

CALENDAR FOR THE BOARD OF SUPERVISORS  
**CONTRA COSTA COUNTY**  
AND FOR SPECIAL DISTRICTS, AGENCIES, AND AUTHORITIES GOVERNED BY THE BOARD  
**BOARD CHAMBERS, ADMINISTRATION BUILDING, 1025 ESCOBAR STREET**  
**MARTINEZ, CALIFORNIA 94553-1229**

**DIANE BURGIS**, CHAIR, 3RD DISTRICT

**FEDERAL D. GLOVER**, VICE CHAIR, 5TH DISTRICT

**JOHN GIOIA**, 1ST DISTRICT

**CANDACE ANDERSEN**, 2ND DISTRICT

**KAREN MITCHOFF**, 4TH DISTRICT

**MONICA NINO**, CLERK OF THE BOARD AND COUNTY ADMINISTRATOR, (925) 655-2075

**To slow the spread of COVID-19, in lieu of a public gathering, the Board meeting will be accessible via television and live-streaming to all members of the public as permitted by the Governor's Executive Order N08-21. Board meetings are televised live on Comcast Cable 27, ATT/U-Verse Channel 99, and WAVE Channel 32, and can be seen live online at [www.contracosta.ca.gov](http://www.contracosta.ca.gov).**

PERSONS WHO WISH TO ADDRESS THE BOARD DURING PUBLIC COMMENT OR WITH RESPECT TO AN ITEM THAT IS ON THE AGENDA MAY CALL IN DURING THE MEETING BY DIALING **888-251-2949** FOLLOWED BY THE ACCESS CODE **1672589#**. To indicate you wish to speak on an agenda item, please push "#2" on your phone. Access via Zoom is also available via the following link: <https://ems8.intellor.com/join/GI665wZkzt>. To indicate you wish to speak on an agenda item, please "raise your hand" in the Zoom app.

Meetings of the Board are closed-captioned in real time. Public comment generally will be limited to two minutes. Your patience is appreciated. A Spanish language interpreter is available to assist Spanish-speaking callers.

A lunch break or closed session may be called at the discretion of the Board Chair. Staff reports related to open session items on the agenda are also accessible online at [www.contracosta.ca.gov](http://www.contracosta.ca.gov).

**AGENDA**  
**August 3, 2021**

**9:00 A.M. Convene, call to order and opening ceremonies.**

Inspirational Thought- *"Forgiveness liberates the soul. It removes fear. That is why it is such a powerful weapon."* ~Nelson Mandela

**CONSIDER CONSENT ITEMS** (Items listed as C.1 through C.45 on the following agenda) – Items are subject to removal from Consent Calendar by request of any Supervisor or on request for discussion by a member of the public. **Items removed from the Consent Calendar will be considered with the Discussion Items.**

## **DISCUSSION ITEMS**

- D.1** Acting as the governing board of the Wendt Ranch Geological Hazard Abatement District (GHAD), HEARING to adopt Resolution No. 2021/03 approving the annexation of the Somerset Development into the Wendt Ranch GHAD, and Somerset Development Plan of Control, and to consider any written objections thereto as required under Public Resources code section 26581. (Patricia Curtain GHAD Attorney and Eric Harrell GHAD Manager)
- D.2** HEARING to consider adopting Ordinance No. 2021-25 updating mitigation fees imposed to implement the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan; and CONSIDER approving and authorizing the County Counsel, or designee, to execute a defense and indemnification agreement with the East Contra Costa County Habitat Conservancy and the cities of Brentwood, Clayton, Oakley, and Pittsburg, as recommended by the Conservation and Development Director. (Abigail Fateman, Department of Conservation and Development)
- D.3** CONSIDER authorizing the Conservation and Development Director, or designee, to develop an ordinance amending the County building code to require certain types of newly constructed buildings be powered only by electricity and not by natural gas, as recommended by the Sustainability Committee; and CONSIDER making a referral to the Sustainability Committee to examine whether the County building code should be similarly amended for certain other types of newly constructed buildings. (Demian Hardman, Department of Conservation and Development)
- D.4** CONVENE workshop on the American Rescue Plan Act, including its impacts on Contra Costa County, and take related actions. (Monica Nino, County Administrator)
- D.5** CONSIDER adopting Resolution No. 2021/234 to modify the Board's policy on appointing family members of County Supervisors to seats on boards, committees or commissions for which the Contra Costa County Board of Supervisors is the appointing authority, by narrowing restrictions to appointing certain family members, as recommended by the Internal Operations Committee. (Supervisor Andersen)
- D. 6** CONSIDER Consent Items previously removed.
- D. 7** PUBLIC COMMENT (2 Minutes/Speaker)
- D. 8** CONSIDER reports of Board members.

## **Closed Session**

CONFERENCE WITH LABOR NEGOTIATORS- Housing Authority of Contra Costa County (Gov. Code § 54957.6)

1. Agency Negotiators: Joseph Villarreal and Stacey Cue.

Employee Organization: Public Employees Union, Local One

2. Agency Negotiators: Joseph Villarreal.

Unrepresented Employees: All unrepresented employees.

## ***ADJOURN***

## **CONSENT ITEMS**

### **Road and Transportation**

- C. 1 ADOPT Resolution No. 2021/228 approving and authorizing the Public Works Director, or designee, to fully close a portion of Marsh Creek Road between Camino Diablo and Vineyards Parkway in the City of Brentwood, on September 23, 2021 from 6:00 a.m. through 6:00 p.m., for the purpose of strength testing gas transmission pipeline. (No fiscal impact)
- C. 2 APPROVE AND AUTHORIZE the Public Works Director, or designee, to execute a contract amendment with CH2M Hill, Inc., to extend the term from June 30, 2022 to December 31, 2023, and increase the payment limit by \$204,727 to a new payment limit of \$1,167,439, for professional engineering services for the Marsh Creek Road Bridges Replacement Project, Brentwood and Clayton areas. (89% Federal Highway Bridge Program Funds, 11% Local Road Funds)

### **Engineering Services**

- C. 3 ADOPT Resolution No. 2021/230 approving and authorizing the Public Works Director, or designee, to fully close a portion of Stanford Avenue, on August 11, 2021 from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole, Kensington area. (No fiscal impact)
- C. 4 ADOPT Resolution No. 2021/231 approving and authorizing the Public Works Director, or designee, to fully close a portion of Highgate Road at 69 Highgate Road, for two consecutive days between August 30, 2021 and September 30, 2021 from 7:00 a.m. through 5:00 p.m., for the purpose of replacing two utility poles, Kensington area. (No fiscal impact)

- C. 5 ADOPT Resolution No. 2021/232 approving the ninth extension of the Subdivision Agreement for subdivision SD03-08744, for a project being developed by Discovery Builders, Inc., as recommended by the Public Works Director, Martinez area. (No fiscal impact)
- C. 6 ADOPT Resolution No. 2021/233 approving the Parcel Map for minor subdivision MS05-00053, for a project being developed by Main Stone Corporation, as recommended by the Public Works Director, Knightsen area. (No fiscal impact)
- C. 7 ADOPT Resolution No. 2021/235 approving and authorizing the Public Works Director, or designee, to fully close a portion of Beloit Avenue between Lake Drive and Purdue Avenue, on August 4, 2021 from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole and installing an anchor, Kensington area. (No fiscal impact)

### **Special Districts & County Airports**

- C. 8 APPROVE and AUTHORIZE the Director of Airports, or designee, to execute a month-to-month hangar rental agreement with Michael McCarthy for a south-facing shade hangar at Buchanan Field Airport effective August 1, 2021 in the monthly amount of \$140, Pacheco area (100% Airport Enterprise Fund).

### **Claims, Collections & Litigation**

- C. 9 DENY claims filed by Dale Holly and Christopher Dwayne Slaughter.

### **Statutory Actions**

- C. 10 APPROVE Board meeting minutes for June 2021, as on file with the Office of the Clerk of the Board.

### **Honors & Proclamations**

- C. 11 ADOPT Resolution No. 2021/240 honoring the Discovery Counseling Center on its 50th Anniversary, as recommended by Supervisor Andersen.
- C. 12 ADOPT Resolution No. 2021/251 recognizing Monument Crisis Center for their 18 years of service to our community and the establishment of their forever home, as recommended by Supervisor Mitchoff.

### **Ordinances**

- C. 13** ADOPT Ordinance No. 2021-22 to require all persons desiring to engage in industrial hemp cultivation in the unincorporated areas of Contra Costa County to obtain a permit from the Contra Costa County Agricultural Commissioner in addition to all other required County and State permits and registrations, and to establish standards for cultivating industrial hemp.

### **Appointments & Resignations**

- C. 14** REAPPOINT David Leimsieder to the District 4 seat on the Family and Children's Trust Committee for a term ending on September 30, 2023, as recommended by Supervisor Mitchoff.
- C. 15** APPROVE the medical staff appointments and reappointments, additional privileges, advancement, and voluntary resignations as recommend by the Medical Staff Executive Committee and by the Health Services Director.
- C. 16** ACCEPT the resignation of Dan Wichlan, DECLARE a vacancy in the District IV Alternate Seat on the Contra Costa County Library Commission for a term ending on June 30, 2023 and DIRECT the Clerk of the Board to post the vacancy, as recommended by Supervisor Mitchoff.
- C. 17** ACCEPT the resignation of Bill Clark from the County Superintendent of School's seat on the Treasury Oversight Committee, and ACCEPT the appointment of Denise Porterfield to the County Superintendent of School's seat for a term ending on April 30, 2024 as recommended by the Treasurer-Tax Collector.
- C. 18** REAPPOINT Anita Pereira-Sekhon to the District V Seat on the Family and Children's Trust Committee for a term ending on September 30, 2023, as recommended by Supervisor Glover.
- C. 19** APPOINT Pier Angeli Linsangan to the District V Seat on the Emergency Medical Care Committee for a term ending September 30, 2022, as recommended by Supervisor Glover.
- C. 20** APPOINT Joe D. Arandia to the District V Seat on the Arts & Culture Commission for a term ending June 30, 2025, as recommended by Supervisor Glover.
- C. 21** ACCEPT the resignation of Chris Gallagher, DECLARE vacant the Appointee 2 seat on County Service Area P-2A Citizens Advisory Committee for a term ending on December 31, 2021, and DIRECT the Clerk of the Board to post the vacancy, as recommended by Supervisor Burgis.

## **Appropriation Adjustments**

- C. 22 Public Works - Building Maintenance (0079): APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No.5068 and AUTHORIZE new revenue for interfund reimbursements in the amount of \$3,400,000, as recommended by the Public Works Director. (100% General Fund)
- C. 23 Public Works - Area of Benefit Funds (124200, 123400): APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No. 5070 authorizing new revenue for road development fees in the amount of \$600,000, as recommended by the Public Works Director. (83% North Richmond Area of Benefit Funds, 17% Central County Area of Benefit Funds)
- C. 24 Public Works - Road Fund (110800): APPROVE Fiscal Year 2020/21 Appropriation Adjustment No.5069 authorizing the transfer of appropriations in the amount of \$2,010,000 from Road Construction to General Road Administration, as recommended by the Public Works Director. (100% Local Road Funds)
- C. 25 Plant Acquisition - General Fund (0111): APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No.5067 to recognize revenues totaling \$13,529,000 and appropriate to various approved capital improvement projects, as recommended by the Public Works Director. (100% General Fund)
- C. 26 Conservation and Development (0285): APPROVE prior year Appropriation and Revenue Adjustment No. 005063 authorizing new revenue in the amount of \$69,898 from the California Public Utilities Commission and appropriating it cover Department of Conservation and Development, Energy Upgrade Program expenditures. (100% California Public Utilities Commission)
- C. 27 Public Works- Walden Green Maintenance Fund (113200-0664): APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No.5062 and AUTHORIZE new revenue for Park Dedication Fund reimbursements and Recycle Grant funding in the total amount of \$520,000, as recommended by the Public Works Director. (100% Walden Green Maintenance Fund)
- C. 28 CSA P-6 Zones (Misc.): APPROVE Appropriations and Revenue Adjustment No. 005071 increasing Fiscal Year 2020/21 revenue and appropriations in the amount of \$277,000 in various special tax levy zones within County Service Area P-6 to reflect anticipated revenue and expenditures. (100% CSA P-6 Special Tax revenue)

## **Personnel Actions**

- C. 29 ADOPT Position Adjustment Resolution No. 25737 to reallocate the salaries of the Assistant County Treasurer - Exempt and the Assistant County Tax Collector - Exempt classifications on the salary schedule; and cancel the vacant position of Chief Deputy Treasurer-Tax Collector-Exempt in the Treasurer-Tax Collector's Office. (100% Cost Savings)
- C. 30 ADOPT Position Adjustment Resolution No. 25782 to cancel one Children Services Manager-Project position (unrepresented); and add one Comprehensive Services Manager-Project position (unrepresented) in the Community Services Bureau, Employment and Human Services Department.
- C. 31 ADOPT Position Adjustment Resolution No. 25776 add one part time (20/40) Library Assistant-Journey Level (represented) position in the Library Department. (100% City of Concord)
- C. 32 ADOPT Position Adjustment Resolution No. 25783 to add two Accountant I (represented) positions and two Accountant III (represented) positions in the Health Services Department. (100% premiums)

### **Grants & Contracts**

#### **APPROVE and AUTHORIZE execution of agreements between the County and the following agencies for receipt of fund and/or services:**

- C. 33 APPROVE and AUTHORIZE the Health Services Director, or designee, to execute a contract amendment with the State of California, Department of Health Care Services, to reflect revisions to medical delivery and services to Medi-Cal recipients under the Contra Costa Health Plan, with no change in the original amount payable to the County of up to \$317,472,000 or term through December 31, 2021. (No County match)
- C. 34 APPROVE and AUTHORIZE the Health Services Director, or designee, to execute a contract amendment with California Business, Consumer Services and Housing Agency, to make adjustments to the budget with no change in the amount payable to the County of \$7,196,771 or term January 9, 2019 through October 31, 2021, for the Contra Costa County Continuum of Care Program to expand and improve the homeless crisis response system for unsheltered individuals and families. (No County match)

#### **APPROVE and AUTHORIZE execution of agreement between the County and the following parties as noted for the purchase of equipment and/or services:**

- C. 35** APPROVE and AUTHORIZE the Conservation and Development Director, or designee, to execute a contract amendment with Environmental Science Associates to extend the term from August 7, 2021 through August 7, 2022 with no change to the payment limit, for continued services to complete the Environmental Impact Report for the Bayview Residential Project. (100% Application Permit fees)
- C. 36** APPROVE and AUTHORIZE the Health Services Director, or designee, to execute a contract with Familytree Medical Transport, LLC, in an amount not to exceed \$600,000 to provide non-emergency transportation services for Contra Costa Health Plan Medi-Cal members for the period August 1, 2021 through July 31, 2024. (100% Contra Costa Health Plan Enterprise Fund II)
- C. 37** APPROVE and AUTHORIZE Health Services Director, or designee, to execute a contract with Public Health Foundation Enterprises, Inc. (dba Heluna Health), in an amount not to exceed \$2,947,041 to provide temporary public health microbiologist, licensed vocational nurses and registered nurses for coverage at COVID-19 testing, vaccination and person under investigation sites for the period July 1, 2021 through December 31, 2021. (100% Federal Emergency funds)
- C. 38** APPROVE and AUTHORIZE the Health Services Director, or designee, to execute a purchase order with McKesson Corporation, in an amount not to exceed \$5,500,000 for the purchase of pharmaceuticals dispensed through nine Rite Aid pharmacies within Contra Costa County for the period July 1, 2021 through June 30, 2025. (100% Contra Costa Health Plan Enterprise Fund III)

### **Other Actions**

- C. 39** ADOPT Resolution No. 2021/229 approving the reissuance of Multi-Family Housing Revenue Notes in the amount of \$66,000,000 for the construction of a 193-unit residential rental housing development known as Baypoint Family Apartments located at 3600-3628 Willow Pass Road, Bay Point and AUTHORIZE the Chair of the Board of Supervisors to execute related documents, as recommended by the Conservation and Development Director. (No impact to the General Fund)
- C. 40** ACCEPT the May 2021 update of the operations of the Employment and Human Services Department, Community Services Bureau, as recommended by the Employment and Human Services Director.
- C. 41** AUTHORIZE the discharge from accountability for uncollected Public Works Land Development accounts totaling \$157,933 which have been deemed uncollectible, as recommended by the Public Works Director.(100% Land Development Fund)

- C. 42** RECEIVE letter from Sustainability Commission recommending actions to reduce greenhouse gas emissions from buildings and REFER the letter to the Sustainability Committee, as recommended by the Conservation and Development Director.
- C. 43** ACCEPT the recommendation of the Behavioral Health Services Director to adopt the Mental Health Services Act FY 2021/22 Annual Update to Three Year Program and Expenditure Plan for Fiscal Years 2020/23, and AUTHORIZE the Chair of the Board of Supervisors to sign a letter of approval to the Department of Health Care Services (DHCS) and the Mental Health Services Oversight and Accountability Commission (MHSOAC) to inform of approval and adoption of this Plan.
- C. 44** SET the special tax levy for County Service Areas P-2 Zone A (Blackhawk), P-2 Zone B (Alamo) and P-5 (Round Hill) for fiscal year 2021/2022, as recommended by the Sheriff-Coroner. (100% Restricted Property Tax revenue)
- C. 45** SET the special tax levy for police services Zones in County Service Area P-6 for Fiscal Year 2021-2022. (100% Restricted Property Tax revenue)

## **GENERAL INFORMATION**

The Board meets in all its capacities pursuant to Ordinance Code Section 24-2.402, including as the Housing Authority and the Successor Agency to the Redevelopment Agency. Persons who wish to address the Board should complete the form provided for that purpose and furnish a copy of any written statement to the Clerk.

Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the Clerk of the Board to a majority of the members of the Board of Supervisors less than 96 hours prior to that meeting are available for public inspection at 1025 Escobar Street, First Floor, Martinez, CA 94553, during normal business hours.

All matters listed under CONSENT ITEMS are considered by the Board to be routine and will be enacted by one motion. There will be no separate discussion of these items unless requested by a member of the Board or a member of the public prior to the time the Board votes on the motion to adopt.

Persons who wish to speak on matters set for PUBLIC HEARINGS will be heard when the Chair calls for comments from those persons who are in support thereof or in opposition thereto. After persons have spoken, the hearing is closed and the matter is subject to discussion and action by the Board. Comments on matters listed on the agenda or otherwise within the purview of the Board of Supervisors can be submitted to the office of the Clerk of the Board via mail: Board of Supervisors, 1025 Escobar Street, First Floor, Martinez, CA 94553 or to [clerkoftheboard@cob.cccounty.us](mailto:clerkoftheboard@cob.cccounty.us).

The County will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Clerk of the Board at least 24 hours before the meeting, at

(925) 655-2000. An assistive listening device is available from the Clerk, First Floor.

Copies of recordings of all or portions of a Board meeting may be purchased from the Clerk of the Board. Please telephone the Office of the Clerk of the Board, (925) 655-2000, to make the necessary arrangements.

Forms are available to anyone desiring to submit an inspirational thought nomination for inclusion on the Board Agenda. Forms may be obtained at the Office of the County Administrator or Office of the Clerk of the Board, 1025 Escobar Street, Martinez, California.

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[www.co.contra-costa.ca.us](http://www.co.contra-costa.ca.us)

## STANDING COMMITTEES

To slow the spread of COVID-19 and in lieu of a public gathering, if the Board's STANDING COMMITTEES meet they will provide public access either telephonically or electronically, as noticed on the agenda for the respective STANDING COMMITTEE meeting.

The **Airport Committee** (Supervisors Diane Burgis and Karen Mitchoff) meets quarterly on the second Wednesday of the month at 11:00 a.m. at the Director of Airports Office, 550 Sally Ride Drive, Concord.

The **Family and Human Services Committee** (Supervisors Candace Andersen and Diane Burgis) meets on the fourth Monday of the month at 9:00 a.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Finance Committee** (Supervisors Karen Mitchoff and John Gioia) meets on the first Monday of the month at 9:00 a.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Hiring Outreach Oversight Committee** (Supervisors Federal D. Glover and John Gioia) meets quarterly on the first Monday at 10:30 a.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Internal Operations Committee** (Supervisors Candace Andersen and Diane Burgis) meets on the second Monday of the month at 10:30 a.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Legislation Committee** (Supervisors Diane Burgis and Karen Mitchoff) meets on the second Monday of the month at 1:00 p.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Public Protection Committee** (Supervisors Andersen and Federal D. Glover) meets on the fourth Monday of the month at 10:30 a.m. in Room 110, County Administration Building, 1025

Escobar Street, Martinez.

The **Sustainability Committee** (Supervisors John Gioia and Federal D. Glover) meets on the fourth Monday of the month at 1:00 p.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

The **Transportation, Water & Infrastructure Committee** (Supervisors Candace Andersen and Diane Burgis) meets on the second Monday of the month at 9:00 a.m. in Room 110, County Administration Building, 1025 Escobar Street, Martinez.

Airports Committee	September 8, 2021	11:00 a.m.	See above
Family & Human Services Committee	August 23, 2021 canceled September 27, 2021	9:00 a.m.	See above
Finance Committee	August 3, 2021 canceled September 13, 2021	9:00 a.m.	See above
Hiring Outreach Oversight Committee	September 13, 2021	10:30 a.m.	See above
Internal Operations Committee	August 9, 2021 Canceled September 13, 2021	10:30 a.m.	See above
Legislation Committee	August 9, 2021 canceled September 13, 2021	1:00 p.m.	See above
Public Protection Committee	August 23, 2021 canceled September 27, 2021	10:30 a.m.	See above
Sustainability Committee	September 28, 2021	1:00 p.m.	See above
Transportation, Water & Infrastructure Committee	August 9, 2021	9:00 a.m.	See above

**AGENDA DEADLINE: Thursday, 12 noon, 12 days before the Tuesday Board meetings.**

### **Glossary of Acronyms, Abbreviations, and other Terms (in alphabetical order):**

Contra Costa County has a policy of making limited use of acronyms, abbreviations, and industry-specific language in its Board of Supervisors meetings and written materials. Following is a list of commonly used language that may appear in oral presentations and written materials associated with Board meetings:

**AB** Assembly Bill

**ABAG** Association of Bay Area Governments

**ACA** Assembly Constitutional Amendment

**ADA** Americans with Disabilities Act of 1990

**AFSCME** American Federation of State County and Municipal Employees

**AICP** American Institute of Certified Planners

**AIDS** Acquired Immunodeficiency Deficiency Syndrome  
**ALUC** Airport Land Use Commission  
**AOD** Alcohol and Other Drugs  
**ARRA** American Recovery & Reinvestment Act of 2009  
**BAAQMD** Bay Area Air Quality Management District  
**BART** Bay Area Rapid Transit District  
**BayRICS** Bay Area Regional Interoperable Communications System  
**BCDC** Bay Conservation & Development Commission  
**BGO** Better Government Ordinance  
**BOS** Board of Supervisors  
**CALTRANS** California Department of Transportation  
**CalWIN** California Works Information Network  
**CalWORKS** California Work Opportunity and Responsibility to Kids  
**CAER** Community Awareness Emergency Response  
**CAO** County Administrative Officer or Office  
**CCE** Community Choice Energy  
**CCCPCFD (ConFire)** Contra Costa County Fire Protection District  
**CCHP** Contra Costa Health Plan  
**CCTA** Contra Costa Transportation Authority  
**CCRMC** Contra Costa Regional Medical Center  
**CCWD** Contra Costa Water District  
**CDBG** Community Development Block Grant  
**CFDA** Catalog of Federal Domestic Assistance  
**CEQA** California Environmental Quality Act  
**CIO** Chief Information Officer  
**COLA** Cost of living adjustment  
**ConFire (CCCPCFD)** Contra Costa County Fire Protection District  
**CPA** Certified Public Accountant  
**CPI** Consumer Price Index  
**CSA** County Service Area  
**CSAC** California State Association of Counties  
**CTC** California Transportation Commission  
**dba** doing business as  
**DSRIP** Delivery System Reform Incentive Program  
**EBMUD** East Bay Municipal Utility District  
**ECCPCFD** East Contra Costa Fire Protection District  
**EIR** Environmental Impact Report  
**EIS** Environmental Impact Statement  
**EMCC** Emergency Medical Care Committee  
**EMS** Emergency Medical Services  
**EPSDT** Early State Periodic Screening, Diagnosis and Treatment Program (Mental Health)  
**et al.** et alii (and others)  
**FAA** Federal Aviation Administration  
**FEMA** Federal Emergency Management Agency  
**F&HS** Family and Human Services Committee  
**First 5** First Five Children and Families Commission (Proposition 10)  
**FTE** Full Time Equivalent  
**FY** Fiscal Year

**GHAD** Geologic Hazard Abatement District  
**GIS** Geographic Information System  
**HCD** (State Dept of) Housing & Community Development  
**HHS** (State Dept of) Health and Human Services  
**HIPAA** Health Insurance Portability and Accountability Act  
**HIV** Human Immunodeficiency Virus  
**HOME** Federal block grant to State and local governments designed exclusively to create affordable housing for low-income households  
**HOPWA** Housing Opportunities for Persons with AIDS Program  
**HOV** High Occupancy Vehicle  
**HR** Human Resources  
**HUD** United States Department of Housing and Urban Development  
**IHSS** In-Home Supportive Services  
**Inc.** Incorporated  
**IOC** Internal Operations Committee  
**ISO** Industrial Safety Ordinance  
**JPA** Joint (exercise of) Powers Authority or Agreement  
**Lamorinda** Lafayette-Moraga-Orinda Area  
**LAFCo** Local Agency Formation Commission  
**LLC** Limited Liability Company  
**LLP** Limited Liability Partnership  
**Local 1** Public Employees Union Local 1  
**LVN** Licensed Vocational Nurse  
**MAC** Municipal Advisory Council  
**MBE** Minority Business Enterprise  
**M.D.** Medical Doctor  
**M.F.T.** Marriage and Family Therapist  
**MIS** Management Information System  
**MOE** Maintenance of Effort  
**MOU** Memorandum of Understanding  
**MTC** Metropolitan Transportation Commission  
**NACo** National Association of Counties  
**NEPA** National Environmental Policy Act  
**OB-GYN** Obstetrics and Gynecology  
**O.D.** Doctor of Optometry  
**OES-EOC** Office of Emergency Services-Emergency Operations Center  
**OPEB** Other Post Employment Benefits  
**ORJ** Office of Reentry and Justice  
**OSHA** Occupational Safety and Health Administration  
**PACE** Property Assessed Clean Energy  
**PARS** Public Agencies Retirement Services  
**PEPRA** Public Employees Pension Reform Act  
**Psy.D.** Doctor of Psychology  
**RDA** Redevelopment Agency  
**RFI** Request For Information  
**RFP** Request For Proposal  
**RFQ** Request For Qualifications  
**RN** Registered Nurse

**SB** Senate Bill  
**SBE** Small Business Enterprise  
**SEIU** Service Employees International Union  
**SUASI** Super Urban Area Security Initiative  
**SWAT** Southwest Area Transportation Committee  
**TRANSPAC** Transportation Partnership & Cooperation (Central)  
**TRANSPLAN** Transportation Planning Committee (East County)  
**TRE** or **TTE** Trustee  
**TWIC** Transportation, Water and Infrastructure Committee  
**UASI** Urban Area Security Initiative  
**VA** Department of Veterans Affairs  
**vs.** versus (against)  
**WAN** Wide Area Network  
**WBE** Women Business Enterprise  
**WCCHD** West Contra Costa Healthcare District  
**WCCTAC** West Contra Costa Transportation Advisory Committee



**Contra  
Costa  
County**

To: Wendt Ranch GHAD Board of Directors  
From: Patricia E. Curtin, GHAD Attorney and General Manager  
Date: August 3, 2021

Subject: Proposed Annexation of the Somerset Development into the Wendt Ranch GHAD and approving the Somerset Plan of Control

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**RECOMMENDATION(S):**

1. OPEN AND CONDUCT a public hearing on the proposed annexation.
2. CLOSE the public hearing and consider any written objections to the proposed annexation.
3. If owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD do not submit written objections to the annexation, ADOPT Resolution No. 2021/03 approving the a) annexation of the Somerset Development into the Wendt Ranch Geologic Hazard Abatement District (“GHAD”) subject to the adoption of a resolution approving the annexation by the Board of Supervisors of Contra Costa County as required under Public Resources code section 26581, and b) Somerset Development Plan of Control, and hear any written objections thereto.
4. If owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD submit written objections to the annexation, the GHAD Board shall close the public hearing and direct that the annexation proceedings be abandoned.

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Haley Ralston  
909.373.5457

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

## FISCAL IMPACT:

The GHAD is proposed to be funded 100% through assessments to be levied on properties within the GHAD. The GHAD cannot provide services until a funding source is in place.

## BACKGROUND:

### 1. GHAD Formation and Purpose.

GHAD Law allows GHADs to be formed to undertake emergency actions necessary or incidental to the prevention, mitigation, abatement, or control of a geologic hazard (*Public Resources Code §26500*, “GHAD Law”). GHAD Law gives local agencies the authority to form districts that can speedily address “an actual or threatened landslide, land subsidence, soil erosion, earthquake, or any other natural or unnatural movement of land or earth.” (*Public Resources Code §26507*).

Consistent with GHAD Law, on February 12, 2002, the Contra Costa County Board of Supervisors adopted Resolution No. 2002/59 approving and forming the GHAD and thereby putting into place a mechanism to respond to emergencies in preventing and/or responding to geologic hazards. Members of the County Board of Supervisors serve as the GHAD Board of Directors.

### 2. Request for Annexation into the Wendt Ranch GHAD.

GHAD Law allows properties to be annexed into an existing GHAD. Since the GHAD was formed in 2002 to include the Wendt Ranch development, two separate developments have been annexed. Monterosso, formerly known as Intervening Properties, and Alamo Creek both in Contra Costa County were annexed in the GHAD on July 19, 2005 with the adoption of Resolution No. 2005/437.

The Somerset development (Danville Subdivision 7763) is located north Camino Tassajara at the intersection with Conejo Drive in Contra Costa County, California. One-hundred fifty residential townhome units currently exist within the Somerset development. As provided by GHAD law, residents within the Somerset development, Subdivision 7763 (“GHAD Annexation Area”), located in the Danville area of unincorporated Contra Costa County submitted a Petition for Annexation to join the existing GHAD which was accepted by the GHAD Board with the approval of Resolution No. 2021/02 on July 13, 2021.

GHAD Law requires a Plan of Control, prepared by a State-Certified Engineering Geologist, as a prerequisite to annexation into a GHAD. Pursuant to GHAD Law, the Somerset Development Plan of Control was prepared by an Engineering Geologist and describes, in detail, the geologic hazards, their location, and the area affected by them. It also provides a plan for the prevention, mitigation, abatement, or control thereof. The Plan of Control covers the GHAD Annexation Area only.

### 3. Proceedings on the Annexation Request.

On July 13, 2021 the GHAD Board of Directors adopted Resolution No. 2021/02 directing that a public hearing be set for August 3, 2021 to consider the proposed annexation and the proposed Plan of Control for the Somerset Development, and hear any written objections thereto. On July 14, 2021 notice of the August 3, 2021 public hearing was sent to each property owner within the proposed GHAD Annexation Area by first-class mail as required by GHAD Law. Notified property owners included all owners of real property to be annexed into the GHAD as shown on the assessment roll last equalized by Contra Costa County.

GHAD Law requires the legislative body which ordered formation of the GHAD to also approve annexations. The Contra Costa County Board of Supervisors, as the legislative body that formed the GHAD, will be required to confirm annexation if the GHAD Board approves the annexation.

As required by GHAD Law, if owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD submit written objections to the annexation, the GHAD Board must close the public hearing and direct that the annexation proceedings be abandoned.

If owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD do not submit written objections to the annexation, the GHAD Manager recommends the GHAD Board adopt Resolution No. 2021/03 approving annexation of the Somerset development into the GHAD and adopting the Plan of Control.

CONSEQUENCE OF NEGATIVE ACTION:

The property owners within the Somerset Development may attempt to form a new GHAD or seek annexation into another GHAD to allow a GHAD to carry out responsibilities identified in the Plan of Control.

ATTACHMENTS

Wendt Ranch GHAD Resolution No. 2021/03

Somerset POC draft

Wendt Ranch GHAD Petition for Annexation

Wendt Ranch GHAD Annexation of Somerset PowerPoint

THE BOARD OF DIRECTORS OF WENDT RANCH  
GEOLOGIC HAZARD ABATEMENT DISTRICT

Adopted this Resolution on \_\_\_\_\_ by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Resolution No. 2021/03 (Wendt Ranch GHAD)

---

**SUBJECT:** Resolution 2021/03 approving the annexation of the Somerset Development into the Wendt Ranch Geologic Hazard Abatement District ("GHAD") and approving the Somerset Plan of Control.

**WHEREAS,** on February 12, 2002, the Contra Costa County Board of Supervisors adopted Resolution No. 2002/59 approving and forming the GHAD and thereby putting into place a mechanism to respond to emergencies in preventing and/or responding to geologic hazards and appointed itself to serve as the GHAD Board of Directors.

**WHEREAS,** on July 13, 2021, the GHAD Board was presented with the Petition for Annexation of Territory to the Wendt Ranch GHAD ("Petition"), which is attached hereto as Attachment 1; this Petition includes a proposed plan of control (dated June 28, 2021) which describes potential geologic hazards within the territory to be annexed and addressed the prevention, mitigation, abatement and control of such hazards.

**WHEREAS,** on July 13, 2021 the GHAD Board adopted Resolution 2021/02 setting a public hearing for August 3, 2021 to consider the proposed annexation and plan of control. This hearing was noticed in accordance with Public Resources Code Sections 26557, 26558(c), 26561, 26562, and 26563.

**WHEREAS,** on August 3, 2021, the GHAD Board held a public hearing and considered the proposed annexation and plan of control. Owner(s) of more than 50 percent of the assessed valuation of the property to be included in the Wendt Ranch GHAD did not object to the annexation.

**The Board of Directors of the GHAD HEREBY RESOLVES THAT:**

1. This Resolution No. 2021/03 is made pursuant to the provisions of Division 17 of the Public Resources Code with particular references to Chapter 1 (commencing with Section 26500), Article 3 (commencing with Section 26550) and Article 4 (commencing with Section 26561) ("GHAD Law").
2. The GHAD Board has been presented with and reviewed the Somerset development plan of control and has determined that the health, safety and welfare of the public requires annexation of the Somerset into the GHAD.
3. At the hearing, owner(s) of more than 50 percent of the assessed valuation of the property to be included in the GHAD did not object to the annexation or to the plan of control.
4. The GHAD Board hereby approves the annexation of the Somerset development into the GHAD as described in the Petition, subject to the adoption of a resolution approving the annexation by the Board of Supervisors of Contra Costa County as required under GHAD Law and specifically, Public Resources Code section 26581.
5. The GHAD Board hereby approves and adopts the Somerset development Plan of Control.
6. These proceedings are exempt from the provisions of the California Environmental Quality Act (Pub. Res. Code §§ 21000 et seq.) in accordance with GHAD Law, and specifically Public Resources Code section 26559.
7. The recitals are incorporated herein by this reference.

This Resolution shall become effective immediately upon its passage and adoption.

**Attachment 1** – Petition for Annexation with Plan of Control

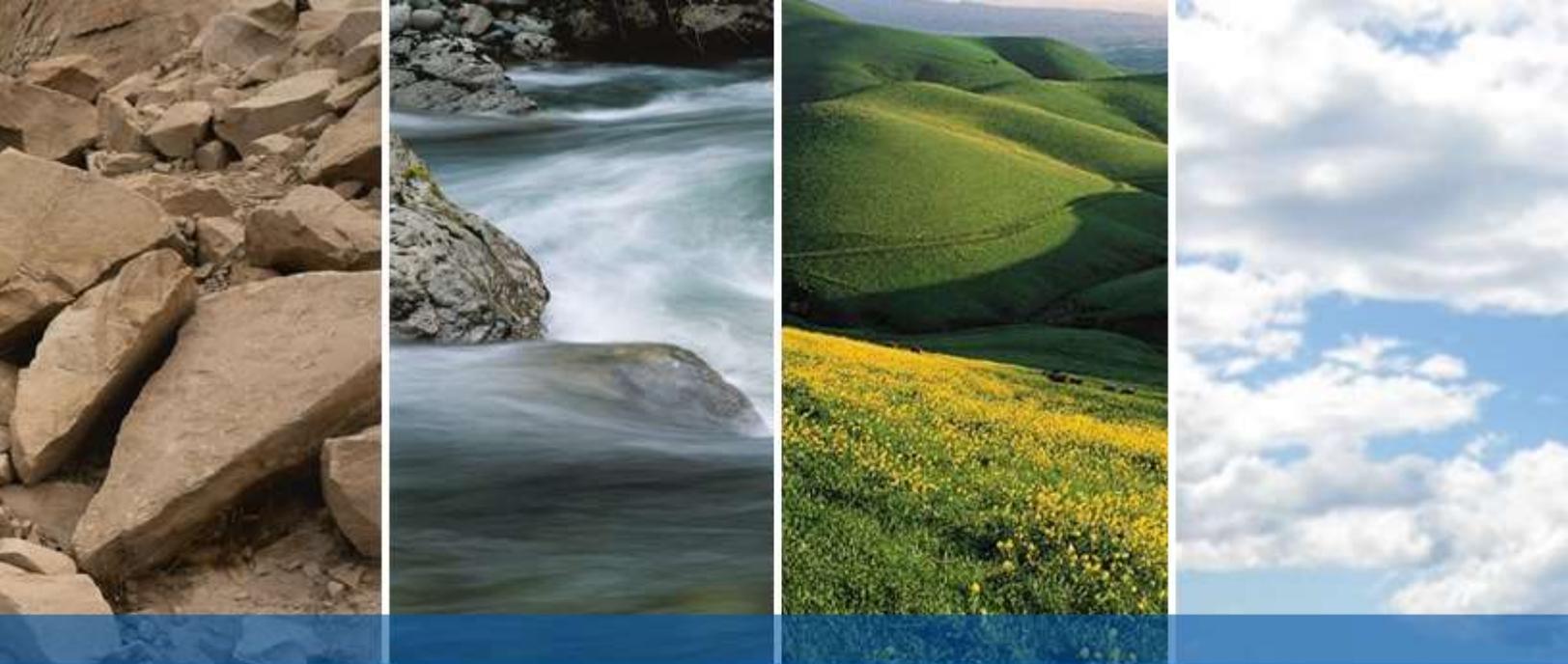
I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Directors on the date shown.

ATTESTED: \_\_\_\_\_  
Monica Nino, Clerk of the GHAD Board of  
Directors and County Administrator

By: \_\_\_\_\_ Deputy

Approved as to form:

\_\_\_\_\_  
Patricia Curtin, GHAD Attorney



## WENDT RANCH GEOLOGIC HAZARD ABATEMENT DISTRICT (GHAD)

### PLAN OF CONTROL FOR SOMERSET, SUBDIVISION 7763 DANVILLE, CALIFORNIA

SUBMITTED TO  
Cheri Cole  
Danville Somerset Homeowners Association  
3180 Crow Canyon Place  
San Ramon, CA 94583

PREPARED BY  
ENGEO Incorporated

June 28, 2021

PROJECT NO.  
16098.000.000

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Exhibit B – Plat to Accompany Legal Description

**APPENDIX C:** Declaration of Disclosures, Right of Entry and Restrictive Covenants Regarding Wendt Geologic Hazard Abatement District

**APPENDIX D:** Sample Transfer Application Form

DRAFT

## 1.0 AUTHORITY AND SCOPE

As provided in *Public Resources Code § 26581*, residents within the Somerset development, Subdivision 7763, (“GHAD Annexation Area”) located in the Danville area of unincorporated Contra Costa County have submitted a Petition for Annexation to the existing Wendt Ranch GHAD (“GHAD”).

State law allows GHADs to be formed to undertake emergency actions necessary or incidental to the prevention, mitigation, abatement, or control of a geologic hazard (*Public Resources Code § 26500*, “GHAD Law”). GHAD Law gives local agencies the authority to form districts that can speedily address “an actual or threatened landslide, land subsidence, soil erosion, earthquake, or any other natural or unnatural movement of land or earth.” (*Public Resources Code § 26507*). Consistent with GHAD Law, on February 12, 2002, the Contra Costa County Board of Supervisors adopted Resolution No. 2002/59 approving and forming the Wendt Ranch GHAD and thereby putting into place a mechanism to respond to emergencies and preventing and/or respond to geologic hazards. The members of the Contra Costa County Board of Supervisors serve as the Board of Directors of the Wendt Ranch GHAD.

GHAD “improvements” (as defined in GHAD Law) and all GHAD activities undertaken in furtherance of, or in connection therewith, are deemed to be specific actions necessary to prevent or mitigate an emergency within Public Resources Code Section 21080(b)(4) (See, Pub. Res. Code Sections 26601 and 26505). Consistent therewith, all GHAD Activities (as defined in Section 7 below) are exempt from review under the California Environmental Quality Act and are not subject to local permitting requirements.

Since the Wendt Ranch GHAD was formed in 2002 to include the Wendt Ranch development, two separate developments have been annexed into the GHAD. Monterosso, formerly known as Intervening Properties, and Alamo Creek both in Contra Costa County were annexed in the Wendt Ranch GHAD in 2005.

Section 26509 of the Public Resources Code requires a Plan of Control, prepared by a State-Certified Engineering Geologist, as a prerequisite to formation of a GHAD or annexation into an existing GHAD. Pursuant to Section 26509, this Plan of Control was prepared by an Engineering Geologist certified pursuant to Section 7822 of the Business and Professions Code and describes, in detail, the geologic hazards, their location, and the area affected by them. It also provides a plan for the prevention, mitigation, abatement, or control thereof. This Plan of Control covers the GHAD Annexation Area only.

As used in this Plan of Control, and as provided in Section 26507, “geologic hazard” means an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth.

### 1.1 PROPERTY IDENTIFICATION

The land within the proposed GHAD Annexation Area is shown on the GHAD Boundary Plat (Appendix B, Exhibit B). The GHAD Annexation Area includes all areas within Subdivision 7763. The legal description of the GHAD Annexation Area is included in Appendix B, Exhibit A and includes all of Parcels A through G and Lots 1 through 150 shown on the Final Map for Subdivision 7763 – Somerset.

## **2.0 BACKGROUND**

### **2.1 SOMERSET PROJECT**

The GHAD Annexation Area includes 150 existing residential townhome units. Additional improvements and parcels include private streets (Parcel A) and common open space parcels (Parcels B, C, D, E, F, and G). The GHAD Annexation Area is approximately 17.8 acres in area. Site access to the GHAD Annexation Area is via Camino Tassajara along the southern edge of the GHAD Annexation Area. As described in this Plan of Control, the GHAD has responsibilities throughout the entire GHAD Annexation Area.

Inclinometer and piezometer monitoring has occurred within the Somerset development since around 1997. Referenced documents indicate that various consultants have observed deflections within the majority of the inclinometers throughout the years of monitoring. According to the most recent monitoring report (ENGEО, March 23, 2021), downslope deflections have been observed in 25 of the 30 inclinometers during the monitoring period between April 2020 and February 2021 (Reference 30). Based on the observed inclinometer deflections, ENGEО identified shallow, intermediate, and deep movement. The deep deflections are interpreted as movement within a portion of a deep-seated landslide mass within the bedrock.

Slope improvements to mitigate instability in the vicinity of Conejo Court were constructed in 2016. According to the plans for the slope improvement project, the mitigation measures comprised a shear pin and tie-back retention system. The shear pins consist of 19 cast-in-drilled-hole (CIDH) piles, connected at the top with a reinforced concrete tie beam.

Design recommendations have been provided to mitigate intermediate and deep slope movement by constructing waler beams and tie-backs embedded in engineered fill slopes ("Stabilization Improvements"). As described in Section 6.0, construction of the proposed waler beams and tie-backs would be completed and their performance verified prior to the transfer of Plan of Control responsibilities from the Danville Somerset Homeowners Association to the GHAD.

### **2.2 GHAD-MAINTAINED IMPROVEMENTS AND OPEN SPACE**

As the private streets and common-area open space parcels within the GHAD Annexation Area are an amenity that benefits all of the property owners within Subdivision 7763, the GHAD funding of the maintenance of the common area open space will be shared by all current and future owners of residential parcels within the GHAD Annexation Area. The common area open space parcels (A through G) are approximately 6.92 acres in area.

The GHAD is charged with responsibilities that relate to the prevention, mitigation, abatement, or control of geologic hazards, which include the maintenance of drainage facilities and associated improvements. This will include the monitoring and maintenance of drainage facilities that, if subject to improper care, could result in decreased slope stability, a primary concern of the GHAD. In addition, the GHAD will mitigate or abate landslide or erosion hazards that could directly affect improved, developed, and accepted properties (as defined in Section 6) within the GHAD Annexation Area in accordance with Section 5.

## 3.0 SITE GEOLOGY

### 3.1 GEOLOGIC SETTING

Cotton, Shires and Associates, Inc. (CSA) characterized the site geology and geologic hazards in previous reports covering the GHAD Annexation Area (CSA 2019 and 2016). As described prior to development, the site was occupied by large, deep-seated landslides. Grading of the site included the placement of fill and relatively minor cuts to construct terraced building pads. Subsurface borings indicate that, in general, fill was placed on top of landslide deposits and colluvial soil without significant corrective grading measures to remove the underlying landslide debris.

Exploratory borings completed within the GHAD Annexation Areas by others in the referenced reports generally indicate that fill at the site comprises stiff to very stiff, moderate- to high-plasticity, silty clay with sand and rock fragments. The underlying colluvium is generally described as stiff, high-plasticity silty clay with sand and rock fragments, local carbonate nodules, and increasing rock fragments with depth. The upper portions of the underlying Tassajara Formation are generally described as landslide debris and old landslide debris, characterized as weak, highly weathered claystone and silty claystone with numerous polished surfaces and localized shear zones. The overall rock quality appears to increase with depth, due to the degree of weathering and shearing decreasing with depth. Based on previous explorations and inclinometer readings, the underlying landslide movement generally ranges in depth from approximately 20 to 50 feet below the existing ground surface.

## 4.0 GEOLOGIC HAZARDS

The following geologic hazards were identified for the GHAD Annexation Area in the referenced geotechnical exploration reports and are expected to remain to some extent after site grading has been completed.

- Slope instability
- Seismically induced ground shaking
- Expansive near-surface soils

### 4.1 SLOPE INSTABILITY

Earth stability is the GHAD's primary geotechnical concern within the GHAD Annexation Area. This is not unique to this GHAD Annexation Area, but is of importance for hillside projects in the San Francisco Bay Area. This section describes several types of slope instability that are within the GHAD's responsibility, subject to the provisions of Sections 6 and 7.

In the referenced geotechnical exploration reports (CSA 2019 and 2016), several landslides are mapped throughout the GHAD Annexation Area (Figure 1). The CSA review of historical aerial photographs that pre-date site grading indicated that a large, ancient, deep-seated landslide underlies the western portion of the GHAD Annexation Area.

In the CSA reports, three depths of potential slope instability were identified.

- Shallow slope creep within the artificial fill is identified as widespread within the GHAD Annexation Area. The effects of soil creep were described as greatest at the surface and diminishing to a negligible effect 10 to 15 feet below the ground surface.
- Intermediate-depth movement was described as concentrated within the colluvium and deeply weathered bedrock underlying the artificial fill. As described, these materials and the associated movement are typically located between 25 and 40 feet below the ground surface. Measured intermediate-depth ground movement has been documented along the south side of the Conejo Drive Loop, Camino Arroyo West, Camino Arroyo East, and Monterey Lane. Previously, CSA identified intermediate-depth deflections and shallow fill creep deflections at Conejo Court; however, both of these types of slope movement were mitigated with the installation of a buried shear pin (soldier pile) and tieback retaining wall installed in 2016.
- Deep movement was identified by CSA, which may represent movement of a deep-seated landslide that existed prior to grading and development of improvements within Subdivision 7763. Measured deep movement was identified in inclinometers located on the north side of Conejo Drive Loop. Typically, displacement indicative of deep movement has been measured at depths greater than 40 feet below the ground surface.

Proposed Stabilization Improvements within the GHAD Annexation Area are designed to mitigate the effects of the intermediate and deep movement on the Site Improvements. In addition, there may be a reduction in the effect of shallow soil creep on the Site Improvements. As described in Section 6.0, construction of the proposed Stabilization Improvements would be completed, and their performance verified, prior to the transfer of Plan of Control responsibilities from the Danville Somerset Homeowners Association to the GHAD.

Landslides are a common geologic phenomenon and are part of the process of mass wasting. Weathered or fractured bedrock and soil are transported downslope over geologic time as a result of gravitational and hydrostatic forces. A landslide is a deposit of soil and/or bedrock moving downward from its original position under the influence of gravity. Landslides include a variety of morphologies and are further defined by type of materials, wetness, and mode of movement. They can consist of mass movements of earth materials that are primarily intact and occur along discrete shear surfaces. These surfaces (shear or slip planes) can be rotational (conchoidal or concave), such as for earth slumps, or planar, as for translational earth slide or bedrock block slides. Most landslides are truly “complex landslides,” sliding, falling, and flowing with more than one type of movement and/or material.

Falls are an abrupt free-fall of earth materials off cliffs, steep cuts, or steep stream banks, while earthflows are mass movements of earth materials in which the type of movement is one of flowing. When composed of soil finer than gravel size, the flowing material is commonly called a mudflow. A debris flow/debris avalanche is composed of natural earth materials, artificial fill, and/or organic debris, which flow downslope with speed. Most of the material is transported away from the area of initial ground failure.

Slope failures are also often triggered by increased pore water pressure due to the infiltration of rainwater. The resulting decrease of shear resistance (internal resistance to deformation by shearing) can cause the slope to move. The level of groundwater table varies with the amount of rainfall for the area. If rainfall is higher than average during the winter season, the water table will become higher than average on a hillslope and groundwater pressures may become sufficiently high to initiate slope movement.

Landslides located within open-space areas are natural landforms that do not require mitigation except where they affect man-made improvements. Debris catchment areas are the principal mitigation method used within the GHAD for areas between potentially unstable slopes and improvements. The debris catchment structures include debris benches, debris berms, and runoff areas. GHAD maintenance of the areas will be critical to maintain adequate protection for the Site Improvements (as defined in Section 11.0). Maintenance and monitoring of these areas is described in Section 9. Potential mitigation and repair measures for GHAD areas near development are discussed in Section 7.

Soil creep is the slow, often imperceptible, deformation of slope materials under low stress levels, which normally affects the shallow portion of the slopes, but can be deep seated where a weak zone of soil or bedrock exists. It results from gravitational and seepage forces, and may be indicative of conditions favorable for landsliding. Creep can be caused by wetting and drying of clays, by solution and crystallization of salts, by the growth of roots, by burrowing animals, and by downslope movement of saturated ground. Colluvium refers to the mantle of loose soil and weathered bedrock debris that progresses down hillsides by creep.

The GHAD shall also be concerned with erosion and sedimentation in the GHAD Annexation Area or affecting developed lots or improvements. Erosion is defined as the process by which earth materials are loosened and removed by running water on the ground surface or in subsurface soils. Sedimentation is the depositing or settling of soil or rock particles from a state of suspension in a liquid.

Hilly terrain open space, either in a natural condition or particularly on excavated slopes, can be subject to erosion. Landslide deposits, which are sometimes in a loosened condition, are particularly prone to erosion. Earth-flow-, debris-flow- and mud-flow-type landslides typically have an area of deposition or accumulation (sedimentation area) at their base. Graded slopes in the GHAD Annexation Area, particularly those in excess of 20 feet in vertical height or those not sufficiently vegetated, can be subject to erosion and, therefore, a source of transported sediment.

#### 4.1.1 Seismically Induced Ground Shaking

An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking within the GHAD Annexation Area, similar to that which has occurred in the past.

#### 4.1.2 Expansive Near-Surface Soil

Fine-grained, near-surface soil within the GHAD Annexation Area could exhibit a moderate to high potential for expansion. Expansive soil shrinks and swells as a result of moisture changes. This can cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations. The potential for expansive soil has been identified in the geotechnical report for the property. Shrink and swell of expansive soil on slopes are a portion of the mechanism of creep movement, which can result in shallow slope instability. Within the GHAD Annexation Area, slope instability caused by expansive soil creep will be addressed by the GHAD, subject to the exceptions in Section 5.0.

## **5.0 CRITERIA FOR GHAD RESPONSIBILITY**

In forming the GHAD and establishing the assessment levels and budgets for GHAD Activities (as defined in Section 7 below) within the GHAD Annexation Area, it is important to clearly define the limits of the GHAD's responsibilities. The GHAD will accept responsibility for property as described in Section 6 of this Plan of Control; however, the intent of this Plan of Control is not to extend the GHAD's responsibilities to every potential situation of instability; rather, the following are exclusions from GHAD responsibility.

### **5.1 ISOLATED OR REMOTE FEATURE REQUIRING MITIGATION**

The GHAD shall not have responsibility to monitor, abate, mitigate, or control slope instability that does not involve significant damage to or pose a significant threat to damage Site Improvements. As used herein, the term "Site Improvements" means buildings, private roads, sidewalks, utilities, swimming pools, tennis courts, gazebos, cabanas, geologic stabilization features, or similar improvements.

### **5.2 SINGLE PROPERTY**

The GHAD will not prevent, mitigate, abate, or control geologic hazards which are limited in area to a single parcel of property unless the geologic hazard has significantly damaged or poses a significant threat of damage to Site Improvements located on other property within the GHAD Annexation Area. This exclusion does not apply to geologic hazards existing on common-area open-space parcels owned by the Danville Somerset Homeowner's Association.

### **5.3 GEOLOGIC HAZARDS RESULTING FROM NEGLIGENCE OF PROPERTY OWNER**

The GHAD may, in the GHAD Manager's sole discretion, decline to prevent, mitigate, abate, or control geologic hazards which occurred or resulted from any negligence of the homeowner and/or the homeowner's contractors, agents, or employees in developing, investigating, grading, constructing, maintaining, or performing or not performing any post-development work on the subject property as long as the geologic hazard is limited to a single lot, pursuant to the single-property exclusion noted above. If the GHAD bears expense as the result of negligence described in this section, the GHAD may pursue reimbursement from the negligent parties.

### **5.4 PROPERTY NOT ACCEPTED**

The GHAD shall not have responsibility to repair damage on a parcel of real property, which the GHAD has not accepted in accordance with Section 6 below. The GHAD, however, may monitor, abate, mitigate, or control geologic or hydrogeologic hazards on a parcel of real property which the GHAD has not accepted in accordance with Section 6 and is not excluded from GHAD responsibility by Sections 5.1, 5.2, and 5.3, provided, however, that GHAD responsibility on such parcel shall be limited to the extent necessary to address significant damage to or a significant threat of damage to Site Improvements which are within a parcel of real property which the GHAD has accepted in accordance with Section 6. Should the GHAD be required to respond to a geologic hazard outside the GHAD Annexation Area, the GHAD may take such actions as may be appropriate to recover costs incurred as a result of preventing, mitigating, abating, or controlling such geologic hazard from the responsible party, if any.

## **5.5 GEOLOGIC HAZARD WHICH REQUIRES EXPENDITURE IN AMOUNT EXCEEDING THE VALUE OF THE THREATENED OR DAMAGED IMPROVEMENT**

The GHAD may elect not to prevent, mitigate, abate, or control a geologic hazard where, in the GHAD Manager's sole discretion, the anticipated expenditure required to be funded by the GHAD to prevent, mitigate, abate, or control the geologic hazard will exceed the value of the structure(s) and Site Improvement(s) threatened with damage or loss.

## **5.6 GHAD FUNDING OR REIMBURSEMENT FOR DAMAGED OR DESTROYED STRUCTURES OR SITE IMPROVEMENTS**

In the event a residence or any other structure, Site Improvement, or landscaping is damaged or destroyed due to, or as a result of, a geologic hazard, the GHAD may fund or reimburse the property owner for the expenses necessary to repair or replace the damaged or destroyed structure, Site Improvement or landscaping. Unless authorized by the Board of Directors, the dollar amount of the GHAD funding or reimbursement may not exceed ten percent (10%) of the costs incurred by the GHAD in preventing, mitigating, abating, or controlling the geologic hazard responsible for the damage<sup>1</sup>. In the event the geologic hazard damaged or destroyed a structure, Site Improvement, or landscaping which violated any provisions of the applicable Building Code or Ordinance Code at the time of its installation or improvement, the GHAD may decline to provide any funding or reimbursement to the property owner for repair or replacement of the damaged structure, Site Improvement, or landscaping.

## **5.7 NO REIMBURSEMENT OF EXPENSES INCURRED BY PROPERTY OWNERS**

The GHAD will not be obligated to reimburse a property owner for expenses incurred for the prevention, mitigation, abatement, or control of a geologic hazard absent a written agreement between the property owner and the GHAD to that effect, which agreement has been executed prior to the property owner incurring said expenses and following an exploration conducted by the GHAD.

## **5.8 RECONSIDERATION AND APPEAL PROCEDURES**

A homeowner directly affected by a decision of the GHAD Manager ("GHAD Manager Decision") may request reconsideration of that decision through the following procedures. The homeowner shall, within thirty (30) days from the date of a written GHAD Manager Decision, file a written request with the GHAD Manager, specifying the grounds for reconsideration, and the relief sought, including the owner's special interest and injury. Within fifteen (15) days of receipt of the homeowner's written request for reconsideration, the GHAD Manager shall reconsider its decision and shall provide a copy of its written decision to the homeowner ("GHAD Manager Reconsideration Decision"). The homeowner may appeal the GHAD Manager Reconsideration Decision to the Board of Directors. This appeal must be filed with the GHAD Manager within fifteen (15) days from the date of the GHAD Manager Reconsideration Decision. The appeal must include the specific grounds for the appeal and the homeowner's requested relief on a form

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<sup>1</sup> For example, if a landslide causes \$10,000 in structural damage to each one of four neighboring homes for a total of \$40,000 in structural damage and it costs the GHAD \$100,000 to design and install a new retaining wall to abate the slide, the GHAD may only reimburse each property owner \$2,500 of their \$10,000 in structural damage.

provided by the GHAD Manager. The Board will make the final decision on the appeal. The GHAD Manager will proceed based on the decision of the Board of Directors.

## **6.0 ACCEPTANCE**

### **6.0 Activation Of Assessment**

An annual assessment shall be authorized on all residential parcels within the GHAD Annexation Area as shown on Appendix B, Exhibit B, which will generate funding for the GHAD Activities. The assessment shall be authorized on each individual parcel prior to the eligibility for transfer of GHAD responsibilities from the Danville Somerset Homeowners Association (“HOA”) to the Wendt Ranch GHAD in Section 6.2.

### **6.1 RESPONSIBILITY FOR GHAD ACTIVITIES**

The HOA shall have the responsibility to perform all the GHAD Activities within the GHAD Annexation Area. Such responsibility shall be eligible for transfer to the GHAD at 9:00 a.m. on the day exactly one year after completion of the proposed Stabilization Improvements provided that the performance of the Stabilization Improvements has been verified by a licensed Geotechnical Engineer in addition to other requirements provided in Section 6.3 have been completed (“Transfer Eligibility Date”).

### **6.2 PROCESS FOR TRANSFERRING RESPONSIBILITY FOR GHAD ACTIVITIES**

After the Transfer Eligibility Date for one or more of the GHAD Annexation Area parcels, the process for transferring responsibility for performing GHAD Activities on such Parcel(s) shall be as follows.

1. The HOA may apply to the GHAD to transfer the responsibility for performing GHAD Activities for such Parcel(s) to the GHAD (“Transfer Application”). A sample Transfer Application form is included in Appendix D.
2. Within 30 days of receiving such Transfer Application, the GHAD Manager shall verify that all the facilities for which the GHAD will have maintenance responsibility have been constructed, and maintained according to Site Improvement plans and specifications for the individual improvements, and that such improvements are operational and in good working order.
3. Within 15 days of such inspection, the GHAD will send the HOA a list (“Punch list”) of all of the items that need to be constructed, repaired, or otherwise modified in order to comply with the Site Improvement plans and specifications.
4. The HOA shall notify the GHAD Manager when it has completed the items identified on the Punch list. Within 30 days of receipt of such notice, the GHAD Manager shall verify that all Punch list items have been completed. GHAD staff will then bring a resolution before the Wendt Ranch GHAD Board of Directors for its consideration, approving GHAD responsibility for performing all future GHAD Activities on the parcel(s).
5. The GHAD Manager shall confirm that the reserve requirement defined in the Engineer’s Report approved by the GHAD Board on this GHAD Annexation Area has been met. The Engineer’s Report is the document that establishes the individual property owners’ GHAD assessment limit based on the projected expenses (budget) of the GHAD.

6. Prior to the GHAD accepting any responsibility for GHAD Activities, the HOA shall record a Declaration of Restrictive Covenants, Right of Entry and Disclosures Regarding Geologic Hazard Abatement District (“Declaration”) as approved by the GHAD Manager and GHAD Attorney and as discussed in Section 12.
7. Any monies owed to the GHAD by the HOA have been paid.

As part of the transfer, the HOA of the GHAD Annexation Area to be transferred will provide the GHAD, for its use, copies of the applicable geotechnical exploration reports, as-built grading plans, as-built corrective grading plans, as-built improvement plans, as-built subdrain plans and other pertinent documents as requested by the GHAD.

The GHAD is not responsible for maintaining the GHAD Parcels or performing any GHAD Activities as defined in Section 7.0 until it accepts such responsibilities pursuant to this section. The HOA will remain responsible for all GHAD Activities until the GHAD accepts responsibility pursuant to this section.

## **7.0 GHAD MONITORING, MAINTENANCE AND REPAIR RESPONSIBILITIES**

Several entities shall have ownership and maintenance duties of common space within the GHAD Annexation Area. The GHAD will assume monitoring and maintenance responsibilities for the following site facilities, improvements, and activities (“GHAD Activities”).

- Monitoring, maintenance, and repair of the concrete-lined drainage ditches, subdrain outlets, and risers.
- Monitoring and maintenance of measurement devices, such as piezometers, inclinometers, and tiltmeters.
- Monitoring, maintenance, and repair of slopes for erosion, landslide, and related slope instability.

## **7.1 GEOTECHNICAL TECHNIQUES FOR MITIGATION OF LANDSLIDE AND EROSION HAZARDS**

The techniques that may be employed by the GHAD to prevent, mitigate, abate, or control geologic hazards include, but are not limited to, the following.

- Removal of the unstable earth mass.
- Stabilization (either partial or total) of the landslide by removal and replacement with compacted, drained fill.
- Construction of structures to retain or divert landslide material or sediment.
- Construction of erosion control devices such as gabions, riprap, geotextiles, or lined ditches.
- Placement of drained engineered buttress fill.
- Placement of subsurface drainage devices (e.g. underdrains or horizontal drilled drains).
- Slope correction (e.g. gradient change, biotechnical stabilization, slope trimming or contouring).

- Construction of additional surface ditches and/or detention basins, silt fences, sediment traps, or backfill or erosion channels.

Potential landslide and erosion hazards can often best be mitigated by controlling soil saturation and water runoff and by maintaining the surface and subsurface drainage systems.

## 8.0 PRIORITY OF GHAD EXPENDITURES

The GHAD is responsible for responding to emergencies and completing scheduled repairs and maintenance. The GHAD's ability to respond, and the extent of the responsiveness, depends on the amount of the available funds and the parameters set forth in the GHAD-Board-approved operating budget. The GHAD is financed through a real property assessment and this assessment cannot be increased without a favorable vote of the residents within the GHAD boundaries. When available funds are not sufficient to undertake all emergency and/or the identified remedial and preventive stabilization measures, the expenditures are to be prioritized as follows in descending order of priority.

- (A) Prevention, mitigation, abatement, or control of geologic hazards that have either significantly damaged or pose a significant threat of damage to residences, critical underground utilities, or paved streets.
- (B) Prevention, mitigation, abatement, or control of geologic hazards which have either significantly damaged or pose a significant threat of damage to ancillary structures, including but not limited to water quality facilities, pools, cabanas or restroom buildings.
- (C) Prevention, mitigation, abatement, or control of geologic hazards which have either significantly damaged or pose a significant threat of damage to open space amenities.
- (D) Prevention, mitigation, abatement, or control of geologic hazards which have either significantly damaged or pose a significant threat of damage limited to loss of landscaping or other similar non-essential amenities.
- (E) Prevention, mitigation, abatement, or control of geologic hazards existing entirely on open-space property and which have neither significantly damaged nor pose a significant threat of damage to any Site Improvements.

In performing its duties as described above, the GHAD may seek funding or reimbursements from public and private entities or agencies including, but not limited to, FEMA, City and County agencies, insurance companies, etc.

## 9.0 MAINTENANCE AND MONITORING SCHEDULE

Geologic features and GHAD-maintained improvements defined in Section 7.0 shall be inspected by the GHAD Manager or its assigned consultants as presented below. The site inspections shall be undertaken at appropriate intervals as determined by the GHAD Manager using supporting documents prepared for the GHAD Annexation Area and the Site Improvements. The GHAD budget should provide for three or more inspections in years of heavy rainfall. Generally, the inspections should take place in October, prior to the first significant rainfall; mid-winter as necessary during heavy rainfall years; and in early April at the end of the rainy season. The frequency of the inspections should increase, depending upon the intensity and recurrence of rainfall.

The HOA shall provide to the GHAD copies of geologic or geotechnical exploration reports related to site development, and the GHAD shall retain these reports in its records. In addition, copies of any earthwork-related testing and observation reports that will be finalized at the completion of grading, when as-built drawings are available, shall be provided to the GHAD by the HOA and maintained as part of the GHAD records.

Following are guidelines for a monitoring plan. The actual timing, scope, frequency and other details regarding such maintenance, inspection, and similar activities shall be at the discretion of the GHAD Manager.

- A State-licensed Professional Engineer and/or Professional Geologist should carry out a geologic reconnaissance of the slopes for indications of erosion or slope failures.
- A State-licensed Professional Engineer and/or Professional Geologist should carry out an inspection of lined surface ditches. Repairs and maintenance, as needed, should be undertaken including removal of excess silt or sediment in ditches and patching or replacement of cracked or broken ditches, prior to the beginning of the next rainy season.
- Subsurface drain outlets and horizontal drilled drain outlets, if any, should be checked. Water flowing from these outlets should be measured and recorded during each inspection.
- Piezometers to measure groundwater levels, or instruments such as inclinometers or tiltmeters measuring potential slope instability should be monitored as recommended.
- Settlement monitoring devices, if any, should be measured periodically and tracked. In the event of anomalous readings or excessive settlement, the monitoring frequency should be increased.
- An annual inspection shall be made by a State-licensed Professional Engineer and/or Certified Engineering Geologist to assess the effectiveness of the preventive maintenance program and to make recommendations as to which landslide or erosion measures should be undertaken in the next fiscal year. Any appropriate site-specific study of landslide or erosion conditions shall be determined at that time. Consultants, if necessary, will be retained to undertake the needed studies. An annual inspection report to the GHAD shall be prepared by the Professional Engineer and/or Certified Engineering Geologist.

## **10.0 OWNERSHIP AND MANAGEMENT**

Ownership, funding sources and maintenance responsibilities shall be as shown on the following Table 10.0. Parcel designations are derived from the final subdivision map (Reference 4).

**TABLE 10.0: Somerset Long-Term Ownership and Management Matrix**

FACILITY/FUNCTION	PARCEL/ IMPROVEMENT OWNERSHIP	IMPROVEMENT MAINTENANCE ENTITY	FUNDING	ACREAGE/ COMMENTS
a. Townhome Residential Parcels (150 units)	Private	Private	Private	
b. Private Roadways (Parcel A)	Homeowners' Association (HOA)	HOA	HOA Dues	Conejo Drive, Conejo Lane, Conejo Court, Joya Court, Joya Lane, West Cam Arroyo, Cam Arroyo, Portola Drive, Portola Court, Monterey Court, Monterey Lane, and Maximo Court
c. Common Area Open Space (Parcels B, C, D, E, F, and G)	HOA	HOA	HOA Dues	6.92 Acres
d. Storm Drain System	Contra Costa Flood Control District (CCCFCD)	Contra Costa Flood Control District CCCFCD	CCCFCD	
<b>2. Plan of Control - Geologic Hazard Abatement Responsibilities</b>				
<b>Post Transfer Period</b>				
Landslides, Slope Stability, and Erosion Control	HOA	GHAD	GHAD Assessment	
Concrete-lined Drainage Ditches	HOA	GHAD	GHAD Assessment	
Subdrains and Subdrain Outfalls	HOA	GHAD	GHAD Assessment	
Geotechnical Monitoring Instruments	HOA	GHAD	GHAD Assessment	

## 11.0 RIGHT-OF-ACCESS

The GHAD Board of Directors, officers, employees, consultants, contractors, agents, and representatives shall have the right to enter upon all lands within the GHAD Annexation Area as shown on Appendix B for the purpose of performing the GHAD Activities defined in this Plan of Control. Such GHAD Activities include, but are not limited to, the inspection, maintenance and monitoring of those improvements listed in Section 7.0. Should the GHAD need to access private residential lots to fulfill its duties under the Plan of Control, the GHAD shall provide the affected landowner and/or resident with 72 hours advanced notice unless, in the reasonable judgment of the GHAD Manager, an emergency situation exists which makes immediate access necessary to protect the public health and safety, in which case no advanced notice is required, but the GHAD Manager shall inform the landowner and/or resident as soon as reasonably possible.

The foregoing right-of-entry provision shall be recorded in the chain of title for all GHAD Annexation Area residential parcels and common area lots.

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## 12.0 GLOSSARY

Engineer's Report – The document that establishes the individual property owners' GHAD assessment limit based on the projected expenses (budget) of the GHAD.

Geologic Hazard – An actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth as defined in GHAD Law, Public Resource Code Section 26507).

Geologic Hazard Abatement District (GHAD) Manager – An entity with a licensed Geotechnical Engineer and a Certified Engineering Geologist who will oversee the operations of the GHAD, including preparation of GHAD budgets. The GHAD Manager is appointed by and reports to the GHAD Board of Directors.

GHAD Annexation Area – The parcels included within the limits of the plat and legal description which is coterminous with the boundaries of Subdivision 7763.

GHAD Activities – Improvements and responsibilities listed in Section 7.0 of this Plan of Control.

Site Improvements – Buildings, public and private roads, sidewalks, utilities, gazebos, cabanas, geologic stabilization features, or similar improvements.

Transfer Application – A document completed by the HOA and submitted to the GHAD Manager to initiate the GHAD transfer process.

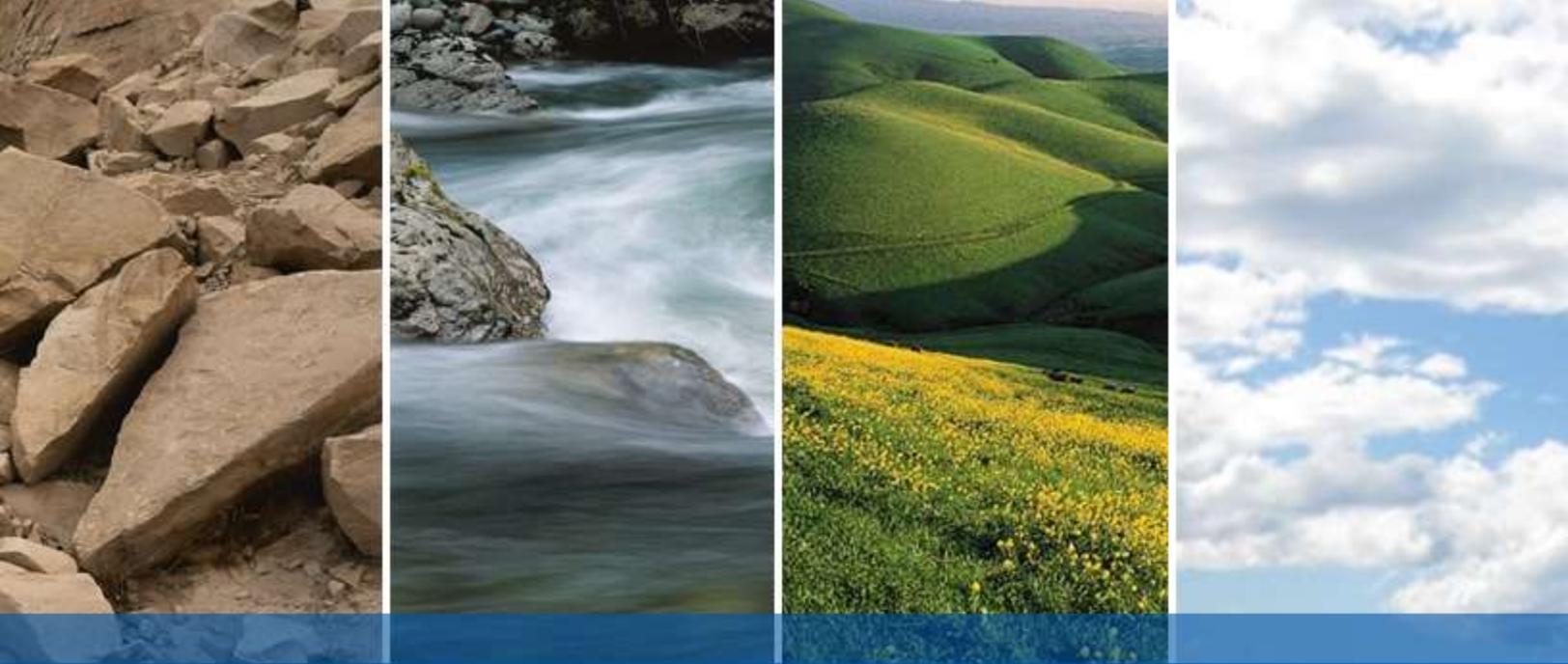
Transfer Eligibility Date – A date specified in the Plan of Control where the HOA is responsible for all GHAD Plan of Control defined activities to allow for the accumulation of reserves prior to acceptance of GHAD-maintained responsibilities.

## SELECTED REFERENCES

1. AKA; DRAFT Report #1, Geotechnical Consultations and Monitoring Services, Danville Somerset, Danville, California, December 20, 2002, Project No. 2014-1A, L-25238.
2. AKA; Update Letter, Geotechnical Consultations and Monitoring Services, Danville Somerset Subdivision, Danville, California, October 1, 2004, Project No. 2014-1A, L-26426.
3. Carlson, Barbee and Gibson, Inc., Final Map, Somerset, Subdivision 7763, October 1992.
4. Carlson, Barbee and Gibson, Inc., Grading Plan, Somerset, Subdivision 7763, July 1992.
5. CSA; Summary of CSA Slope Stability Investigation Findings to Date, Danville Somerset, Contra Costa County, California, January 2, 2019, Project No. E5020C.
6. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report for Spring 2019, Danville Somerset, Contra Costa County, California, June 17, 2019, Project No. E5020RA.
7. CSA; Geotechnical Investigation and Recommendations for Slope Stability Improvements at the South Side of the Conejo Drive Loop and Camino Arroyo West, Danville Somerset, Contra Costa County, California, April 26, 2019, Project No. E5020U.
8. CSA; Summary of 2016 Residential Inspections and Floor Level Surveys at Conejo Court, Danville Somerset, Contra Costa County, California, April 18, 2018, Project No. E5020C.
9. CSA; Geotechnical Investigation and Recommendations for Slope Stability Improvements Below Conejo Court, Danville Somerset, Contra Costa County, California, April 12, 2016, Project No. E5020M.
10. CSA; Conejo Court Slope Improvement Project, Danville Somerset, Contra Costa County, California, March 24, 2016, Plan Set – Sheets 1-16, Project No. E5020M.
11. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report for Fall 2018, Danville Somerset, Contra Costa County, California, November 14, 2018, Project No. E5020RA.
12. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report for Spring 2018, Danville Somerset, Contra Costa County, California, May 29, 2018, Project No. E5020RA.
13. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report for Fall 2017, Danville Somerset, Contra Costa County, California, December 13, 2017, Project No. E5020RA.
14. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report for Spring 2017, Danville Somerset, Contra Costa County, California, May 8, 2017, Project No. E5020RA.
15. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, May 13, 2016, Project No. E5020P.
16. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, November 2, 2016, Project No. E5020P.
17. CSA; Preliminary Evaluation of Deflection at Slope Inclinator AKA-5, Danville Somerset, Contra Costa County, California, September 18, 2015, Project No. E5020C.
18. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, March 26, 2015, Project No. E5020L.
19. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, October 30, 2015, Project No. E5020L.

## SELECTED REFERENCES (Continued)

20. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, March 26, 2014, Project No. E5020K.
21. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, September 19, 2014, Project No. E5020K.
22. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, April 3, 2013, Project No. E5020F.
23. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, September 27, 2013, Project No. E5020F.
24. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, April 13, 2012, Project No. E5020D.
25. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, September 14, 2012, Project No. E5020D.
26. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, October 4, 2011, Project No. E5020D.
27. CSA; Semi-Annual Slope Inclinator and Piezometer Monitoring Report, Danville Somerset, Contra Costa County, California, May 11, 2011, Project No. E5020D.
28. Earth Systems Consultants, Geotechnical Report on Residential Structure and Pavement Distress Evaluation, Somerset Residential Development, subdivision 7763, Contra Costa County, California, June 19, 1998, File No. NFF-3867-01.
29. ENGEO, Geotechnical Design Recommendations, Danville Somerset, Danville, California, Project No 16098.000.000, September 3, 2020.
30. ENGEO, Slope Inclinator and Piezometer Monitoring Report for Establishing Baseline and Winter 2021, Danville Somerset, Contra Costa County, California, Project No 16098.000.000, March 23, 2021
31. TerraSearch, Inc., Geotechnical Investigation, Proposed Subdivision 7763, Danville, California, July 30, 1991, Project No.6357.
32. Treadwell & Rollo, DRAFT, Boring Logs, March 12, 1999.

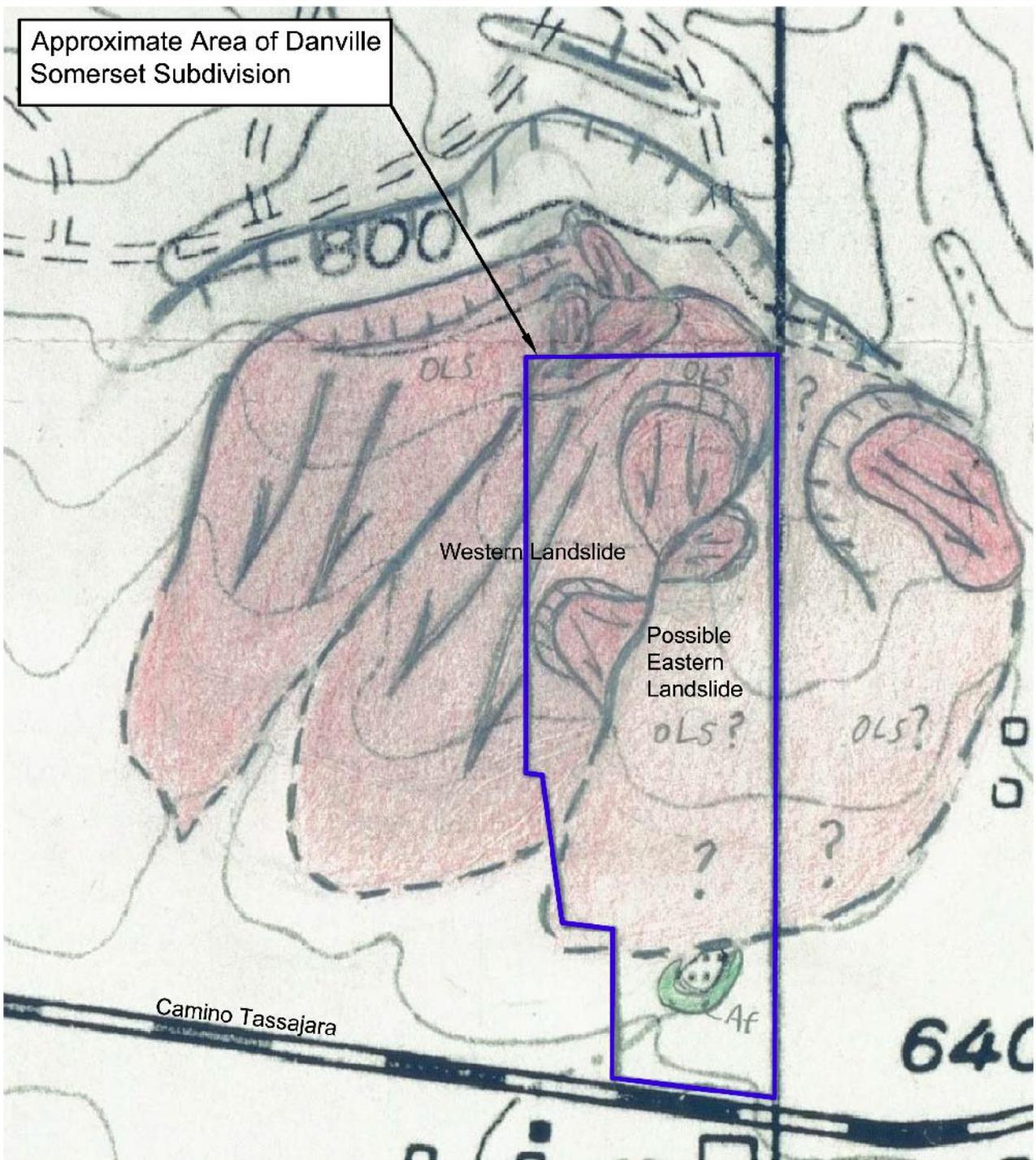


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## **APPENDIX A**

**FIGURE 1: Photogeologic Map (CSA 2016)**

**FIGURE 2: Site Plan (ENGEO 2021)**

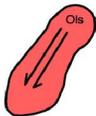


**EXPLANATION**

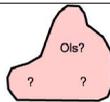
ALL LOCATIONS ARE APPROXIMATE



LANDSLIDE SCARP



OLD LANDSLIDE



POSSIBLE OLD LANDSLIDE (UNCERTAIN)



ARTIFICIAL FILL



APPROXIMATE ORIENTATION OF BEDDING

BASE MAP SOURCE: COTTON, SHIRES AND ASSOCIATES, INC.



PHOTOGEOLOGIC MAP  
DANVILLE SOMERSET  
CONTRA COSTA COUNTY, CALIFORNIA

PROJECT NO.: 16098.000.000

SCALE: NO SCALE

DRAWN BY: JV

CHECKED BY: HR

FIGURE NO.

1

ORIGINAL FIGURE PRINTED IN COLOR

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**EXPLANATION**

ALL LOCATIONS ARE APPROXIMATE

GHAD ANNEXATION LIMIT

CSA/SI-19 SLOPE INCLINOMETERS AND PIEZOMETERS (COTTON SHIRES & ASSOCIATES)

AKA-3 SLOPE INCLINOMETER (ALAN KROPP AND ASSOCIATES)

P-6 PIEZOMETER (ALAN KROPP AND ASSOCIATES)

TR-1 SLOPE INCLINOMETERS AND PIEZOMETERS (TREADWELL AND ROLLO)

ESC-1 SLOPE INCLINOMETER (EARTH SYSTEMS CONSULTANTS)



BASE MAP SOURCE: USGS LIDAR TOPO (2013) AND GOOGLE EARTH MAPPING SERVICE



**SITE PLAN**  
DANVILLE SOMERSET  
CONTRA COSTA COUNTY, CALIFORNIA

PROJECT NO.: 16098.000.000

SCALE: AS SHOWN

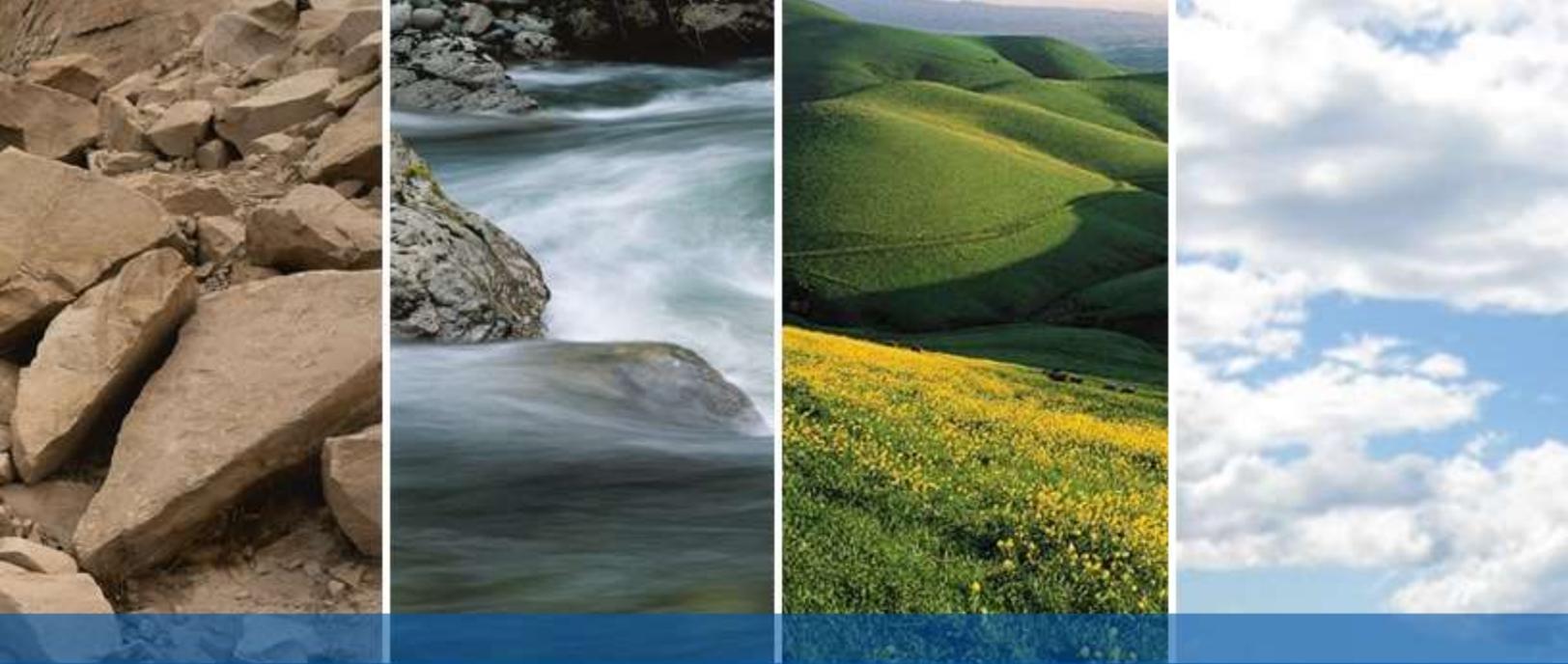
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FIGURE NO.

**2**

ORIGINAL FIGURE PRINTED IN COLOR



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## **APPENDIX B**

### **EXHIBIT A LEGAL DESCRIPTION**

**Geologic Hazard Abatement District, Somerset -  
Subdivision 7763**

### **EXHIBIT B Plat to Accompany Legal Description**

JUNE 17, 2021  
JOB NO.: 3237-00

**LEGAL DESCRIPTION  
SOMERSET - SUBDIVISION 7763  
SAN RAMON, CALIFORNIA**

REAL PROPERTY, SITUATE IN THE INCORPORATED TERRITORY OF THE CITY OF SAN RAMON, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

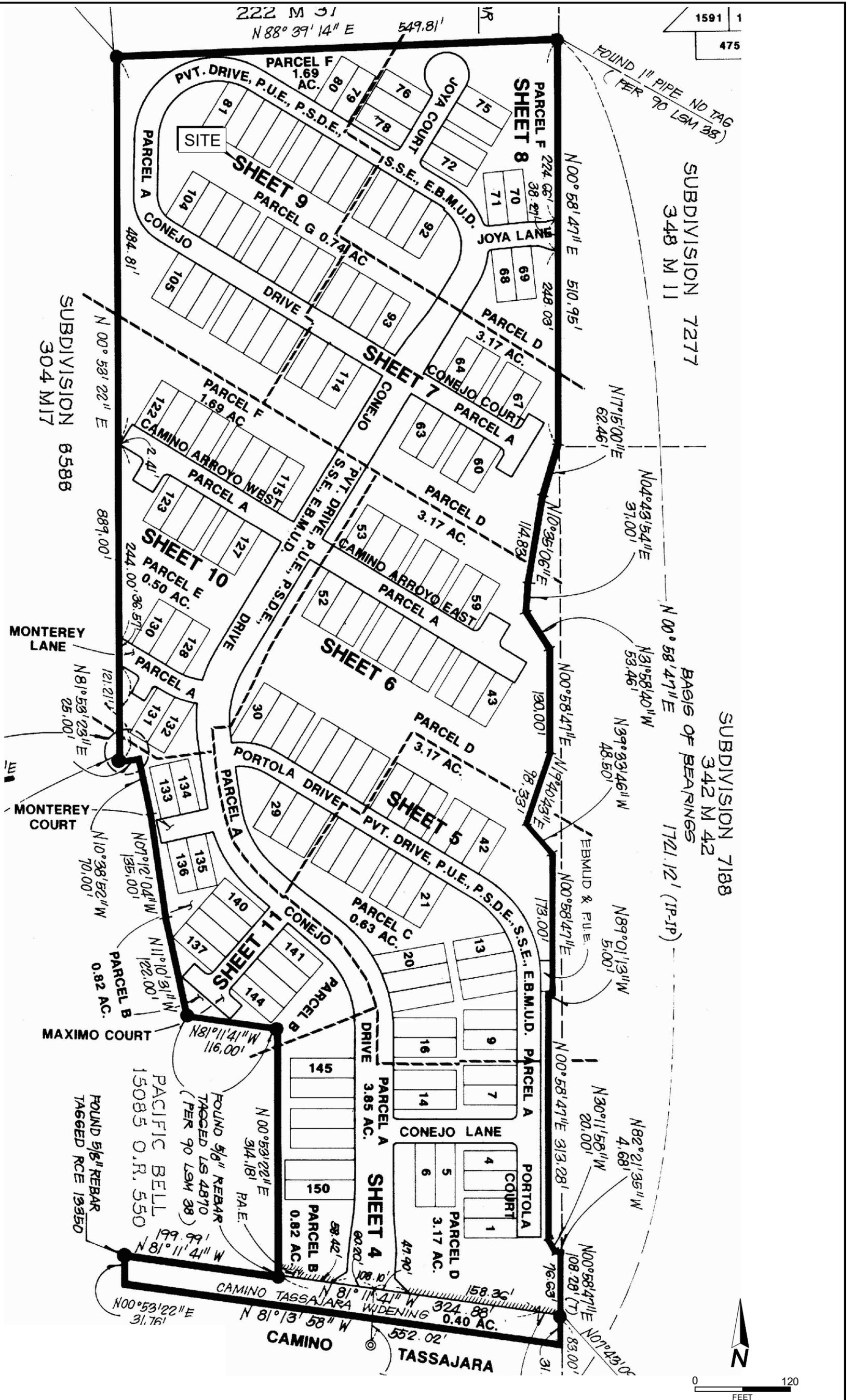
BEING ALL OF PARCELS A THRU G AND LOTS 1 THRU 150 AS SAID PARCELS AND LOTS ARE SHOWN AND DESIGNATED ON THAT CERTAIN FINAL MAP ENTITLED "SUBDIVISION 7763 - SOMERSET", FILED ON JUNE 3, 1993, IN BOOK 366 OF MAPS AT PAGES 4 THROUGH 14, OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF CONTRA COSTA COUNTY.

**END OF DESCRIPTION**



MARK H. WEHBER, P.L.S.  
L.S. NO. 7960

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BASE MAP SOURCE: CARLSON, BARBEE, & GIBSON, INC. OCTOBER 1997

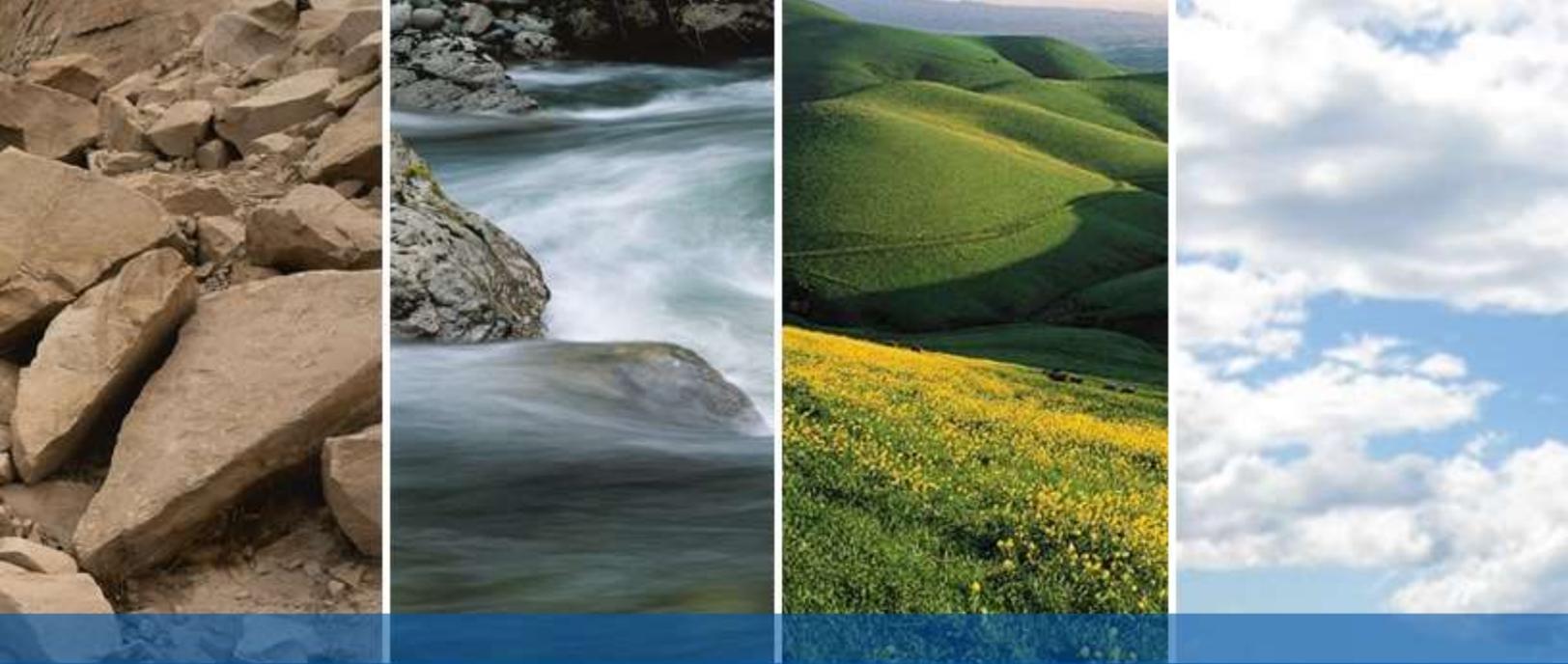


PLAT TO ACCOMPANY LEGAL DESCRIPTION  
 DANVILLE SOMERSET  
 CONTRA COSTA COUNTY, CALIFORNIA

PROJECT NO.: 16098.000.000  
 SCALE: AS SHOWN  
 DRAWN BY: JV CHECKED BY: HR

EXHIBIT  
**B**

ORIGINAL FIGURE PRINTED IN COLOR



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## **APPENDIX C**

**DECLARATION OF DISCLOSURES, RIGHT OF ENTRY AND  
RESTRICTIVE COVENANTS REGARDING WENDT RANCH  
GEOLOGIC HAZARD ABATEMENT DISTRICT**

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:  
Wendt Ranch Geologic Hazard Abatement District

Attn:

**DECLARATION OF DISCLOSURES, RIGHT OF ENTRY AND RESTRICTIVE COVENANTS  
REGARDING WENDT RANCH GEOLOGIC HAZARD ABATEMENT DISTRICT**

This Declaration of Disclosures, Right of Entry, and Restrictive Covenants Regarding Wendt Ranch Geologic Hazard Abatement District (the "Declaration") is made this \_\_\_\_ day of \_\_\_\_\_, 2021 (the "Effective Date"), by, Danville Somerset Homeowners Association ("Declarant").

**RECITALS**

- A. Declarant is the owner of that certain real property located in unincorporated County of Contra Costa, State of California, more particularly described as Parcels A through G in Subdivision 7763, filed on June 3, 1993 in Book of Parcel Maps, at pages 4 through 14, all in the Official Records of Contra Costa County, California (the "Property").
- B. Residents within the Somerset development, Subdivision 7763, ("GHAD Annexation Area") located in the Danville area of unincorporated Contra Costa County submitted a Petition for Annexation to join the existing Wendt Ranch Geologic Hazard Abatement District ("GHAD").
- C. Under the authority of California Public Resources Code section 26500, et seq., the Contra Costa County Board of Supervisors on February 12, 2002, adopted Resolution No. 2002/59 forming and establishing the Wendt Ranch GHAD to prevent, mitigate, abate or control potential geologic hazards within the boundaries of the GHAD. On \_\_\_\_\_, 2021, the Wendt Ranch GHAD adopted Resolution No. 2021/\_\_\_\_, approving annexation of the Property into the Wendt Ranch GHAD.

NOW, THEREFORE, Declarant, as the owner of the Property, for itself, its successors and assigns does hereby declare as follows:

1. Notification and Disclosure of Wendt Ranch GHAD: The Declarant hereby gives notice and discloses that the Property is a part of the Wendt Ranch GHAD. The Board of Directors of the Wendt Ranch GHAD are the members of the Contra Costa County Board of Supervisors. Pursuant to the Plan of Control for Annexation of the Property to Wendt Ranch GHAD as it may be amended from time to time (the "Plan of Control"), the Declarant and the Wendt Ranch GHAD are afforded certain responsibilities and rights relating to the prevention, mitigation, abatement, and control of potential geologic hazards on the Property. The powers of the Wendt Ranch GHAD include the power to assess lot owners within the GHAD Annexation Area for the purposes set out in the Plan of Control. An assessment was authorized by the Wendt Ranch GHAD to be imposed on the GHAD Annexation Area pursuant to adopted Resolution 2021/\_\_\_\_.
2. Right of Entry: The Declarant by executing and recording this Declaration hereby contractually affords Wendt Ranch GHAD, its officials, employees, contractors and agents an irrevocable right of entry with continuing and perpetual access to and across the Property for the purposes and responsibilities set out in the Plan of Control ("Access Rights"). Should the Wendt Ranch GHAD need to access private residential lots to fulfill its duties under the Plan of Control, the

Wendt Ranch GHAD shall provide the affected landowner and/or resident with 72 hours advanced notice unless, in the reasonable judgment of the GHAD Manager, an emergency situation exists which makes immediate access necessary to protect the public health and safety, in which case no advanced notice is required, but the Wendt Ranch GHAD shall inform the landowner and/or resident as soon as reasonably possible. The Declarant hereby gives notice that the GHAD will acquire Access Rights immediately upon the execution of this Declaration. The GHAD, in its sole discretion, may elect not to exercise Access Rights until it accepts its maintenance responsibilities consistent with the Plan of Control.

3. GHAD Easement: For those properties within the GHAD Annexation Area the Declarant hereby grants the Wendt Ranch GHAD a perpetual easement for the purposes and responsibilities set out in the Plan of Control and for maintaining certain site improvements as depicted in Exhibit B, and legally described in Exhibit A attached hereto, (the "GHAD Easement"). Such activities include, but are not limited to: (a) the inspection, maintenance, monitoring, and replacement of site improvements including, drainage ditches, storm drains, outfalls, and pipelines; (b) the monitoring, maintenance, and repair of slopes, including repaired or partially repaired landslides; and (c) the management of erosion and geologic hazards within the open space areas shown in the Plan of Control. The GHAD Easement shall become effective upon acceptance by the Wendt Ranch GHAD of its responsibilities and rights, the process by which is articulated in the Plan of Control. The Wendt Ranch GHAD has no maintenance responsibilities whatsoever to the Declarant or Property until and unless the Wendt Ranch GHAD accepts such responsibilities consistent with the Plan of Control.
4. Covenants Running with the Land: The Property shall be held, conveyed, hypothecated, encumbered, sold, leased, used, improved, and maintained subject to the limitations, covenants, conditions, restrictions, easements, rights of entry, and equitable servitude set forth in this Declaration, which are in furtherance of Declarant's plan for the uniform improvement and operation of the Property. All of the limitations, covenants, conditions, restrictions, easements, rights of entry, and equitable servitudes set out in this Declaration shall both benefit and burden the Property and shall run with and be binding upon and inure to the benefit of the Property and each parcel therein, and shall be binding upon and inure to the benefit of each owner, and every person having or acquiring any right, title or interest in and to all or any portion of the Property and their successors and assigns. Upon Declarant's conveyance of fee title to the Property, or any portion thereof, Declarant shall be released from any further liability or obligation hereunder related to the portion of the Property so conveyed, and the grantee of such conveyance shall be deemed to be the "Declarant," with all rights and obligations related thereto, with respect to that portion of the Property conveyed.
5. Hold Harmless: Declarant, or its successors and assigns, shall hold harmless, protect, and indemnify Wendt Ranch GHAD and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (collectively, "Wendt Ranch GHAD Indemnified Parties") from and against any and all liabilities, penalties, costs, losses, damages, expenses (including, without limitation, reasonable attorneys' fees and experts' fees), causes of action, claims, demands, orders, liens, or judgments (each a "Claim" and, collectively, "Claims"): (1) for injury to or the death of any person, or physical damage to any property, related to or occurring on or about the GHAD Easement to the extent arising from the negligence or intentional misconduct of Declarant, its employees, agents or contractors; or (2) related the existence of the GHAD Easement, exclusive of any Claims brought by Declarant.

6. Enforcement: The Wendt Ranch GHAD shall have the right but not the obligation to enforce the provisions of this Declaration.
7. Modification or Termination: This Declaration shall not be modified, amended, or terminated without the written consent of the Wendt Ranch GHAD.

Executed as of the Effective Date.  
Declarant:

Danville Somerset Homeowners Association

By: \_\_\_\_\_

Its: \_\_\_\_\_

DRAFT

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed to the Wendt Ranch Geologic Hazard Abatement District by the foregoing document titled "Declaration of Disclosures, Right of Entry and Restrictive Covenants", which is dated \_\_\_\_\_, 20\_\_\_\_ and executed by \_\_\_\_\_, is hereby accepted by the undersigned pursuant to authority conferred by Resolution No. \_\_\_\_-\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_. The Town of Danville, as grantee, consents to recordation of said "Declaration of Disclosures, Right of Entry and Restrictive Covenants".

\_\_\_\_\_  
ENGEO  
Wendt Ranch GHAD Manager

Date:

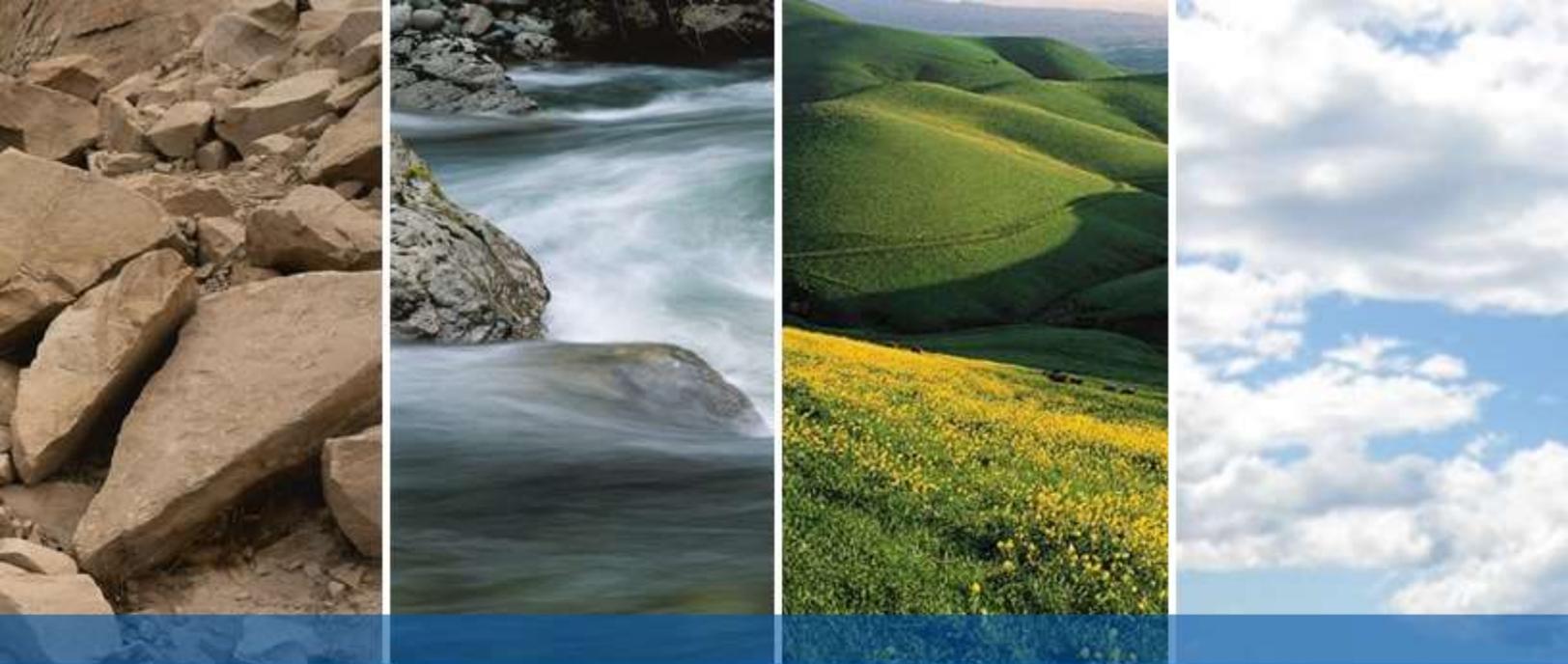
*Attest:*

\_\_\_\_\_  
ENGEO  
Wendt Ranch GHAD Clerk

*Approved as to form:*

\_\_\_\_\_  
Wendel Rosen, LLP  
Wendt Ranch GHAD Attorney

DRAFT

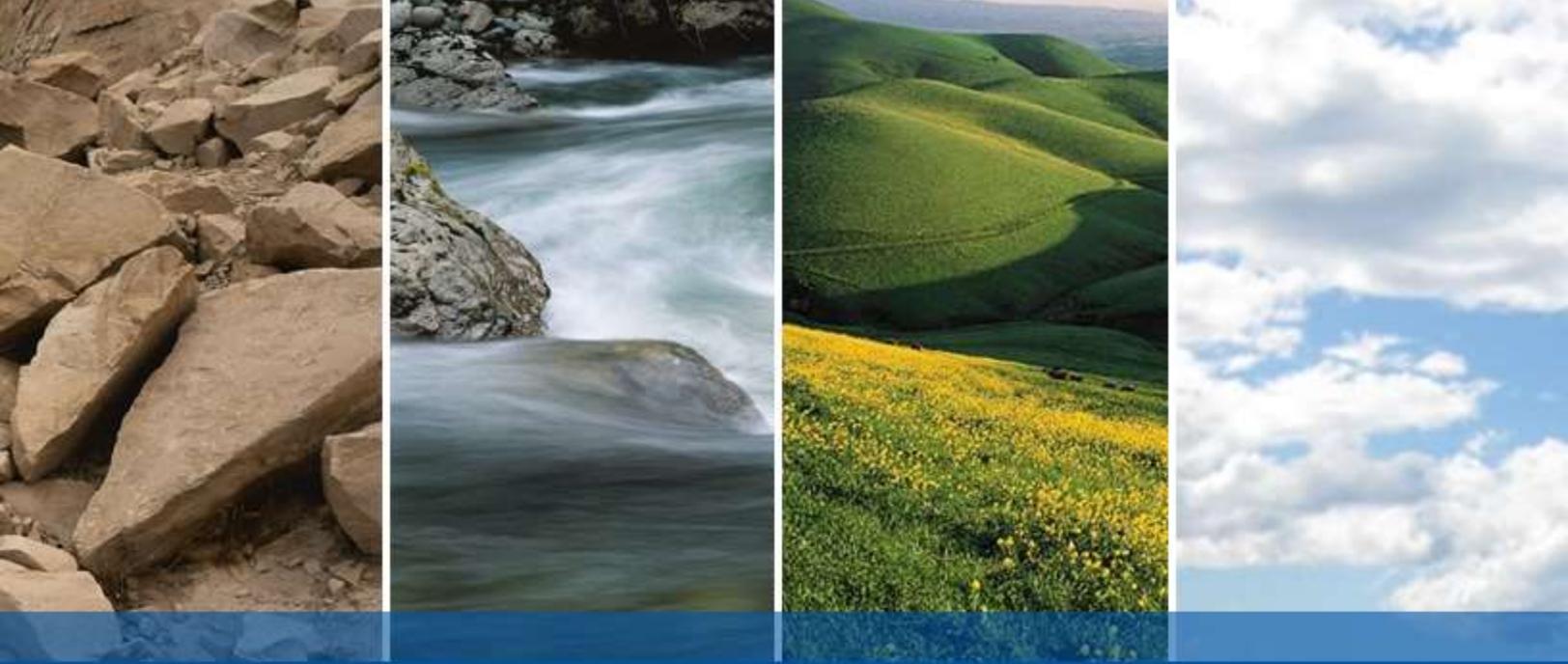


DRAFT

## **APPENDIX D**

### **SAMPLE TRANSFER APPLICATION FORM**





DRAFT

**PETITION FOR ANNEXATION OF TERRITORY TO THE  
WENDT RANCH GEOLOGIC HAZARD  
ABATEMENT DISTRICT PURSUANT TO  
DIVISION 17 (commencing with section 26500)  
OF THE PUBLIC RESOURCES CODE  
OF THE STATE OF CALIFORNIA**

TO: The Clerk of the Wendt Ranch Geologic Hazard Abatement District (“GHAD”)

The undersigned owners of land within the boundaries of the territory proposed to be annexed to the GHAD hereby requests that the Board of Directors of the GHAD (“GHAD Board”) initiate proceedings to annex the territory described in Exhibit A (“Legal Description”) and Exhibit B (“Boundary Map”), attached hereto, to the GHAD pursuant to Article 3 (commencing with Public Resources Code § 26550) and Article 4 (commencing with Public Resources Code § 26561) of Chapter 2 of Division 17 of the Public Resources Code (§ 26500 *et seq.*).

(a) This petition is made pursuant to Division 17 of the Public Resources Code with particular reference to Article 3 (commencing with Section 26550) and Article 4 (commencing with Section 26561).

(b) Opposite the signature of each petitioner is an indication of the lot, tract and map number or other legal description sufficient to identify the signature of the petitioner as that of an owner of land within the territory proposed to be annexed to the GHAD.

(c) Opposite the signature of each petitioner is an indication of the date on which said petitioner’s signature was affixed to this petition.

(d) The following documents are attached to this petition and are incorporated herein by this reference as if set forth in full in the petition:

1. A legal description of the boundaries of the territory proposed to be annexed to the GHAD (Exhibit A); and

2. A map of the boundaries of the territory proposed to be annexed to the GHAD (Exhibit B);

3. A Plan of Control for the Somerset development prepared by an Engineering Geologist certified pursuant to Section 7822 of the California Business and Professions Code, which describes in detail geologic hazards, their location and the areas affected thereby, and a plan for their prevention, mitigation, abatement and control thereof (Exhibit C).

Exhibits: A - Legal Description  
B - Boundary Map  
C – Somerset Plan of Control

Name	Date	Address	Lot and Tract	Signature
George Silva	5/21/2021	227 Portola Pr.	23 Lot Tract 7763	George Silva
Meg Styles	5/21/2021	235 Portola Pr.	22 Lot Tract 7763	Meg Styles
Karen Ween Carmagnola	5/21/2021	4334 Conejo Dr	20 Lot Tract 7763	K Carmagnola
Sandi Wiley	5/21/21	4332 Conejo Dr	19 Lot Tract 7763	Sandi Wiley
Sue Michelson	5/21/21	4330 Conejo Dr	18 Lot Tract 7763	Sue Michelson
Arezoo Amin	5/21/21	63 Joya Ln.	70 Lot Tract 7763	Arezoo Amin
Megan Riley	5.21.21	36 Maximo Ct.	lot 137 Tract 7763	Megan Riley
Joe Christian	5/21/21	112 Monteny Ln	Lot 130 Tract 7763	Joe Christian
Wachyuk chae	5/21/21	601 Joya Ct	Lot 78 Tract 7763	Wachyuk chae
GEORGE STONE	5/22/21	608 JOYA CT.	Lot 75 Tract 7763	George Stone
ROBERT STAAB	5/22/21	4398 CONEJO DR	Lot 92 Tract 7763	Robert Staab
Aryn Bevala	5/23/21	61 Joya Lane	Lot 71 Tract 7763	Aryn Bevala
BRAD HOCK	5/24/21	37 MAXIMO CT	LOT TRACT 7763	Brad Hock
Preetroman Sahal	5/24/21	34 maximo CT	TRACT 7763	Preetroman Sahal
Vicki Kishi	5/28/21	233 Portola		Vicki Kishi
Mary Fulmer	5/28/21	31 MAXIMO CT	LOT 77 TRACT 7763	Mary Fulmer
Alyson Grant	6/2/21	41 Monteny Ct		Alyson Grant

**EXHIBITS A and B**

Legal Description and Boundary Map

16098.000.000  
May 6, 2021

JUNE 17, 2021  
JOB NO.: 3237-00

**LEGAL DESCRIPTION  
SOMERSET - SUBDIVISION 7763  
SAN RAMON, CALIFORNIA**

REAL PROPERTY, SITUATE IN THE INCORPORATED TERRITORY OF THE CITY OF SAN RAMON, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

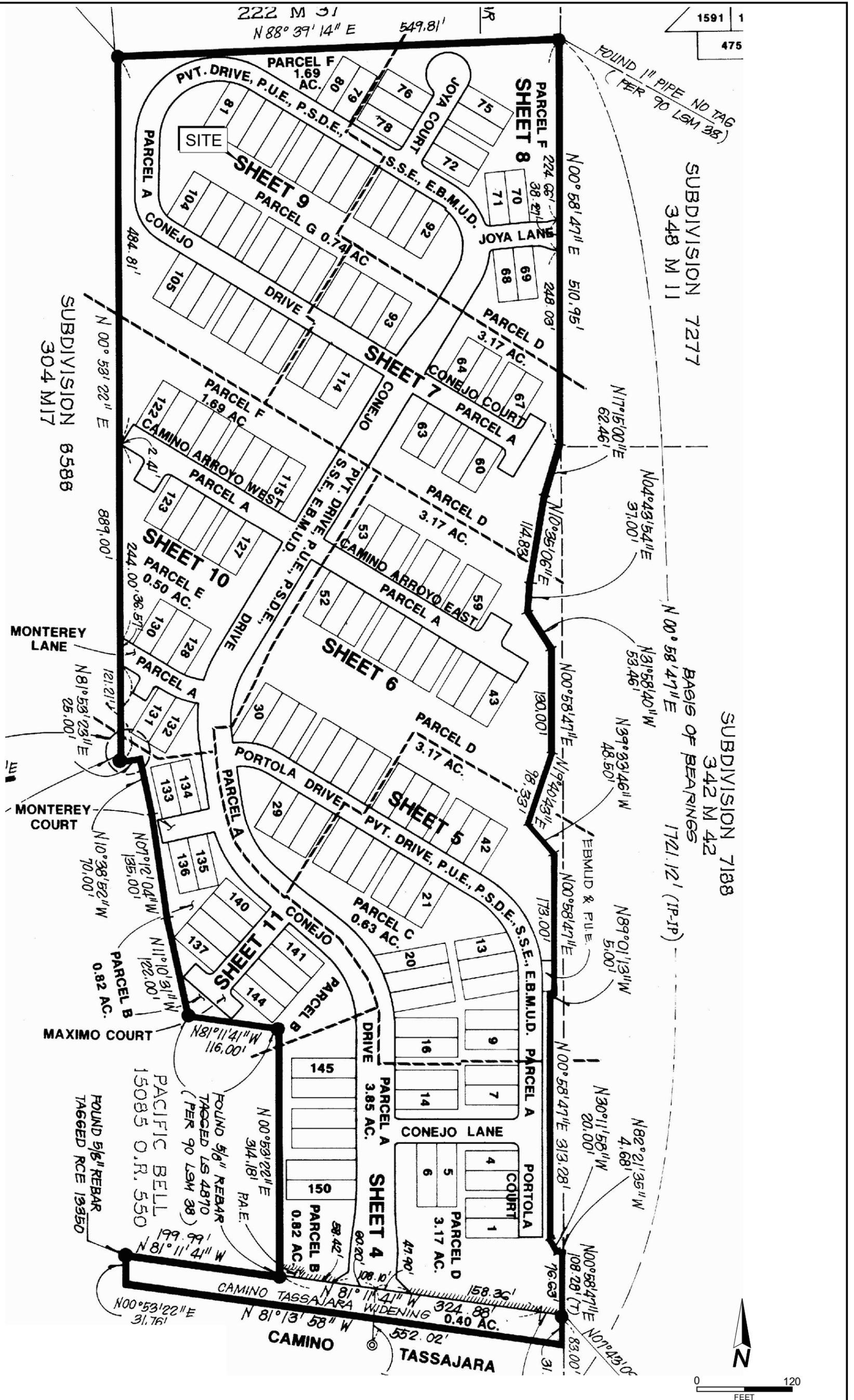
BEING ALL OF PARCELS A THRU G AND LOTS 1 THRU 150 AS SAID PARCELS AND LOTS ARE SHOWN AND DESIGNATED ON THAT CERTAIN FINAL MAP ENTITLED "SUBDIVISION 7763 - SOMERSET", FILED ON JUNE 3, 1993, IN BOOK 366 OF MAPS AT PAGES 4 THROUGH 14, OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF CONTRA COSTA COUNTY.

**END OF DESCRIPTION**



MARK H. WEHBER, P.L.S.  
L.S. NO. 7960

FILE PATH: G:\Working\PROJECTS\16000 to 17399\16998\1699800000\Letter\Somerset\1699800000-ExhibitB-legaldescription-021 - Copy.dwg SAVE DATE: 6/29/2021 3:28:24 PM SAVED BY: jenggeo



BASE MAP SOURCE: CARLSON, BARBEE, & GIBSON, INC. OCTOBER 1997



PLAT TO ACCOMPANY LEGAL DESCRIPTION  
 DANVILLE SOMERSET  
 CONTRA COSTA COUNTY, CALIFORNIA

PROJECT NO.: 16098.000.000	EXHIBIT <b>B</b>
SCALE: AS SHOWN	
DRAWN BY: JV    CHECKED BY: HR	

ORIGINAL FIGURE PRINTED IN COLOR

**EXHIBIT C**

Somerset Plan of Control

16098.000.000  
May 6, 2021

# Wendt Ranch Geologic Hazard Abatement District

Annexation of Somerset  
Development (Tract 7763) Into the  
Wendt Ranch GHAD

Date: August 3, 2021

Presented by: Eric Harrell GHAD  
Manager, ENGEEO Representative



# Overview – Wendt Ranch GHAD

- Formed in 2002 to include the Wendt Ranch development (Subdivision 8002)
- Monterosso (Subdivision 8831) and Alamo Creek developments (Subdivisions 8381 and 8382) were annexed into the Wendt Ranch GHAD in 2005
- Approximately 1,300 residential units within the existing GHAD and subject to the levy of an assessment
- GHAD monitoring and maintenance responsibilities within the Wendt Ranch GHAD began in 2009 and will continue in perpetuity

# Overview – Somerset Development

- 150 townhomes and common-area parcels on 17.8 acres in Contra Costa County
- Residential units constructed between 1992 and 1996.
- Monitoring of instrumentation within the development started as early as 1997 and has indicated deep-seated landslide movement beneath a significant portion of the site.
- Structural slope improvements were installed in 2016 for a portion of the development and design recommendations have been provided to stabilize intermediate and deep-seated slope movement.

# Actions Being Considered

- Approve annexation of the Somerset development into the Wendt Ranch Geologic Hazard Abatement District and approve the Somerset Plan of Control
  - Based on approval of resolution accepting the petition for annexation by the GHAD Board of Directors on July 13, 2021, the GHAD Clerk mailed a public notice of this hearing to the 150 property owners listed on roll last equalized by the County
  - Calls were received from several property owners within the Somerset development wanting additional information about the GHAD and the GHAD annexation process

# Annexation Hearing Process

- Open and conduct a public hearing
- Close the public hearing and consider any written objections to the proposed annexation
- If owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD do not submit written objections to the annexation, consider approval of the annexation and adoption of the Somerset Plan of Control
- If owners of more than 50 percent of the assessed valuation of the property to be included in the GHAD submit written objections to the annexation close the public hearing and abandon the annexation proceedings

# Future Board Actions

If annexation is approved, future GHAD Board of Directors meetings would be scheduled to consider:

- Approving Engineer's Report and Notice of intent to Order an Assessment
- Accepting Canvass of Votes for Assessment
- Accepting Tabulation of Mail-in Ballots, Confirming Assessment, and Authorizing Levy and Collection of an assessment
- Transferring Monitoring, Maintenance, and Repair Responsibilities as outlined in the Plan on Control

# Transfer of GHAD Plan of Control Responsibilities

Transfer of monitoring, maintenance, and repair responsibilities as outlined in the Plan of Control from the HOA to the GHAD would be contingent on completion of following items.

- Authorization of a GHAD assessment for residences within the Somerset development
- Verification of the condition and performance of GHAD-maintained improvements including currently proposed stabilization improvements
- Acceptance of transfer responsibilities by the GHAD Board of Directors

# Recommendation

- If owners of more than 50 percent of the assessed valuation do not submit written objections to the annexation, adopt Resolution 2021/03 approving annexation of the Somerset development into the Wendt Ranch Geologic Hazard Abatement District and adopting the Somerset development Plan of Control



**Contra  
Costa  
County**

To: Board of Supervisors  
From: John Kopchik, Director, Conservation & Development Department  
Date: August 3, 2021

Subject: Ordinance No. 2021-25, to update mitigation fees imposed to implement the East Contra Costa County HCP/NCCP

---

**RECOMMENDATION(S):**

1. OPEN the public hearing on Ordinance No. 2021-25; RECEIVE testimony; CLOSE the public hearing.
2. DETERMINE that the adoption of Ordinance No. 2021-25 is not a project under the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines section 15378(b)(4) (governmental fiscal activity).
3. ADOPT Ordinance No. 2021-25 to update mitigation fees imposed to implement the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan.
4. DIRECT the Director of Conservation and Development, or designee, to file a notice of exemption with the County Clerk-Recorder.
5. APPROVE and AUTHORIZE the County Counsel, or her designee, to execute a Defense and Indemnification Agreement with the East Contra Costa County Habitat Conservancy and the Cities of Brentwood, Clayton, Oakley, and Pittsburg, without any changes to the substantive terms of the attached agreement.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Abigail Fateman,  
925-655-2908

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

### FISCAL IMPACT:

The proposed fee update will result in the County collecting additional revenues that can be used only for public facilities related to the conservation of covered species, as set forth in the HCP/NCCP and the proposed ordinance. Conservation and Development Department staff time to administer the ordinance will be reimbursed through the Department's existing process of tracking time spent to review development applications and charging applicants for the cost of the staff time actually spent to review the applications. The proposed defense and indemnification agreement reduces the County's financial exposure in the event it is sued after it adopts or imposes the HCP/NCCP fees and fee adjustments recommended by the Conservancy.

### BACKGROUND:

Ordinance No. 2021-25 updates mitigation fees imposed to implement the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan ("HCP/NCCP" or "Plan"). The fees are used for the conservation of habitat for covered species in mitigation of the impacts of development in eastern Contra Costa County.

The County originally approved the HCP/NCCP in December 2006. Under the HCP/NCCP, the County and the other participating local agencies were issued state and federal permits for impacts to endangered species and their habitats, also referred to as take permits. This enables the County and the other participating local agencies to control endangered species permitting for activities and projects in the region that they perform or approve. The East Contra Costa County Habitat Conservancy, a joint powers authority composed of the County and the Cities of Brentwood, Clayton, Oakley, and Pittsburg, was formed in February 2007 for the purpose of implementing the HCP/NCCP. Among other responsibilities, the Conservancy conducts periodic fee audits and refers the results to the participating cities and the County.

In October 2007, the County adopted Ordinance No. 2007-53 to originally establish the mitigation fees and procedures to implement the HCP/NCCP within the portion of the unincorporated County covered by the Plan. Two types of mitigation fees were established: the Development Fee (calculated by multiplying the acreage of the site permanently disturbed by development projects subject to the fee by the fee rate applicable in the zone in which the projects are located), and the Wetland Mitigation Fee (applicable to the wetland, aquatic, or riparian portions of a development project). The Conservancy and participating cities each separately adopted the mitigation fees and procedures to implement the HCP/NCCP.

The HCP/NCCP requires automatic annual adjustments to the mitigation fees based on economic indices. The HCP/NCCP also requires periodic audits in years 3, 6, 10, 15, 20, and 25 of the Plan's implementation. The periodic audits are conducted to assess whether changes in HCP/NCCP implementation costs over time require adjustment of the fees. Per HCP/NCCP requirements, the Conservancy hired an outside, independent financial auditor to conduct a fee analysis. The 2017 East Contra Costa County HCP/NCCP Mitigation Fee Audit and Nexus Study ("Fee Study") was prepared to comply with the requirement of a fully funded mitigation strategy.

Other than the automatic annual adjustments approved for the fees, the County has not updated its HCP/NCCP mitigation fees since their initial adoption in 2007. The fee update based on the 2017 Fee Study has been delayed due to pending litigation between the Conservancy and a private third-party. The litigation was settled in January 2021. In February 2021, the Conservancy adopted the updated fee schedule based on the 2017 Fees Study and now the participating cities and the County need to take action to adopt the updated fee schedule. The proposed Ordinance 2021-25 updates mitigation fee schedule to reflect the 2017 Fee Study. The procedures included in the proposed ordinance for

implementing the HCP/NCCP are unchanged from those adopted by the County in 2007.

Updated 2021 Fee Schedule:

In addition to the periodic fee audit, the mitigation fees are automatically adjusted annually based on the Consumer Price Index (CPI) and the Home Price Index (HPI) using a formula in the HCP/NCCP. The fees calculated in the Fee Study are for 2017. These have further been updated to reflect the annual adjustments made in 2018 through 2021. The updated mitigation fee schedule, calculated as of 2021, is shown in the table below. The table also shows the percent change from the 2021 fee calculated under the current fee schedule compared to the corresponding updated fee.

2021 Mitigation Fee Schedule Based On 2017 Fee Study

<b>Land Cover</b>	<b>Fee Basis</b>	<b>Current 2021 Fee</b>	<b>Updated 2021 Fee Based On 2017 Fee Study</b>	<b>Change from Current 2021 Fee</b>
<b>Development Fee</b>				
Zone 1	per acre	\$17,602	<b>\$16,890.46</b>	-4.04%
Zone 2	per acre	\$35,204	<b>\$33,780.93</b>	-4.04%
Zone 3	per acre	\$8,801	<b>\$8,445.23</b>	-4.04%
<b>Wetland Mitigation Fee</b>				
Riparian	per acre	\$85,924	<b>\$101,220.24</b>	17.80%
Perennial Wetland	per acre	\$117,581	<b>\$153,401.41</b>	30.46%
Seasonal Wetland	per acre	\$254,759	<b>\$358,985.11</b>	40.91%
Alkali Wetland	per acre	\$241,192	<b>\$362,908.51</b>	50.46%
Ponds	per acre	\$128,133	<b>\$197,540.18</b>	54.17%
Aquatic (Open Water)	per acre	\$64,820	<b>\$98,770.65</b>	52.38%
Slough / Channel	per acre	\$146,222	<b>\$141,043.28</b>	-3.54%
Streams (<=25 ft. wide)	per ln ft.	\$700	<b>\$520.50</b>	-25.71%
Streams (>25 ft. wide)	per ln ft.	\$1,055	<b>\$781.31</b>	-25.97%

The updated Development Fees reflect an approximate 4% decrease from those currently charged by the County. For the non-stream wetlands, the costs of restoration are substantially higher than those originally estimated when the HCP/NCCP and the mitigation fees were originally adopted. The opposite is the case for streams. The changes in the Wetland Mitigation Fees are due to the fact that estimates of restoration costs developed for the Plan did not have the benefit of actual project cost experience in eastern Contra Costa County. But that experience has been gained since Plan adoption and is reflected in the proposed updates under the Fee Study.

Defense and Indemnification Agreement:

Staff recommends that the Board of Supervisors approve a Defense and Indemnification Agreement (“Proposed Agreement”) with the Conservancy and the Cities of Brentwood, Clayton, Oakley and Pittsburg, to establish cooperative procedures in the event there is litigation on the matter of fees collected pursuant to the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan.

The Proposed Agreement requires the Conservancy to defend, indemnify, and hold harmless the other parties to the Proposed Agreement from claims made against any of them related to the adoption and

imposition of the HCP/NCCP fees, the fee adjustments made pursuant to the 2017 Fee Study and recommended by the Conservancy on February 22, 2021, and future fee adjustments made pursuant to the fee audit scheduled for 2022 and to be recommended by the Conservancy (the “Fees”). The Proposed Agreement also authorizes each party’s attorneys to participate in that party’s defense, and it describes each party’s rights and responsibilities regarding settlement of any litigation.

The Fees are required to ensure that the Conservancy has funding necessary to meet its obligations under state and federal law. Although each city and the County adopts and imposes the Fees within its jurisdiction, Fee revenue is used to fund the Conservancy’s activities required under the HCP/NCCP. As a joint exercise of powers authority created by the participating cities and the County to serve as the Implementing Entity for the HCP/NCCP and to coordinate the successful implementation of the HCP/NCCP, the Conservancy is the most appropriate agency to support its member agencies if there is litigation regarding the Fees. The Conservancy also is best-suited to provide a coordinated legal defense of its member agencies.

The substantive terms of the Proposed Agreement have been negotiated. Although editorial and non-substantive changes may be required or requested by a party, no substantive changes will be made without the approval of the Board of Supervisors. For these reasons, staff recommends that the Board of Supervisors approve the above-stated recommendation.

CONSEQUENCE OF NEGATIVE ACTION:

Ordinance No. 2021-25 would not be adopted, and the mitigation fees imposed to implement the HCP/NCCP would not be updated consistent with the 2017 Fee Study. With respect to the proposed defense and indemnification agreement, the County would bear its own attorney’s fees and costs if a party were to sue the County after it adopts or imposes the HCP/NCCP fees and fee adjustments.

ATTACHMENTS

Ordinance No. 2021-25 HCP.NCCP Fee Update

East Contra Costa County HCP/NCCP Mitigation Fee Audit and Nexus Study, (Draft June 2017, Final February 2020)

Memo: From Bob Spencer to Conservancy RE: Updated 2020 Fees (February 16, 2020)

Index Fee Data

Defense and Indemnification Agreement, dated April 5, 2021 (“Proposed Agreement”)

**ORDINANCE NO. 2021-25**  
(uncodified)

**(Adoption of the East Contra Costa County Habitat Conservation Plan/  
Natural Community Conservation Plan Fees and Implementation Procedures)**

The Contra Costa County Board of Supervisors ordains as follows:

**SECTION I.**        **SUMMARY.** This ordinance provides for the adoption of fees to be used for the conservation of habitat for covered species in mitigation of the impacts of development in eastern Contra Costa County and procedures to implement the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan.

**SECTION II.**        **AUTHORITY.** This ordinance is enacted pursuant to the Mitigation Fee Act (Gov. Code, § 66000 et seq.) and Article 11, section 7 of the California Constitution.

**SECTION III.**        **NOTICE AND HEARING.** This ordinance was adopted pursuant to the procedure set forth in Government Code sections 54986 and 66017-66018 and all required notices have been properly given and public hearing held.

**SECTION IV.**        **DEFINITIONS.** As used in this ordinance:

A. "Affected Development Projects" means the development projects to which this ordinance applies, as set forth in Section V of this ordinance.

B. "Covered species" means those species of plants and animals whose conservation and management are provided for by the HCP/NCCP for which limited take is authorized pursuant to the state and federal permits.

C. "Development Fee" means the fee described in Chapter 9.3.1 of the HCP/NCCP and imposed on development projects pursuant to Section VIII.A of this ordinance.

D. "Development Fee Zones" means the three areas depicted as Zones I, II, and III on the map attached hereto as **Exhibit A** and in the detailed map data used to create Exhibit A, both of which are incorporated herein by reference. The Development Fee imposed on a development project is determined based on the Development Fee Zone in which the project is located.

E. "Development project" means any project undertaken for the purpose of development, including a project involving the issuance of a permit for construction or reconstruction, but not a permit to operate.

F. "HCP/NCCP" means the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan, approved by the Board of Supervisors on December 19, 2006, as may be revised from time to time.

G. "HCP/NCCP implementation fees" means the Development Fee and the Wetland Mitigation Fee.

H. "Implementing Agreement" means the January 22, 2007, Implementing Agreement for the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan by and between East Contra Costa County Habitat Conservancy, County of Contra Costa, City of Pittsburg, City of Clayton, City of Oakley, City of Brentwood, Contra Costa County Flood Control and Water Conservation District, East Bay Regional Park District, United States Fish and Wildlife Service, and California Department of Fish and Game.

I. "Implementing Entity" means the East Contra Costa County Habitat Conservancy, a joint exercise of powers agency formed by the County and the cities of Brentwood, Clayton, Oakley, and Pittsburg to oversee the implementation of the HCP/NCCP.

J. "Jurisdictional Wetlands and Waters" means State and federally regulated wetlands and other water bodies that cannot be filled or altered without permits from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. § 1251 et seq.), from the State Water Resources Control Board under either section 401 of the Clean Water Act or the Porter-Cologne Water Quality Act (California Water Code, § 13000 et seq.), or from the California Department of Fish and Game under section 1602 of the California Fish and Game Code, as further explained in Chapter 1.3.5 of the HCP/NCCP.

K. "Project applicant" means a property owner, or duly designated agent of the property owner, who has submitted to the County a request for approval of a development project on the property.

L. "Public facilities" includes public improvements, public services, and community amenities.

M. "State and federal permits" means the permit issued by the California Department of Fish and Game to the County and other local agencies on August 6, 2007, authorizing take of covered species pursuant to the HCP/NCCP and the Natural Community Conservation Planning Act (permit number 2835-2007-01-03), and the permit issued by the United States Fish and Wildlife Service to the County and other local agencies on July 25, 2007, authorizing incidental take of covered species pursuant to the HCP/NCCP and the federal Endangered Species Act (permit number TE160958-0), as those documents may be amended from time to time.

N. "Take" has the same meaning provided by the federal Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.) ("FESA") and its implementing regulations with regard to activities subject to that Act, and also has the same meaning provided in the California Fish and Game Code with regard to activities subject to the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) and the Natural Community Conservation Planning Act (Fish & G. Code, § 2800 et seq.). Specifically, take is defined in FESA to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct"

(16 U.S.C. § 1532(18)) and in California Fish and Game Code section 86 as "to hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, capture, or kill."

O. "Urban Development Area" means the areas designated for urban development that are either (1) within the area designated as the "Initial Urban Development Area" as generally depicted on the map attached hereto as **Exhibit B**, incorporated herein by reference, or (2) areas added to or removed from the Initial Urban Development Area according to the procedures set forth in Section 3.50 of the Implementing Agreement.

P. "Wetland Mitigation Fee" means the fee described in Chapter 9.3.1 of the HCP/NCCP and imposed on development projects pursuant to Section VIII.B of this ordinance.

## **SECTION V. APPLICATION OF ORDINANCE**

A. This ordinance applies to all development projects in unincorporated Contra Costa County that are within the Urban Development Area except for the following:

1. Any development project that will permanently disturb less than one acre. The "acreage of land permanently disturbed" by a project, as that term is defined in Chapter 9.3.1 of the HCP/NCCP, shall be determined by the Community Development Director or his designee.

2. Any development project that the Community Development Director or his designee determines is contained entirely within an area mapped as urban, turf, landfill, and/or aqueduct land cover types in the HCP/NCCP, as generally depicted on **Exhibit A** and in the map data used to create Exhibit A.

3. Any development project of a type not covered by the HCP/NCCP within the Urban Development Area, as set forth in Chapter 2.3.1 of the HCP/NCCP.

4. Development projects with vested rights pursuant to an agreement by and between the project applicant and the County.

5. Development projects exempt under any provision of law.

6. Development projects where the County determines based on written evidence submitted by the project applicant that application of the ordinance would deprive the project applicant of all reasonable economic use of the property in violation of federal or state constitutional prohibitions against the taking of property without just compensation.

B. The development projects to which this ordinance applies, as set forth above, may be referred to as the "Affected Development Projects."

## **SECTION VI. PURPOSE OF FEES; USE OF FEE REVENUE**

A. The purpose of the Development Fee is to mitigate for impacts to open space, habitat and species covered by the HCP/NCCP. The Development Fee revenues will be used to fund the acquisition of land that does or could provide habitat for covered species, the management and enhancement of that land and habitat, and the administrative actions necessary to accomplish these tasks, as more particularly set forth in the HCP/NCCP, incorporated herein by reference.

B. The purpose of the Wetland Mitigation Fee is to mitigate for impacts to Jurisdictional Wetlands and Waters, riparian woodland/scrub, or stream buffers. The Wetland Mitigation Fee revenues will be used to fund the restoration, creation and management of Jurisdictional Wetlands and Waters and riparian woodland/scrub, and the administrative actions necessary to perform these tasks, as more particularly set forth in the HCP/NCCP.

**SECTION VII.**      **FINDINGS.** The Board of Supervisors finds and determines as follows:

A. There is a need to establish a comprehensive framework to protect and conserve species, wetlands, natural communities, and ecosystems in East Contra Costa County, while improving and streamlining the environmental permitting process for impacts of future development on rare, threatened, and endangered species.

B. To meet the need identified in Section VII.A, the County participated as a member of the East Contra Costa County Habitat Conservation Plan Association, a joint exercise of powers authority, to develop the HCP/NCCP and the Implementing Agreement. The Board finds that the HCP/NCCP, implemented in accordance with the Implementing Agreement, will provide comprehensive species, wetlands, and ecosystem conservation and contribute to the recovery of endangered species within East Contra Costa County; balance open space, habitat, and urban development; reduce the cost and increase the clarity and consistency of federal and state permitting; consolidate and streamline these processes into one, locally controlled plan; encourage, where appropriate, multiple uses of protected areas; share the costs and benefits of the HCP/NCCP as widely and equitably as possible; and protect the rights of private property owners.

C. Adoption and implementation of this Ordinance will enable the County to promote the health, safety and welfare of all of its residents by helping to achieve the conservation goals set forth in the HCP/NCCP, to implement the associated Implementing Agreement, and to preserve the ability of affected property owners to make reasonable use of their land consistent with the requirements of the National Environmental Policy Act, the California Environmental Quality Act, the Federal Endangered Species Act, the California Endangered Species Act, the California Natural Community Conservation Planning Act, and other applicable laws.

D. Based on the HCP/NCCP and the data and analyses referenced therein, there is a reasonable relationship between the use of the HCP/NCCP implementation fees and the type of development projects subject to the fees. The Development Fee will be used to implement the HCP/NCCP by funding the acquisition of land, the enhancement and management of habitat, and the other public facilities identified in Section VI.A in order to mitigate for impacts to open space, habitat, and covered species caused by Affected Development Projects. The Wetland Mitigation Fee will be used to implement the HCP/NCCP by funding the restoration, creation, and management of Jurisdictional Wetlands and Waters and riparian woodland/scrub, and the other public facilities identified in Section VI.B in order to mitigate for impacts to Jurisdictional Wetlands and Waters and riparian areas caused by Affected Development Projects. The HCP/NCCP implementation fees will not apply to all types of development projects, but only to

those that impact open space, habitat suitable for one or more covered species, Jurisdictional Wetlands and Waters, or riparian areas. In this way, the HCP/NCCP implementation fees will be used only for purposes reasonably related to the types of development projects that will be subject to the fees.

E. Based on the HCP/NCCP and the data and analyses referenced therein, there is a reasonable relationship between the need for the public facilities to be funded by the HCP/NCCP implementation fees and the type of development projects on which the fees are imposed because the need for these facilities, which include the acquisition of land and the management, enhancement, restoration, and creation of habitat, arises from the development projects to which the fees will apply, i.e., development projects of all types that disturb open space, habitat, Jurisdictional Wetlands and Waters or riparian areas.

F. Based on the HCP/NCCP and the data and analyses referenced therein, there is a reasonable relationship between the amount of the HCP/NCCP implementation fees and the cost of the public facilities or portion of the public facilities attributable to the development projects on which the fees will be imposed. The costs of the public facilities needed to mitigate cumulative impacts from development projects subject to the fees were estimated by projecting the extent of future development impacts, calculating the open space or habitat acreage to be acquired, managed, enhanced, restored, and created to offset these impacts, and estimating the overall costs of acquiring and preserving this acreage for the 30-year term of the state and federal permits. The fees were then calculated based on these costs, as follows:

1. The method of calculating the Development Fee amount for individual Affected Development Projects reflects the cost of the public facilities attributable to individual Affected Development Projects based on:

a. Area of the Affected Development Project, as the cost of acquiring sufficient open space or habitat land to mitigate for the impacts of a particular development project is directly proportional to the acreage of that project; and

b. Location of the Affected Development Project, as the need for the public facilities varies in proportion to the intrinsic habitat or open space value of the land impacted by the project. Thus, fees are tiered so that the highest fee amounts are imposed in Development Fee Zone II, which is deemed to have the highest intrinsic value per acre. A fee equal to 50 percent of the highest fee amount is imposed in Development Fee Zone I, which is deemed to have substantial but lower intrinsic value per acre, and a fee equal to 25 percent of the highest fee amount is required in Development Fee Zone III, which is deemed to have the lowest intrinsic value per acre.

2. The method of calculating the Wetland Mitigation Fee amount for individual Affected Development Projects reflects the cost of the public facilities attributable to those individual Affected Development Projects based on:

a. Type of Jurisdictional Wetlands and Waters and riparian woodland/scrub to be impacted by the Affected Development Project, as the type of Jurisdictional Wetlands and Waters and riparian woodland/scrub to be restored or created must effectively replace the type being impacted by the particular project. The cost of restoring or creating Jurisdictional Wetlands and Waters and riparian woodland/scrub depends on (1) the

specific construction tasks necessary to restore or create these areas and (2) the different mitigation ratios applicable to the restoration or creation of various types of Jurisdictional Wetlands and Waters and riparian woodland/scrub, these ratios having been established in the HCP/NCCP to require relatively more restoration or creation of those types of Jurisdictional Wetlands and Waters and riparian woodland/scrub that have a higher habitat value and function for covered species and/or are more difficult to restore or create, and therefore must be restored or created in larger amounts to offset the anticipated failure of a portion of the acreage restored or created; and

b. Area of Jurisdictional Wetlands and Waters and riparian woodland/scrub to be impacted by the Affected Development Project, as the cost of restoring or creating Jurisdictional Wetlands and Waters and riparian woodland/scrub is directly proportional to the acreage being restored or created, which in turn is directly proportional to the acreage being impacted by the project.

**SECTION VIII. HCP/NCCP IMPLEMENTATION FEES.** HCP/NCCP implementation fees are hereby adopted to fund the public facilities identified in Section VI of this ordinance, as follows:

A. Development Fee

1. Except as otherwise provided in Sections VIII.D and VIII.F of this ordinance, a Development Fee shall be imposed upon and collected from any and all Affected Development Projects for each acre of land permanently disturbed, as follows:

<u>Location of Affected Development Project</u>	<u>Development Fee</u>
Development Fee Zone I	<b>\$16,890.46</b> per acre
Development Fee Zone II	<b>\$33,780.93</b> per acre
Development Fee Zone III	<b>\$8,445.23</b> per acre

2. The Conservation and Development Director, or his designee, shall determine in which of the three Development Fee Zones an Affected Development Project is located, pursuant to **Exhibit A** and the map data used to create Exhibit A.

3. The Development Fee for each Affected Development Project shall be calculated by multiplying the fee for the applicable Development Fee Zone by the acreage of the site permanently disturbed by the Project, as determined by the Conservation and Development Director or his designee pursuant to Chapter 9.3.1 of the HCP/NCCP.

4. Upon or before the issuance of a grading permit or, if no grading permit is issued, upon or before issuance of a building permit, the project applicant shall either (1) pay the entire Development Fee or, (2) with the prior written approval of the County, pay at least 67 percent of the Development Fee and execute an agreement with the County, in a form approved by County Counsel, to provide additional funding payments through assessments on the subject parcels or other mechanisms, provided that assessments or other funding mechanisms are legally authorized for this purpose, pursuant to the requirements of Chapter 9.3.1 of the HCP/NCCP.

5. The Development Fee amount applicable to an Affected Development Project shall be the Development Fee amount in effect at the time a grading permit is issued or, if no grading permit is issued, at the time the first building permit is issued for the project. Notwithstanding the foregoing, a project applicant may request to pay the Development Fee in a calendar year prior to the calendar year in which the grading permit or first building permit is issued. This request may be granted by the Conservation and Development Director or his designee only in accordance with Section 13.2.2.1 of the Implementing Agreement and Chapter 9.3.1 of the HCP/NCCP. If such request is granted, the applicable Development Fee shall be the Development Fee in effect during the calendar year in which the fee is to be paid, including any adjustments made pursuant to Section IX of this ordinance.

B. Wetland Mitigation Fee

1. Except as otherwise provided in Sections VIII.E and VIII.F of this ordinance, in addition to a Development Fee, a Wetland Mitigation Fee shall be imposed upon and collected from any and all Affected Development Projects that will fill, dredge, or remove Jurisdictional Wetlands and Waters or riparian woodland/scrub, and from any and all Affected Development Projects that have been granted an exception to the stream setback established pursuant to Conservation Measure 1.7 of the HCP/NCCP.

2. The Wetland Mitigation Fee applicable to Affected Development Projects that will fill, dredge, or remove Jurisdictional Wetlands and Waters or riparian woodland/scrub varies by the land cover type impacted by those projects. The Conservation and Development Director or his designee shall determine which of the land cover types will be impacted by an Affected Development Project and the corresponding fee amounts in accordance with **Exhibit C**, incorporated herein by reference, and in accordance with Chapter 9.3.1 of the HCP/NCCP. The Wetland Mitigation Fee applicable to an Affected Development Project that has been granted an exception to the stream setback shall be determined by the Conservation and Development Director or his designee based on the acreage of setback encroachment, in accordance with Chapter 9.3.1 of the HCP/NCCP and **Exhibit C**.

3. Upon or before the issuance of a grading permit or, if no grading permit is issued, upon or before issuance of a building permit, the project applicant shall pay the Wetland Mitigation Fee determined for the Affected Development Project.

4. The Wetland Mitigation Fee amount applicable to an Affected Development Project shall be the Wetland Mitigation Fee amount in effect at the time a grading permit is issued or, if no grading permit is issued, at the time the first building permit is issued for the project. Notwithstanding the foregoing, a project applicant may request to pay the Wetland Mitigation Fee in a calendar year prior to the calendar year in which the grading permit or first building permit is issued. This request may be granted by the Conservation and Development Director or his designee only in accordance with Section 13.2.2.1 of the Implementing Agreement and Chapter 9.3.1 of the HCP/NCCP. If this request is granted, the applicable Wetland Mitigation Fee shall be the Wetland Mitigation Fee in effect during the calendar year in which the fee is to be paid, including any adjustments made pursuant to Section IX of this ordinance.

C. Condition of Approval

Compliance with this ordinance, including but not limited the payment of the fees specified herein, as applicable, shall be a condition of approval of all Affected Development Projects.

D. Dedications

1. On a case-by-case basis, and upon a voluntary offer by the project applicant, the County may accept a dedication of land in lieu of some or all of the Development Fee that would otherwise be imposed upon a development project. Any offer of dedication may be considered for acceptance only if the land dedication is considered by the Conservation and Development Director or his designee to be consistent with the HCP/NCCP and Implementing Agreement. The amount of the Development Fee for which the dedication would substitute shall be determined by the County pursuant to Section 13.2.2.2 of the Implementing Agreement and Chapters 8.6.7 and 9.3.1 of the HCP/NCCP.

2. If required to comply with the Stay Ahead provision set forth at Chapter 8.6.1 of the HCP/NCCP and Section 9.2 of the Implementing Agreement, the County may require that some or all Affected Development Projects offer a dedication of land in lieu of some or all of the Development Fee that would otherwise be imposed.

E. Creation/Restoration of Habitat

On a case-by-case basis, and upon a voluntary offer by the project applicant, the County may accept the restoration or creation of Jurisdictional Wetlands and Waters or riparian woodland/scrub in lieu of some or all of the Wetland Mitigation Fee that would otherwise be imposed on an Affected Development Project. The offer of restoration or creation of Jurisdictional Wetlands and Waters or riparian woodland/scrub in lieu of some all or a portion of the Wetland Mitigation Fee may be considered for acceptance only if the restoration or creation is determined by the Conservation and Development Director or his designee to be consistent with the HCP/NCCP and Implementing Agreement. The amount of the Wetland Mitigation Fee for which such restoration or creation would substitute shall be determined by the County pursuant to Conservation Measures 2.1 and 2.2 and Chapter 9.3.1 of the HCP/NCCP.

F. Separate Take Authorization

On a case-by-case basis, a project applicant that possesses separate and final approval from the United States Fish and Wildlife Service and/or California Department of Fish and Game for incidental take of all federally or state listed species that may be adversely affected by the development project may apply to the County to pay a fee, the amount to be negotiated by the project applicant with the County, to support the conservation of habitat and open space under the HCP/NCCP in lieu of the HCP/NCCP implementation fees. If the Conservation and Development Director or his designee determines that the mitigation and conservation requirements under the separate approval are equivalent to or exceed what would be required under this ordinance, the County may determine that no further fees are required for purposes of complying with the HCP/NCCP, in which case the HCP/NCCP implementation fees described herein shall not be required of the project.

G. Fee Transmittal

All fees collected hereunder shall be transmitted to the County Auditor-Controller quarterly, within thirty (30) days of the end of the quarter within which the fee was collected, for deposit into a separate account or fund, and for investment, accounting and expenditure in accordance with the provisions of this ordinance and the Mitigation Fee Act.

**SECTION IX. ADJUSTMENTS TO FEES.** The Development Fee and Wetland Mitigation Fee shall on March 15 of each year be automatically adjusted automatically as follows:

A. The Development Fee shall be adjusted as provided in **Exhibit D** and based on the formula in **Exhibit E**, as explained in Chapter 9.3.1 of the HCP/NCCP. As shown in **Exhibit D** and **Exhibit E**, both of which are incorporated herein by reference, one portion of the Development Fee amounts in effect before March 15 of each year shall be increased or decreased by the same percentage as the percentage of increase or decrease in the Office of Federal Housing Finance Agency Annual Home Price Index for the Oakland-Berkeley-Livermore, California Metropolitan Division for the 12-month period ending December 31. The remaining portion of the Development Fee amounts shall be increased or decreased by the same percentage as the percentage of increase or decrease in the Consumer Price Index for the San Francisco-Oakland-Fremont Combined Statistical Area (U.S. Bureau of Labor Statistics) for the 12-month period ending December 31.

B. The Wetland Mitigation Fee shall be adjusted as provided in **Exhibit D**. As shown in **Exhibit D**, the Wetland Mitigation Fee amounts in effect before March 15 of each year shall be increased or decreased by the same percentage as the percentage of increase or decrease in the Consumer Price Index for the San Francisco-Oakland-Fremont Combined Statistical Area Bureau of Labor Statistics) for the 12-month period ending December 31.

**SECTION X. TAKE AUTHORIZATION APPLICATION AND REVIEW PROCEDURES**

A. The County shall require project applicants for any and all Affected Development Projects to submit an application for take authorization to the Conservation and Development Director for review simultaneously with the submittal of the request for approval of the project. The Conservation and Development Director may require that the application be submitted on one or more standard application forms. The application for take authorization must include the following information:

1. A description of the Affected Development Project, including maps, detailed information on the project footprint, extent of construction, and extent of any ongoing maintenance activities subject to the HCP/NCCP.
2. One or more reports documenting the methods and results of planning surveys and the methods of applicable preconstruction surveys and construction monitoring, in accordance with Chapter 6 of the HCP/NCCP. The Conservation and Development Director or his designee may allow specific components of the required surveys, including some or all of the results of planning surveys and the methods of applicable preconstruction surveys and construction monitoring, to be provided after the submittal of the initial application and prior to

approval of the development project; however, the application for take authorization is not complete until all items in this Section X.A have been submitted.

3. Evidence of compliance or planned compliance with applicable avoidance and minimization measures, in accordance with Chapter 6 of the HCP/NCCP.
4. Quantification of the anticipated acreage of land permanently disturbed, consistent with Chapters 6.2 and 9.3.1 of the HCP/NCCP.
5. Estimated HCP/NCCP implementation fees due and/or documentation of proposed land dedication and/or proposed habitat restoration or creation, consistent with Section VIII of this ordinance.
6. Other information as directed by the Conservation and Development Director in accordance with the HCP/NCCP.

B. The County may grant take authorization to a project applicant only upon satisfaction of all of the following conditions:

1. The application for take authorization is deemed by the Conservation and Development Director to be complete.
2. The conditions of approval for the project require the project applicant to comply with all terms and conditions of the implementing Agreement, the HCP/NCCP, and the state and federal permits that apply to the project. These terms and conditions include but are not limited to the following:
  - a. Payment of the required HCP/NCCP implementation fees and/or approval by the County of an offer of land dedication and/or habitat restoration or creation, pursuant to the requirements of Section VIII of this ordinance.
  - b. Compliance with all relevant surveys, monitoring, avoidance, minimization and conservation measures determined by the Conservation and Development Director to apply to the project, pursuant to Chapter 6 of the HCP/NCCP.
  - c. The County determines that extension of take authorization is consistent with the HCP/NCCP, implementing Agreement, the state and federal permits, and all applicable federal, state, and local laws and regulations.

**SECTION XI. JUDICIAL REVIEW.** Any judicial action or proceeding to attack, review, set aside, void, or annul the fees established by this ordinance must be commenced within one hundred twenty (120) days after the effective date of this ordinance. Any action to attack an increase adopted pursuant to Section IX must be commenced within one hundred twenty (120) days after the effective date of the increase.

**SECTION XII. REPEAL.** Except as specified in this Section XII and Section XIII, below, Ordinance No. 2007-53 is hereby repealed and superseded by this ordinance, as of the effective date of this ordinance. However, this repeal does not affect any fees that were imposed prior to the effective date of this ordinance, which fees shall be paid and collected under the provisions of Ordinance No. 2007-53.

**SECTION XIII. SEVERABILITY.** If any individual component of the HCP/NCCP implementation fees or any provision of this ordinance is held invalid or unenforceable by a court of competent jurisdiction, that holding shall not affect the validity or enforceability of the remaining fee components and/or ordinance provisions, and the Board declares that it would have adopted each part of this ordinance irrespective of the validity of any other part.

## **ORDINANCE NO. 2021-25**

Notwithstanding any other provision of this ordinance to the contrary, if a court of competent jurisdiction determines any fee set forth in Section VIII of this ordinance is invalid or unenforceable, the corresponding fee adopted by Ordinance No. 2007-53 shall be deemed not to have been repealed and shall remain in effect and subject to the remaining provisions of this ordinance. Notwithstanding any other provision of this ordinance to the contrary, if a court of competent jurisdiction determines this ordinance is invalid or unenforceable, Ordinance No. 2007-53 shall be deemed not to have been repealed and shall remain in full force and effect.

**SECTION XIV.**      **EFFECTIVE DATE.** This ordinance becomes effective 60 days after passage, and within 15 days after passage shall be published once with the names of supervisors voting for or against it in the East Bay Times, a newspaper published in this County.

PASSED on \_\_\_\_\_, by the following vote:

- AYES:
- NOES:
- ABSENT:
- ABSTAIN:

ATTEST:      MONICA NINO,      \_\_\_\_\_  
Clerk of the Board of Supervisors      Board Chair  
and County Administrator

By:      \_\_\_\_\_      [SEAL]  
Deputy

KCK:  
Ordinance No. 2021-25 HCP.NCCP Fee Update.docx

Exhibit A

Development Fee Zones

*(adapted from Figure 9-1 of the HCP/NCCP)*

Figure 9-1: Development Fee Zones

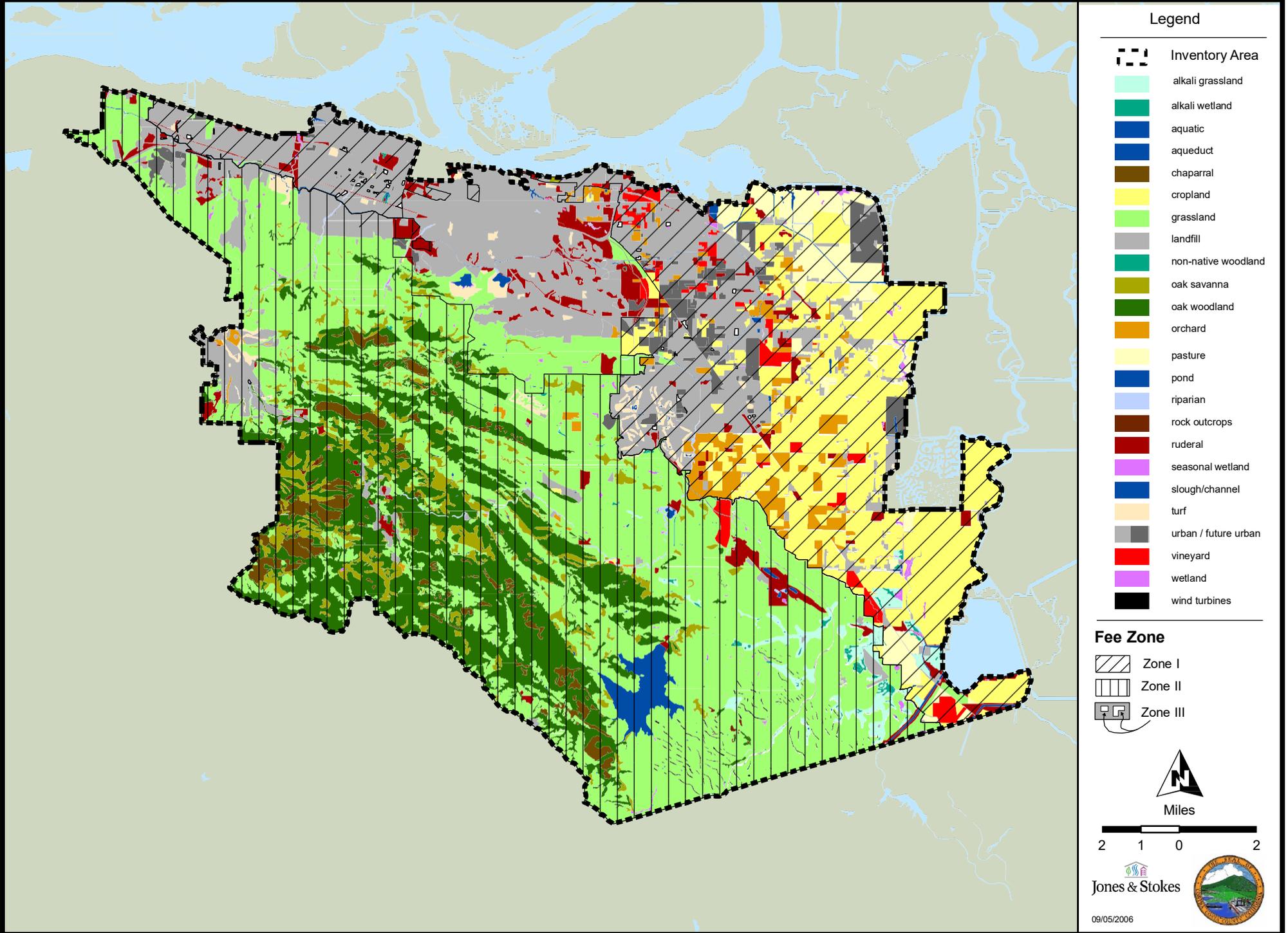
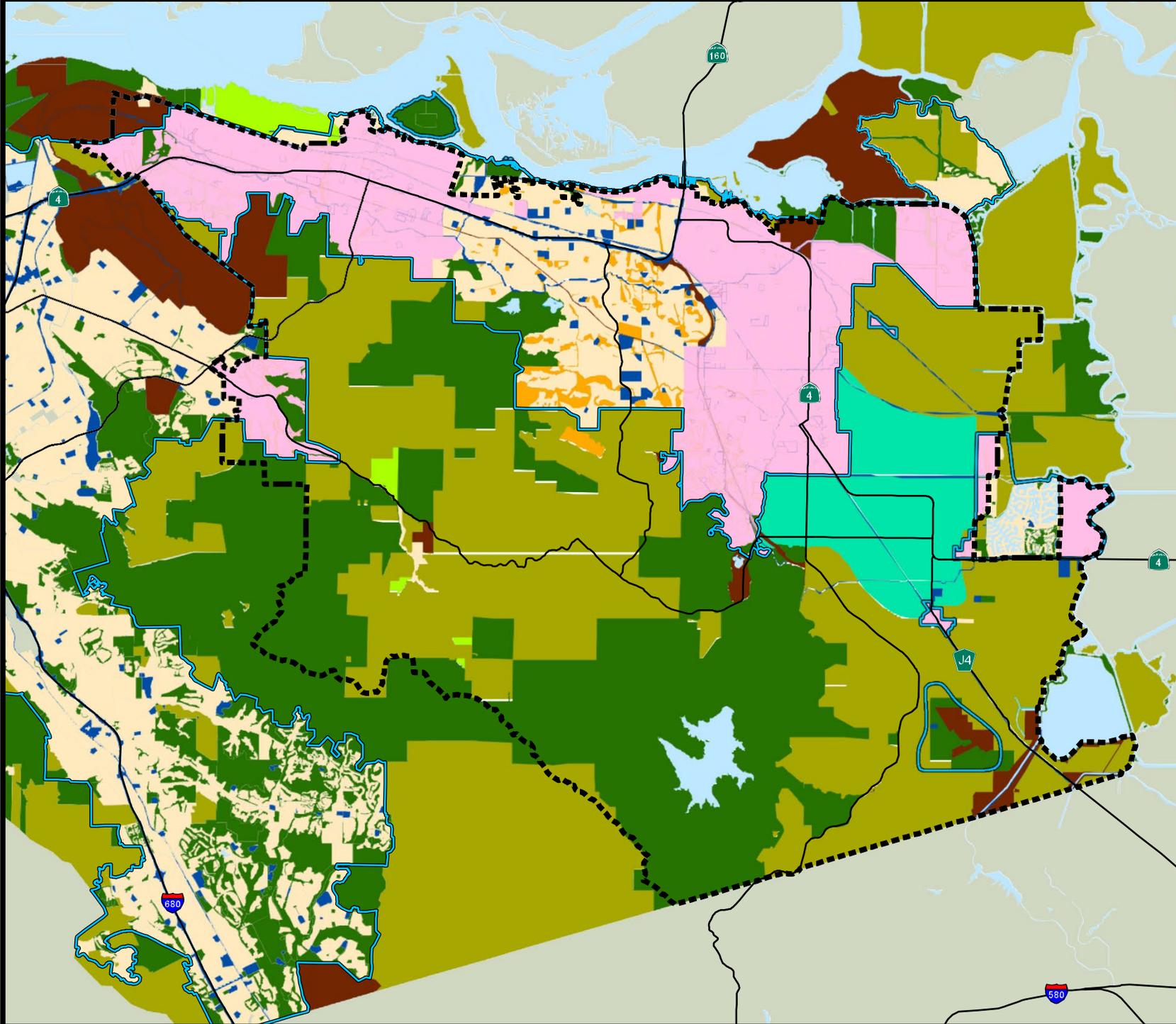


Exhibit B

Initial Urban Development Area  
*(Figure 2-3 of the HCP/NCCP)*

Figure 2-3: Initial Urban Development Area



Legend

-  Inventory Area
-  County Urban Limit Line
-  Initial Urban Development Area

Land Use Designations \*  
For Areas Outside  
Initial Urban Development Area

-  Agricultural Core
-  Agriculture
-  Development
-  Open Space (Designated in General Plan)
-  Parks, Public Watershed Lands, and Deed Restricted Open Space
-  Urban Parks & Open Spaces (in Inventory Area)
-  Public Facilities
-  Public Facilities with Undeveloped Land
-  Water

\* Land Use Designations were derived from County and City General Plan Maps. Designations were combined to create a simpler map.



Miles



Jones & Stokes



## Exhibit C

### Wetland Mitigation Fee and Acreage Determination Methods (adapted from Table 9-5 of the HCP/NCCP to reflect the fee amounts applicable after the effective date of this Ordinance 2021-25)

Land Cover Type	Fee per unit of Impact	Method for Determining Fee Boundary
Riparian woodland/scrub	\$101,220.24/acre	Limit of tree or shrub canopy (drip line)
Perennial wetlands	\$153,401.41/acre	Jurisdictional wetland boundary of state or federal government <sup>1</sup> , whichever is greater
Seasonal wetland	\$358,985.11/acre	Same as above
Alkali wetland	\$362,908.51/acre	Same as above
Ponds	\$197,540.18/acre	Jurisdictional waters boundary of state or federal government <sup>1</sup> , whichever is greater
Aquatic (open water)	\$98,770.65/acre	Wetted area during normal rainfall year or jurisdictional waters boundary, whichever is greater
Slough/channel	\$141,043.28/acre	Area of impact within banks
Streams		
Streams 25 feet wide or less	\$520.50/linear foot	Stream length measured along stream centerline. Stream width measured between top of bank.
Streams greater than 25 feet wide <sup>2</sup>	\$781.31/linear foot	Stream length measured along stream centerline. Stream width measured between top of bank.

<sup>1</sup> Using methods for determining state and federal jurisdictional wetlands and waters at the time of HCP/NCCP approval.

<sup>2</sup> Impact fee for wider streams is 1.5 times the base stream fee to account for higher construction costs on wider streams.

## Exhibit D

### Fee Adjustment Indices

*(adapted from Table 9-7 of the HCP/NCCP to reflect the fee adjustment procedures applicable after the effective date of this Ordinance 2021-25)*

Fee	Annual Adjustment Index <sup>1</sup>	Average Annual Rate (2006-2020) <b>Example</b>
<b>Development Fee</b>		
Portion for Land Acquisition <sup>2</sup> (62.52 % initially <sup>3</sup> )	Change in the annual Home Price Index (HPI) for the Oakland-Berkeley-Livermore, CA Metropolitan Division (MSAD) for the prior calendar year (Office of Federal Housing Finance Agency) <sup>4</sup>	3.05%
Portion for Preserve System Operation, Restoration, and Maintenance (37.48% initially <sup>3</sup> )	Change in the Consumer Price Index for the San Francisco-Oakland-Fremont Combined Statistical Area for all urban consumers for the prior calendar year (U.S. Bureau of Labor Statistics) <sup>5</sup>	2.64%
Wetland Mitigation Fee	Change in the Consumer Price Index for the San Francisco-Oakland-Fremont Combined Statistical Area for all urban consumers for the prior calendar year (U.S. Bureau of Labor Statistics) <sup>5</sup>	2.64%

Note:

- <sup>1</sup> HCP/NCCP fees to be adjusted automatically by March 15 of every year based on the indices for the prior calendar year. See Appendix G of the HCP/NCCP for more details on methodology and sources.
- <sup>2</sup> Direct land acquisition costs only. Excludes costs associated with land transaction, site improvements, and due diligence (e.g., pre-acquisition surveys).
- <sup>3</sup> The portion of the Development Fee that will be adjusted according to the HPI and CPI will vary over time. For the first annual automatic adjustment following the effective date of this Ordinance No. 2021-25, 62.52% of the initial fees will be adjusted according to the HPI and 37.48% will be adjusted according to the CPI. The apportionment in subsequent years will depend on the relative values of the indices, in accordance with the formula provided in Exhibit E.
- <sup>4</sup> See <https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#atvolData>. Data for the prior calendar year are published in March. To calculate automatic adjustments, the change in the HPI for the prior calendar year will be used.
- <sup>5</sup> Consumer Price Index, All Items, with base data year of 1982-1984 (i.e., 1982-1984 = 100), for all urban consumers (CPI-U), not seasonally adjusted. See [http://www.bls.gov/eag/eag.ca\\_sanfrancisco\\_msa.htm](http://www.bls.gov/eag/eag.ca_sanfrancisco_msa.htm).

## Exhibit E

### Automatic Development Fee Increase Formula

*(adapted from Table 9-7 of the HCP/NCCP to reflect the fee amounts applicable after the effective date of this Ordinance 2021-25)*

$$Fee_n = [[L_{n-1} * (HPI_{n-1}/HPI_{n-2})] + [S_{n-1} * (CPI_{n-1}/CPI_{n-2})]] * Z$$

Where:

n = year of HCP/NCCP Implementation [year 1 (n=1) is 2007, the calendar year in which the HCP/NCCP implementation ordinance was adopted; year 2 (n = 2) is 2008; etc. Year 0 (n=0) is 2006. Year 15 (n=15) is 2021.]

Fee<sub>n</sub> = Development Fee for year n (the Development Fee for year n applies from March 15 of year n through March 14 of the following year)

Fee<sub>15</sub> = \$33,780.93 for Zone II; \$16,890.46 for Zone I; and \$8,445.23 for Zone III

$$L_n = [L_{n-1} * (HPI_{n-1}/HPI_{n-2})] * Z$$

L<sub>n-1</sub> = Land acquisition portion of development fee for the year prior to year n

$$L_{15} = 62.52\% \text{ of } \$33,780.93 = \$21,119.94$$

HPI<sub>n-1</sub> = Home Price Index (HPI) for the Oakland-Berkeley-Livermore, CA Metropolitan Division (MSAD) at the end of the calendar year prior to year n as published by the Office of Federal Housing Finance Agency

$$S_n = [S_{n-1} * (CPI_{n-1}/CPI_{n-2})] * Z$$

S<sub>n-1</sub> = Non-land acquisition portion of development fee for the year prior to year n

$$S_{15} = 37.48\% \text{ of } \$33,780.93 = \$12,660.99$$

CPI<sub>n-1</sub> = Consumer Price Index for the San Francisco-Oakland-Fremont Combined Statistical Area for all urban consumers at the end of the calendar year prior to year n as published by U.S. Bureau of Labor Statistics

Z = Fee zone factor (based on which fee zone the project is in (see Figure 9-1 in the HCP)). The fee zone factors for the three zones are as follows:

Z = 1 for Zone II, the Natural Lands Zone

Z = 0.5 for Zone I, the agricultural lands zone

Z = 0.25 for Zone III, the infill zone

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**EAST CONTRA COSTA  
COUNTY HCP / NCCP  
MITIGATION FEE AUDIT  
AND NEXUS STUDY**

**FINAL REPORT**

*Prepared For:*

East Contra Costa County Habitat Conservancy

*Prepared By:*

Robert D. Spencer, Urban Economics

Sally E. Nielsen, Hausrath Economics Group

*June 2017 (revised)*

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## EXECUTIVE SUMMARY

The purpose of this report is to present the findings, conclusions, and recommendations of an audit of mitigation fees that partially fund the *East Contra Costa Habitat Conservation Plan and Natural Community Conservation Plan* (the Plan). The purpose of this audit is to fulfill the requirements of the periodic audit requirements of the Plan. The audit also provides the basis for findings required by the Mitigation Fee Act (MFA) related to the mandatory five-year review and any action establishing, increasing, or imposing a fee (commonly referred to as a “nexus analysis”).

Revenue sources to fund estimated Plan costs during the 30-year permit term include four types of mitigation fees:

- ♦ Development Fee
- ♦ Wetland Mitigation Fee
- ♦ Rural Infrastructure Fee
- ♦ Temporary Impact Fee.

Covered activities that cause permanent impacts pay the development fee or rural infrastructure fee depending on location (inside or outside the Urban Development Area or “UDA”). Covered activities that cause temporary impacts pay the temporary impact fee regardless of location. All projects that cause impacts on aquatic land cover types pay the wetland mitigation fee in addition to the applicable development or rural infrastructure fee. **Table E.1** summarizes how the four types of mitigation fees are applied to covered activities based on location and type of impact.

**Table E.1: Application of Mitigation Fees to Covered Activities**

Type of Impact	Location of Impact	
	Inside UDA	Outside UDA
<b>Permanent</b>	<ul style="list-style-type: none"> <li>♦ Development fee</li> <li>♦ Wetland mitigation fee (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>♦ Rural infrastructure fee</li> <li>♦ Wetland mitigation fee (if applicable)</li> </ul>
<b>Temporary</b>	<ul style="list-style-type: none"> <li>♦ Temporary impact fee (plus temporary wetland mitigation fee if applicable)</li> </ul>	

Note: “UDA” is the urban development area.

This audit represents a significant turning point for implementation of the 2006 Plan. For the first time, this audit includes funding for post-permit term costs in perpetuity. Furthermore, this development of the funding plan is occurring five years prior to when it is required by the Plan.

Funding for post-permit term costs is required by the Plan but the Plan allowed the obligation to be deferred until year 15 of implementation, or when half of the impacts allowed under the permit occur, whichever comes first. This audit identifies available funding to provide the endowment with an opening balance. Combined with revenue contributions through year 30 from mitigation fees and possibly other funding sources, the endowment would grow with re-invested earnings. Following year 30 the endowment would be of a size sufficient to fully fund post-permit management and monitoring costs in perpetuity with adjustments for inflation.

The results of the audit in terms of a revised development fee schedule are compared to current adopted fees in **Table E.2**. The development fee is also the basis for the rural infrastructure and temporary fees so the same trends would apply to those fees as well. The "Cities/County" fees are imposed by Permittees (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. The "Conservancy" fees reflect the results of the 2013 audit and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee. Most covered activities are currently paying the "Cities/County" fee.

**Table E.2: Development Fee Comparison**

Zone	Current Fee (2017)		Fee Audit (2017)	Fee Audit Compared To:	
	Cities/County	Conservancy		Cities/County	Conservancy
Zone 1	\$14,711	\$ 13,491	\$14,078	(4.3%)	4.4%
Zone 2	\$29,423	\$ 26,983	\$28,156	(4.3%)	4.3%
Zone 3	\$ 7,356	\$ 6,746	\$ 7,039	(4.3%)	4.3%

Note: "Cities/County" fees are imposed by Permittees (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. "Conservancy" fees reflect the results of the 2011 and 2013 audits and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee.

Sources: Table 6.3.

As shown in the table, the recommended development fee, which includes necessary funding for the endowment, is about four percent higher than current fees imposed directly by the Conservancy, and four percent lower than fees currently imposed by participating cities and the County.

Required future revenue contributions to the endowment represent about 20 percent of total remaining Plan costs for years 10-30. Current development

fees require only a modest adjustment despite this additional cost because of cost savings over the 30-year permit term. These cost savings come primarily from the preserve management and maintenance cost category (see Chapter 3). Such savings were anticipated by the 2006 Plan as a source of funding for the endowment.

For the wetland mitigation fee the results of the audit are compared to the fees in the original Plan and the current adopted 2017 fees in **Table E.3**. The wetland mitigation fee is also the basis for the wetland mitigation component of the temporary fee so the same trends would apply to the wetland component of that fee as well.

**Table E.3: Wetland Mitigation Fee Comparison**

Land Cover Type		Current Fee (2017)		Fee Audit (2017)	Fee Audit Compared To:	
		Cities/County	Conservancy		Cities/County	Conservancy
Riparian	per acre	\$ 76,433	\$ 98,978	\$ 90,039	18%	(9%)
Perennial Wetland	per acre	\$104,593	\$145,423	\$136,456	30%	(6%)
Seasonal Wetland	per acre	\$226,617	\$337,101	\$319,330	41%	(5%)
Alkali Wetland	per acre	\$214,549	\$340,512	\$322,820	50%	(5%)
Aquatic (Open Water)	per acre	\$113,979	\$184,474	\$175,719	54%	(5%)
Aquatic (Open Water)	per acre	\$ 57,660	\$ 92,237	\$ 87,860	52%	(5%)
Slough / Channel	per acre	\$130,070	\$134,428	\$125,463	(4%)	(7%)
Streams (<=25 ft. wide)	per linear foot	\$ 623	\$ 376	\$463	(26%)	23%
Streams (>25 ft. wide)	per linear foot	\$ 939	\$ 564	\$695	(26%)	23%

Note: "Cities/County" fees are imposed by Permittees (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. "Conservancy" fees reflect the results of the 2011 and 2013 audits and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee.

Sources: Table 5.2.

Wetland mitigation fees imposed per acre by the Conservancy decline compared to current fees because of a more detailed approach to the use of inflation indices in this audit versus a more general (and appropriate) approach used for the annual fee adjustments. Fees imposed by the cities and the County increase primarily because the cities and the County have not yet adopted the revised rates developed by the 2013 audit.

## **1. INTRODUCTION**

The purpose of this report is to present the findings, conclusions, and recommendations of an audit of mitigation fees that partially fund the *East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan* (the Plan). This introduction provides background on the Plan and the Mitigation Fee Act (MFA), the state enabling statute for mitigation fees. This chapter also describes the purpose and scope of this audit and explains the general approach taken to complete the audit.

The purpose of this audit is to fulfill the requirements of the periodic audit requirements of the Plan.<sup>1</sup> The audit also provides the basis for findings required by the MFA related to any action establishing, increasing, or imposing a fee.

### **Background**

The Plan was completed in 2006 after an extensive planning process initiated in 1999 that built on prior efforts begun in 1995.<sup>2</sup> The Plan enables the protection of natural resources in Eastern Contra Costa County while streamlining the environmental permitting process for impacts on endangered species covered by the Plan. Adoption of the Plan allowed state and federal wildlife agencies to issue various permits for a 30-year term (the permit) allowing the incidental take of endangered species by projects and activities covered by the Plan. Covered activities include all ground- or habitat-disturbing activities, for example, urban development projects, public infrastructure projects, and ongoing infrastructure maintenance activities. Implementation of the Plan preserves specified natural lands in eastern Contra Costa County in perpetuity (the preserve system) to mitigate the impacts of covered activities on endangered species and contribute to their recovery.

The five local agencies responsible for implementing portions of the Plan that relate to the development entitlement process are the County of Contra Costa and the cities of Brentwood, Clayton, Oakley, and Pittsburg. The City of Antioch chose not to participate in the Plan. The five participating local agencies formed a joint powers authority in 2007 known as the East Contra

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<sup>1</sup> Jones and Stokes, “East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan”, prepared for the East Contra Costa County Habitat Conservation Plan Association (hereafter referred to in footnotes as “2006 Plan”), p. 9-31.

<sup>2</sup> 2006 Plan, Chapter 1, pp. 1-1 to 1-2.

Costa County Habitat Conservancy (the Conservancy) to perform the many implementation duties assigned to the “Implementing Entity” by the Plan.

The Conservancy’s fiscal year is from January 1 to December 31. The first (partial) year of operation was 2007. The Conservancy began collecting mitigation fees in 2008. Consistent with the financial planning presented in Chapter 9 of the Plan, 2007 is year 0, 2008 is year 1, 2016 is year 9, and the permit term would end in 2037, year 30. This audit is completed in year 10 (2017) as required by the Plan, and is based on data as of December 31, 2016 (year 9). The next audit is required in year 15, or 2022.

## Plan Mitigation Fees

Revenue sources to fund estimated Plan costs during the 30-year permit term include four types of mitigation fees:

- ◆ Development Fee
- ◆ Wetland Mitigation Fee
- ◆ Rural Infrastructure Fee
- ◆ Temporary Impact Fee.

The type of mitigation fee paid by a covered activity depends on the location of the activity and the type of impact (“impact” and “covered activity” are used interchangeably in this report). Location depends on whether the impact is located inside or outside the urban development area (UDA). The UDA is defined as (1) the County of Contra Costa urban limit line, or (2) the boundaries of the four cities implementing the Plan whichever is larger.<sup>3</sup> Applicants can dedicate land for the preserve system in lieu of paying the fee subject to approval by the Conservancy.

Covered activities that permanently remove habitat cause permanent impacts and pay the development fee or rural infrastructure fee, depending on location (inside or outside the UDA). Covered activities that temporarily disturb habitat cause temporary impacts pay the temporary impact fee regardless of location. All projects that cause impacts on aquatic land cover types (wetlands, ponds, and streams) pay the wetland mitigation fee in addition to the applicable development or rural infrastructure fee. **Table 1.1** summarizes how the four types of mitigation fees are applied to covered activities based on location and type of impact.

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<sup>3</sup> 2006 Plan, Chapter 2, pp. 2-16 to 2-18, Figure 2-3. Excludes City of Antioch that is not covered under the Plan.

**Table 1.1: Application of Mitigation Fees to Covered Activities**

Type of Impact	Location of Impact	
	Inside UDA	Outside UDA
<b>Permanent</b>	<ul style="list-style-type: none"> <li>♦ Development fee</li> <li>♦ Wetland mitigation fee (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>♦ Rural infrastructure fee</li> <li>♦ Wetland mitigation fee (if applicable)</li> </ul>
<b>Temporary</b>	<ul style="list-style-type: none"> <li>♦ Temporary impact fee (plus temporary wetland mitigation fee if applicable)</li> </ul>	

Note: "UDA" is the urban development area.

## Audit Objectives and Scope

The objectives of this audit are defined by the requirements of the Plan. The audit also provides the basis for findings required by the MFA related to the mandatory five-year review and any action establishing, increasing, or imposing a fee.

### **Periodic Audit Requirements of the Plan**

The Plan calls for periodic audits of the mitigation fees in years 3, 6, 10, 15, 20, and 25. The purpose of the audit is “[t]o ensure that the fees generated by development and other covered activities are adequately covering their share of Plan costs.”<sup>4</sup> The Plan calls for the audit to be completed by an outside independent financial auditor.

Audits must compare current actual costs to the cost assumptions used in the current mitigation fee calculation. The audit must review actual land acquisition costs as well as costs to operate, manage, and maintain the preserve system. The audit must recalculate fees based on this cost review to maintain mitigation fee funding as a share of total Plan costs based on the fair share allocation determined by the Plan.

In between periodic audits the Plan calls for automatic annual adjustments to the Plan’s mitigation fees. Annual adjustments are based on two inflation indices weighted by the appropriate Plan cost component reflected by each index.<sup>5</sup> A real estate cost index is used to update the land acquisition cost component reflecting more than half of total plan costs. The Consumer Price Index is used to update the share of fees funding the balance of Plan costs.

<sup>4</sup> 2006 Plan, Chapter 9, p. 9-31.

<sup>5</sup> 2006 Plan, Chapter 9, p. 9-30.

## **Mitigation Fee Act Requirements**

The mitigation fees collected pursuant to the Plan are authorized by California law under the Mitigation Fee Act (MFA) found in Sections 66000 through 66025 of the *California Government Code*. This audit provides a revised fee schedule based on updated cost data that proposes increasing the existing fee amount. Consequently, this audit must make the following four “reasonable relationship” or “nexus” findings that the MFA requires when increasing a fee:

*Sec. 66001(a) In any action establishing, increasing, or imposing a fee as a condition of approval of a development project by a local agency, the local agency shall do all of the following:*

*(1) Identify the purpose of the fee.*

*(2) Identify the use to which the fee is to be put. If the use is financing public facilities, the facilities shall be identified. That identification may, but need not, be made by reference to a capital improvement plan as specified in Section 65403 or 66002, may be made in applicable general or specific plan requirements, or may be made in other public documents that identify the public facilities for which the fee is charged.*

*(3) Determine how there is a reasonable relationship between the fee’s use and the type of development project on which the fee is imposed.*

*(4) Determine how there is a reasonable relationship between the need for the public facility and the type of development on which the fee is imposed.*

The following finding is not required though this audit makes this finding as well:

*Section 66001(b) In any action imposing a fee as a condition of approval of a development project by a local agency, the local agency shall determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.*

Each of these findings are made in association with the analysis of each fee in Chapters 5, 6, and 7.

## **Post-Permit Term Costs**

Chapter 9 of the Plan describes the funding sources and estimates the total revenue needed to fully fund Plan costs during the 30-year permit term. Following the end of the permit term the preserve system will need to be

managed and monitored in perpetuity to comply with the permit. Chapter 9 did not include a funding plan for post-permit term costs though it did identify a range of potential funding sources.<sup>6</sup> The Plan requires the Conservancy to develop a detailed plan for long-term funding before half of all authorized impacts occur (measured in acres) or at the end of year 15 of implementation, whichever occurs first.

For the first time in the Plan's history, this audit provides an updated fee schedule and funding plan that fully funds post-permit term costs, in advance of the year 15 deadline. Post-permit term costs are funded with an ongoing share of development fee revenue deposited into an endowment account. The endowment account would be actively managed in accordance with state law. Investment earnings would be reinvested and no withdrawals made through the end of the permit term in year 30. At that time, the endowment account balance is projected to be sufficient to generate a self-sustaining amount equal to annual post-permit term costs in perpetuity and adjusted for inflation.

### **Objectives and Scope**

The findings required by the MFA described above are similar in intent to the Plan's objectives for periodic audits. Both suggest the need to update the fee amount based on recent data and confirm the role of fee revenues in a reasonable funding plan. To address both the periodic audit requirements of the Plan and the findings required by the MFA, the objectives and scope of this audit are:

1. Update cost assumptions underlying the mitigation fees
2. Recalculate fee amounts
3. Affirm the reasonable relationship between new development and the need for the fee, the amount of the fee, and the use of fee revenues
4. Update the funding plan including sources and amounts of anticipated non-fee revenue
5. Incorporate post-permit term costs.

This audit uses the most recently available data on financial transactions and covered activities through December 31, 2016.

This audit is not a comprehensive audit of the Conservancy's finances. The Conservancy separately has an annual financial audit conducted by an outside auditor. This report utilizes this audited financial data. The financial and other data compiled for this audit represents a level of accuracy sufficient to

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<sup>6</sup> 2006 Plan, Chapter 9, pp. 9-40 to 9-42 and Table 9-9.

recalculate the mitigation fees and update the funding plan based on the five-year audit and reasonable relationship requirements of the MFA.

### ***Organization of the Audit***

Covered activities (impacts) under the Plan for years 1-9 are summarized in Chapter 2 as well as remaining impacts through the 30-year permit term. The update to the cost model used to estimate implementation costs of the Plan is presented in Chapter 3. Chapter 4 describes post-permit term costs and funding of an endowment.

Updates to the four fees are presented in Chapters 5 through 7. The wetland mitigation fee is calculated independently of the other fees based on estimated costs to restore/create wetlands in proportion to the amount of impact. The development fee is calculated based on urban development's fair share of total Plan costs net of wetland mitigation costs. Thus, the wetland mitigation fee analysis is presented in Chapter 5 and the development fee analysis is presented in Chapter 6. The other two fees, rural infrastructure and temporary impact, use the same rates as the development and wetland mitigation fees applied to rural infrastructure impacts and temporary impacts, respectively. Thus, these fees require no additional fee calculation. These fees are discussed in Chapter 7.

The updated 30-year funding plan based on revised cost and revenue estimates is presented in Chapter 8.

## 2. IMPACTS

This section of the audit describes the impacts that have occurred to date during the years 1-9 of the Plan (2008-2016). This section also identifies the remaining impacts to be accommodated by the Plan's implementation based on the total amount of impacts covered by the Plan.

The Plan uses the amount of acreage from urban development and rural infrastructure projects and activities as the primary unit of measurement for impacts. The Plan uses linear feet to measure stream impacts subject to the additional wetland mitigation fee.

### Urban Development Area (UDA)

The boundaries of the UDA are subject to change over time based on local land use policy decisions by the five agencies implementing the Plan. Thus, boundary changes could lead to changes in the land use capacity for, and eventual amount of, urban development.

To accommodate the uncertainty regarding the amount of urban development that would be covered under the Plan, the Plan uses two scenarios to “book end” the potential urban development levels:

- ◆ The initial UDA is defined by the County of Contra Costa urban limit line and the boundaries of the cities of Brentwood, Clayton, Oakley, and Pittsburg existing at the time the Plan was adopted.<sup>7</sup>
- ◆ The maximum UDA is the maximum development capacity for urban development under the terms of the permit. Although boundaries are not defined development capacity considers areas outside the initial UDA proposed for future development in the general plans of Brentwood, Clayton, Pittsburg, and the County. The maximum development capacity is consistent with the biological goals and objectives of the Plan.

The urban development area covered under the Plan at the end of the permit term could fall anywhere in the range defined by the initial urban development area and the maximum urban development area. The Plan does not define the precise boundaries of the maximum UDA because the ultimate boundaries depend on local land use decisions occurring during the permit term. Rather, the Plan defines the maximum number of acres under the maximum UDA covered under the Plan. The conservation requirements of the Plan are greater

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<sup>7</sup> Excluding some areas within the County urban limit line surrounding the Byron Airport. See 2006 Plan, p. 2-17.

for the maximum UDA compared to the initial UDA to accommodate the greater impacts under the maximum UDA scenario.

## Development Fee Zones

The development fee is implemented based on three fee zones defined by the Plan.<sup>8</sup> A map of the zones is provided in Figure 9-1 of the Plan. The zones represent varying levels of impacts on covered species and natural habitats caused by urban development and rural infrastructure activities and projects. The development fee is lowest in the zone where development would have the least impacts and highest in the zone where development would have the greatest impacts. The zones generally correspond to the dominant land cover type and habitat and open space value. Below is a summary of the zones:

- ◆ Zone I: Cultivated and disturbed lands, primarily areas in agricultural use and some undeveloped areas within existing urban areas.
- ◆ Zone II: Natural areas where lands are dominated by natural land cover types.
- ◆ Zone III: Small vacant lots (less than 10 acres) within the initial UDA.

The lowest development fee is in Zone III because the habitat and open space value is lowest on vacant land within existing developed areas. As the Plan states in Chapter 4, “[d]evelopment of these areas will result in loss of open space and some habitat values, but impacts will be less than those in Zone I and substantially less than those in Zone II.”<sup>9</sup> An acre of permanent impacts in Zone III is given a weight of **one** for the purposes of allocating the fair share of total plan costs to the development fee.

The highest fee is in Zone II because this predominantly natural area has the highest habitat value. The dominant land cover type is annual grassland that covers 34 percent of the land included in the Plan’s inventory area, and the greatest impacts in Zone II are in this land cover type. Chapter 4 of the Plan references the importance of annual grassland throughout its detailed analysis of impacts on covered species and critical habitats.<sup>10</sup> An acre of permanent impacts in Zone II is given a weight of **four** for the purposes of allocating the fair share of total plan costs to the development fee (four times the weight of impacts in Zone III).

The amount of the Zone I fee is between the fees in the other two zones because cultivated and other disturbed uses have greater habitat value than

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<sup>8</sup> 2006 Plan, Chapter 9, pp. 9-20 to 9-21.

<sup>9</sup> Ibid.

<sup>10</sup> 2006 Plan, Chapter 4, pp. 4-14 to 4-22.

vacant lots but less value than natural areas. Chapter 4 of the Plan includes several findings to support this approach.<sup>11</sup> An acre of permanent impact in Zone I is given a weight of **two** for the purposes of allocating the fair share of total plan costs to the development fee (twice the weight of impacts in Zone III and half the weight of impacts in Zone II).

The fee zone map in the Plan (Chapter 9, Figure 9-1) is the sole determination of the fee zone applicable to a project or other covered activity.<sup>12</sup> The zones represent predominant land cover types, as described above, and the relative level of impact per acre from covered activities within a zone. Individual parcels within a zone will have greater or lesser impact on covered species, natural communities, and open space. An individual parcel in zone A, for example, may have characteristics like land cover types in zone B. However, the parcel's location adjacent to lands within zone A combined with the benefits of contiguous open space to meeting the Plan's objectives, provides reasonable justification to include the parcel in zone A. The mapping of the zones was completed at a level of detail sufficient to provide a reasonable relationship between all land within a specific zone and the relative weight of impacts assigned to that zone.<sup>13</sup>

## Summary of Impacts to Date

Impacts to date (2008-2016) are shown in **Table 2.1**. As explained in Chapter 1 (see Table 1.1) impacts fees were paid on these covered activities (impacts) as follows:

- ◆ Permanent impacts within the UDA paid the development fee on covered activities based on the three fee zones.
- ◆ Rural infrastructure impacts paid the rural infrastructure fee.
- ◆ Temporary impacts paid the temporary impact fee.
- ◆ Impacts to aquatic land cover types paid the wetland mitigation fee in addition to the applicable development, rural infrastructure, or temporary impact fee.

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<sup>11</sup> 2006 Plan, Chapter 4, pp. 4-6, 4-15, and 2006 Plan, Appendix D, *Species Profiles*.

<sup>12</sup> 2006 Plan, Chapter 9, p. 9-20.

<sup>13</sup> See, for example, 2006 Plan, Chapter 3, pp. 3-2 to 3-5.

**Table 2.1: Covered Activities, Years 1-9 (2008-2016)**

	Land Conversion (acres)	Aquatic Impacts <sup>1</sup>	
		Wetlands (acres)	Streams (linear feet)
<b>Permanent Impacts</b>			
Urban Development Area (UDA)			
Zone 1	411.99		
Zone 2	34.19		
Zone 3	<u>12.46</u>		
Subtotal UDA	458.64		
Rural Infrastructure (outside UDA) <sup>2</sup>	<u>73.06</u>		
Total Land Conversion	531.70		
Aquatic			
Wetlands		1.83	
Streams (linear feet)			923.31
<b>Temporary Impacts</b>			
All Land Cover	429.30		
Wetlands		5.99	
Streams (linear feet)			4,517.70

<sup>1</sup> Aquatic impacts (wetlands and streams) are included in land conversion impacts. Aquatic impacts pay wetland fees in addition to land conversion fees.

<sup>2</sup> Covered activities occurring outside the UDA could occur in either zones 1 or 2. Includes rural road projects as shown in Table 9-6 of the 2006 Plan, plus rural infrastructure projects and activities, and activities within the preserve system (see Sections 2.3.2 through 2.3.4 of the 2006 Plan).

Sources: Appendix A, Table A.1.

See **Table A.1** in **Appendix A** for a detailed list of covered activities to date.

## Remaining Permanent Impacts Under the Plan

The Plan allows for a fixed amount of permanent impacts within the UDA and from rural infrastructure. Permanent impacts are used to calculate and update the development fee. The remaining permanent impacts allowed under the Plan in years 10-30 are summarized in **Table 2.2** by subtracting impacts to date (Table 2.1) from the total impacts allowed for the 30-year permit term. The table applies the weighting factors by zone discussed above. The result is the total acreage of permanent impacts with the UDA remaining under the Plan weighted by the relative impact in each zone. This total for the maximum and initial UDAs is used to allocate costs to the development fee in Chapter 5.

**Table 2.2: Permanent Impacts (acres)**

	Zone 1	Zone 2	Zone 3	Subtotal	Share	Outside UDA	Total <sup>1</sup>	Share
<b>Permit Limits (Years 1-30)</b>								
Initial UDA	6,198	2,306	166	8,670	100.0%	1,126	9,796	100.0%
Maximum UDA	7,507	4,180	166	11,853	100.0%	1,126	12,979	100.0%
<b>Actual Impacts to Date (Years 1-9, through 2016)</b>								
Initial UDA	412	34	12	458	5.3%	73	531	5.4%
Maximum UDA	412	34	12	458	3.9%	73	531	4.1%
<b>Remaining Impacts (Years 10-30)</b>								
Initial UDA	5,786	2,272	154	8,212	94.7%	1,053	9,265	94.6%
Maximum UDA	7,095	4,146	154	11,395	96.1%	1,103	12,448	95.9%
<i>Impact Weighting Factor<sup>2</sup></i>	2	4	1					
<b>Permit Limits - Equivalent Acres (Years 1-30)</b>								
Initial UDA	12,396	9,224	166	21,786	100.0%			
Maximum UDA	15,014	16,720	166	31,900	100.0%			
<b>Actual Impacts to Date - Equivalent Acres (Years 1-9, through 2016)</b>								
Initial UDA	824	136	12	972	4.5%			Not Available <sup>3</sup>
Maximum UDA	824	136	12	972	3.0%			
<b>Remaining Impacts - Equivalent Acres (Years 10-30)</b>								
Initial UDA	11,572	9,088	154	20,814	95.5%			
Maximum UDA	14,190	16,584	154	30,928	97.0%			

Notes: "UDA" is the urban development area.

The permit limits used to calculate the initial fees shown in Chapter 9, Table 9-4, and Appendix H of the 2006 Plan are revised to control to the totals in Chapter 4, Tables 4-2 and 4-3, of the 2006 Plan (14 acres less for the Initial UDA and 26 acres less for the Maximum UDA). These adjustments are made to zone 1 though they could be allocated to any zone within the UDA.

<sup>1</sup> Table 4-3 in Chapter 4 of the 2006 Plan appears to have a mathematical error for the maximum UDA permit limit, showing 13,029 acres instead of 12,979.

<sup>2</sup> Weighting factor reflects relative impacts by zone (see 2006 Plan, Appendix H). Equivalent acres for impacts outside the UDA not calculated because impacts occur in both zones 1 and 2.

<sup>3</sup> The 2006 Plan did not identify the location of all covered activities occurring outside the UDA by zone, except for rural road projects (see Table 9-6 of the 2006 Plan). Includes rural infrastructure projects and activities, and activities within the preserve system (see Sections 2.3.2 through 2.3.4 of the 2006 Plan).

Sources: 2006 Plan, Tables 4-2 and 4-2, Table 9-4 (revised), and Appendix H, Table 1; Table 2.1.

Table 2.2 shows 12,979 acres for the permit limit under the maximum UDA. Table 4-3 in the 2006 Plan shows 13,029. There appears to be an addition error in the Table 4-3 that included an extra 50 acres. These 50 acres are excluded in Table 2.2. The Conservancy should consult with the Permittees and the wildlife agencies to resolve this issue. The difference has no impact on any of the analyses for this audit, including the cost model update, the mitigation fee calculations, or other revenue estimates developed for the funding plan.

Impacts to aquatic land cover types (wetlands, ponds, and streams) are shown in **Table 2.3**. This audit contains the same adjustment made by the 2013 audit to total acres of restoration/creation assumed in the 2006 Plan cost model to be consistent with Tables 5-16 and 5-17 in Chapter 5 of the Plan. Estimated

compensatory restoration/creation acreage for seasonal wetlands under the maximum UDA scenario was adjusted to match the 2:1 mitigation ratio applied to the acres of impact shown in the tables. Also, consistent with Plan assumptions, a 30 percent reduction was made to the estimate of compensatory restoration/creation acreage (not contribution to recovery acreage) for the perennial, seasonal, and alkali wetlands to reflect overestimates due to mapping of these areas.<sup>14</sup>

**Table 2.3: Wetland Impacts**

	Estimated Impacts (Years 1-30) <sup>1</sup> (acres or linear feet)		Actual Wetland Impacts (Years 1-9) <sup>2</sup>	Estimated Impacts (Years 10-30) (acres or linear feet)	
	Initial UDA	Maximum UDA		Initial UDA	Maximum UDA
<b>Impacts Based on Acres</b>					
Riparian	30.00	35.00	1.08	28.92	33.92
Perennial Wetland	22.20	22.50	0.07	22.13	22.43
Seasonal Wetland	14.00	18.67	0.38	13.62	18.29
Alkali Wetland	9.33	10.33	0.14	9.19	10.19
Pond	7.00	8.00	0.10	6.90	7.90
Aquatic (Open Water)	12.00	12.00	-	12.00	12.00
Slough / Channel	72.00	72.00	0.07	71.93	71.93
Subtotal (acres)	166.53	178.50	1.83	164.70	176.67
<b>Impacts Based on Linear Feet</b>					
Streams (<=25 ft. wide)	21,120	26,400	677	20,443	25,723
Streams (>25 ft. wide)	3,168	4,224	246	2,922	3,978
Subtotal (linear feet)	24,288	30,624	923	23,365	29,701

Note: "UDA" is the urban development area.

Impacts includes wetland impacts outside the UDA because these impacts are counted against the estimates of permanent impacts in the 2006 Plan (see Tables 5-16 and 5-17).

<sup>1</sup> Discrepancies in the 2006 Plan in Appendix G, Wetland Fee Worksheet are corrected to be consistent with Chapter 5, Tables 5-16 and Table 5-17. Perennial, Seasonal, and Alkali wetland impacts reduced by 70 percent to account for overestimates in mapping analysis (see Tables 5-16 and 5-17, footnote 2, and the original Wetland Fee Worksheet in the Plan, footnotes 12 and 13), Stream impacts are added that were not included in the Wetland Fee Worksheet.

Source: 2006 Plan, Tables 5-16 and 5-17; Appendix A, Table A.1.

<sup>14</sup> For seasonal wetlands, the total restored acreage for the initial [maximum] UDA scenario equals 45.2 [53.6] acres based on: (42 [56] impact acres x 2:1 mitigation ratio x 30 percent adjustment for mapping overestimate) + 20 acres contribution to recovery. See Tables 5-16 and 5-17 and Appendix G of the Plan.

### 3. COST MODEL

This chapter presents a summary of the updated cost models for the 30-year permit term. As shown in Appendix G of the Plan a separate cost model is used for the initial and maximum UDAs to account for the difference in preserve system size and other differences in the conservation requirements of the Plan. The two models are identical in structure. The difference in cost between the two models is primarily related to the effect of different land acquisition and restoration requirements for the preserve system under each scenario.

#### General Approach

The cost model was updated based on provisions in the Plan for periodic audits. The original model is documented in Appendix G of the Plan. For this 2017 update, cost model revisions were made to the latest version of the model developed for the 2013 audit. The model for each scenario (initial and maximum UDA) includes approximately 30 pages of linked spreadsheets (see **Appendix C and Appendix D**). Total costs for the permit term are the sum of actual costs to date (through December 31, 2016) and remaining costs through the end of the permit term. All costs are expressed in 2016 dollars to support calculation of the mitigation fees.

Actual costs through December 31, 2016 were adjusted to 2016 dollars using changes in the Conservancy's mitigation fee schedule, thus replicating the same index used to reflect inflation in Plan costs. The Conservancy's fees are adjusted annually based on published price indices and periodically based on prior audits (the 2011 and 2013 audit).<sup>15</sup>

Remaining costs through the end of the permit term were updated based on recent cost experience and application of appropriate inflation indices to assumptions in the 2013 audit model, as explained in more detail in the following section of this chapter.

The models provide budgets for the following nine cost categories related to Plan implementation:

1. Program administration
2. Land acquisition
3. Planning and design
4. Habitat restoration/creation

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<sup>15</sup> See the 2006 Plan, Chapter 9, pp. 30-31 and Table 9-7, and Appendix F, Table F.1.

5. Environmental compliance
6. Preserve management and maintenance
7. Monitoring, research, and adaptive management
8. Remedial measures
9. Contingency.

A separate endowment model was built for this audit and is described in the following chapter (Chapter 4).

## Land Acquisition Costs

Land acquisition is the Plan's largest cost category representing about 64 percent of total costs excluding endowment costs. Substantial effort was expended during the audit to update costs to reflect current market conditions and recent Conservancy land acquisition experience.

For this audit, Conservancy staff prepared an updated acquisition model for both the initial and maximum UDA scenarios. The model evaluates the characteristics of potential preserve land against preserve targets and acquisitions that have already occurred. The 2006 plan indicates a range of total acreage needed to achieve the various habitat acquisition requirements of the Plan. Total acquisition costs assumed in the cost model for the Plan and in the 2013 audit were based on a mid-point estimate. The improved mapping used for this audit found that the number of acres needing to be acquired would likely be at the high end of the range rather than the mid-point. Acquisition costs for this audit are based on acquiring about 15 percent more preserve acres in both the initial and maximum UDA scenarios than was the case in 2006 and 2013.

The Conservancy, working with East Bay Regional Park District, has been very successful in acquiring preserve system lands since the Plan's implementation. Through year 9 (2016) the Conservancy has acquired approximately 10,987 acres, or 36 and 45 percent and of the preserve system required under the maximum and initial UDA scenarios, respectively. These totals exclude (1) acquired lands that cannot be credited to the preserve system because of existing conservation easements mitigating habitat impacts that occurred prior to Plan adoption<sup>16</sup> and (2) parts of acquired parcels that lie outside plan acquisition zones.

A database of over 90 land transactions in East Contra Costa County, most within the past five years, was compiled from a variety of sources to estimate costs per acre for future preserve system acquisitions. This database included

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<sup>16</sup> Unless those pre-Plan impacts were also counted against the Plan's permit limits.

32 East Bay Regional Park District acquisitions (most of which were performed in partnership with the Conservancy), plus acquisitions by Save Mount Diablo (local nonprofit land trust organization), the Contra Costa Water District, and land transactions identified in the County Assessor's database. Land costs for developable parcels within the urban limit line that are part of the Conservancy's acquisition strategy were updated based on current housing values. Detailed data on the transactions used to update the cost model land cost factors are provided in **Appendix B**.

As shown in **Table B.2** in Appendix B estimated land costs per acre have generally increased since 2012 when land prices reflected the fall off in demand due to the Great Recession. Since then, prices for larger parcels outside the urban limit line have increased between 20 and 50 percent, and prices for smaller parcels 10 acres or less have decreased about 20 percent. The fluctuation in prices for smaller open space parcels is because there are notably fewer transactions of this type and the characteristics of each parcel are more variable. Inside the urban limit line, where a small fraction of the acquisition will occur and where prices more closely track changes in the housing market, estimated land costs have increased about 70 percent.

Consistent with changes made for the 2013 audit, due diligence costs are estimated based on a flat three percent charge on land acquisition costs and pre-acquisition surveys are a Conservancy staff cost. There is no contingency applied to land acquisition costs. Total remaining land acquisition costs to meet preserve system requirements were evenly spread across the remaining 21-year period of the 30-year permit term.

## Habitat Restoration/Creation Costs

Habitat restoration/creation is the second largest cost category of Plan implementation, representing 12 percent of total costs excluding endowment costs. Unit costs (costs per acre) for restoration of specific habitats are the basis for the wetland mitigation fee.

The most significant component of habitat restoration/creation costs is contract services to restore or create habitat across nine separate land cover types. The 2013 audit discovered that unit cost (costs per acre) assumptions in the 2006 Plan were significantly different than the Conservancy's actual experience through 2012. Based on a detailed review of actual restoration projects completed by the Conservancy and other agencies, the 2013 audit significantly increased unit costs for most land cover types.

For the current audit, we reviewed cost data for Conservancy restoration projects undertaken since 2012. Based on this review, unit costs in the 2013 audit for seven of the nine land cover types are updated by applying the California Construction Cost Index developed by the California Department

of General Services.<sup>17</sup> The remaining two land cover types (oak savanna and stream) are increased more than this inflation adjustment to reflect recent Conservancy cost experience and contractor experience on similar projects.

Unit costs for habitat restoration/creation construction are augmented by three types of soft costs:

- ◆ Construction-related costs including seven line items: plans and specifications, bid assistance, construction oversight, post-construction maintenance, environmental compliance, pre-construction surveys, and construction monitoring
- ◆ Conservancy staff and related costs
- ◆ Contingency.

Consistent with the 2013 audit, four of the construction-related cost line items (plans and specifications, bid assistance, construction oversight, and post-construction maintenance) are estimated as a percent of construction costs based on experience with how contractors structure their bids. Soft cost percentages remain the same as the 2013 audit except restoration plans and specifications costs are increased to account for the shift of restoration design preparation from the Planning and Design cost category, and construction oversight is increased from 7 to 10 percent to reflect more reliance on contractors than Conservancy staff positions in this cost category.

The remaining three line items (environmental compliance, pre-construction surveys, and construction monitoring) are estimated as dollar amounts per acre. These assumptions were updated for inflation.

Conservancy staff and related costs are updated based on current hourly costs per position and experience with allocation of staff time for habitat restoration/creation projects. Consistent with that experience, this update eliminates Conservancy senior scientist and technical support positions in restoration, showing these tasks as higher contractor costs for construction oversight, as noted above.

This audit eliminates the cost line items for vehicle purchase and vehicle fuel and maintenance that in prior models had been allocated between planning and design, restoration, and monitoring cost categories. These costs are included in the Conservancy staff overhead cost and contractor rates.

The contingency of 20 percent on habitat restoration/creation construction costs remain unchanged from the 2006 Plan and the 2013 audit. The contingency applies to habitat construction costs only and not soft costs or Conservancy staff costs. The contingency is higher than the five percent rate applied to other Plan implementation activities because of the high degree of

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<sup>17</sup> This index is based on building cost indices for San Francisco and Los Angeles published by the Engineering News-Record.

cost variation and uncertainty associated with habitat restoration/creation projects.

Habitat restoration/creation mitigation unit costs for aquatic land cover types estimated for this audit are shown in **Table 3.1**. The cost for open water is the same as the cost for ponds because the Plan calls for open water impacts to be mitigated by the creation of ponds. The table includes two costs for stream restoration, one based on stream widths of 25 feet or less, and one based on stream widths of greater than 25 feet.

## **Updates to Other Cost Categories**

Cost model changes to the other seven cost categories besides land acquisition and habitat restoration/creation are summarized in the following subsections.

### ***Program Administration***

The original 2006 model estimated staff costs based on direct salary costs plus benefits, and separately estimated overhead costs (human resources, information technology, office space, etc.). With the 2013 audit, Conservancy staff costs were budgeted based on a fully burdened hourly rate that includes benefits and all overhead costs and this audit maintains that approach. The staffing plan is updated to reflect experience with staff allocation by function and the ability to rely on fractions of a full-time employee. Other overhead costs such as travel, insurance, legal, and financial analysis and audits that are not included in Conservancy staff hourly rates are updated based on actual costs and projected needs.

### ***Planning and Design***

Based on current Conservancy practice, for the 2017 audit, the cost model eliminates Conservancy senior scientist staffing and to compensate increases contractor costs for management planning. Management planning costs anticipated by the Plan but not yet incurred are shifted to later in the permit period. Restoration planning costs are shifted to the Habitat Restoration/Creation cost category. Vehicle purchase, fuel, and maintenance costs are included in staff overhead cost and contractor rates.

**Table 3.1: Wetland Mitigation Costs (2016\$)**

<b>Cost Category</b>	<b>Cost Factor</b>	<b>Riparian (per acre)</b>	<b>Perennial Wetland (per acre)</b>	<b>Seasonal Wetland (per acre)</b>	<b>Alkali Wetland (per acre)</b>	<b>Pond (per acre)</b>	<b>Open Water (per acre)</b>	<b>Slough/Channel (per acre)</b>	<b>Stream<sup>2</sup> (per linear foot)</b>
Construction		\$42,200	\$68,800	\$82,100	\$83,100	\$91,300	\$91,300	\$62,500	\$234
Construction-related costs									
Plans, specs., allowance for remedial measures <sup>1</sup>	33%	13,926	22,704	27,093	27,423	30,129	30,129	20,625	77
Bid assistance <sup>1</sup>	1.5%	633	1,032	1,232	1,247	1,370	1,370	938	4
Construction oversight <sup>1</sup>	10%	4,220	6,880	8,210	8,310	9,130	9,130	6,250	23
Post-construction maint. <sup>1</sup>	10%	4,220	6,880	8,210	8,310	9,130	9,130	6,250	23
Environmental compliance <sup>2,3</sup>	\$6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	21
Pre-construction surveys <sup>2,4</sup>	\$1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	4
Construction monitoring <sup>2,4</sup>	\$2,900	2,900	2,900	2,900	2,900	2,900	2,900	2,900	10
Staff and related costs <sup>2,5</sup>	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	20
Subtotal		\$81,599	\$122,696	\$143,245	\$144,790	\$157,459	\$157,459	\$112,963	\$417
Contingency <sup>1</sup>	20%	8,440	13,760	16,420	16,620	18,260	18,260	12,500	47
Total Unit Cost		\$90,039	\$136,456	\$159,665	\$161,410	\$175,719	\$175,719	\$125,463	\$463
Adjustment Factor for Streams >25 Feet Wide									<u>1.50</u>
Total Unit Cost (Streams >25 feet wide)									\$695

<sup>1</sup> Percentage applied to construction costs.

<sup>2</sup> Amount applied per acre of impact. Stream costs based on average of per acre costs as a percent of construction costs for all other aquatic land cover types.

<sup>3</sup> Based on CEQA, CWA 401, CDFG 1602, and other permit costs for "small" project, divided by two (assume a two-acre project). NHPA permit unlikely to be applicable.

<sup>4</sup> Cost model estimate divided by two (estimate based on a two-acre project).

<sup>5</sup> Midpoint of staffing costs per acre (all costs except construction and contractors) between initial and maximum UDA cost models for habitat restoration/creation cost category

Sources: Appendices C and D (Habitat Restoration/Creation tab).

### **Environmental Compliance**

Based on actual Conservancy experience with the permitting process, this 2017 update reinstates an allocation of Conservancy program staff time for permitting. In addition, some legal services are allocated to this category because of the need for legal assistance with on-going regional wetland permitting anticipated through year 20. Contractor costs are increased based on the Employment Cost Index and permit fees are updated based on current fee schedules and calculators.

### **Preserve Management and Maintenance**

The schedule of land under management continues to reflect the fact that the pace of acquisition exceeds actual mitigation and conservation targets. Current costs reflect land-banking of many acquired lands. Preserve management staffing is based on review of staffing patterns at Conservancy properties and other similar parkland units within the East Bay Regional Parks District (EBRPD) Interpretive Parklands Unit. Preserve management staff costs are based on EBRPD costs. Furthermore, in place of the detailed line item cost estimates for vehicles, equipment, materials, facilities and road maintenance, water pumping, weed management, pond maintenance, etc., this audit derives a cost factor per full-time equivalent (FTE) management staff to capture the wide range of equipment, materials and services required for land management on Conservancy properties. The factor is derived from analysis of spending in the Maintenance and Skilled Trades Department within the EBRPD Parks Operations Division.

### **Monitoring, Research, and Adaptive Management**

Based on current Conservancy practice, for the 2017 audit, the model eliminates Conservancy senior scientist staffing and increases contractor costs for monitoring. Vehicle purchase, fuels, and maintenance costs are assumed to be included in staff overhead cost and contractor rates. Contractor costs are adjusted based on actual Conservancy cost for monitoring contractors.

### **Remedial Measures**

The total cost for remedial measures is based on (1) a percent of total cost of habitat restoration/creation costs, (2) a cost per acre for remedial measures applied to a percent of total preserve system acres acquired, and (3) a lump sum cost for other remedial measures. No changes were made in these cost assumptions for this audit.

## Contingency

Contingency costs reflect changes in other cost categories. The estimated rate remains at five percent and is applied to total Plan costs net of total land acquisition and total habitat restoration/creation costs.

## Summary of Cost Model Results

**Table 3.2** and **Table 3.3** summarize changes in total costs by cost category for the Plan for the initial and maximum UDA, respectively. The tables compare the results of this audit to the 2006 Plan costs and the prior 2013 audit. All amounts are updated to 2016 dollars using the same inflation index used to update actual Conservancy costs to date in the cost model. Total costs excluding wetland mitigation fee revenue are shown at the bottom of the table because changes to this amount directly affect the development fee (see Chapter 5).

Adjusted for inflation, total costs are in the range of 10 percent lower than costs in the 2013 audit for both the initial and maximum UDA scenarios. Similar results pertain for total costs excluding wetland mitigation fee revenue; costs used to calculate the development fee are eight percent lower than those in the 2013 audit for the initial UDA scenario and four percent lower for the maximum UDA scenario.

Trends in costs between this audit and the 2006 Plan, and this audit and the prior (2013) audit, are described below. All comparisons are in 2016 dollars as presented in Tables 3.2 and 3.3.

1. **Program administration:** Costs are higher than estimated for the 2006 Plan due to higher costs for (1) overhead support and benefits, (2) legal and financial analysis services, and (3) higher than anticipated costs to assist Participating Special Entities with the permitting process, offset by revenue from higher administrative charges and other development exactions. Costs are unchanged from the 2013 audit.
2. **Land acquisition:** Costs adjusted for inflation have not changed significantly from the 2006 Plan and the 2013 audit.
3. **Planning and design:** Total costs remain higher than in the 2006 Plan because of higher costs for overhead support and benefits than originally anticipated. Cost decline from the 2013 audit because (1) that audit assumed Conservancy technical staffing while this audit assumes more planning services are contracted out, and (2) this audit shifts restoration design costs to the habitat restoration/creation category.

**Table 3.2: Cost Model Comparison – Initial Urban Development Area (2016 \$)**

<b>Cost Category</b>	<b>2006 Plan</b>	<b>2013 Fee Audit</b>	<b>2017 Fee Audit</b>	<b>2017 Audit vs. 2006 Plan</b>		<b>2017 Audit vs. 2013 Audit</b>	
Program Administration	\$20,540,000	\$26,690,000	\$26,630,000	\$6,090,000	30%	\$(60,000)	(0%)
Land Acquisition	216,910,000	217,690,000	217,550,000	640,000	0%	(140,000)	(0%)
Planning and Design	6,960,000	10,300,000	7,810,000	850,000	12%	(2,490,000)	(24%)
Habitat Restoration/Creation	23,080,000	50,290,000	43,430,000	20,350,000	88%	(6,860,000)	(14%)
Environmental Compliance	2,650,000	3,720,000	3,640,000	990,000	37%	(80,000)	(2%)
Preserve Management & Maintenance	37,400,000	46,730,000	28,990,000	(8,410,000)	(22%)	(17,740,000)	(38%)
Monitoring, Research, & Adaptive Management	21,260,000	22,030,000	12,890,000	(8,370,000)	(39%)	(9,140,000)	(41%)
Remedial Measures	1,790,000	3,160,000	3,080,000	1,290,000	72%	(80,000)	(3%)
Contingency	5,680,000	6,210,000	4,280,000	(1,400,000)	(25%)	(1,930,000)	(31%)
<b>Total Plan Implementation</b>	<b>\$336,270,000</b>	<b>\$386,820,000</b>	<b>\$348,300,000</b>	<b>\$12,030,000</b>	<b>4%</b>	<b>\$(38,520,000)</b>	<b>(11%)</b>
<b>Wetland Mitigation Fee Revenue</b>	<b>25,170,000</b>	<b>42,140,000</b>	<b>36,550,000</b>	<b>11,380,000</b>	<b>45%</b>	<b>(5,590,000)</b>	<b>(13%)</b>
<b>Total Costs Excluding Wetland Mitigation Fee</b>	<b>\$313,190,000</b>	<b>\$336,530,000</b>	<b>\$311,750,000</b>	<b>\$(1,440,000)</b>	<b>(0%)</b>	<b>\$(24,780,000)</b>	<b>(8%)</b>

Note: 2006 Plan and 2013 Fee Audit costs are inflated to 2016 dollars using the inflation index in Appendix F. Sources: 2006 Plan, Table 9-1; 2013 audit, Table 3.2; Appendix C (Summary tab); Appendix F, Table F.1.

**Table 3.3: Cost Model Comparison – Maximum Urban Development Area (2016 \$)**

<b>Cost Category</b>	<b>2006 Plan</b>	<b>2013 Fee Audit</b>	<b>2017 Fee Audit</b>	<b>2017 Audit vs. 2006 Plan</b>		<b>2017 Audit vs. 2013 Audit</b>	
Program Administration	\$20,630,000	\$26,770,000	\$26,680,000	\$6,050,000	29%	\$(90,000)	(0%)
Land Acquisition	266,760,000	257,140,000	268,650,000	1,890,000	1%	11,510,000	4%
Planning and Design	7,050,000	10,430,000	7,810,000	760,000	11%	(2,620,000)	(25%)
Habitat Restoration/Creation	25,910,000	56,090,000	51,750,000	25,840,000	100%	(4,340,000)	(8%)
Environmental Compliance	2,650,000	3,720,000	3,640,000	990,000	37%	(80,000)	(2%)
Preserve Management & Maintenance	41,250,000	55,680,000	35,650,000	(5,600,000)	(14%)	(20,030,000)	(36%)
Monitoring, Research, & Adaptive Management	23,860,000	24,800,000	14,880,000	(8,980,000)	(38%)	(9,920,000)	(40%)
Remedial Measures	1,920,000	3,590,000	3,650,000	1,730,000	90%	60,000	2%
Contingency	6,170,000	6,920,000	4,890,000	(1,280,000)	(21%)	(2,030,000)	(29%)
<b>Total Plan Implementation</b>	<b>\$396,200,000</b>	<b>\$445,140,000</b>	<b>\$417,600,000</b>	<b>\$21,400,000</b>	<b>5%</b>	<b>\$(27,540,000)</b>	<b>(7%)</b>
Wetland Mitigation Fee Revenue	26,770,000	48,100,000	42,200,000	15,430,000	58%	(5,900,000)	(12%)
<b>Total Costs Excluding Wetland Mitigation Fee</b>	<b>\$370,290,000</b>	<b>\$389,050,000</b>	<b>\$375,400,000</b>	<b>\$5,110,000</b>	<b>1%</b>	<b>\$(13,650,000)</b>	<b>(4%)</b>

Note: 2006 Plan and 2013 Fee Audit costs are inflated to 2016 dollars using the inflation index in Appendix F. Sources: 2006 Plan, Table 9-1; 2013 audit, Table 3.2; Appendix D (Summary tab); Appendix F, Table F.1.

4. **Habitat restoration/creation:** Costs are higher than the 2006 Plan due to higher construction unit costs than assumed in the Plan for nearly all habitat types based on actual Conservancy experience. Costs are lower than the 2013 audit because the inflation index used to inflate construction costs from 2012 dollars for this audit is lower than used in Tables 3.2 and 3.3 to inflate 2012 costs across all cost categories.
5. **Environmental compliance:** Costs are higher than the 2006 Plan because a more fine-grained approach in the 2013 audit documented significantly higher permitting costs for restoration projects than originally projected. Costs remain nearly unchanged from the 2013 to the 2017 audit.
6. **Preserve management and maintenance:** Costs are lower than the 2006 Plan and the 2013 audit because this audit reflects economies of scale associated with the Conservancy's partnership with EBRPD. Also, costs in the 2006 Plan included recreation management and these costs were removed in the 2013 audit. Finally, with this audit through year 9 (2016) nearly one-third of the permit term has elapsed. Actual costs to date have been lower due to lower levels of impacts from covered activities (see Table 2.2), and therefore total costs for the entire permit term decline with fewer years remaining for management and maintenance activities.
7. **Monitoring, research, and adaptive management:** Costs decline in part because higher contractor costs are more than offset by lower Conservancy staff costs. More significantly, and like the comment above regarding lower preserve management and maintenance costs, nearly one-third of the permit term has elapsed and there are fewer years over which the Conservancy will incur the remaining costs.
8. **Remedial measures:** Costs are higher than the 2006 Plan because they are primarily affected by habitat restoration/creation costs (see discussion, above). Costs are nearly unchanged from the 2013 audit.
9. **Contingency:** Costs are lower than the 2006 Plan and the 2013 audit because costs are deleted for prior years and instead reflected in actual costs for the other cost categories.

Overall, total costs are slightly higher compared to the 2006 plan and slightly lower compared to the 2013 audit. Total costs excluding wetland mitigation fee revenue, the total amount used to calculate the development fee, follow similar trend though not to the same degree.

## 4. ENDOWMENT MODEL

The 2006 Plan requires funding for post-permit term costs in perpetuity for the management and monitoring of the preserve system.<sup>18</sup> The Plan did not require that these costs be included in the initial funding plan. Instead, the Plan required that the Conservancy develop a funding plan for post-permit term costs, and secure all necessary commitments to implement the funding plan, by year 15 (2022) or when half of the impacts allowed under the permit occur, whichever comes first.

This audit represents a significant turning point for implementation of the 2006 Plan. For the first time, this audit includes funding for post-permit term costs in perpetuity. Due to cost savings in other areas, this audit proposes a mitigation fee schedule that fully funds post-permit term costs in perpetuity with small increase in current fees (see Chapters 5 and 6).

Post-permit term costs would be funded by a portion of mitigation fee and other revenues transferred to an endowment over time. The endowment would grow with re-invested earnings through year 30. At that time, the endowment would be large enough to generate ongoing earnings sufficient to fully fund post-permit management and monitoring costs in perpetuity, including adjustments for inflation.

The approach taken to estimate post-permit term costs and endowment funding is like that used in other recent Northern California regional habitat plans, including the San Joaquin Multi-Species Habitat Conservation and Open Space Plan, Santa Clara Valley Habitat Plan, the Yolo Habitat Conservation Plan, and the Placer County Conservation Program. The approach fully complies with applicable statutes regarding investment of public funds for long-term stewardship of conservation lands.<sup>19</sup> The approach also ensures that, pursuant to the MFA, future development does not fund the endowment needs associated with development that has occurred to date.

### Post-permit Term Costs and Revenues

Annual post-permit funding needs from the endowment were developed based on guidance provided in Chapter 9 of the 2006 Plan. Total post-permit term costs were estimated based on a percent of annual costs in the final five-year period of the plan (years 26-30) for the following cost categories:

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<sup>18</sup> 2006 Plan, Chapter 9, pp. 9-40 to 9-42 and Table 9-9.

<sup>19</sup> See Mitigation Lands: Nonprofit Organizations (California Government Code section 65965-65968) and the Uniform Prudent Management of Institutional Funds Act (Probate Code section 18501 et seq.).

- ◆ 45 percent of program administration costs
- ◆ 100 percent of preserve management and monitoring costs
- ◆ 50 percent of monitoring, research, and adaptive management costs

The EBRPD has been building a lease revenue stream from activities on preserve system lands primarily associated with wind turbine sites, cell towers, and grazing rights. The agency has been using these funds for preserve management and maintenance costs. Annual revenues have averaged \$500,000 annually over the past four years (2013-2016). Some lease revenues are anticipated to continue in perpetuity and therefore to provide funding for post-permit term costs. To be conservative, the endowment model assumes that 50 percent of current average annual lease revenue will be available for post-permit term funding in perpetuity (\$250,000 annually).

## Endowment Funding Plan

The endowment fund balance is built through year 30 with a combination of three types of revenue:

1. Re-invested earnings from endowment investments.
2. An opening balance representing the fair share cost for development to date (years 1-9)
3. Allocation of a share of revenues from mitigation fees and possibly other Conservancy and local partner revenues through year 30

The Conservancy will need to develop a funding plan for the endowment to ensure that a sufficient balance is built by year 30 to fund post-permit term costs in perpetuity. Guidance for development of the funding plan is provided in the subsections, below.

## Investment Earnings

The endowment model assumes a long-term average annual return on investment (ROI) of 7.25 percent. For comparison, other funds with similar long range investment horizons such as university endowments, pension funds, and hospital endowments, have average annual earnings objectives of six to nine percent.

Based on an ROI goal of 7.25 percent, the endowment model assumes that inflation is 3.00 percent and endowment manager fees are 1.00 percent. As shown in **Table 4.1**, this results in an annual real return on endowment fund balances of 3.25 percent. The real rate of return is also known as the “capitalization rate”. Thus, the endowment can be expected to generate funding for post-permit term costs, adjusted for inflation and management

fees, at a constant rate of 3.25 percent of the fund balance that is achieved by the end of the permit term in year 30 (2037).

**Table 4.1: Investment Earnings**

<b>Allocation of Annual Investment Earnings on Endowment Fund Balance</b>	<b>Percent of Endowment Fund Balance</b>
Average Annual Return on Investment Goal <sup>1</sup>	7.25%
Reinvested Earnings to Offset Inflation	<u>3.00%</u>
Available for Annual Distributions	4.25%
Endowment Manager Fees <sup>2</sup>	<u>1.00%</u>
<b>Average Annual Real Rate of Return to Fund Post-Permit Term Costs</b>	<b>3.25%</b>

<sup>1</sup> Total average annual investment earnings are net of investment management fees (including custodial and audit costs) and are separate from endowment manager fees (see note 2).

<sup>2</sup> The endowment model assumes that the Conservancy will engage an outside endowment fund manager instead of staffing this function in-house. Endowment manager fees would fund administration, accounting, and reporting costs directly associated with the Conservancy's account.

These assumptions are based on a current habitat endowment management programs operated by the National Fish and Wildlife Foundation (NFWF) under agreements with the California Department of Fish and Wildlife. These programs assume a long-range real rate of return of 3.25 percent to 3.50 percent. The endowment model for this audit uses the more conservative rate of 3.25 percent. This rate is the same rate being used by the Santa Clara Valley Habitat Agency for its endowment fund being managed by the Santa Clara Valley Community Foundation.

Lower investment earnings, higher inflation, or higher endowment manager fees would require increased endowment funding and higher mitigation fees. Higher investment earnings, lower inflation, or lower endowment manager fees would require less endowment funding and lower mitigation fees. Future periodic fee audits will evaluate these assumptions and adjust mitigation fees and other revenues allocated to the endowment as needed to maintain adequate funding.

**Opening Fund Balance**

Development that has occurred through year 9 has not directly contributed funding for post-permit term costs. Therefore, the endowment fund requires a source of revenue other than future mitigation fees and their related investment earnings to represent prior development's fair share of total endowment funding needs. This funding need will be satisfied by the

Conservancy contributing to the endowment's opening fund balance when the fund is established.

The Conservancy has several options for sources of funding to cover the fair share of development impacts through year 9. One source is a \$1 million currently being held by the California Wildlife Foundation that is available for the Conservancy's endowment. Another source is the Conservancy's own fund balance that was \$2.3 million as of the end of the prior fiscal year (December 31, 2016).

The fair share endowment contribution from prior development was calculated in three steps with use of the endowment model:

1. Fee revenue contributions sufficient to build the endowment by year 30 were calculated for the initial and maximum UDA based on no opening fund balance.
2. The total revenue contribution for each scenario from step (1) was multiplied by a factor representing impacts to date, weighted by zone, as a percent of permit limits (see Table 2.2). This factor was 4.5 percent for the initial UDA and 3.0 percent for the maximum UDA.
3. The fair share revenue contributions represented by impacts to date from step (2) was used in the endowment model as the opening fund balance, and the model recalculated revenue contributions required from remaining development from each scenario.

The calculated fair share endowment contribution is \$2,200,000 and \$1,750,000 for the initial and maximum UDA scenarios, respectively. The average of these two amounts is \$1,975,000.

### **Mitigation Fees and Other Revenues**

Besides investment earnings, the other ongoing funding sources to build the endowment fund balance by year 30 are revenues from mitigation fees and possibly other Conservancy and local partner revenues. The Conservancy will need to develop a plan to fund this endowment contribution.

Many non-fee revenues sources, including state and federal sources, are generally limited to the following (overlapping) uses: (1) land acquisition, and (2) conservation component of the Plan over and above mitigation requirements. Therefore, these funding sources cannot fund the endowment costs for management and monitoring of lands associated with the conservation (non-mitigation) component in perpetuity. Consequently, other funding sources primarily mitigation fees will fund the share of the endowment associated with the conservation (non-mitigation) component of the Plan. In return, state, federal, and other sources will fund a larger share of land acquisition costs. In this manner both types of funding sources (non-fee

sources and mitigation fees) will remain constrained to funding only their respective appropriate shares of total Plan costs.

The endowment model assumes that revenue contributions will be made at a constant rate on an annual basis through the end of the permit term. Of course, revenues may fluctuate above and below this annual average from year to year particularly if funding relies on mitigation fees. However, this variability is offsetting, i.e. lower endowment fund contributions in one year are compensated by higher contributions in other years. Furthermore, periodic audits such as this one enable the Conservancy to adjust its funding plan for the endowment, including revising mitigation fee levels, in response to changing conditions to ensure an adequate fund balance by the end of the permit term.

### Mitigation Fees

Development and rural infrastructure fees are likely the primary mitigation fee funding source because there is a reasonable relationship (nexus) between development impacts and the size of the reserve, and the size of the reserve determines post-permit funding needs.

Wetland mitigation fees are associated with specific habitat impacts and only fund habitat restoration/creation projects. Wetland mitigation fees do not fund land acquisition so there is less of reasonable relationship between these types of impacts and the purpose of the endowment. Therefore, these fees are probably not appropriate to contribute to the endowment.

Temporary impact fees could be used to contribute to the endowment though these fees are only one percent of total revenues for the Conservancy's overall plan for funding Plan implementation costs (see Chapter 8, Table 8.1).

### Other Potential Funding

Other potential funding for the endowment includes:

- ◆ Administrative charges
- ◆ Other development exactions, e.g. contributions to recovery that are above and beyond mitigation payments
- ◆ Interest earnings (on the Conservancy's operating account)
- ◆ Lease revenues

Like temporary impact fees, the first three sources listed above together constitute only a small share of total revenues for the Conservancy's overall funding plan (see Chapter 8, Table 8.1). Thus, these sources are unlikely to be depended upon for the endowment funding.

The fourth source, lease revenues, are received by the EBRPD. As described above, lease revenues have averaged about \$500,000 annually since 2013. These revenues could be tapped for endowment funding.

## Endowment Fund Model Results

The key inputs to and results from the endowment model are shown below in **Table 4.2**.

**Table 4.2: Post-Permit Funding**

	<b>Initial UDA</b>	<b>Maximum UDA</b>
Endowment Opening Balance (Year 10)	\$2,200,000	\$1,750,000
Endowment Revenue (Years 10-30)	45,930,000	57,290,000
Endowment Investment Earnings (Years 10-30)	<u>21,660,000</u>	<u>26,060,000</u>
<b>Endowment Fund Balance (Year 30)</b>	<b>\$69,790,000</b>	<b>\$85,100,000</b>
Annual Distribution Rate (Year 31+)	<u>3.25%</u>	<u>3.25%</u>
Annual Distribution (Year 31+)	\$2,270,000	\$2,770,000
Annual Lease Revenue (Year 31+)	<u>250,000</u>	<u>250,000</u>
<b>Annual Endowment Funding (Year 31+)</b>	<b>\$2,520,000</b>	<b>\$3,020,000</b>

Source: Appendix E, Tables E.1 and E.2.

See **Appendix E** for detailed output of the endowment model for the initial and maximum UDA scenarios.

## Endowment Management

The Conservancy may manage and invest endowment funds directly or have another entity hold and invest the endowment under contract as authorized by California Government Code section 65965. The Conservancy should ensure that the endowment is managed, invested, and disbursed in furtherance of the long-term stewardship of the preserve system by:

- ◆ Managing endowment funds efficiently.
- ◆ Achieving a reasonable long-term rate of return on investment of endowment funds like those of other prudent investors for endowment funds.
- ◆ Achieving a long-term rate of return that is equal to the annual real rate of return assumed in the funding plan (currently 3.25 percent), after deducting inflation and fees.

- ◆ Contributing to the endowment at least annually by transferring a fixed percentage of development fee and rural infrastructure fee revenues received.
- ◆ Use the periodic audits required by the Plan (such as this audit) to adjust fees and endowment contributions to ensure full funding of the endowment by the end of the permit term.
- ◆ Managing and investing endowment funds in good faith and with the care an ordinarily prudent person in a like position would exercise under similar circumstances, consistent with the Uniform Prudent Management of Institutional Funds Act (Part 7 (commencing with Section 18501) of Division 9 of the Probate Code).
- ◆ Utilizing generally accepted accounting practices as promulgated by either the Financial Accounting Standards Board or any successor entity for nonprofit organizations or the Governmental Accounting Standards Board or any successor entity for public agencies, to the extent those practices do not conflict with any other requirements of law.
- ◆ Disbursing endowment funds on a timely basis and only for the long-term stewardship of the preserve system post-permit term.

## 5. WETLAND MITIGATION FEE

This chapter presents the updated wetland mitigation fee schedule and the reasonable relationship findings required by the MFA and explained in Chapter 1. Unless the applicant chooses to perform their own restoration or creation, the wetland mitigation fee is applied to covered activities that generate permanent impacts on aquatic land cover types whether inside or outside the UDA.<sup>20</sup> Wetland mitigation fees are calculated based on the surface area of the aquatic land cover type impacted, regardless of the size of the covered activity or the total amount of impacts. The wetland mitigation fee is therefore typically applied to small portion of the total impacts of a covered activity.

### Updated Fee Schedule

The wetland mitigation fee is based on the unit costs (cost per acre or cost per linear foot for streams) presented in the prior chapter multiplied by a mitigation ratio established by the Plan. The mitigation ratio represents the restoration area needed to mitigate one acre (or one linear foot in the case of streams) of impact. Most mitigation ratios are one-to-one, that is one acre of impact requires one acre of wetland restoration/creation to mitigate impacts. Several land cover types require a higher or lower mitigation ratio to adjust for the relative ability of restoration projects to mitigate the types of impacts associated with a given land cover type. The updated wetland mitigation fees based on mitigation ratios by land cover type are shown in **Table 5.1**.

Consistent with the habitat restoration/creation cost estimates explained in Chapter 3, above, the wetland mitigation fee is only related to the one-time activity of restoration or creation of aquatic land cover types. The three other fees presented in the following two chapters of this report address the other Plan costs to mitigate the impacts of covered activities on aquatic land cover types. These other costs include, for example, acquisition of sites for wetland, pond, and stream restoration/creation, preservation of existing wetland, pond, and stream habitat and long-term management, maintenance, and monitoring of habitat restoration/creation sites.

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<sup>20</sup> 2006 Plan, Chapter 9, pp. 9-23 to 9-24 and Table 9-5.

**Table 5.1: Wetland Mitigation Fee Schedule**

Land Cover Type	Habitat Restoration / Creation Cost		Mitigation Ratio	Wetland Mitigation Fee	
Riparian	\$ 90,039	per acre	1:1	\$ 90,039	per acre
Perennial Wetland	136,456	per acre	1:1	136,456	per acre
Seasonal Wetland	159,665	per acre	2:1	319,330	per acre
Alkali Wetland	161,410	per acre	2:1	322,820	per acre
Ponds	175,719	per acre	1:1	175,719	per acre
Aquatic (Open Water)	175,719	per acre	0.5:1	87,860	per acre
Slough / Channel	125,463	per acre	1:1	125,463	per acre
Streams (<=25 ft. wide)	463	per linear foot	1:1	463	per linear foot
Streams (>25 ft. wide)	695	per linear foot	1:1	695	per linear foot

Sources: 2006 Plan, Tables 5-16 and 5-17; Table 3.1.

**Table 5.2** compares the updated wetland mitigation fees to current fees. The current fee has two levels. The "Cities/County" fees are imposed by Permittees with land use authority (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. The "Conservancy" fees reflect the results of the 2013 audit and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee.

Wetland mitigation fees imposed per acre by the Conservancy decline compared to current fees because of differences in the inflation index for certain cost components used for this audit versus the index used for the annual fee adjustments. The former uses the Building Cost Index (BCI) provided by the California Department of General Services, and the latter uses the Consumer Price Index (CPI) for the San Francisco Bay Area provided by the U.S. Bureau of Labor Statistics. The BCI increased less than the CPI so fees can be reduced compared to current Conservancy levels while still fully funding habitat restoration/creation costs.

Fee imposed by the cities and the County increase for most land cover types primarily because the cities and the County have not yet adopted the revised rates developed by the 2013 audit.

Estimated restoration costs and revenues associated with aquatic land cover impacts are shown in **Table 5.3**. The table multiplies the aquatic land cover acreage impacts from Table 2.4 by the update fee schedule in Table 5.1. The 30-year revenue estimates in the table are used in the development fee calculation presented in Chapter 6.

**Table 5.2: Wetland Mitigation Fee Comparison**

Land Cover Type		Current Fee (2017)		Fee Audit (2017)	Fee Audit Compared To:	
		Cities/County	Conservancy		Cities/County	Conservancy
Riparian	per acre	\$ 76,433	\$ 98,978	\$ 90,039	18%	(9%)
Perennial Wetland	per acre	\$104,593	\$145,423	\$136,456	30%	(6%)
Seasonal Wetland	per acre	\$226,617	\$337,101	\$319,330	41%	(5%)
Alkali Wetland	per acre	\$214,549	\$340,512	\$322,820	50%	(5%)
Aquatic (Open Water)	per acre	\$113,979	\$184,474	\$175,719	54%	(5%)
Aquatic (Open Water)	per acre	\$ 57,660	\$ 92,237	\$ 87,860	52%	(5%)
Slough / Channel	per acre	\$130,070	\$134,428	\$125,463	(4%)	(7%)
Streams (<=25 ft. wide)	per linear foot	\$ 623	\$ 376	\$463	(26%)	23%
Streams (>25 ft. wide)	per linear foot	\$ 939	\$ 564	\$695	(26%)	23%

Note: "Cities/County" fees are imposed by Permittees (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. "Conservancy" fees reflect the results of the 2011 and 2013 audits and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee.

Sources: ECCC Habitat Conservancy; Table 5.1.

## Mitigation Fee Act Findings

The following findings are required by the MFA and were presented in Chapter 1.

### **Section 66001(a)(1)**

The wetland mitigation fee is intended to pay the full cost of restoration or creation of aquatic land cover types, including design, implementation, post-construction monitoring, and remediation. The development fee described in the next chapter will fund acquisition of the site for the restoration or creation and the management and monitoring after the wetland is fully functioning. Restoration of oak savanna is also required by the Plan, but the cost of this restoration is included in the development fee because it is not associated with jurisdictional wetlands and waters.

**Table 5.3: Wetland Mitigation Fee Revenue**

		Fee Revenue (Year 10-30)	
		Initial UDA	Maximum UDA
<b>Land Cover Type</b>	<b>Wetland Mitigation Fee</b>		
Riparian	\$ 90,039 per acre	\$ 2,600,000	\$ 3,050,000
Perennial Wetland	136,456 per acre	3,020,000	3,060,000
Seasonal Wetland	319,330 per acre	4,350,000	5,840,000
Alkali Wetland	322,820 per acre	2,970,000	3,290,000
Ponds	175,719 per acre	1,210,000	1,390,000
Aquatic (Open Water)	87,860 per acre	1,050,000	1,050,000
Slough / Channel	125,463 per acre	9,020,000	9,020,000
Subtotal		\$24,220,000	\$26,700,000
Streams (<=25 ft. wide)	\$463 per linear foot	9,470,000	11,910,000
Streams (>25 ft. wide)	695 per linear foot	<u>2,030,000</u>	<u>2,760,000</u>
Total		\$35,720,000	\$41,370,000
		Fee Revenue (Year 0-30)	
		Initial UDA	Maximum UDA
Actual (Year 0-9)		\$830,000	\$830,000
Estimated (Year 10-30)		<u>35,720,000</u>	<u>41,370,000</u>
Total (Year 0-30)		\$36,550,000	\$42,200,000

Note: "UDA" is the urban development area.  
Sources: Tables 2.3, 5.1, and 8.1.

**Section 66001(a)(2)**

The wetland mitigation fee will fund the capital costs associated with wetland restoration/creation the mitigate related wetland impacts. Chapter 5 of the Plan explains the conservation strategy for wetland restoration/creation, and Chapter 9 explains the costs associated with implementing the strategy.

**Section 66001(a)(3)**

A reasonable relationship exists between the use of wetland mitigation fee revenue and covered activities that would pay the fee. Only covered activities that have wetland impacts (impacts on species and natural communities within aquatic land cover types) pay the fee, and fee revenues fund implementation of the conservation strategy designed to mitigate those impacts. Specific elements of the strategy from Chapter 5 of the Plan that relate to the restoration or creation of wetlands, ponds, and streams include:

- ◆ Conservation methods such as:
  - Biological goals and objectives that include the restoration and creation of wetlands, ponds, and streams.
  - Mitigation of impacts on state and federal jurisdictional wetlands and waters.
- ◆ Conservation measures such as:
  - Conservation Measure 2.3. Restore Wetlands and Create Ponds
  - Conservation Measure 2.10. Restore Streams and Riparian Woodland/Scrub to Compensate for Habitat Loss and to Increase Biodiversity.

The cost model summarized in Chapter 9 and presented in detail in Appendix G of the Plan explains the costs associated with the restoration or creation of wetlands, ponds, and streams. Updated costs are shown in Table 3.1 in Chapter 3 of this report and include:

- ◆ All costs associated with the habitat restoration/creation cost category (includes construction costs and staff-related costs)
- ◆ The share of environmental compliance costs associated with one-time costs for habitat restoration/creation
- ◆ The share of monitoring, research, and adaptive management costs associated with habitat restoration/creation, specifically costs for pre-construction surveys and construction monitoring.

### **Section 66001(a)(4)**

A reasonable relationship exists between the need for the wetland mitigation fee and covered activities that would pay the fee. Chapter 3 of the Plan explains the relationship between the 17 animal and 11 plant species covered under the Plan and aquatic land cover types (see Table 3-9 in Chapter 3 of the Plan). Chapter 4 of the Plan explains the impacts of covered activities on these animal and plant species, and more broadly on natural communities. The importance of aquatic land cover types is demonstrated by:

- ◆ The eight aquatic land cover types provide habitat for all 17 animal species covered under the Plan.
- ◆ Individual aquatic land cover types provide habitat for at least three and, in the case of seasonal wetlands, as many as 11 covered animal species.
- ◆ Vernal pools are an essential habitat for four covered species and 11 covered plants.

**Section 66001(b)**

A reasonable relationship exists between the amount of the wetland mitigation fee on a specific covered activity and the proportionate share of Plan costs based on the fee schedule shown in Table 5.1. The fee schedule reflects the type of land cover that is affected because both mitigation ratios and per acre mitigation costs vary by land cover. The total fee for a covered activity is proportional to the amount of the impact based on the number of acres of wetland or pond, or linear feet of stream affected.

## 6. DEVELOPMENT FEE

This chapter presents the updated development fee schedule and the reasonable relationship findings required by the MFA and explained in Chapter 1. The development fee is applied to covered activities that generate permanent impacts inside the UDA.<sup>21</sup> Applicants also have the option of dedicating land to the preserve system in lieu of a fee payment subject to approval by the Conservancy.

### Updated Fee Schedule

The development fee is based on covered activities related to urban development (all covered activities within the UDA) funding a fair share of total Plan implementation costs. The fair share is based on the total amount of lands dedicated to habitat preservation in Eastern Contra Costa County, both lands existing prior to the Plan and lands added by the preserve system through implementation of the Plan. The Plan apportioned this total land area for habitat preservation between urban development existing prior to the Plan and urban development anticipated to occur during the 30-year permit term of the Plan. The fair share of costs allocated to the development fee under the maximum UDA scenario is 52 percent as documented in Appendix H of the Plan. The Plan requires that the periodic audit use this fair share amount to update the development fee, and that the fee cannot make up for shortfalls in revenue from other local, state, and federal sources.<sup>22</sup>

As explained in Chapter 1, all covered activities pay the development fee unless the applicant provides their own mitigation. In cases where aquatic land cover types are affected, the wetland mitigation fee is also paid. As explained in Chapter 3, the wetland mitigation fee will fund costs of habitat restoration/creation associated with impacts on wetlands, ponds, and streams. Therefore, total Plan costs subject to the fair share calculation are calculated net of wetland mitigation fee revenue. This approach avoids double-charging covered activities for the same Plan costs.

**Table 6.1** shows that share of total Plan costs allocated to the development fee. Costs are shown net of estimated wetland mitigation fee revenue drawn from Table 5.3 in the prior chapter. Development fee revenue to date (years 1-9) is deducted from the fair share allocated to the development fee to calculate the net revenue still required from the development fee for the remaining 21 years of the permit term. Using this approach in future periodic

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<sup>21</sup> 2006 Plan, Chapter 9, pp. 9-17 to 9-22, Figure 9-1, Table 9-4.

<sup>22</sup> 2006 Plan, Chapter 9, p. 9-31.

audits will ensure that at the end of the permit term covered activities would have paid the fair share of plan costs as calculated in the Plan.

**Table 6.1: Development Fee Fair Share Analysis**

	Maximum Urban Development Area		Initial Urban Development Area	
	Formula	Amount	Formula	Amount
Plan Implementation Costs	<i>a</i>	\$417,600,000	<i>q</i>	\$348,300,000
Wetland Mitigation Fee Revenue	<i>b</i>	(42,200,000)	<i>p</i>	(36,550,000)
Endowment Contribution	<i>c</i>	<u>59,040,000</u>	<i>o</i>	<u>48,130,000</u>
Net Cost Subject to Fair Share Allocation	<i>d (sum)</i>	\$434,440,000	<i>m (sum)</i>	\$359,880,000
Development Fair Share Allocation <sup>1</sup>	<i>e</i>	<u>52%</u>	<i>l = k / m</i>	<u>42%</u>
Development Fair Share Costs	<i>f = d * e</i>	\$225,910,000	<i>k = m - i</i>	\$151,350,000
Development Fee Revenue to Date	<i>g</i>	<u>(6,190,000)</u>	<i>g</i>	<u>(6,190,000)</u>
<b>Remaining Development Fair Share Costs (Years 10-30)</b>	<i>h = f - g</i>	<b><u>\$219,720,000</u></b>	<b><i>j = k + g</i></b>	<b><u>\$145,160,000</u></b>
Remaining Non-Fee Funding	<i>i = d - f</i>	\$208,530,000	<i>i</i>	\$208,530,000

<sup>1</sup> "Development Fair Share Allocation" for maximum UDA based on 2006 Plan, Appendix H, Table 1, consistent with procedures required for periodic audit (2006 Plan, Chapter 9, p. 9-31). Also, consistent with the 2006 Plan, the initial UDA Development Fair Share Allocation is based on holding constant non-fee revenue sources calculated for the maximum UDA scenario. This approach reasonably assumes that other federal, state, and local funding over the permit term will not be affected by the amount of urban development area impacts.

Sources: 2006 Plan, Appendix H, Table 1; Tables 3.2, 3.3, 5.3, 8.1, and Appendix E, Table E.1 and E.2.

A range of federal, state, and local sources fund the remaining costs for Plan implementation, including rural infrastructure fees and temporary impact fees. Fair share costs allocated to the development fee under the initial UDA scenario are calculated by holding constant total funding from these other sources. It is reasonable to assume that the level of development under the Plan would not affect the level of funding from these other sources.

The updated development fee is shown in **Table 6.2**. The fee is based on the fair share costs calculated in Table 6.1 divided by the equivalent acres of impact remaining under each scenario from Table 2.2. The bottom of Table 6.2 shows the fee per acre by zone based on the weighting factors explained in Chapter 2.

**Table 6.2: Development Fee Schedule**

		Initial UDA	Maximum UDA	Average
<b><u>Fee per Equivalent Acre</u></b>				
Remaining Development Fair Share Costs (Years 10-30)		\$145,160,000	\$219,720,000	
Remaining Development Impacts (equivalent acres)		<u>20,814</u>	<u>30,928</u>	-
Development Fee (per equivalent acre)		\$6,974	\$7,104	<b>\$7,039</b>
<b><u>Fee Schedule (per acre of impact)</u></b>				
	<i>Weight</i>			
Zone 1	2	\$13,948	\$14,208	<b>\$14,078</b>
Zone 2	4	\$27,896	\$28,416	<b>\$28,156</b>
Zone 3	1	\$6,974	\$7,104	<b>\$7,039</b>

Source: Tables 2.2 and 6.1.

Table 6.2 also shows the average fee for the initial and maximum UDA scenarios. Use of the average development fee for the two scenarios was approved by the Conservancy Board when adopting the 2013 Audit recommendations (June 27, 2013).

Consistent with the 2013 audit, these equivalent acres do not discount for lands within the UDA that remain undeveloped during the permit term, as was done in the Plan to calculate the original development fee. A discount factor for developable land is no longer warranted because public funding for land acquisition has been strong. The Conservancy will be well-positioned to pursue an extension if the impact estimates are not reached within the current 30-year permit term.

## Comparison with Original and Current Fee

In **Table 6.3** the updated fee based on the average of the two scenarios is compared with the current adopted fee. The current fee has two levels for the same reason explained in the prior chapter. The "Cities/County" fees are imposed by Permittees with land use authority (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. The "Conservancy" fees reflect the results of the 2013 audit and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee. Most covered activities are currently paying the "Cities/County" fee.

**Table 6.3: Development Fee Comparison (fee per acre)**

Zone	Current Fee (2017)		2017 Fee Audit <sup>2</sup>	Fee Audit Compared To:	
	Cities/County	Conservancy		Cities/County	Conservancy
Zone 1	\$14,711	\$13,491	\$14,078	(4.3%)	4.4%
Zone 2	\$29,423	\$26,983	\$28,156	(4.3%)	4.3%
Zone 3	\$ 7,356	\$ 6,746	\$ 7,039	(4.3%)	4.3%

Note: "Cities/County" fees are imposed by Permittees (participating cities and the County) and have been adjusted annually for inflation since Plan adoption but do not reflect the results of fee audits. "Conservancy" fees reflect the results of the 2011 and 2013 audits and are imposed on participating special entities (PSEs) that apply for coverage under the Plan but are not a Permittee.

<sup>1</sup> Uses average development fee of initial and maximum UDA scenarios as approved by the Conservancy Board when adopting the 2013 Audit recommendations (June 27, 2013).

Sources: ECCC Habitat Conservancy; Table 6.2.

As shown in the table, the recommended development fee, which includes necessary funding for the endowment, is about four percent higher than current fees imposed directly by the Conservancy, and four percent lower than fees currently imposed by participating cities and the County.

Required future revenue contributions to the endowment represent about 20 percent of total remaining Plan costs for years 10-30. Current development fees require only a modest adjustment despite this additional cost because of cost savings over the 30-year permit term. These cost savings come primarily from the preserve management and maintenance cost category discussed in Chapter 3. Such savings were anticipated by the Plan as a source of funding for the endowment.

## Mitigation Fee Act Findings

The following findings are required by the MFA and were presented in Chapter 1.

### **Section 66001(a)(1)**

The development fee is intended to pay the fair share cost of the Plan associated with permanent impacts from urban development excluding habitat restoration/creation costs for aquatic land cover types funded by the wetland mitigation fee.

**Section 66001(a)(2)**

The development fee will fund a fair share of all Plan costs except costs funded by wetland mitigation fees. Chapter 5 of the Plan explains the conservation strategy for the Plan and Chapter 9 explains the costs associated with implementing the strategy.

**Section 66001(a)(3)**

A reasonable relationship exists between the use of development fee revenue and covered activities that would pay the fee. Chapter 5 of the Plan explains the conservation strategy and Chapter 9 explains the costs associated with implementing the strategy.

The conservation strategy in Chapter 5 of the Plan identifies biological goals and objectives that are supported by specific conservation measures: five measures related to landscape-level conservation, nine measures related to natural community-level conservation (excluding two measures related to wetland, pond, and stream restoration/creation discussed in the prior chapter of this report), and nine measures related to species-level conservation.

The cost model summarized in Chapter 9 of the Plan and presented in detail in Appendix G of the Plan explains and estimates the costs associated with implementation. Updated costs are shown in Chapter 3 of this report and include nine cost categories necessary to implement the Plan: program administration, land acquisition, planning and design, habitat restoration/creation, environmental compliance, preserve management and maintenance, monitoring, research, and adaptive management, remedial measures, and contingency fund. As explained in the Chapter 3 of this report costs related to wetland, pond, and stream habitat restoration/creation are not included in the development fee.

**Section 66001(a)(4)**

A reasonable relationship exists between the need for the development fee and covered activities that would pay the fee. Chapter 3 of the Plan explains the relationship between the 17 animal species, 11 plant species, and associated habitats covered under the Plan and terrestrial land cover types (see Table 3-9 in Chapter 3 of the Plan). Chapter 4 of the Plan explains the impacts of covered activities by land cover type on these animal and plant species, and more broadly on their habitats and natural communities.

### **Section 66001(b)**

A reasonable relationship exists between the amount of the development fee on a specific covered activity and the proportionate share of Plan costs based on the fee schedule shown in Table 6.2 for three reasons:

- ◆ The fee is based on urban development’s fair share of Plan costs as determined by the share of urban development occurring under the Plan compared to total development (existing plus new) under the maximum UDA scenario. As stated in the Plan: “this analysis considers the pace of open space acquisition relative to the pace of development before and after adoption of the HCP/NCCP, and assigns the land acquisition requirements of the HCP/NCCP according to the premise that future development should mitigate impacts in the inventory area proportionate to its share of the overall habitat impacts in the inventory area (i.e., impacts in the past and the future).”<sup>23</sup>
- ◆ As explained in detail in Chapter 2 in the section “Development Fee Zone” the fee is adjusted for three zones that reflect the relative amount of impact from urban development on natural habitats and covered species. The mapping of the zones was completed at a level of detail sufficient to provide a reasonable relationship between all land within a specific zone and the relative weight of impacts assigned to that zone.
- ◆ The total fee for a covered activity is proportional to the amount of the impact based on the number of acres affected.

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<sup>23</sup> 2006 Plan, Chapter 5, p. 5-51.

## 7. RURAL INFRASTRUCTURE AND TEMPORARY IMPACT FEES

This chapter presents the updated fee schedule for the rural infrastructure fee and the temporary impact fee, and the reasonable relationship findings for each fee required by the MFA and explained in Chapter 1.

### Rural Infrastructure Fee

The rural infrastructure fee is applied to all permanent impacts from covered activities outside the UDA based on the UDA boundaries at the time of the covered activity. The rural infrastructure fee is based on the development fee described in the prior chapter and shown in the fee schedule in Table 6.2.

The Plan focused on fee estimates for 18 specified rural road projects.<sup>24</sup> For these projects the development fee was adjusted for the more severe fragmentation, edge, and increased-mortality effects compared to urban development and other rural infrastructure projects and activities. The extent of these additional impacts depends on whether the proposed facility is new or expanded, on the length of the facility, on the type of habitat traversed by the road, and other factors. Some of these additional impacts can be partially reduced by wildlife-friendly design measures.

The Plan also covers other rural infrastructure projects and activities such as flood protection projects, utility projects, and related maintenance activities. The Plan includes a revenue estimate for these covered activities but does not list specific projects or activities as it does for rural roads.<sup>25</sup>

### Mitigation Fee Act Findings

The following findings are required by the MFA and were presented in Chapter 1.

#### Section 66001(a)(1)

The rural infrastructure fee is intended to pay the costs of the Plan associated with mitigating permanent impacts outside the urban development area, excluding habitat restoration/creation costs for aquatic land cover types funded by the wetland mitigation fee.

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<sup>24</sup> 2006 Plan, Chapter 9, pp. 9-24 to 9-25, Table 9-6.

<sup>25</sup> 2006 Plan, Appendix H, Table 1. See the \$1,500,000 revenue assumption estimate in section 2 of the table for “other rural infrastructure mitigation costs”.

### **Section 66001(a)(2)**

The rural infrastructure fee will fund Plan costs to mitigate permanent impacts outside the urban development area, excluding habitat restoration/creation costs for aquatic land cover types funded by the wetland mitigation fee. Chapter 5 of the Plan explains the conservation strategy for the Plan and Chapter 9 explains the costs associated with implementing the strategy.

### **Section 66001(a)(3)**

A reasonable relationship exists between the use of rural infrastructure fee revenue and covered activities that would pay the fee. Chapter 5 of the Plan explains the conservation strategy and Chapter 9 explains the costs associated with implementing the strategy.

The conservation strategy in Chapter 5 of the Plan identifies biological goals and objectives that are supported by specific conservation measures: five measures related to landscape-level conservation, nine measures related to natural community-level conservation (excluding two measures related to wetland, pond, and stream restoration/creation discussed in the prior chapter of this report), and nine measures related to species-level conservation.

The cost model summarized in Chapter 9 and presented in detail in Appendix G of the Plan explains the costs associated with implementation. Updated costs are shown in Chapter 3 of this report and include nine cost categories: program administration, land acquisition, planning and design, habitat restoration/creation, environmental compliance, preserve management and maintenance, monitoring, research, and adaptive management, remedial measures, and contingency fund. As explained in the prior chapter of this report costs related to habitat restoration/creation on aquatic land cover types are not included in the development fee.

### **Section 66001(a)(4)**

A reasonable relationship exists between the need for the rural infrastructure fee and covered activities that would pay the fee. Chapter 3 of the Plan explains the relationship between the 17 animal species, 11 plant species, and associated habitats covered under the Plan and terrestrial land cover types (see Table 3-9 in Chapter 3 of the Plan). Chapter 4 of the Plan explains the impacts of covered activities by land cover type on these animal and plant species, and more broadly on their habitats and natural communities.

## Section 66001(b)

A reasonable relationship exists between the amount of the rural infrastructure fee on a specific covered activity and the proportionate share of Plan costs based on the fee schedule shown in Table 6.2 for three reasons:

- ◆ As explained in the prior chapter, the development fee is based only on urban development's fair share of Plan costs and excludes permanent impacts outside the UDA. Permanent impacts within the UDA are reasonably like permanent impacts outside the UDA so it is reasonable to base the rural infrastructure fee at the same level as the development fee.
- ◆ As explained in detail in Chapter 2 in the section "Development Fee Zone" the fee is adjusted for three zones that reflect the relative amount of impact from urban development on natural habitats and covered species. The mapping of the zones was completed at a level of detail sufficient to provide a reasonable relationship between all land within a specific zone and the relative weight of impacts assigned to that zone.
- ◆ The fee for rural road projects is also adjusted by a multiplier for individual rural road projects to reflect their respective level of additional fragmentation, edge and wildlife mortality effects.
- ◆ The total fee for a covered activity is proportional to the amount of the impact based on the number of acres affected.

## Temporary Impact Fee

The temporary impact fee is applied to all temporary impacts from covered activities both inside and outside the UDA. The temporary impact fee is based on the development fee described in the prior chapter and shown in the fee schedule in Table 6.2. Where applicable the fee is also based on the wetland mitigation fee described in Chapter 5 and shown in the fee schedule in Table 5.1.

As described in Chapter 2 of the Plan there are many covered activities that are short duration or intermittent and result in temporary impacts on natural land cover types. As described in Chapter 4 of the Plan some covered activities are expected to have substantial temporary impacts on covered species due to their large footprint, linear nature, location in the inventory area, effect on local soils or hydrology, or a combination of these factors. Temporary impacts are defined as any impact on vegetation or habitat that does not result in permanent habitat removal.

Chapter 9 of the Plan provides a detailed explanation of the calculation of the temporary impact fee. Covered activities with temporary impacts pay a fee based on the development fee. In addition, covered activities with temporary

impacts on aquatic land cover types also pay a fee based on the wetland mitigation fee. The temporary impact fee is calculated based on the frequency of the temporary impact over the 30-year permit term; the amount of the fee is equal to the applicable development or wetland mitigation fee multiplied by the proportion of the Plan's 30-year term affected by the temporary impact.

### **Mitigation Fee Act Findings**

The following findings are required by the MFA and were presented in Chapter 1.

#### **Section 66001(a)(1)**

The temporary impact fee is intended to pay for costs of the Plan associated with mitigating temporary impacts.

#### **Section 66001(a)(2)**

The temporary impact fee will fund Plan costs to mitigate temporary impacts. Chapter 5 of the Plan explains the conservation strategy for the Plan and Chapter 9 explains the costs associated with implementing the strategy.

#### **Section 66001(a)(3)**

A reasonable relationship exists between the use of temporary impact fee revenue and covered activities that would pay the fee. Chapter 5 of the Plan explains the conservation strategy and Chapter 9 explains the costs associated with implementing the strategy.

The conservation strategy in Chapter 5 of the Plan identifies biological goals and objectives that are supported by specific conservation measures: five measures related to landscape-level conservation, 11 measures related to natural community-level conservation, and nine measures related to species-level conservation.

The cost model summarized in Chapter 9 and presented in detail in Appendix G of the Plan explains the costs associated with implementation. Updated costs are shown in Chapter 3 of this report and include nine cost categories: program administration, land acquisition, planning and design, habitat restoration/creation, environmental compliance, preserve management and maintenance, monitoring, research, and adaptive management, remedial measures, and contingency fund.

### **Section 66001(a)(4)**

A reasonable relationship exists between the need for the temporary impact fee and covered activities that would pay the fee. Chapter 3 of the Plan explains the relationship between the 17 animal and 11 plant species covered under the Plan and all land cover types (see Table 3-9 in Chapter 3 of the Plan). Chapter 4 of the Plan explains the impacts of covered activities on these animal and plant species.

### **Section 66001(b)**

A reasonable relationship exists between the amount of the temporary impact fee on a specific covered activity and the proportionate share of Plan costs based on the fee schedules shown in Table 5.1 and Table 6.2 for three reasons:

- ◆ As explained in Chapter 4 regarding the wetland mitigation fee and Chapter 5 regarding the development fee, the fees are based only on Plan costs associated with permanent impacts. Temporary impacts are reasonably like permanent impacts when adjusted for the duration of the temporary impact so it is reasonable to establish the temporary fee based on the wetland mitigation and development fees.
- ◆ As explained in detail in Chapter 2 in the section “Development Fee Zone” the fee is adjusted for three zones that reflect the relative amount of impact from urban development on natural habitats and covered species. The mapping of the zones was completed at a level of detail sufficient to provide a reasonable relationship between all land within a specific zone and the relative weight of impacts assigned to that zone.
- ◆ The total fee for a covered activity is proportional to the amount of the impact based on the number of acres affected.
- ◆ The total fee is proportional to the duration of the temporary impact.

## 8. FUNDING PLAN

This chapter provides an updated funding plan for the Plan based on the Plan cost and mitigation fee revenue analysis presented in the prior chapters. This chapter provides the remaining two findings required by the MFA and explained in Chapter 1:

- ◆ Identify all sources and amounts of funding anticipated to complete financing of improvements to be funded by the fee.
- ◆ Designate the approximate dates when funding is expected to complete financing of improvements to be funded by the fee.

**Table 8.1** presents the updated funding plan under the initial and maximum UDA scenarios. Actual revenues and costs for years 0-9 inflated to 2016 dollars are added to estimates of remaining revenues and costs for each scenario to calculate total amounts for years 0-30.

Revenue estimates were developed using the following approach:

- ◆ **Wetland mitigation fee** and **development fee** revenue is based on the approaches explained in Chapters 5 and 6, respectively.
- ◆ **Rural infrastructure fees** are based on the amounts estimated in the 2006 Plan adjusted for inflation to 2016 dollars.
- ◆ **Temporary impact fees** are estimated to continue at 50 percent of the average annual amount for the prior four years reflecting a loss of revenue from P.G.&E. utility projects because the utility now has its own approved habitat conservation plan.
- ◆ **Administrative charges** are for Conservancy costs associated with processing mitigation fees paid by participating special entities, and are estimated to continue at 100 percent of the average annual amount for the prior four years.
- ◆ **Payments for non-covered activities** are zeroed out because this revenue cannot be used for impacts under the Plan but must be used for additional conservation measures.
- ◆ **Other development exactions** are primarily from participating special entities and are for conservation beyond the mitigation requirements of the Plan (“contribution to recovery”). These revenues are estimated to continue at 100 percent of the average annual amount for the prior four years.
- ◆ **State/federal funds** are estimated to continue at 40 percent of the average annual amount for the prior four years reflecting the large amount of contributions to date and therefore less need in the future, as well as declining funding for Section 6 grants.

- ♦ **Local capital funds**, primarily from foundation grants and the EBRPD, are estimated to continue at 60 percent of the average annual amount for the prior four years, also reflecting the large amount of contributions to date and therefore less need in the future, as well as declining funding from EBRPD Measure WW.
- ♦ **Local operating funds** are composed of due diligence and closing costs for land acquisitions funded by the EBRPD, plus windmill turbine site, cell tower, and grazing lease revenues from preserve lands. These funds are estimated to continue at 100 percent of the average annual amount for the prior four years.
- ♦ **Interest earnings and miscellaneous revenue** are estimated to continue at 100 percent of the average annual amount for the prior four years.

The Conservancy anticipates that it soon will approve funding from special tax districts formed by development projects in exchange for providing discounts on development fees. Special district funding will be available in perpetuity. Should this funding be realized, the next periodic audit in 2022 will integrate it into the funding plan.

Consistent with the original funding plan, revenues from non-mitigation fee sources are held constant under both scenarios. Revenue from other fees and exactions not anticipated in the original funding plan are included with non-mitigation fee revenues because the former is not associated with impacts from covered activities paying mitigation fees or are to cover costs not reflected in the Plan. State and federal funding is calculated as a residual amount after accounting for all other non-mitigation fee revenue.

Table 8.1 supports the findings described above by identifying sources and amounts of funding anticipated to complete the Plan, and that funding is expected within the 30-year permit term.

**Tables 8.2 and 8.3** compare the updated funding plan with the 2006 Plan and the 2013 audit for the initial and maximum UDA scenarios, respectively, in 2016 dollars. Key findings and conclusions from these tables include:

- ♦ The shares of total revenue for the three major funding sources (development fees, state/federal land acquisitions funds, and local land acquisition funds) that constitute about 80 percent of total funding have generally remained constant across all three funding plans.
- ♦ Mitigation fee revenues generally have increased in line with overall cost increases. Development fees in the initial UDA funding plan increased less than overall costs compared to the 2013 audit because of a lower fair share percentage.

**Table 8.1: Funding Plan (2016 dollars)**

	2007-2016 (Year 0-9) <i>Actual</i>	Initial UDA		Maximum UDA	
		2017-2037 (Year 10-30) <i>Estimate</i>	Total (Year 1-30) <i>Estimate</i>	2017-2037 (Year 10-30) <i>Estimate</i>	Total (Year 1-30) <i>Estimate</i>
<b>PLAN FUNDING</b>					
<b>Mitigation Fees</b>					
Development Fee	\$6,190,000	\$145,160,000	\$151,350,000	\$219,720,000	\$225,910,000
Wetland Mitigation Fee	830,000	35,720,000	36,550,000	41,370,000	42,200,000
Rural Infrastructure Fees <sup>1</sup>	1,690,000	7,980,000	9,670,000	7,980,000	9,670,000
Temporary Impact Fee <sup>2</sup>	<u>2,060,000</u>	<u>2,620,000</u>	<u>4,680,000</u>	<u>2,620,000</u>	<u>4,680,000</u>
Subtotal	\$10,770,000	\$191,480,000	\$202,250,000	\$271,690,000	\$282,460,000
<b>Other Fees &amp; Exactions</b>					
Administrative Charges <sup>2</sup>	\$390,000	\$800,000	\$1,190,000	\$800,000	\$1,190,000
Non-Covered Activities <sup>3</sup>	3,540,000	(3,540,000)	-	(3,540,000)	-
Other Development Exactions <sup>2</sup>	<u>1,450,000</u>	<u>2,050,000</u>	<u>3,500,000</u>	<u>2,050,000</u>	<u>3,500,000</u>
Subtotal	\$5,380,000	\$(690,000)	\$4,690,000	\$(690,000)	\$4,690,000
<b>Local, State &amp; Federal Funds</b>					
State/Federal Funds <sup>2</sup>	\$67,200,000	58,800,000	126,000,000	58,800,000	126,000,000
Local Capital Funds <sup>2</sup>	26,420,000	19,750,000	46,170,000	19,750,000	46,170,000
Local Operating Funds	<u>4,560,000</u>	<u>13,380,000</u>	<u>17,940,000</u>	<u>13,380,000</u>	<u>17,940,000</u>
Subtotal	\$98,180,000	\$91,930,000	\$190,110,000	\$91,930,000	\$190,110,000
<b>Other Funds</b>					
Interest Earnings <sup>2</sup>	\$250,000	\$230,000	\$480,000	\$230,000	\$480,000
Miscellaneous <sup>2</sup>	<u>20,000</u>	-	<u>20,000</u>	-	<u>20,000</u>
Subtotal	<u>\$270,000</u>	<u>\$230,000</u>	<u>\$500,000</u>	<u>\$230,000</u>	<u>\$500,000</u>
<b>Total Revenue</b>	<b>\$114,600,000</b>	<b>\$282,950,000</b>	<b>\$397,550,000</b>	<b>\$363,160,000</b>	<b>\$477,760,000</b>
<b>PLAN COSTS</b>					
Plan Implementation (Permit Term)	\$105,500,000	\$242,800,000	\$348,300,000	\$312,100,000	\$417,600,000
Endowment Fund Contribution	-	-	<u>48,130,000</u>	-	<u>59,040,000</u>
<b>Total Costs</b>	-	-	<b>\$396,430,000</b>	-	<b>\$476,640,000</b>
<b>Surplus / (Deficit)</b>			<b>\$1,120,000</b>		<b>\$1,120,000</b>

<sup>1</sup> Total Year 0-30 revenue estimated based on adjusting 2006 Plan estimate of \$8,930,000 by the inflation index for 2006.

<sup>2</sup> Future year estimates based on annual average actual revenue for prior four years, except: (1) future temporary impact fee revenue estimated at 50 percent of prior revenue reflecting reduced PG&E need for Plan coverage, (2) future state/federal land acquisition funds are estimated at 40 percent of prior revenue to reflect funding commitment, and (3) future local land acquisition funds estimated at 55 percent of prior revenue to reflect loss of non-recurring revenue.

<sup>3</sup> Prior year revenue deducted from future years because funding must augment and not substitute for Plan obligations (see Chapter 9 of the Plan).

Sources: Tables 5.3 and 6.1, Appendices C and D (Summary), Appendix F, Table F.2.

**Table 8.2: Funding Plan Comparison – Initial Urban Development Area (2016 dollars)**

<b>Cost Category</b>	<b>2006 Plan</b>		<b>2013 Fee Audit</b>		<b>2017 Fee Audit</b>		<b>2017 Audit vs. 2006 Plan</b>		<b>2017 Audit vs. 2013 Audit</b>	
<b>Mitigation Fees</b>										
Development Fee	\$133,760,000	40%	\$154,110,000	40%	\$151,350,000	38%	\$17,590,000	13%	\$(2,760,000)	(2%)
Wetland Mitigation Fee	25,170,000	7%	42,140,000	11%	36,550,000	9%	11,380,000	45%	(5,590,000)	(13%)
Rural Infrastructure Fees	10,110,000	3%	10,040,000	3%	9,670,000	2%	(440,000)	(4%)	(370,000)	(4%)
Temporary Impact Fee	-	0%	1,210,000	0%	4,680,000	1%	4,680,000	NA	3,470,000	287%
Subtotal	\$169,040,000	50%	\$207,500,000	53%	\$202,250,000	51%	33,210,000	20%	(5,250,000)	(3%)
<b>Other Fees &amp; Exactions</b>										
Administrative Charges	\$-	0%	\$1,450,000	0%	\$1,190,000	0%	1,190,000	NA	\$(260,000)	(18%)
Non-Covered Activities	-	0%	-	0%	-	0%	-	NA	-	NA
Other Development Exactions	-	0%	1,220,000	0%	3,500,000	1%	3,500,000	NA	2,280,000	187%
Subtotal	\$-	0%	\$2,670,000	1%	\$4,690,000	1%	4,690,000	NA	2,020,000	76%
<b>Local, State &amp; Federal Funds</b>										
State/Federal Funds	\$106,960,000	32%	\$110,150,000	28%	\$126,000,000	32%	\$19,040,000	18%	\$15,850,000	14%
Local Land Capital Funds	39,620,000	12%	44,130,000	11%	46,170,000	12%	6,550,000	17%	2,040,000	5%
Local Operating Funds	22,640,000	7%	25,210,000	6%	17,940,000	5%	(4,700,000)	(21%)	(7,270,000)	(29%)
Subtotal	\$169,220,000	50%	\$179,490,000	46%	\$190,110,000	48%	20,890,000	12%	10,620,000	6%
<b>Other Funds</b>										
Interest Earnings <sup>1</sup>	\$-	0%	\$-	0%	\$480,000	0%	480,000	NA	480,000	NA
Miscellaneous <sup>1</sup>	-	0%	-	0%	20,000	0%	20,000	NA	20,000	NA
Subtotal	\$-	0%	\$-	0%	\$500,000	0%	\$500,000	NA	500,000	NA
<b>Total Funding</b>	<b>\$338,260,000</b>	<b>100%</b>	<b>\$389,660,000</b>	<b>100%</b>	<b>\$397,550,000</b>	<b>100%</b>	<b>\$59,290,000</b>	<b>18%</b>	<b>\$7,890,000</b>	<b>2%</b>
<b>Total Costs</b>	<b>336,260,000</b>		<b>386,820,000</b>		<b>396,430,000</b>		<b>60,170,000</b>	<b>18%</b>	<b>9,610,000</b>	<b>2%</b>
<b>Surplus / (Deficit)</b>	<b>\$2,000,000</b>		<b>\$2,840,000</b>		<b>\$1,120,000</b>		<b>\$(880,000)</b>		<b>\$(1,720,000)</b>	

Note: 2006 Plan and 2013 Audit revenues are inflated to 2016 dollars using the inflation index in Appendix F.

Sources: 2006 Plan, Table 9-8 and Appendix H; 2013 Fee Audit, Table 7.1, p. 43; Table 8.1.

**Table 8.3: Funding Plan Comparison – Maximum Urban Development Area (2016 dollars)**

<b>Cost Category</b>	<b>2006 Plan</b>		<b>2013 Fee Audit</b>		<b>2017 Fee Audit</b>		<b>2017 Audit vs. 2006 Plan</b>		<b>2017 Audit vs. 2013 Audit</b>	
<b>Mitigation Fees</b>										
Development Fee	\$192,100,000	48%	\$206,470,000	46%	\$225,910,000	47%	\$33,810,000	18%	\$19,440,000	9%
Wetland Mitigation Fee	27,180,000	7%	48,100,000	11%	42,200,000	9%	15,020,000	55%	(5,900,000)	(12%)
Rural Infrastructure Fees	10,110,000	3%	10,040,000	2%	9,670,000	2%	(440,000)	(4%)	(370,000)	(4%)
Temporary Impact Fee	-	0%	1,210,000	0%	4,680,000	1%	4,680,000	NA	3,470,000	287%
Subtotal	\$229,390,000	58%	\$265,820,000	59%	\$282,460,000	59%	53,070,000	23%	16,640,000	6%
<b>Other Fees &amp; Exactions</b>										
Administrative Charges	\$-	0%	\$1,450,000	0%	\$1,190,000	0%	1,190,000	NA	\$(260,000)	(18%)
Non-Covered Activities	-	0%	-	0%	-	0%	-	NA	-	NA
Other Development Exactions	-	0%	1,220,000	0%	3,500,000	1%	3,500,000	NA	2,280,000	187%
Subtotal	\$-	0%	\$2,670,000	1%	\$4,690,000	1%	4,690,000	NA	2,020,000	76%
<b>Local, State &amp; Federal Funds</b>										
State/Federal Funds	\$106,960,000	27%	\$110,150,000	25%	\$126,000,000	26%	\$19,040,000	18%	\$15,850,000	14%
Local Capital Funds	39,620,000	10%	44,130,000	10%	46,170,000	10%	6,550,000	17%	2,040,000	5%
Local Operating Funds	22,640,000	6%	25,210,000	6%	17,940,000	4%	(4,700,000)	(21%)	(7,270,000)	(29%)
Subtotal	\$169,220,000	42%	\$179,490,000	40%	\$190,110,000	40%	20,890,000	12%	10,620,000	6%
<b>Other Funds</b>										
Interest Earnings <sup>1</sup>	\$-	0%	-	0%	\$480,000	0%	480,000	NA	480,000	NA
Miscellaneous <sup>1</sup>	-	0%	-	0%	20,000	0%	20,000	NA	20,000	NA
Subtotal	\$-	0%	\$-	0%	\$500,000	0%	\$500,000	NA	500,000	NA
<b>Total Funding</b>	<b>\$398,610,000</b>	<b>100%</b>	<b>\$447,980,000</b>	<b>100%</b>	<b>\$477,760,000</b>	<b>100%</b>	<b>\$79,150,000</b>	<b>20%</b>	<b>\$29,780,000</b>	<b>7%</b>
<b>Total Costs</b>	<b>396,200,000</b>		<b>445,140,000</b>		<b>476,640,000</b>		<b>80,440,000</b>	<b>20%</b>	<b>31,500,000</b>	<b>7%</b>
<b>Surplus / (Deficit)</b>	<b>\$2,410,000</b>		<b>\$2,840,000</b>		<b>\$1,120,000</b>		<b>\$(1,290,000)</b>		<b>\$(1,720,000)</b>	

Note: 2006 Plan and 2013 Audit revenues are inflated to 2016 dollars using the inflation index in Appendix F.  
 Sources: 2006 Plan, Table 9-8 and Appendix H; 2013 Fee Audit, Table 7.1, p. 43; Table 8.1.

## APPENDIX A: DEVELOPMENT IMPACTS THROUGH 2016

The following tables provide detail for impacts from covered activities (impacts from development projects and other covered activities) for years 1-9 (2008 through 2016) of the Plan:

**Table A.1** provides detail for permanent land conversion.

**Table A.2** provides detail for wetland impacts.

**Table A.3** provides detail for temporary land conversion and wetland impacts.

**Table A.1: Covered Activities Through December 31, 2016 (Year 9) – Permanent Land Conversion (acres)**

Year	Project	Urban Development Area			Rural Infra-structure <sup>1</sup>
		Zone 1	Zone 2	Zone 3	
2009	CCC LP07-2033: Verizon Wireless Martin Cell Tower Project				1.39
2009	CCC LP09-2002: US Coast Guard/SBA Cell Tower Project				1.158
2009	PSE: State Route 4 Bypass, Segment 4, Phase 2	24.69	23.81		
2010	PSE: CalTrans SR4 Median Buffer & Shoulder Widening Project				7.34
2010	CCC PWD: Vasco Road Safety Improvements				6.201
2010	CCC LP09-2033: Horizon Cell Tower Project				1.19
2010	PSE: eBart Phase 1 Project				0.3
2011	CCC LP10-2070: Morgan Territory Rd Telecommunications Facility Project				0.901
2011	CCC LP09-2037: Camino Diablo Vasco Telecommunications Facility Project				2.35
2011	CCC LP10-2082: J4 Byron Hot Springs Communications Facility				0.8
2011	CCC PWD: Balfour Rd Culvert Repair Project				0.01
2011	CCC PWD: Byron Hwy Shoulder Widening Project-Phase 1				0.44
2011	CCC PWD: Vasco Camino Diablo Intersection				1.94
2011	PSE: ConocoPhillips Line 200 Repair & Anode		0.003		
2011	PSE: Oakley Generating Station (Original-3rd Amendment) Project <sup>Note 2</sup>	16.72			
2011	City of Oakley: Stonewood III-Unit #1 Sub #9183	2.21			
2011	City of Pittsburg: Trash Capture Demonstration Project	0.02			
2011	City of Brentwood: New Meetinghouse Brentwood			3.4	
2012	CCC PWD: Deer Valley Road Safety Improvement Project				0.53

Year	Project	Urban Development Area			Rural Infra-structure <sup>1</sup>
		Zone 1	Zone 2	Zone 3	
2012	CCC PWD: Marsh Creek Should Widening near Round Valley Regional Preserve Project				2.79
2012	CCC BIG12-0004598: EBRIX Los Vaqueros Communication Facility				0.026
2012	CCC LP10-2009: Clayton Regency Mobile Home Park Emergency H2O Pipeline Extension				0.5
2012	EBRPD Round Valley Pedestrian Bridge Project				0.15
2012	City of Oakley: iPark Oakley Project	9.14			
2012	PSE: eBart Phase II Extension				37.91
2012	PSE: eBart Phase II Extension-1st & 2nd Amend				2.56
2012	Upper Sand Creek Detention Basin Expansion		6.89		
2013	City of Brentwood: AutoZone Store 4136	0.9			
2013	City of Oakley: Emerson Ranch	138.25			
2013	CCC: Clayton Regency Mobile Home Park Stormdrain Outfall				0.2
2013	PSE: SR160/SR4 Bypass Phase II Connectors	18.01			
2013	Phillips 66 Pipeline Repair, 196,920.27.22				
2013	PSE: Chevron Pipeline KLM Site 1357 Repair		0.007		
2014	City of Brentwood: Ferro/Ronconi	42.23			
2014	CCC PWD: Pacifica Ave Sidewalk	0.204			
2014	CCC PWD: Marsh Creek Bridge Scour Repair				0.003
2014	CCC PWD: Marsh Creek 142 Wingwall Repair				0.009
2014	CCC PWD: Deer Valley Road Shoulder Widening				1.77
2014	CCC PWD: Marsh Creek Detention Center Bridge Replacement				0.18
2014	CCC PWD: Marsh Creek Road Safety Improvements				1.3
2014	CCC LP13-2097: Verizon Wireless Bethel Island	0.036			
2014	CCC LP13-2111: AT&T Co-location Marsh Creek Monopine				0.000226
2014	CCC LP13-2069: Marsh Creek Cell Tower				0.019
2015	City of Brentwood: Bella Fiore	13.5			
2015	City of Brentwood: Celebration Preschool	0.87			
2015	City of Brentwood: Mangini	9.77			
2015	CCC LP14-2044: Mariner's Discovery Church	3.49			
2015	City of Oakley PW: Marsh Creek Pedestrian Bridge	0.02			
2015	City of Brentwood: Mission Grove	15.6			
2015	City of Brentwood: Palmilla Phase I	20.64			
2015	Duane Martin Jr. Vasco Caves				0.1
2015	City of Pittsburg: Greystone Place			4.9	
2015	Hess Water Trough Installation				0.01
2015	Horse Valley Wetland Creation Test Pits				
2015	City of Brentwood PW: John Muir Parkway-Phase II	0.33	2.36		
2015	PSE: PG&E Pole Replacement				

Year	Project	Urban Development Area			Rural Infra-structure <sup>1</sup>
		Zone 1	Zone 2	Zone 3	
2015	PSE: Phillips 66 Line 200 Vasco Rd Remediation				
2015	Vaquero Farms S. Wetland Creation & Repair				0.01
2015	CCC PWD: Vasco Road Embankment Repair				0.02
2015	CCC PWD: Marsh Creek Safety Improvement Project (Fed. No. HRRL-5928 (095))		0.76		
2016	City of Brentwood: Maffeo	9.1			
2016	City of Brentwood: Palmilla Phase II	38.7			
2016	City of Brentwood: Sparrow at Marsh Creek	6.71			
2016	City of Brentwood: Cornerstone Church	4.51			
2016	City of Brentwood: Elite (Pacific Union) Self Storage	4			
2016	City of Oakley: Verizon Wireless Empire Oakley Road	0.33			
2016	City of Pittsburg: Sonic Drive-In Project			1.22	
2016	City of Brentwood: Tractor Supply Project			2.8	
2016	City of Pittsburg: Delta Gateway Pad No. 12	1.8			
2016	CCC PWD: Port Chicago Hwy-Willow Pass Sidewalk Improvements	0.156		0.143	
2016	CCC PWD: Canal Road Sidewalk and Bike Lanes Project	0.4709			
2016	CCC LP15-2029: Timber Rd Communication Facility				0.05
2016	CCC TP12-0026: Moita Road Improvement Project		0.36		0.9
2016	PSE: SR4/Balfour & First Amendment <sup>Note 2</sup>	29.58			
	<b>Total</b>	<b>411.9869</b>	<b>34.19</b>	<b>12.463</b>	<b>73.057226</b>
<p>Note: "PSE" is participating special entity. "CCC" is Contra Costa County. "CTR" is contribution to recovery. Certain impacts reported in the 2013 Audit have been corrected in this table. Impact to other land cover types not tracked for Stay-Ahead provision (see Table 14 in the Conservancy's Annual Report) are not included here because they are impacts from non-covered activities and are not counted against permit limits.</p> <p><sup>1</sup> Covered activities occurring outside the UDA could occur in either zones 1 or 2. Includes rural road projects as shown in Table 9-6 of the 2006 Plan, plus rural infrastructure projects and activities, and activities within the preserve system (see Sections 2.3.2 through 2.3.4 of the 2006 Plan).</p> <p><sup>2</sup> There were various amendments to this project over multiple years and only the final total impacts are shown here.</p> <p>Sources: ECCC Habitat Conservancy.</p>					

**Table A.2: Covered Activities Through December 31, 2016 (Year 9) – Aquatic Land Cover Types**

Year	Project	Wetlands							Streams	
		Total	Riparian/Woodland	Permanent Wetland	Seasonal Wetland	Alkali Wetland	Pond	Reservoir	Slough	≤ 25 ft
	<i>Units</i>	<i>(acres)</i>							<i>(linear feet)</i>	
2008	CCC PWD: Marsh Creek Emergency Bridge Repair Project									0.3096
2009	PSE: State Route 4 Bypass, Segment 4, Phase 2	0.19	0.19							
2009	City of Pittsburg: RileMart- 2515 Ant-Pitt Hwy Use 1									
2010	PSE: CalTrans SR4 Median Buffer & Shoulder Widening Project	0.41	0.05		0.29			0.07		6
2010	CCC PWD: Vasco Road Safety Improvements	0.007		0.006	0.001				110	22
2011	CCC PWD: Balfour Rd Culvert Repair Project									12
2011	CCC PWD: Byron Hwy Shoulder Widening Project-Phase 1									47
2011	City of Pittsburg: Trash Capture Demonstration Project	0.02		0.02						
2012	CCC PWD: Deer Valley Road Safety Improvement Project	0.13				0.13				
2012	CCC PWD: Marsh Creek Should Widening near Round Valley Regional Preserve Project	0.064			0.064				29	
2012	Upper Sand Creek Detention Basin Expansion	0.17	0.11	0.04	0.02				295	
2013	CCC: Clayton Regency Mobile Home Park Stormdrain Outfall	0.1	0.1							
2013	PSE: Chevron Pipeline KLM Site 1357 Repair	0.007				0.007				
2014	CCC PWD: Pacifica Ave Sidewalk	0.044	0.044							36
2014	PSE: Chevron Pipeline KLM 32- 1st Ammend									
2014	CCC PWD: Marsh Creek Bridge Scour Repair	0.003	0.003							23
2014	CCC PWD: Marsh Creek 142 Wingwall Repair	0.009	0.009							
2014	CCC PWD: Deer Valley Road Shoulder Widening	0.1					0.1			
2014	CCC PWD: Marsh Creek Detention Center Bridge Replacement	0.132	0.132							60
2014	CCC PWD: Marsh Creek Road Safety Improvements								148	
2015	City of Oakley PW: Marsh Creek Pedestrian Bridge									15
2015	City of Brentwood: Palmilla Phase I									25

Year	Project	Wetlands							Streams		
		Total	Riparian/Woodland	Permanent Wetland	Seasonal Wetland	Alkali Wetland	Pond	Reservoir	Slough	≤ 25 ft	> 25 ft
2015	CCC PWD: Marsh Creek Safety Improvement Project (Fed. No. HRRL-5928 (095))	0.02	0.02							29	
2016	CCC PWD: Canal Road Sidewalk and Bike Lanes Project	0.0039	0.0034		0.0005					21	
2016	CCC TP12-0026: Moita Road Improvement Project									45	
2016	PSE: SR4/Balfour & First Amendment <sup>Note 1</sup>	0.42	0.42								
	Total	1.8299	1.0814	0.066	0.3755	0.137	0.10	-	0.070	677.00	246.3096

Note: "PSE" is participating special entity. "CCC" is Contra Costa County. "CTR" is contribution to recovery.  
 Certain impacts reported in the 2013 Audit have been corrected in this table.  
 Aquatic impacts (wetlands and streams) are included in land conversion impacts and are shown separately because of the additional wetland fee that applies.

<sup>1</sup> There were various amendments to this project over multiple years and only the final total impacts are shown here.

Sources: ECCC Habitat Conservancy.

**Table A.3: Covered Activities Through December 31, 2016 (Year 9) – Temporary Impacts**

Year	Project	Land Conversion <i>(acres)</i>	Wet-lands <i>(acres)</i>	Streams	
				≤ 25 ft <i>(linear feet)</i>	> 25 ft
	<i>Units</i>				
2008	PSE: Ameresco Keller Canyon Landfill Gas Power Plant Project	0.6			
2008	CCC PWD: Marsh Creek Emergency Bridge Repair Project	0.038	0.038		38.7
2008	City of Pittsburg: Mt. Diablo Recycling Center Project	5			
2009	CCC LP07-2033: Verizon Wireless Martin Cell Tower Project	0.65			
2009	PSE: PG&E Contra-Costa-Las Positas Reconductoring Project	22.36			
2009	City of Pittsburg: RileMart- 2515 Ant-Pitt Hwy Use 1	12.5			
2010	PSE: CalTrans SR4 Median Buffer & Shoulder Widening Project	15.28	0.4		
2010	CCC PWD: Vasco Road Safety Improvements	5.4418	0.1228	230.5	118
2010	CCC LP09-2033: Horizon Cell Tower Project	0.74			
2010	PSE: ConocoPhillips Line 200 Repair & 1st Ammend	0.46			
2010	PSE: Shell Oil Coalinga-Avon Pipeline Repair	0.27			
2010	PSE: eBart Phase 1 Project	3.5			
2010	City of Pittsburg: JBM Construction Use of 2515 Ant-Pitts Hwy (Use 2)	12.5			
2010	City of Pittsburg: USS Psoco Site L-A Material	7.81			
2011	CCC LP10-2070: Morgan Territory Rd Telecommunications Facility Project	0.031			
2011	CCC LP09-2037: Camino Diablo Vasco Telecommunications Facility Project	0.86			
2011	CCC LP10-2082: J4 Byron Hot Springs Communications Facility	0.25			
2011	CCC PWD: Balfour Rd Culvert Repair Project	0.094		15	28
2011	CCC PWD: Byron Hwy Shoulder Widening Project-Phase 1	0.74			112
2011	CCC PWD: Vasco Camino Diablo Intersection	4.85			
2011	PSE: ConocoPhillips Line 200 Repair & Anode	1.37			
2011	PSE: ConocoPhillips Line 200 Repair-2nd Amend	0.05			
2011	PSE: Shell Oil Coalinga-Avon Pipeline Repair- 1st Amend	0.05			
2011	PSE: Oakley Generating Station (Original-3rd Amendment) Project <sup>Note 3</sup>	42.02			
2011	City of Pittsburg: Trash Capture Demonstration Project	0.06			
2011	City of Brentwood: New Meetinghouse Brentwood				
2011	City of Pittsburg: Bay Cities Paving & Grading for CA Ave Temp Storage Site	1.96			
2012	CCC PWD: Deer Valley Road Safety Improvement Project	1.63	0.23		

Year	Project	Land Conversion	Streams		
			Wet-lands	≤ 25 ft	> 25 ft
	<i>Units</i>	<i>(acres)</i>	<i>(acres)</i>	<i>(linear feet)</i>	
2012	CCC PWD: Marsh Creek Should Widening near Round Valley Regional Preserve Project	1.418	0.028	24	
2012	CCC BIG12-0004598: EBRIX Los Vaqueros Communication Facility	1.0621			
2012	CCC LP10-2009: Clayton Regency Mobile Home Park Emergency H2O Pipeline Extension	2.3			
2012	EBRPD Round Valley Pedestrian Bridge Project	0.83			
2012	PSE: CalTrans SR4 Median Buffer & Shoulder Widening Project- 2nd Amendment	1.05	0.6		
2012	PSE: Phillips 66 Vasco Road Line 200 Pipeline Emergency Release	24.22			
2012	PSE: Shell Oil Coalinga-Avon Pipeline Repair-2nd Amend	0.05			
2012	Emergency Marsh Creek Detention Center Bridge Repair	0.074		29	
2012	PSE: eBart Phase II Extension	2.22			
2012	PSE: eBart Phase II Extension-1st & 2nd Amend				
2012	Upper Sand Creek Detention Basin Expansion	57.63	3.38	3639	
2012	CCC PWD: Upper Sand Creek Detention Basin Excavation Project	5.3			
2012	City of Oakley PW: Marsh Creek Restoration at Creekside Park	3			
2013	CCC: Clayton Regency Mobile Home Park Stormdrain Outfall	0.08	0.04		
2013	City of Pittsburg: PGE PSEP California Avenue Valve Automation	1.55			
2013	PSE: SR160/SR4 Bypass Phase II Connectors	2.73			
2013	Phillips 66 Pipeline Repair, 196,920.27.22	0.13			
2013	PSE: Chevron Pipeline KLM Site 1357 Repair	0.837	0.599		
2013	PSE: Phillips 66 Pipeline Repair Line 200	0.25			
2013	PSE: Phillips 66 Pipeline Repair Line 200, First Ammend	0.8			
2013	PSE: Phillips 66 Pipeline Requirement Survey	0.002			
2013	PSE: PG&E Pittsburg-Tesla 230 kV Reconductoring & 1st Amend	10.74			
2013	CCC PWD: Marsh Creek Rd Emergency Cluvert Repair-Morgan Territory Rd	0.03			
2014	City of Brentwood PW: Non-potable Water Dist. System Phase II	0.8			
2014	CCC PWD: Three Stormwater Basins	0.201	0.201		
2014	City of Brentwood: Ferro/Ronconi				
2014	City of Pittsburg: Colombia Solar	96.69			
2014	City of Pittsburg: Mt. Diablo Recycling Center 5 ac Lease Site- 5 yr Ext.	5			
2014	City of Oakley: East Cypress Corridor Specific Plan/Stockpile Permit	25.74			

Year	Project	Land Conversion	Streams		
			Wet-lands	≤ 25 ft	> 25 ft
	<i>Units</i>	<i>(acres)</i>	<i>(acres)</i>	<i>(linear feet)</i>	
2014	CCC PWD: Pacifica Ave Sidewalk	0.143	0.013		33
2014	CCC PWD: Marsh Creek Reservoir- Trash Rack Replacement	0.17	0.02		
2014	PSE: PG&E CC-Moraga 230(kV) Reconductoring & 1st Amend	17.51			
2014	PSE: Chevron Pipeline KLM 32	0.032	0.005		
2014	PSE: Chevron Pipeline KLM 32- 1st Ammend	0.005	0.005		
2014	CCC PWD: Marsh Creek Bridge Scour Repair	0.075	0.038		30.5
2014	CCC PWD: Marsh Creek 142 Wingwall Repair	0.14	0.14	33	72
2014	CCC PWD: Deer Valley Road Shoulder Widening	3.89	0.04		
2014	CCC PWD: Marsh Creek Detention Center Bridge Replacement	0.318	0.016		60
2014	CCC PWD: Marsh Creek Road Safety Improvements	0.43		21	
2014	CCC LP13-2097: Verizon Wireless Bethel Island	0.943			
2014	CCC LP13-2111: AT&T Co-location Marsh Creek Monopine	0.722315			
2014	CCC LP13-2069: Marsh Creek Cell Tower	1.235			
2014	PSE: Shell Pipeline North 20 ILI Repair and 1st Ammend	0.116			
2015	City of Oakley PW: Marsh Creek Pedestrian Bridge	0.03		8	
2015	City of Brentwood: Mission Grove				
2015	City of Brentwood: Palmilla Phase I	0.08			20
2015	Duane Martin Jr. Vasco Caves	1.02			
2015	City of Pittsburg: Greystone Place				
2015	Hess Water Trough Installation	0.19	0.05		
2015	Horse Valley Wetland Creation Test Pits	0.74			
2015	City of Brentwood PW: John Muir Parkway-Phase II	2.94			
2015	PSE: PG&E Pole Replacement	0.003			
2015	PSE: Phillips 66 Line 200 Vasco Rd Remediation	1.9			
2015	Vaquero Farms S. Wetland Creation & Repair	1.63			
2015	CCC PWD: Vasco Road Embankment Repair	0.54			
2015	CCC PWD: Marsh Creek Safety Improvement Project (Fed. No. HRRL-5928 (095))	0.8			
2016	City of Oakley: Verizon Wireless Empire Oakley Road	1.48			
2016	CCC PWD: Port Chicago Hwy-Willow Pass Sidewalk Improvements	0.284			
2016	CCC PWD: Canal Road Sidewalk and Bike Lanes Project	1.025	0.006	6	
2016	CCC LP15-2029: Timber Rd Communication Facility	1.21			
2016	CCC TP12-0026: Moita Road Improvement Project	2.32			
2016	PSE: PG&E T1047A Hydrotest	1.47			
2016	CCC PWD: Clifton Court Road Bridge Repair Project	0.064	0.014		
	<b>Total</b>	<b>429.304215</b>	<b>5.9858</b>	<b>4,005.50</b>	<b>512.20</b>

Year	Project	Land Conversion	Streams		
			Wet-lands	≤ 25 ft > 25 ft	
	<i>Units</i>	<i>(acres)</i>	<i>(acres)</i>	<i>(linear feet)</i>	
<p>Note: "PSE" is participating special entity. "CCC" is Contra Costa County. "CTR" is contribution to recovery. Certain impacts reported in the 2013 Audit have been corrected in this table.</p> <p>Wetland and stream impacts are included in land conversion impacts and are shown separately because of the additional wetland fee that applies.</p> <p>Sources: ECCC Habitat Conservancy.</p>					

## **APPENDIX B: LAND ACQUISITION COST ANALYSIS**

The following tables provide detail for the land acquisition cost analysis update.

**Table B.1**

**REMAINING LAND ACQUISITION BY COST CATEGORY, Acres and Estimated Total Cost  
EAST CONTRA COSTA COUNTY HCP/NCCP  
2017 Update**

Acquisition Cost Category	Parcel Size	<u>Initial Urban Development Area</u>				<u>Maximum Urban Development Area</u>				
		Acres	% of Total	Estimated Cost	% of Total	Acres	% of Total	Estimated Cost	% of Total	
<u>OUTSIDE THE URBAN LIMIT LINE</u>										
1	120 + acres	10,022	70%	\$64,511,878	54%	14,410	71%	\$92,598,003	55%	
2	40 - 120 acres	1,814	13%	20,311,794	17%	3,252	16%	36,426,298	22%	
3	10 - 40 acres	521	4%	12,111,660	10%	627	3%	14,451,580	9%	
4	5 - 10 acres	15	0%	587,480	0%	33	0%	1,243,892	1%	
5	< 5 acres	-	0%	-	0%	4	0%	240,350	0%	
6	ALL, steep slopes	480	3%	2,160,000	2%	489	2%	2,202,300	1%	
<u>INSIDE THE URBAN LIMIT LINE</u>		1,422	10%	19,669,487	16%	1,465	7%	20,498,210	12%	
<b>TOTAL</b>		<b>14,273</b>	<b>100%</b>	<b>\$119,352,299</b>	<b>100%</b>	<b>20,281</b>	<b>100%</b>	<b>\$167,660,633</b>	<b>100%</b>	

Note: includes acres that may be acquired outside the Inventory Area and outside Acquisition Analysis zones that do not count towards preserve targets but are part of larger preserve parcels.

Source: East Contra Costa County Habitat Conservancy and Hausrath Economics Group

## Table B.2

### LAND ACQUISITION COST FACTOR EAST CONTRA COSTA COUNTY HCP/NCCP 2017 Update

#### OUTSIDE THE URBAN LIMIT LINE

#### Per Acre Land Value Factor

Acquisition Cost Category	Parcel Size	Slope Characteristics (percent of parcel)	Per Acre Land Value Factor					Change from 2012
			2003 Valuation	2005 Valuation	2006 Valuation	2012 Valuation	2017 Valuation	
1	120 + acres	< 26%	\$3,500	\$4,800	\$5,600	\$5,300	<b>\$6,400</b>	21%
2	40 - 120 acres	< 26%	\$6,000	\$8,200	\$9,600	\$7,500	<b>\$11,200</b>	49%
3	10 - 40 acres	< 26%	\$20,000	\$27,400	\$31,900	\$18,600	<b>\$22,000</b>	18%
4	5 - 10 acres	< 26%	\$35,000	\$48,000	\$56,000	\$49,000	<b>\$38,000</b>	-22%
5	< 5 acres	< 26%	\$50,000	\$68,600	\$80,000	\$70,000	<b>\$55,000</b>	-21%
6	ALL	> 26%	\$3,000	\$3,300	\$3,800	\$4,200	<b>\$4,500</b>	7%

#### INSIDE THE URBAN LIMIT LINE

#### Per Acre Land Value Factor

Acquisition Cost Category	Currently Designated for Development (Yes/No)	Slope Characteristics (percent of parcel)	Per Acre Land Value Factor					Change from 2012
			2003 Valuation	2005 Valuation	2006 Valuation	2012 Valuation	2017 Valuation	
7	No	<15%	\$14,500	\$18,300	\$21,300	<b>\$11,000</b>	<b>\$19,000</b>	73%
8	No	15-26%	\$10,100	\$12,700	\$14,800	<b>\$6,600</b>	<b>\$11,400</b>	73%
9	No	>26%	\$3,600	\$4,500	\$5,200	<b>\$2,800</b>	<b>\$4,800</b>	71%
10	Yes	<15%	\$45,000	\$56,800	\$66,200	<b>\$35,000</b>	<b>\$60,000</b>	71%
11	Yes	15-26%	\$31,500	\$39,760	\$46,400	<b>\$21,000</b>	<b>\$36,000</b>	71%
12	Yes	>26%	\$11,300	\$14,263	\$16,600	<b>\$8,800</b>	<b>\$15,000</b>	70%

#### INSIDE THE URBAN LIMIT LINE - BYRON AIRPORT

13	na	na	\$8,000	\$8,800	\$10,300	\$6,200	<b>\$10,700</b>	4%
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Note: The 2017 land cost factor for the Byron Airport Area is based on the \$8,000 per acre value estimated in 2003, adjusted by the 2017 percentage change from values originally estimated in 2003 for Cost Category 10--about 33 percent.

Source: East Contra Costa County Habitat Conservancy and Hausrath Economics Group

**Table B.3**

LAND ACQUISITION ANALYSIS - Price per acre for parcels &gt; 120 acres (nominal dollars)

EAST CONTRA COSTA COUNTY HCP/NCCP

2017 Update

Transaction ID	Project/Property Name	Year of Sale	Acres	Purchase	Price/Value
				Price/Market Value	per acre
<u>EBRPD/ECCC Habitat Conservancy Land Acquisitions</u>					
1	Souza 1 (appraisal)	2004 (2009)	575.1	\$2,759,085	\$4,798
2	Lentzner (appraisal)	2005 (2009)	320.0	\$1,340,000	\$4,188
3	Chaparral Springs	2008	183.0	\$1,322,650	\$7,228
4	Schwartz	2009	153.1	\$803,880	\$5,250
5	Souza 2	2009	190.6	\$1,692,000	\$8,879
6	Fox Ridge	2009	221.6	\$1,760,000	\$7,941
7	Vaquero Farms South	2009	708.2	\$2,454,400	\$3,466
8	Vaquero Farms North	2010	577.0	\$2,770,000	\$4,801
9	Martin	2010	232.4	\$2,025,855	\$8,717
10	Grandma's Quarter	2010	157.0	\$1,036,200	\$6,600
11	Ang	2010	460.6	\$2,763,840	\$6,000
12	Souza 3	2010	697.4	\$2,222,765	\$2,905
13	Irish Canyon - Chopra	2010	320.0	\$1,760,000	\$5,500
14	Barron	2010	798.0	\$2,952,600	\$3,700
15	Land Waste Management	2010	469.4	\$3,050,000	\$6,498
16	Austin 1 (Thomas Southern)	2010	852.3	\$3,240,000	\$3,801
17	Austin 2 (Thomas Central)	2010	160.0	\$624,000	\$3,900
19	Vaquero Farms Central	2012	319.9	\$1,855,700	\$5,800
23	Thomas North	2012	135.0	\$863,900	\$6,400
26	Smith	2014	960.0	\$5,376,000	\$5,600
27	Roddy Ranch (part)	2014	994.5	\$13,500,000	\$13,575
28	Viera/Perley	2015	260.0	\$1,950,000	\$7,500
30	Nunn	2016	646.0	\$6,072,000	\$9,400
32	Coelho	2016	199.4	\$1,495,750	\$7,500
<b>Weighted Average</b>					<b>\$6,203</b>
<u>Save Mount Diablo</u>					
SMD 4	Mangini Ranch	2007	208.0	\$1,454,530	\$6,993
SMD 23	Curry Canyon Ranch	2013	1,080.5	\$7,173,800	\$6,639
<b>Weighted Average</b>					<b>\$6,696</b>
<u>Contra Costa Water District</u>					
CCWD 5	Leonardini	2010	138.0	\$899,000	\$6,514
CCWD 6	Church Property	2011	340.0	\$2,618,000	\$7,700
CCWD 7	Evergreen	2011	658.0	\$5,800,000	\$8,815
<b>Weighted Average</b>					<b>\$8,202</b>
<b>Overall Weighted Average</b>					<b>\$6,426</b>
<b>Land Cost Factor for 2017 Update:</b>					<b>\$6,400</b>

Note: Adjustments for some of the acquisitions for the East Contra Costa County Habitat Conservancy remove the value of lease income and conservation easements: Souza 1, Vaquero Farms South, Martin, Souza 3, Irish Canyon, and Austin 1.

Souza 1 and Lentzner analyses reflect 2009 appraisals prepared for the Conservancy in support of matching funds applications. The appraisals assumed the properties were available for private ownership and accounted for the conservation easement value on Souza 1.

Sources: East Contra Costa Habitat Conservancy, Save Mount Diablo, Contra Costa Water District, and Hausrath Economics Group

**Table B.4****LAND ACQUISITION ANALYSIS - Price per acre for parcels 40 - 120 acres (nominal dollars)****EAST CONTRA COSTA COUNTY HCP/NCCP****2017 Update**

<b>Transaction ID</b>	<b>Project/Property Name</b>	<b>Year of Sale</b>	<b>Acres</b>	<b>Purchase Price/Market Value</b>	<b>Price/Value per acre</b>
<u>EBRPD/ECCC Habitat Conservancy Land Acquisitions</u>					
18	Affinito - large parcel (appraisal)	2012 (2010)	101.5	\$862,500	\$8,500
20	Galvin	2012	61.7	\$370,000	\$5,999
25	Adrienne Galvin	2013	112.0	\$884,400	\$7,900
31	Hanson Hills	2016	76.5	\$730,000	\$9,547
<b>Weighted Average</b>					<b>\$8,098</b>
<u>Save Mount Diablo</u>					
SMD 1	Wright Canyon	2001	76.0	\$640,000	\$8,421
SMD 20	Highland Springs	2012	105.0	\$495,000	\$4,714
SMD 22	Marsh Creek 8	2013	51.1	\$690,684	\$13,506
<b>Weighted Average</b>					<b>\$7,865</b>
<u>Contra Costa Water District</u>					
CCWD 4	Acrew	2010	103.0	\$694,000	\$6,738
<u>Contra Costa County Assessor's Data - Agricultural land use, unimproved or improvements less than 5 percent of value)</u>					
Assessor 25	Brentwood	2014	40.3	\$680,000	\$16,881
Assessor 26	Brentwood	2014	40.4	\$680,000	\$16,828
Assessor 27	Brentwood	2015	40.4	\$1,335,000	\$33,012
Assessor 28	Brentwood	2016	50.3	\$375,000	\$7,463
Assessor 29	Byron	2013	72.9	\$1,000,000	\$13,710
Assessor 30	Knightsen	2012	73.8	\$725,000	\$9,827
Assessor 31	Byron	2015	76.4	\$1,712,500	\$22,417
Assessor 32	Byron	2015	80.0	\$1,500,000	\$18,750
Assessor 33	Byron	2014	85.0	\$550,000	\$6,471
Assessor 34	Byron	2013	108.9	\$500,000	\$4,592
Assessor 35	Brentwood	2016	57.7	\$385,000	\$6,669
Assessor 36	Byron	2016	68.8	\$760,000	\$11,053
Assessor 37	Brentwood	2014	49.3	\$1,000,000	\$20,284
Assessor 38	Byron	2016	40.9	\$1,000,000	\$24,438
<b>Weighted Average</b>					<b>\$13,787</b>
<b>Overall Weighted Average</b>					<b>\$11,178</b>
<b>Land Cost Factor for 2017 Update:</b>					<b>\$11,200</b>

Note: Affinito value reflects the appraised market value of the largest parcel in a five-parcel acquisition that closed in February 2012. The value is adjusted to reflect only the unimproved land, as presented in the 2010 appraisal.

Sources: East Contra Costa Habitat Conservancy, Save Mount Diablo, Contra Costa Water District, Contra Costa County Assessor, and Hausrath Economics Group

## Table B.5

### LAND ACQUISITION ANALYSIS - Price per acre for parcels 10 - 40 acres (nominal dollars)

#### EAST CONTRA COSTA COUNTY HCP/NCCP

#### 2017 Update

Transaction ID	Project/Property Name	Year of Sale	Acres	Purchase Price/Market Value	Price/Value per acre
<u>EBRPD/ECCC Habitat Conservancy Land Acquisitions</u>					
21	Moss Rock	2012	20.5	\$410,000	\$20,010
22	Fan	2012	21.0	\$220,000	\$10,476
<b>Weighted Average</b>					<b>\$15,184</b>
<u>Save Mount Diablo</u>					
SMD 3	Young Canyon	2006	17.6	\$300,000	\$17,026
SMD 7	Marsh Creek 2	2008	17.0	\$320,000	\$18,824
SMD 12	Oak Hill	2010	10.0	\$87,500	\$8,750
SMD 13	Oak Hill	2010	10.0	\$87,500	\$8,750
SMD 14	Oak Hill	2010	10.0	\$87,500	\$8,750
SMD 15	Oak Hill	2010	10.0	\$87,500	\$8,750
<b>Weighted Average</b>					<b>\$12,999</b>
<u>Contra Costa County Assessor's Data - Agricultural land use, unimproved or improvements less than 5 percent of value)</u>					
Assessor 14	Brentwood	2015	10.0	\$280,000	\$27,978
Assessor 15	Knightsen	2015	10.1	\$295,000	\$29,093
Assessor 16	Oakley	2015	10.3	\$250,000	\$24,307
Assessor 17	Knightsen	2013	10.6	\$395,000	\$37,194
Assessor 18	Brentwood	2016	14.5	\$490,000	\$33,910
Assessor 19	Byron	2014	15.0	\$300,000	\$20,000
Assessor 20	Brentwood	2012	16.9	\$478,000	\$28,284
Assessor 21	Brentwood	2014	19.6	\$650,000	\$33,101
Assessor 22	Brentwood	2013	21.5	\$450,000	\$20,971
Assessor 23	Byron	2016	31.1	\$700,000	\$22,509
Assessor 24	Clayton	2014	20.3	\$625,000	\$30,788
<b>Weighted Average</b>					<b>\$27,310</b>
<b>Overall Weighted Average</b>					<b>\$22,003</b>
<b>Land Cost Factor for 2017 Update:</b>					<b>\$22,000</b>

Sources: East Contra Costa Habitat Conservancy, Save Mount Diablo, Contra Costa County Assessor, and Hausrath Economics Group

**Table B.6****LAND ACQUISITION ANALYSIS - Price per acre for parcels 5 - 10 acres (nominal dollars)****EAST CONTRA COSTA COUNTY HCP/NCCP****2017 Update**

<b>Transaction ID</b>	<b>Project/Property Name</b>	<b>Year of Sale</b>	<b>Acres</b>	<b>Purchase Price/Market Value</b>	<b>Price/Value per acre</b>
<b>EBRPD/ECCC Habitat Conservancy Land Acquisitions</b>					
18	Affinito - part (appraisal)	2012 (2010)	6.50	\$215,000	\$33,077
<b>Save Mount Diablo</b>					
SMD 6	Marsh Creek 1	2007	8.92	\$315,000	\$35,314
SMD 10	Dry Creek	2010	5.18	\$84,000	\$16,216
SMD 16	Marsh Creek 5	2011	7.37	\$125,000	\$16,972
SMD 18	Marsh Creek 6	2011	5.74	\$395,000	\$68,815
SMD 19	Marsh Creek 7	2011	7.57	\$574,000	\$75,826
<b>Weighted Average</b>					<b>\$42,933</b>
<b>Contra Costa County Assessor's Data - Rural land use, unimproved or improvements less than 5 percent of value</b>					
Assessor 2	Brentwood	2015	5.00	\$225,000	\$45,000
Assessor 3	Clayton	2015	5.01	\$220,000	\$43,912
Assessor 4	Brentwood	2014	5.02	\$250,000	\$49,801
Assessor 5	Knightsen	2016	5.81	\$275,000	\$47,332
Assessor 6	Clayton	2015	6.42	\$295,000	\$45,950
Assessor 7	Brentwood	2014	6.45	\$262,500	\$40,698
Assessor 8	Knightsen	2015	8.55	\$335,000	\$39,190
Assessor 9	Knightsen	2013	8.87	\$210,000	\$23,675
Assessor 10	Knightsen	2016	9.33	\$295,000	\$31,618
Assessor 11	Brentwood	2013	9.44	\$220,000	\$23,305
Assessor 12	Knightsen	2016	9.49	\$295,000	\$31,085
Assessor 13	Brentwood	2016	9.72	\$405,000	\$41,667
<b>Weighted Average</b>					<b>\$36,893</b>
<b>Overall Weighted Average</b>					<b>\$38,314</b>
<b>Land Cost Factor for 2017 Update:</b>					<b>\$38,000</b>

Note: Affinito value reflects the appraised market value of the 6.5 acre parcel in a five-parcel acquisition that closed in February 2012. The value of that land as an unimproved parcel was appraised independently in 2010.

Sources: East Contra Costa Habitat Conservancy, Save Mount Diablo, Contra Costa County Assessor, and Hausrath Economics Group

**Table B.7****LAND ACQUISITION ANALYSIS - Price per acre for parcels less than 5 acres (nominal dollars)****EAST CONTRA COSTA COUNTY HCP/NCCP****2017 Update**

<b>Transaction ID</b>	<b>Project/Property Name</b>	<b>Year of Sale</b>	<b>Acres</b>	<b>Purchase Price/Market Value</b>	<b>Price/Value per acre</b>
<u>EBRPD/ECCC Habitat Conservancy Land Acquisitions</u>					
18	Affinito - A (appraisal)	2012 (2010)	3.94	\$195,000	\$49,492
18	Affinito - B (appraisal)	2012 (2010)	2.69	\$175,000	\$65,056
18	Affinito - C (appraisal)	2012 (2010)	1.89	\$165,000	\$87,302
24	Alaimo	2013	2.31	\$185,000	\$80,087
29	Clayton Radio LLC	2015	2.02	\$75,000	\$37,129
<u>Save Mount Diablo</u>					
SMD 8	Marsh Creek 4	2008	2.65	\$325,000	\$122,642
<u>Contra Costa County Assessor's Data - Rural land use, unimproved</u>					
Assessor 1	Brentwood	2015	1.57	\$120,000	\$76,433
<b>Overall Weighted Average</b>					<b>\$72,642</b>
<b>Land Cost Factor for 2017 Update:</b>					<b>\$55,000</b>

Note: The Affinito A, B, and C values reflects the appraised market values of each of the three small parcels in a five-parcel acquisition tht closed in February 2012. The unimproved parcels were appraised independently in 2010.

Only a small number of parcels less than 5 acres might be acquired as part of the acquisition strategy to fill gaps between larger parcels. Following the rationale presented in "NCCP/HCP Land Cost Data", Technical Memorandum to John Kopchik, prepared by Economic & Planning Systems, August 3, 2006 and included in Appendix G: HCP/NCCP Cost Data, the value assumption is based on a per-acre premium above the average value for the 5 - 10 acre parcels (\$38,000 for this 2017 update). In the 2006 analysis, the premium was about 40 percent. This 2017 analysis assumes a roughly similar premium, resulting in the \$55,000 per acre land cost factor for parcels less than five acres.

Sources: East Contra Costa Habitat Conservancy, Save Mount Diablo, Contra Costa County Assessor, and Hausrath Economics Group

**Table B.8****LAND ACQUISITION ANALYSIS - Basis for price per acre calculation for parcels inside the Urban Limit Line****EAST CONTRA COSTA COUNTY HCP/NCCP****2017 Update**

Item	Value		Source
Average Sales Price Per Single Family Unit	\$590,000	a	New Home Sales 2016 Antioch, Brentwood, Oakley, and Pittsburg
Units per Gross Acre	4.7	b	Average Lot Size of 7,000 sqft and net to gross ratio of 75 percent
Total Development Value	\$2,753,614	c=a*b	Calculated
Raw Entitled Land Value as % of Development Value	9.0%	d	Based on standard 10 percent ratio, adjusted down slightly based on real estate broker conversations
Raw Entitled Land Value	\$247,825	e=c*d	Calculated
Discount Rate	12%	f	Average land speculator discount rate
Category 10 - 12.5 years to entitlement/ development	\$60,106	$g=e/(1+f)^{12.5}$	Calculated
Category 7 - 22.5 years to entitlement/ development	\$19,353	$h=e/(1+f)^{22.5}$	Calculated

Note: This table updates the cost factors in the calculations for this land cost factor as established in the August 3, 2006 Technical Memorandum from Economic & Planning Systems, "NCCP/HCP Land Cost Data". The average sales price for new single family units is updated to reflect current market conditions.

This table calculates the average values for cost categories 7 and 10, Following the methodology established in 2006, the values for categories 8 and 11 are discounted 40 percent from the value for a level site and the values for categories 9 and 12 are discounted 75 percent from the average for the level site.

Sources: "Annual New Home Sale Data for Selected Contra Costa County Cities," from CoreLogic provided by DataquickNews; Hausrath Economics Group

## **APPENDIX C: INITIAL UDA COST MODEL UPDATE**

The following tables provide comprehensive documentation for the cost model update based on estimated impacts for the initial urban development area.

East Contra Costa County HCP/NCCP  
2017 Update  
Implementation Cost Data and Assumptions with  
Initial Urban Development Area

## Summary of East Contra Costa HCP Implementation Costs for Initial Urban Development Area

### 2017 Update

(2016 dollars rounded to the nearest \$10,000)

#### Total Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$160,000	\$6,800,000	\$5,760,000	\$4,630,000	\$4,640,000	\$4,650,000	\$26,630,000
Land Acquisition	\$170,000	\$88,930,000	\$36,960,000	\$30,500,000	\$30,500,000	\$30,500,000	\$217,550,000
Planning and Design	\$0	\$1,930,000	\$2,110,000	\$1,640,000	\$1,060,000	\$1,060,000	\$7,810,000
Habitat Restoration/Creation	\$0	\$3,910,000	\$11,290,000	\$9,410,000	\$9,410,000	\$9,410,000	\$43,430,000
Environmental Compliance	\$0	\$770,000	\$1,060,000	\$990,000	\$820,000	\$0	\$3,640,000
Preserve Management and Maintenance	\$0	\$1,930,000	\$5,270,000	\$5,470,000	\$7,620,000	\$8,690,000	\$28,990,000
Monitoring, Research, and Adaptive Management	\$0	\$900,000	\$2,410,000	\$2,770,000	\$3,230,000	\$3,580,000	\$12,890,000
Remedial Measures	\$0	\$0	\$330,000	\$200,000	\$760,000	\$1,800,000	\$3,080,000
Contingency	\$0	\$0	\$1,060,000	\$960,000	\$1,090,000	\$1,170,000	\$4,280,000
<b>Total</b>	<b>\$330,000</b>	<b>\$105,170,000</b>	<b>\$66,250,000</b>	<b>\$56,570,000</b>	<b>\$59,130,000</b>	<b>\$60,860,000</b>	<b>\$348,300,000</b>

#### Capital Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	INCLUDED IN STAFF AND OVERHEAD COSTS						
Land Acquisition: acquisition and site improvements	\$0	\$86,370,000	\$35,160,000	\$29,400,000	\$29,400,000	\$29,400,000	\$209,720,000
Planning and Design	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Habitat Restoration/Creation	\$0	\$0	\$6,990,000	\$5,820,000	\$5,820,000	\$5,820,000	\$24,460,000
Preserve Management and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$330,000	\$200,000	\$760,000	\$1,800,000	\$3,080,000
<b>Total</b>	<b>\$0</b>	<b>\$86,370,000</b>	<b>\$42,480,000</b>	<b>\$35,420,000</b>	<b>\$35,980,000</b>	<b>\$37,020,000</b>	<b>\$237,260,000</b>

#### Operational Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$160,000	\$6,800,000	\$5,760,000	\$4,630,000	\$4,640,000	\$4,650,000	\$26,630,000
Land Acquisition: transactional costs	\$170,000	\$2,560,000	\$1,800,000	\$1,100,000	\$1,100,000	\$1,100,000	\$7,830,000
Planning and Design	\$0	\$1,930,000	\$2,110,000	\$1,640,000	\$1,060,000	\$1,060,000	\$7,810,000
Habitat Restoration/Creation	\$0	\$3,910,000	\$4,300,000	\$3,590,000	\$3,590,000	\$3,590,000	\$18,970,000
Environmental Compliance	\$0	\$770,000	\$1,060,000	\$990,000	\$820,000	\$0	\$3,640,000
Preserve Management and Maintenance	\$0	\$1,930,000	\$5,270,000	\$5,470,000	\$7,620,000	\$8,690,000	\$28,990,000
Monitoring, Research, and Adaptive Management	\$0	\$900,000	\$2,410,000	\$2,770,000	\$3,230,000	\$3,580,000	\$12,890,000
Contingency	\$0	\$0	\$1,060,000	\$960,000	\$1,090,000	\$1,170,000	\$4,280,000
<b>Total</b>	<b>\$330,000</b>	<b>\$18,800,000</b>	<b>\$23,770,000</b>	<b>\$21,150,000</b>	<b>\$23,150,000</b>	<b>\$23,840,000</b>	<b>\$111,040,000</b>

## Summary of East Contra Costa HCP Implementation Costs for Initial Urban Development Area

2017 Update

(2016 dollars not rounded)

### Total Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$159,352	\$6,795,011	\$5,763,667	\$4,625,183	\$4,636,476	\$4,647,769	\$26,627,458
Land Acquisition	\$165,742	\$88,927,630	\$36,962,450	\$30,497,618	\$30,497,618	\$30,497,618	\$217,548,675
Planning and Design	\$0	\$1,931,148	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972
Habitat Restoration/Creation	\$0	\$3,909,578	\$11,291,201	\$9,409,334	\$9,409,334	\$9,409,334	\$43,428,780
Environmental Compliance	\$0	\$770,553	\$1,064,764	\$992,070	\$817,070	\$0	\$3,644,457
Preserve Management and Maintenance	\$0	\$1,929,601	\$5,273,082	\$5,469,235	\$7,619,235	\$8,694,235	\$28,985,388
Monitoring, Research, and Adaptive Management	\$0	\$897,309	\$2,410,961	\$2,769,446	\$3,225,504	\$3,581,812	\$12,885,034
Remedial Measures	\$0	\$0	\$329,018	\$200,632	\$755,469	\$1,799,321	\$3,084,440
Contingency	\$0	\$0	\$1,062,909	\$963,855	\$1,085,207	\$1,168,676	\$4,280,646
<b>Total</b>	<b>\$325,094</b>	<b>\$105,160,830</b>	<b>\$66,272,115</b>	<b>\$56,562,393</b>	<b>\$59,110,782</b>	<b>\$60,863,635</b>	<b>\$348,294,849</b>

### Capital Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	INCLUDED IN STAFF AND OVERHEAD COSTS						
Land Acquisition: acquisition and site improvements	\$0	\$86,372,000	\$35,161,110	\$29,395,531	\$29,395,531	\$29,395,531	\$209,719,704
Planning and Design	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Habitat Restoration/Creation	\$0	\$0	\$6,988,585	\$5,823,821	\$5,823,821	\$5,823,821	\$24,460,049
Preserve Management and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$329,018	\$200,632	\$755,469	\$1,799,321	\$3,084,440
<b>Total</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$42,478,713</b>	<b>\$35,419,985</b>	<b>\$35,974,821</b>	<b>\$37,018,674</b>	<b>\$237,264,193</b>

### Operational Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$159,352	\$6,795,011	\$5,763,667	\$4,625,183	\$4,636,476	\$4,647,769	\$26,627,458
Land Acquisition: due diligence, transaction costs	\$165,742	\$2,555,630	\$1,801,340	\$1,102,086	\$1,102,086	\$1,102,086	\$7,828,970
Planning and Design	\$0	\$1,931,148	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972
Habitat Restoration/Creation	\$0	\$3,909,578	\$4,302,615	\$3,585,513	\$3,585,513	\$3,585,513	\$18,968,731
Environmental Compliance	\$0	\$770,553	\$1,064,764	\$992,070	\$817,070	\$0	\$3,644,457
Preserve Management and Maintenance	\$0	\$1,929,601	\$5,273,082	\$5,469,235	\$7,619,235	\$8,694,235	\$28,985,388
Monitoring, Research, and Adaptive Management	\$0	\$897,309	\$2,410,961	\$2,769,446	\$3,225,504	\$3,581,812	\$12,885,034
Contingency	\$0	\$0	\$1,062,909	\$963,855	\$1,085,207	\$1,168,676	\$4,280,646
<b>Total</b>	<b>\$325,094</b>	<b>\$18,788,830</b>	<b>\$23,793,402</b>	<b>\$21,142,408</b>	<b>\$23,135,961</b>	<b>\$23,844,961</b>	<b>\$111,030,655</b>

NOTE: Original unit cost estimates for the 2006 HCP/NCCP were in 2005 dollars, inflated to 2006 dollars for use in the plan document.

**Consumer Price Index - All Urban Consumers**  
Original Data Value

Series Id: CUURA422SA0 Data extracted on: March 29, 2017 (8:35:58 PM)  
 Not Seasonally Adjusted  
 Area: San Francisco-Oakland-San Jose, CA  
 Item: All items  
 Base Period: 1982-84=100  
 Years: 2005 to 2017

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	2016 dollars
2005		201.2		202.5		201.2		203.0		205.9		203.4	202.7	201.5	203.9	0.7610
2006		207.1		208.9		209.1		210.7		211.0		210.4	209.2	207.9	210.6	0.7855
2007		213.688		215.842		216.123		216.240		217.949		218.485	216.048	214.736	217.361	0.8112
2008		219.612		222.074		225.181		225.411		225.824		218.528	222.767	221.730	223.804	0.8364
2009		222.166		223.854		225.692		225.801		226.051		224.239	224.395	223.305	225.484	0.8425
2010		226.145		227.697		228.110		227.954		228.107		227.658	227.469	226.994	227.944	0.8540
2011		229.981		234.121		233.646		234.608		235.331		234.327	233.390	232.082	234.698	0.8763
2012		236.880		238.985		239.806		241.170		242.834		239.533	239.650	238.099	241.201	0.8998
2013		242.677		244.675		245.935		246.072		246.617		245.711	245.023	243.894	246.152	0.9199
2014		248.615		251.495		253.317		253.354		254.503		252.273	251.985	250.507	253.463	0.9461
2015		254.910		257.622		259.117		259.917		261.019		260.289	258.572	256.723	260.421	0.9708
2016		262.600		264.565		266.041		267.853		270.306		269.483	266.344	263.911	268.777	1.0000
2017		271.626														

**Employment Cost Index (NAICS)**  
Original Data Value

Year	Qtr1	Qtr2	Qtr3	Qtr4	2016 dollars	
Series Id: CIU20100001200001	2005	98.0	98.8	99.5	100.0	0.7893
Not seasonally adjusted	2006	101.0	101.8	103.1	103.9	0.8200
Series Title: Total compensation for Private industry workers in	2007	104.9	105.9	106.7	107.3	0.8469
Ownership: Private industry workers	2008	108.3	109.0	109.9	110.3	0.8706
Component: Total compensation	2009	111.0	111.1	111.4	111.4	0.8792
Occupation: Professional and related occupations	2010	112.2	112.6	113.3	113.5	0.8958
Industry: All workers	2011	114.6	115.1	115.4	115.7	0.9132
Subcategory: All workers	2012	116.8	117.3	117.7	118.2	0.9329
Area: United States (National)	2013	118.9	119.5	120.2	120.5	0.9511
Periodicity: Index number	2014	121.0	121.9	122.5	122.9	0.9700
Years: 2005 to 2016	2015	123.7	124.1	124.5	124.9	0.9858
	2016	125.7	126.2	126.7	126.7	1.0000

**California Construction Cost Index, Department of General Services**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	2016 dollars
2006	4620	4603	4597	4600	4599	4593	4609	4616	4619	4867	4891	4877	4,674	0.74759
2007	4869	4868	4871	4872	4886	4842	4849	4851	4942	4943	4978	4981	4,896	0.78306
2008	4983	4983	4999	5004	5023	5065	5135	5142	5194	5393	5375	5322	5,135	0.82126
2009	5309	5295	5298	5296	5288	5276	5263	5265	5264	5259	5259	5262	5,278	0.84413
2010	5260	5262	5268	5270	5378	5394	5401	5401	5381	5591	5599	5596	5,400	0.86368
2011	5592	5624	5627	5636	5637	5643	5654	5667	5668	5675	5680	5680	5,649	0.90342
2012	5683	5683	5738	5740	5755	5754	5750	5778	5777	5780	5779	5768	5,749	0.91944
2013	5774	5782	5777	5786	5796	5802	5804	5801	5802	5911	5903	5901	5,820	0.93083
2014	5898	5896	5953	5956	5957	5961	5959	5959	5959	5969	5981	5977	5,952	0.95197
2015	6073	6077	6069	6062	6069	6055	6055	6055	6113	6114	6109	6108	6,080	0.97241
2016	6106	6132	6248	6249	6240	6238	6245	6244	6267	6343	6344	6373	6,252	1.00000
2017	6373	6373	6373											

The California Construction Cost index is developed based upon Building Cost Index (BCI) cost indices for San Francisco and Los Angeles produced by Engineering News Record (ENR) and reported in the second issue each month for the previous month. This table is updated at the end of each month.

The ENR BCI reports cost trends for specific construction trade labor and materials in the California marketplace.

This page last updated: 4/17/17

Available at: [https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable\\_2017/CCCI\\_MasterListing\\_4-2017.pdf](https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable_2017/CCCI_MasterListing_4-2017.pdf)

## Legend

red numbers are assumptions or data entered directly into the worksheet

blue numbers are links from other worksheets in the workbook

black numbers are calculations based on the above numbers

Cost factors are colored coded by primary source considered:

EBRPD (for HCP)
CCWD (for HCP)
Average of CCWD/EBRPD
ECCC Habitat Conservancy
J&S and EPS (for HCP)
AECOM, 2012
Updated by HEG, 2017
Updated with input from H.T. Harvey, 2017
Other estimated factors
Actual costs start-up and years 1 - 9
Estimate of EBRPD contributions to operational costs, start up and years 1-9
Summary actuals supercede model detail

**Acres Acquired, Managed, and Restored within HCP/NCCP Preserves for Initial Urban Development Area  
2017 Update**

	<b>Initial UDA</b>	Source
<b>Total acres acquired/managed</b>	<b>24,250</b>	(Table 5-9: mid-point of range)
<b>Pond acres acquired</b>	<b>14</b>	(Table 5-5a)

**Acres Acquired and Managed by Time Period**

	Implementation Period (Years)							Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30		
Total reserve acres acquired per period	-	10,987	3,789	3,158	3,158	3,158	24,250	
Total reserve acres managed, per period	-	8,083	4,042	4,042	4,042	4,042	24,250	
Total reserve acres managed, cumulative	-	8,083	12,125	16,167	20,208	24,250	24,250	
Pond acres acquired per period	-	10.86	0.9	0.7	0.7	0.7	14	
Pond acres added to management per period	-	4.67	2.3	2.3	2.3	2.3	14	
Pond acres managed cumulative, including restoration	-	4.71	13.0	20.4	27.7	35.0	35.0	

**Assumptions:**  
 Actual acquisition accounted for in years 1-5 and 6-9; the net remaining requirement is allocated evenly over the remaining 21 years of the permit term.  
 Management and monitoring on acquired land and ponds has not kept pace with actual acquisition; land is assumed to come under management in 6 equal increments over the 30-year period.  
 13,349.6 Total acres acquired through 2016  
 1,682.3 Easement acres on parcels acquired through 2016  
 680.0 Other acres (outside acquisition zones) not credited to reserve through 2016  
 10,987.2 Total acres acquired and credited toward reserve

**Land Cover Type Restored/Created by Time Period**

Land Cover Type (acres except where noted)	Implementation Period (Years)						Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30	
oak savanna	-	-	12.0	10.0	10.0	10.0	42.0
riparian woodland/scrub	-	4.04	13.1	10.9	10.9	10.9	50.0
perennial wetland (jurisdictional boundary)	-	0.16	9.2	7.6	7.6	7.6	32.2
seasonal wetland (jurisdictional boundary)	-	5.79	11.3	9.4	9.4	9.4	45.2
alkali wetland (jurisdictional boundary)	-	2.12	5.6	4.7	4.7	4.7	21.8
slough/channel	-	-	20.6	17.1	17.1	17.1	72.0
open water	-	-	-	-	-	-	-
ponds	-	0.04	6.0	5.0	5.0	5.0	21.0
streams (miles)	-	1.10	1.0	0.8	0.8	0.8	4.6
<b>Total (acres)</b>	-	<b>12.82</b>	<b>78.3</b>	<b>65.3</b>	<b>65.3</b>	<b>65.3</b>	<b>287.0</b>

**Assumptions:**  
 Actual restoration accounted for in years 1-9; the net remaining requirement is allocated evenly over the next 21 years of the permit term.  
 For total acre calculation, streams are assumed to be 5 feet wide  
 30% of perennial, seasonal or alkali wetland complex acreage assumed to be jurisdictional wetland; for compensatory restoration

	average acres/site or linear feet/site (streams)	% requiring substantial soil disturbance
<b>Defining sites:</b>		
riparian/woodland scrub sites by acreage conversion:	3	20%
wetlands and pond sites by acreage conversion	2.0	80%
stream sites by linear feet conversion:	1,000	90%

**Restoration sites that require significant soil disturbance by land-cover type** USED IN MONITORING COST ESTIMATE

Land Cover Type Restoration Sites	Implementation Period (Years)						Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30	
riparian woodland/scrub	-	0.3	0.9	0.7	0.7	0.7	3.3
perennial wetland	-	0.1	3.7	3.1	3.1	3.1	12.9
seasonal wetland	-	2.3	4.5	3.8	3.8	3.8	18.1
alkali wetland	-	0.8	2.2	1.9	1.9	1.9	8.7
ponds	-	-	8.2	6.9	6.9	6.9	28.8
streams (miles/acres converted to sites)	-	5.2	4.8	4.0	4.0	4.0	21.9
Total sites for monitoring cost estimate	-	8.7	24.3	20.2	20.2	20.2	93.7

**Assumptions:**  
 Average acres/site and percent of sites requiring substantial soil disturbance calculated in table above.  
 Seasonal, perennial, and alkali wetland acreages in Tables 5-16 and 5-17 are for wetland complexes; for cost estimates and revenue projections the wetted acres of these complexes are assumed to be 30% of the total acres.

**Summary of HCP/NCCP Personnel  
2017 Update**

		2012 UPDATE STAFFING						2017 UPDATE STAFFING						POST PERMIT STAFFING		
		Number of FTEs						Number of FTEs						Number of FTEs		
UPDATE STAFFING		0	1-5	6-10	11-15	16-20	21-25	26-30	0	1-5	6-9	10-15	16-20	21-25	26-30	
<b>Administrative staffing</b>																
Principal Planner				0.50	0.80	0.80	0.80	0.80				0.60	0.60	0.60	0.60	0.50
Senior Planner				0.30	0.50	0.50	0.50	0.50				-	-	-	-	0.05
Senior GIS Planner				0.25	0.25	0.25	0.25	0.25				0.05	0.05	0.05	0.05	0.05
Associate Planner				0.80	-	-	-	-				1.85	1.85	1.85	1.85	0.50
Assistant Planner/Planning Technician				0.25	0.50	0.50	0.50	0.50				0.30	0.30	0.30	0.30	0.15
Accountant				0.25	0.25	0.25	0.25	0.25				0.40	0.40	0.40	0.40	0.20
Admin – Secretary (included in rates)				-	-	-	-	-				-	-	-	-	-
IT Support Staff (included in rates)				-	-	-	-	-				-	-	-	-	-
<b>Total</b>				2.35	2.30	2.30	2.30	2.30				3.20	3.20	3.20	3.20	1.40
<b>Land acquisition staffing</b>																
Principal Planner				0.20	0.20	0.20	0.20	0.20				0.15	0.15	0.15	0.15	-
Senior GIS Planner												0.05	0.05	0.05	0.05	-
Associate Planner												0.30	0.20	0.20	0.20	-
<b>Total</b>				0.20	0.20	0.20	0.20	0.20				0.50	0.40	0.40	0.40	-
<b>Planning and design, restoration, and monitoring staffing</b>																
Principal Planner				0.10	-	-	-	-				0.05	0.05	0.05	0.05	-
Senior GIS Planner												0.05	0.05	0.05	0.05	-
Senior Planner				0.20	-	-	-	-				-	-	-	-	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Associate Planner				0.17	0.33	0.33	0.33	0.33				0.30	0.30	0.30	0.30	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.80	1.33	1.33	1.33	1.00				0.40	0.40	0.40	0.40	-
<b>Habitat restoration and creation staffing</b>																
Principal Planner				0.10	-	-	-	-				0.05	0.05	0.05	0.05	-
Associate Planner/Project Manager				0.20	-	-	-	-				0.30	0.30	0.30	0.30	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Project Manager				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.80	1.33	1.33	1.33	1.00				0.35	0.35	0.35	0.35	-
<b>Environmental compliance staffing</b>																
Principal Planner				-	-	-	-	-				0.05	0.05	0.05	-	-
Associate Planner				-	-	-	-	-				0.10	0.10	0.10	-	-
<b>Total</b>				-	-	-	-	-				0.15	0.15	0.15	-	-
<b>Preserve management and maintenance staffing</b>																
Principal Planner				0.10	-	-	-	-				0.025	0.025	0.025	0.025	0.025
Senior Planner				0.20	-	-	-	-				-	-	-	-	-
Associate Planner/Preserve Manager				1.00	1.00	1.00	1.00	1.00				0.05	0.05	0.05	0.05	0.05
Preserve Maintenance Staff				3.00	4.00	6.00	7.00	8.00				4.00	5.00	7.00	8.00	8.00
<b>Total</b>				4.30	5.00	7.00	8.00	9.00				4.075	5.075	7.075	8.075	8.075
<b>Monitoring and research staffing</b>																
Principal Planner				-	-	-	-	-				0.025	0.025	0.025	0.025	0.025
Senior Planner				0.10	-	-	-	-				-	-	-	-	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Associate Planner				0.17	0.33	0.33	0.33	0.33				0.05	0.30	0.33	0.33	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.60	1.33	1.33	1.33	1.00				0.075	0.325	0.358	0.358	0.025
<b>Overall Staffing Plan</b>																
Principal Planner				1.00	1.00	1.00	1.00	1.00				0.95	0.95	0.95	0.90	0.55
Senior Planner				1.00	0.50	0.50	0.50	0.50				-	-	-	-	-
Senior GIS Planner				0.25	0.25	0.25	0.25	0.25				0.15	0.15	0.15	0.15	0.05
Associate Planner/Preserve Manager				0.80	-	-	-	-				2.95	3.10	3.13	3.03	0.55
Assistant Planner/Planning Technician				0.25	0.50	0.50	0.50	0.50				0.30	0.30	0.30	0.30	0.15
Accountant				0.25	0.25	0.25	0.25	0.25				0.40	0.40	0.40	0.40	0.20
Admin – Secretary (included in rates)				-	-	-	-	-				-	-	-	-	-
IT Support Staff (included in rates)				-	-	-	-	-				-	-	-	-	-
Senior Scientist				0.50	1.00	1.00	1.00	1.00				-	-	-	-	-
Project Manager				0.50	1.00	1.00	1.00	1.00				-	-	-	-	-
Technical Support				0.50	2.00	2.00	2.00	1.00				-	-	-	-	-
Preserve Manager				1.00	1.00	1.00	1.00	1.00				-	-	-	-	-
Preserve Maintenance Staff				3.00	4.00	6.00	7.00	8.00				4.00	5.00	7.00	8.00	8.00
<b>Total</b>				9.05	11.50	13.50	14.50	14.50				8.75	9.90	11.93	12.78	9.50

**HCP/NCCP Program Administration for Initial Urban Development Area  
2017 Update  
(2016 dollars)**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
<u>Capital Costs</u>								
<b>Capital Subtotal</b>	<b>INCLUDED IN STAFF AND OVERHEAD COSTS</b>							
<u>Operational Costs</u>								
Staff and overhead				\$4,587,012	\$3,822,510	\$3,822,510	\$3,822,510	
Other administrative costs				\$36,000	\$30,000	\$30,000	\$30,000	
Vehicle / mileage allowance				\$9,000	\$7,500	\$7,500	\$7,500	
Travel				\$36,000	\$30,000	\$30,000	\$30,000	
Insurance				\$120,000	\$100,000	\$100,000	\$100,000	
Legal assistance				\$600,000	\$300,000	\$300,000	\$300,000	
Financial analysis assistance				\$65,000	\$65,000	\$65,000	\$65,000	
Financial audit (annual)				\$120,000	\$100,000	\$100,000	\$100,000	
In-lieu funding for law enforcement and firefighting				\$40,655	\$45,173	\$56,466	\$67,759	
Public relations and outreach				\$150,000	\$125,000	\$125,000	\$125,000	
<b>Operational Subtotal</b>	<b>\$159,352</b>	<b>\$3,328,033</b>	<b>\$3,466,978</b>	<b>\$5,763,667</b>	<b>\$4,625,183</b>	<b>\$4,636,476</b>	<b>\$4,647,769</b>	
<b>Total</b>	<b>\$159,352</b>	<b>\$3,328,033</b>	<b>\$3,466,978</b>	<b>\$5,763,667</b>	<b>\$4,625,183</b>	<b>\$4,636,476</b>	<b>\$4,647,769</b>	<b>\$26,627,458</b>

**Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.60	0.60	0.60	0.60
Senior Planner and support	\$177				-	-	-	-
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				1.85	1.85	1.85	1.85
Planning Technician and support	\$104				0.30	0.30	0.30	0.30
Accountant and support	\$133				0.40	0.40	0.40	0.40
Total FTEs					3.20	3.20	3.20	3.20
Total cost per year					\$764,502	\$764,502	\$764,502	\$764,502
Total cost per period					\$4,587,012	\$3,822,510	\$3,822,510	\$3,822,510

Notes/Assumptions:

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

Some actual costs for program administration staff and contractors through 2016 are included in actual costs under land acquisition, planning and design, preserve management, restoration, monitoring and environmental compliance.

**1,880** hours per year

**Other Administrative Costs**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
CHCPC membership (IEH)				\$30,000	\$25,000	\$25,000	\$25,000
Miscellaneous equipment and supplies				\$6,000	\$5,000	\$5,000	\$5,000
Cost per period				\$36,000	\$30,000	\$30,000	\$30,000

Assumption:  
\$5,000 annual cost for CHCPC membership, based on actual Conservancy experience through 2016 (Institute for Ecological Health)  
\$1,000 annual cost based on actual Conservancy experience through 2016

**Vehicle / Mileage Allowance**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$9,000	\$7,500	\$7,500	\$7,500

Assumption:  
\$1,500 annual cost based on actual Conservancy experience through 2016

**Travel**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$36,000	\$30,000	\$30,000	\$30,000

Assumption:  
\$6,000 annual cost based on actual Conservancy experience through 2016

**Insurance**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$120,000	\$100,000	\$100,000	\$100,000

Assumption:  
\$20,000 annual cost based on actual Conservancy experience through 2016

**Legal Assistance**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$600,000	\$300,000	\$300,000	\$300,000	\$1,500,000

Assumptions:  
\$100,000 Annual cost for legal assistance, years 10 - 15  
\$60,000 Annual cost for legal assistance, after year 15

Note: The legal assistance category covers legal assistance required for program administration and (for years 6 - 10) the environmental compliance category. Legal assistance for land acquisition included in the due diligence cost factor in the land acquisition category. Legal assistance is also estimated for the environmental compliance category.

### Financial Analysis Assistance

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$65,000	\$65,000	\$65,000	\$65,000	\$260,000

**Assumptions:**

**\$65,000** Cost per period for financial analysis assistance

Financial analyst review will occur periodically over the life of the Plan (years 3, 6, 10, 15, 20 and 25).

Note: The financial analysis assistance category covers the periodic assistance of a financial analyst to review the program's cost/revenue balance, ensure that charges are adjusted in line with changing land costs and ensure compliance with State requirements on collection of fees.

### Annual Financial Audit

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$120,000	\$100,000	\$100,000	\$100,000	\$420,000

**Assumptions:**

**\$20,000** Cost per year for financial audit services based on Conservancy experience through 2016

Annual financial audit of the Conservancy's financial statements by an independent auditor are required by the JPA agreement and Government Code.

### In-Lieu Payments for Law Enforcement and Firefighting

	Cost by Implementation Period (Years)						
	0	1-5	6-10	10-15	16-20	21-25	26-30
Total preserve area per period	-	-	8,083	12,125	16,167	20,208	24,250
In-lieu payments for law enforcement per year			\$1,783	\$2,675	\$3,566	\$4,458	\$5,349
In-lieu payments for firefighting per year			\$2,734	\$4,101	\$5,468	\$6,835	\$8,202
Total cost per year			\$4,517	\$6,776	\$9,035	\$11,293	\$13,552
Cost per period			\$22,586	\$40,655.29	\$45,173	\$56,466	\$67,759

**Assumptions:**

**\$4.53** In-lieu law enforcement funding per preserve acre

**\$2.96** In-lieu firefighting funding per preserve acre

In lieu costs per preserve acres are based on CCWD's annual in-lieu payments and the assumption that CCWD manages approximately 20,000 acres of preserve.

### Public Relations/Outreach

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Total cost per year				\$25,000	\$25,000	\$25,000	\$25,000	\$100,000
Cost per period				\$150,000	\$125,000	\$125,000	\$125,000	\$525,000

**HCP/NCCP Land Acquisition for Initial Urban Development Area**

**2017 Update**

(2016 dollars)

	Cost by Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
<b>Capital Costs</b>							
Acquisition	\$0	\$86,372,000	\$34,100,657	\$28,417,214	\$28,417,214	\$28,417,214	\$205,724,299
Site improvements	\$0	\$0	\$1,060,453	\$978,317	\$978,317	\$978,317	\$3,995,405
<b>Capital Subtotal</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$35,161,110</b>	<b>\$29,395,531</b>	<b>\$29,395,531</b>	<b>\$29,395,531</b>	<b>\$209,719,704</b>
<b>Operational Costs</b>							
Program staff and overhead	na	na	\$778,320	\$249,570	\$249,570	\$249,570	\$1,527,030
Due diligence	\$165,742	\$2,555,630	\$1,023,020	\$852,516	\$852,516	\$852,516	\$6,301,940
<b>Operational Subtotal</b>	<b>\$165,742</b>	<b>\$2,555,630</b>	<b>\$1,801,340</b>	<b>\$1,102,086</b>	<b>\$1,102,086</b>	<b>\$1,102,086</b>	<b>\$7,828,970</b>
<b>Total</b>	<b>\$165,742</b>	<b>\$88,927,630</b>	<b>\$36,962,450</b>	<b>\$30,497,618</b>	<b>\$30,497,618</b>	<b>\$30,497,618</b>	<b>\$217,548,675</b>

**Acquisition Cost over 30-year Program, Actuals year 1 - 9 + Projections Years 10 - 30 (2016 dollars)**

	Cost by Implementation Period (Years)						Total	Estimated Remainder 10-30
	0	1-9	10-15	16-20	21-25	26-30		
Acquisition Analysis Zone								
Zone 1	\$0	\$8,385,000	\$3,685,131	\$3,070,943	\$3,070,943	\$3,070,943	\$21,282,960	\$12,897,960
Zone 2	\$0	\$31,138,000	\$12,806,707	\$10,672,256	\$10,672,256	\$10,672,256	\$75,961,473	\$44,823,473
Zone 3	\$0	\$2,217,000	\$326,188	\$271,823	\$271,823	\$271,823	\$3,358,656	\$1,141,656
Zone 4	\$0	\$6,417,000	\$9,158,247	\$7,631,872	\$7,631,872	\$7,631,872	\$38,470,864	\$32,053,864
Zone 5	\$0	\$26,249,000	\$6,673,142	\$5,560,952	\$5,560,952	\$5,560,952	\$49,604,998	\$23,355,998
Zone 6 (incl. within ULL along Marsh Creek)	\$0	\$6,072,000	\$1,095,489	\$912,907	\$912,907	\$912,907	\$9,906,210	\$3,834,210
Outside Inventory Area	\$0	\$0	\$352,480	\$293,733	\$293,733	\$293,733	\$1,233,680	\$1,233,680
Outside Acquisition Zones	\$0	\$5,894,000	\$3,274	\$2,728	\$2,728	\$2,728	\$5,905,457	\$1,145,728
<b>Total</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$34,100,657</b>	<b>\$28,417,214</b>	<b>\$28,417,214</b>	<b>\$28,417,214</b>	<b>\$205,724,299</b>	<b>\$119,352,299</b>

**Assumptions:** Actual acquisition cost through year 9, in 2016 dollars. Updated 2016 land cost factors by cost category applied to remaining acquisition targets. Total remaining cost allocated evenly over remaining 21 years of the permit term. 42% 58%

See Appendix G and description of separate land cost model in Chapter 9.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.15	0.15	0.15	0.15
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.20	0.20	0.20
<b>Total FTEs</b>					0.50	0.40	0.40	0.40
<b>Total cost per year</b>					\$129,720	\$49,914	\$49,914	\$49,914
<b>Total cost per period</b>					\$778,320	\$249,570	\$249,570	\$249,570

**Notes/Assumptions:**

Actual staff costs for years 0 - 9 are included in the due diligence actuals below.

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Due Diligence**

Covers costs for appraisals, preliminary title report, escrow and other closing costs, boundary surveys, legal services, environmental and Phase 1 site assessment.

Includes Conservancy staff costs on land acquisition projects.

The 2006 cost model used more detailed unit costs. The result of applying those cost factors in the 2006 model was that due diligence represented about 4% of land acquisition costs.

For the 2012 and 2016 updates the model is simplified to assume due diligence costs (not including Conservancy staff costs) at 3% of land acquisition costs, roughly consistent with the experience of the Conservancy and EBRPD through 2016, during which time about 35 percent of the reserve goals for land acquisition took place. For years 10 -30, Conservancy staff time costs are separately estimated and included in Program Staff line item above.

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Due Diligence	\$165,742	\$1,504,429	\$1,051,201	\$1,023,020	\$852,516	\$852,516	\$852,516	\$6,301,940

Assumptions:  
3.0% Due diligence costs as a percentage of land acquisition cost.

**Planning Surveys (Pre-Acquisition)**

Based on Conservancy and EBRPD experience to date, initial property evaluation and planning is included in staff and consultant time.

Most significant field biological work is done post acquisition and is included as a monitoring cost.

**Site Improvements**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Demolition of old facilities				\$60,825	\$50,688	\$50,688	\$50,688
Repair of boundary fence				\$567,640	\$567,640	\$567,640	\$567,640
Repair and replacement of gates				\$204,626	\$170,521	\$170,521	\$170,521
Signs (boundary, landbank, etc.)				\$125,049	\$104,208	\$104,208	\$104,208
Other security (e.g., boarding up barns)				\$102,313	\$85,261	\$85,261	\$85,261
Total				\$1,060,453	\$978,317	\$978,317	\$978,317

Assumptions:  
 Most demolition to date is a condition of the transaction and assigned to the seller. Other site improvement costs included in EBRPD operations and maintenance costs to date.

\$8,026	Demolition of old facilities per 500 acres
\$5,400	Repair and replacement of gates per 100 acres
\$3,300	Signs (boundary, landbank, etc.) per 100 acres
\$2,700	Other security (e.g., boarding up barns) per 100 acres
240	Estimated number of parcels acquired years 10 - 30 assuming 100 acres per parcel
15,000	Average parcel boundary length in linear feet (from GIS analysis, grouping adjacent parcels with the same landowner)
\$5.26	Average cost per linear foot for boundary fence repair
15%	Proportion of boundary fence that needs repair

## HCP/NCCP Management and Restoration Planning and Design for Initial Urban Development Area

### 2017 Update

(2016 dollars)

Capital costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational costs</b>								
Program staff and overhead				\$578,664	\$482,220	\$482,220	\$482,220	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$15,000	\$12,500	\$12,500	\$12,500	
Contractors				\$1,520,400	\$1,140,300	\$570,150	\$570,150	
<b>Operational subtotal</b>	\$0	\$1,262,793	\$668,355	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	
<b>Total</b>	\$0	\$1,262,793	\$668,355	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972

### Program Staff and Overhead

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	0.05
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.30	0.30	0.30
Total FTEs					0.40	0.40	0.40	0.40
Total cost per year					\$96,444	\$96,444	\$96,444	\$96,444
Total cost per period					\$578,664	\$482,220	\$482,220	\$482,220

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies, .

### Technical Staff and Overhead

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Planning Technician and support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Total cost per period					\$0	\$0	\$0	\$0

#### Notes/Assumptions:

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Travel (shared with restoration and monitoring)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$15,000	\$12,500	\$12,500	\$12,500

**Assumption:**

\$6,250	annual cost based on Conservancy 2017 budget
0.40	proportion of travel costs that are used for planning (40% used for restoration and included in the restoration spreadsheet, and 20% used for monitoring and included in the monitoring spreadsheet)

**Contractors**

Contractor category	Contract value per period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Management planning				\$760,200	\$570,150	\$0	\$0
Restoration planning				\$760,200	\$570,150	\$570,150	\$570,150
Total per period			\$0	\$1,520,400	\$1,140,300	\$570,150	\$570,150

**Assumptions:**  
Restoration designs included in habitat restoration/creation cost as of 2017 update.

**The management and restoration planning and design staff and contractors will conduct the following activities:**

**Management Planning**

- Management plans prepared for cropland/pasture preserves
- Management plans prepared for natural area preserves
- Grazing leases developed or renewed
- Jurisdictional wetland delineation
- Exotic Plant Control Program (Preserve System-wide)
- Fire management/control plan (System-wide)

**Restoration Planning & Design (restoration construction designs included in the habitat restoration/creation cost category)**

- Pond creation plan and construction designs
- Wetland creation plan and construction designs
- Stream restoration plan and construction designs
- Oak savanna restoration plan and construction designs
- Riparian woodland/scrub restoration plan and construction designs

**HCP/NCCP Habitat Restoration/Creation for Initial Urban Development Area**

**2017 Update**

(2016 dollars)

Capital Costs	Cost by Implementation Period (Years)						Total	
	0	1-5	6-9	10-15	16-20	21-25		26-30
Creation/Restoration				\$6,988,585	\$5,823,821	\$5,823,821	\$5,823,821	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital Subtotal</b>				<b>\$6,988,585</b>	<b>\$5,823,821</b>	<b>\$5,823,821</b>	<b>\$5,823,821</b>	
<b>Operational Costs</b>								
Program staff and overhead				\$478,836	\$399,030	\$399,030	\$399,030	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$15,000	\$12,500	\$12,500	\$12,500	
Contractors				\$3,808,779	\$3,173,983	\$3,173,983	\$3,173,983	
<b>Operational Subtotal</b>	<b>\$0</b>	<b>\$2,439,332</b>	<b>\$1,470,246</b>	<b>\$4,302,615</b>	<b>\$3,585,513</b>	<b>\$3,585,513</b>	<b>\$3,585,513</b>	
<b>Total</b>	<b>\$0</b>	<b>\$2,439,332</b>	<b>\$1,470,246</b>	<b>\$11,291,201</b>	<b>\$9,409,334</b>	<b>\$9,409,334</b>	<b>\$9,409,334</b>	<b>\$43,428,780</b>

**Land Cover Type Restored/Created**

Land Cover Type (acres)	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
oak savanna	-	-	12.0	10.0	10.0	10.0	42.0
riparian woodland/scrub	-	4.0	13.1	10.9	10.9	10.9	50.0
perennial wetland	-	0.2	9.2	7.6	7.6	7.6	32.2
seasonal wetland	-	5.8	11.3	9.4	9.4	9.4	45.2
alkali wetland	-	2.1	5.6	4.7	4.7	4.7	21.8
slough/channel	-	-	20.6	17.1	17.1	17.1	72.0
open water	-	-	-	-	-	-	-
ponds	-	0.0	6.0	5.0	5.0	5.0	21.0
streams (miles)	-	1.1	1.0	0.8	0.8	0.8	4.6
<b>Total (acres)</b>	<b>-</b>	<b>12.8</b>	<b>78.3</b>	<b>65.3</b>	<b>65.3</b>	<b>65.3</b>	<b>287.0</b>

**Cost of Restoration/Creation Construction**

Land Cover Type	Units	Cost per unit	Cost by Implementation Period (Years)					
			0	1-9	10-15	16-20	21-25	26-30
oak savanna	acres	\$15,000			\$216,000	\$180,000	\$180,000	\$180,000
riparian woodland/scrub	acres	\$42,199			\$664,966	\$554,138	\$554,138	\$554,138
perennial wetland	acres	\$68,846			\$756,282	\$630,235	\$630,235	\$630,235
seasonal wetland	acres	\$82,115			\$1,109,535	\$924,613	\$924,613	\$924,613
alkali wetland	acres	\$83,094			\$560,668	\$467,224	\$467,224	\$467,224
slough/channel	acres	\$62,538			\$1,543,789	\$1,286,491	\$1,286,491	\$1,286,491
open water	acres	\$91,251			\$0	\$0	\$0	\$0
ponds	acres	\$91,251			\$655,754	\$546,462	\$546,462	\$546,462
streams	linear feet	\$234			\$1,481,590	\$1,234,659	\$1,234,659	\$1,234,659
	Total				\$6,988,585	\$5,823,821	\$5,823,821	\$5,823,821

**Assumptions:**  
Construction costs depend mostly on the amount, depth, and linear extent of earthwork expected, and whether water control structure are required. Plant propagation, seeding, and watering also included.

For 2017 update, unit costs increased based on change in the California Construction Cost Index published by the State of California Department of General Services. Available at: [https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccctable\\_2017/CCCI MasterListing\\_4-2017.pdf](https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccctable_2017/CCCI MasterListing_4-2017.pdf)

20% Contingency factor for restoration projects; assumed higher than the standard contingency because of the higher degree of uncertainty in this portion of the conservation program.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.30	0.30	0.30
Total FTEs					0.35	0.35	0.35	0.35
Total cost per year					\$79,806	\$79,806	\$79,806	\$79,806
Total cost per period					\$478,836	\$399,030	\$399,030	\$399,030
1,880 hours per year								

**Technical Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Associate Planner and support	\$112				-	-	-	-
Planning Technician and support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Cost per period					\$0	\$0	\$0	\$0

**Assumptions:**

Habitat Conservancy staff select sites, hire and oversee consultants for plans, specifications, and implementation. Staff shared with other implementation tasks; the amount listed is the estimated portion to support wetland mitigation creation/restoration.

Cost includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Travel (shared with planning and monitoring)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$15,000	\$12,500	\$12,500	\$12,500

**Assumption:**

\$6,250	annual cost based on Conservancy 2017 budget
0.40	proportion of travel costs that are used for restoration (40% used for planning and included in the planning spreadsheet, and 20% used for monitoring and included in the monitoring spreadsheet)

**Contractors**

Contractor category	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Design, plans, specifications, and engineering				\$2,306,233	\$1,921,861	\$1,921,861	\$1,921,861
Bid assistance				\$104,829	\$87,357	\$87,357	\$87,357
Construction oversight				\$698,859	\$582,382	\$582,382	\$582,382
Post-construction maintenance				\$698,859	\$582,382	\$582,382	\$582,382
Cost per period				\$3,808,779	\$3,173,983	\$3,173,983	\$3,173,983

Assumptions:	
33%	percent of total construction cost required to complete restoration design and plans, specifications, engineering and provide allowance for remedial measures
1.50%	percent of total construction cost required for bid assistance
10%	percent of total construction cost required for construction oversight
10%	percent of total construction cost required for post construction maintenance

The total area of restoration that occurs in each period will be designed as three different projects (approximately 14 acres each).

Design, plan, specification, and engineering work, bid assistance, and construction oversight will be conducted in the period in which construction takes place.

Two years of post-construction maintenance will be conducted in the period after construction takes place to maintain irrigation systems, conducting weeding, etc. Management costs after success criteria are met is included in development fee paid for same site (wetland mitigation fee is in addition).

## HCP/NCCP Environmental Compliance for Initial Urban Development Area

### 2017 Update

(2016 dollars)

Operational Costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Program staff and overhead				\$226,164	\$188,470	\$188,470	\$0	
Legal assistance				\$210,000	\$175,000	\$0	\$0	
NEPA/CEQA				\$493,300	\$493,300	\$493,300	\$0	
CWA 404				\$0	\$0	\$0	\$0	
CWA 401				\$24,700	\$24,700	\$24,700	\$0	
CDFG 1602				\$20,500	\$20,500	\$20,500	\$0	
NHPA				\$53,200	\$53,200	\$53,200	\$0	
Other	\$0	\$632,307	\$138,246	\$36,900	\$36,900	\$36,900	\$0	
<b>Total</b>	<b>\$0</b>	<b>\$632,307</b>	<b>\$138,246</b>	<b>\$1,064,764</b>	<b>\$992,070</b>	<b>\$817,070</b>	<b>\$0</b>	<b>\$3,644,457</b>

### Program Staff and Overhead

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	-
Associate Planner and support	\$112				0.10	0.10	0.10	-
	Total FTEs				0.15	0.15	0.15	-
	Total cost per year				\$37,694	\$37,694	\$37,694	\$0
	Total cost per period				\$226,164	\$188,470	\$188,470	\$0

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

### Legal Assistance

Legal Assistance	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$210,000	\$175,000	\$0	\$0	\$385,000

#### Assumptions:

\$35,000 Annual cost for legal assistance with wetland permitting, years 10 - 20

### Number of Projects Requiring Environmental Compliance

Project size	Size Range	Number							Total
		0	1-5	6-9	10-15	16-20	21-25	26-30	
Small/simple	up to 10 acres or up to 0.1 stream miles				4	4	4	-	20
Medium/more complex	10.1-50 acres or 0.1-0.5 stream miles				4	4	4	-	20
Large/most complex	over 50 acres or 0.5 stream miles				2	2	2	-	10
	Total projects				10	10	10	-	30

#### Assumptions:

Of the total of approximately 50 projects that would require environmental compliance, 1/5 would require compliance in each 5-year period between years 1 and 25.

**Environmental Compliance Cost per Project Size and Compliance Category (2016 dollars)**

Project size	Size Range	Estimate Project Cost within DFG jurisdiction		Project Impacts to Wetlands for CWA 401		Compliance Category					
				Minimum	Maximum	CEQA	CWA 404	CWA 401	CDFG 1602	NHPA	Other
Small/simple	up to 10 acres or up to 0.1 stream miles	\$ 2,000	\$ 25,000	0.001	0.01	\$6,490	\$0	\$1,800	\$983	\$3,245	\$3,077
Medium/more complex	10.1-50 acres or 0.1-0.5 stream miles	\$ 25,001	\$ 100,000	0.0121	0.07	\$51,923	\$0	\$2,340	\$2,109	\$4,543	\$3,692
Large/most complex	over 50 acres or 0.5 stream miles	\$ 100,001	\$500,000 or more	0.073	0.30	\$129,809	\$0	\$4,063	\$4,048	\$11,034	\$4,923

**Assumptions:**

Assumed wetland impact determined by AECOM based experience with typical projects that would be expected to be implemented by the Conservancy. For example wetland restoration/creation projects, stream restoration projects, adaptive management measures for existing wetland features and facilities improvements. In general, it is expected that impacts to wetlands and streams would be avoided if at all possible. Of the stream length indicated, assumed only 10% of that length would be impacted and an average stream width of 10 feet.

For NEPA/CEQA, 401/404 and 1602 compliance, varying costs have more to do with project complexity than with project size.

Clean Water Act 401 and 1602 permits will be done on a per-project basis

Cultural compliance permits will be done on a per-project basis.

Contra Costa Conservancy staff will prepare permit applications and notification for the 401, 404 and 1600 applications, thereby resulting in no consultant cost for permit preparation. This table also assumes that the permits for Water Quality Certification (CWA 401) and Streambed Alteration Agreement (DFG 1602) will not be secured under programmatic or Master permit processes.

Permitted projects would be completed within the time limit allotted for the permits; no extensions or re-application would be required.

The "other" compliance category could include county grading permits, road encroachment permits, or other local approvals.

**NEPA/CEQA**

Depending on the level of detail that is provided for specific projects, they may or may not be able to be covered under the HCP EIR/EIS.

For those without sufficient detail, additional environmental documentation may need to be prepared.

It is likely that the majority of those would be in the form of mitigated negative declarations.

Because it is difficult to provide a cost estimate for a project without knowing details such as location, size, etc., the following are some rough numbers based on level of controversy:

Small scale non-controversial projects = Cat Excl/Cat Exemp

Medium scale more controversial projects = IS MND/EA FONSI

Larger scale more controversial projects = EIR/EIS

All land acquisitions would be a categorical exemption under CEQA as well as under NEPA, when NEPA applies.

**401/404**

The cost of conducting wetland delineations is not included under CWA 404/401 compliance; it is expected that delineation would be covered under land acquisition costs.

Each project implemented under the HCP will qualify for compliance under the USACE 404 regional permit program for the inventory area; there is no fee for 404 permit applications

Tasks associated with Section 402 compliance are not included in this cost estimate.

CWA 401 fee cost estimate is based on impacts to jurisdictional waters of the state rather than project size. Fee is an average based on the minimum and maximum expected impacts. State Water

Resources Control Board Fiscal Year 2016-2017 Water Quality Certification Dredge and Fill Application Fee Calculator (Effective Date 11/16/2016) Available:

[http://www.waterboards.ca.gov/water\\_issues/programs/cwa401/](http://www.waterboards.ca.gov/water_issues/programs/cwa401/)

**NHPA**

Archaeological surveys can be conducted at an intensive level at a rate of 40 acres per person per day.

No more than one cultural resource will be identified per 40 acres or part thereof.

This scope of work and cost estimate does not include tasks necessary for significance evaluations and resolution of adverse effects.

**CDFG 1602**

DFG 1602 costs are estimated based on the assumed cost of project activities within DFW jurisdiction per Fish and Game Code Sections 1600-1616, and the fee schedule corresponding to the project costs. Average cost based on mean of minimum and maximum fee amounts for standard agreements.

California Department of Fish and Wildlife Lake and Streambed Alteration Agreements and Fees, Effective October 1, 2016. Available:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=130459&inline>

**HCP/NCCP Preserve Management and Maintenance for Initial Urban Development Area**

**2017 Update**

(2016 dollars)

Capital Costs	Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Vehicle purchase								
Equipment - capital								
Field facilities								
Contractors - capital								
Recreation facilities								
<b>Capital Subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational Costs</b>								
Program staff and overhead				\$49,914	\$41,595	\$41,595	\$41,595	
Preserve staff and overhead				\$3,447,168	\$3,577,640	\$4,987,640	\$5,692,640	
Facilities Maintenance/Vehicles and equipment				\$1,776,000	\$1,850,000	\$2,590,000	\$2,960,000	
Equipment - operational				\$0	\$0	\$0	\$0	
Facilities maintenance and utilities								
Water pumping								
Contractors - operational								
Recreation - operational				\$0	\$0	\$0	\$0	
<b>Operational Subtotal</b>	\$0	\$386,065	\$1,543,536	\$5,273,082	\$5,469,235	\$7,619,235	\$8,694,235	
<b>Total</b>	\$0	\$386,065	\$1,543,536	\$5,273,082	\$5,469,235	\$7,619,235	\$8,694,235	\$28,985,388

NOTE: Costs for years 1 - 9 include expenditures by the East Bay Regional Park District on land maintenance activities on Conservancy properties (staff costs, maintenance supplies, maintenance services from inception through 2016. Details provided by the East Contra Costa County Habitat Conservancy.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and Support	\$177				0.025	0.025	0.025	0.025
Senior Planner and Support	\$177				-	-	-	-
<b>Total FTEs</b>					0.025	0.025	0.025	0.025
<b>Total cost per year</b>					\$8,319	\$8,319	\$8,319	\$8,319
<b>Total cost per period</b>					\$49,914	\$41,595	\$41,595	\$41,595

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Preserve Staff and Overhead**

Position	Preserve area per position (acres)	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
			0	1-5	6-9	10-15	16-20	21-25	26-30
Preserve Manager and support		\$112				0.05	0.05	0.05	0.05
Preserve maintenance staff	3,000	\$75				4.0	5.0	7.0	8.0
<b>Total FTEs</b>						4.05	5.05	7.05	8.05
<b>Total cost per year</b>						\$574,528	\$715,528	\$997,528	\$1,138,528
<b>Total cost per period</b>						\$3,447,168	\$3,577,640	\$4,987,640	\$5,692,640

**Notes/Assumptions:**

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year, excluding vacation

**Preserve maintenance including capital and operational costs for all maintenance activities (new cost approach for 2017 update)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per year				4.0	5.0	7.0	8.0
Total cost per period				\$1,776,000	\$1,850,000	\$2,590,000	\$2,960,000

**Notes/Assumptions:**

Annual cost per FTE **\$74,000**

For 2017 update, revised the approach to this component of the cost estimate. Replaced detailed estimates of schedules for vehicle and equipment purchases, field facilities construction, and various maintenance activities with a per-FTE factor derived from analysis of the EBRPD budget for the Maintenance and Skilled Trades Department within the Parks Operations Division. This department acquires, manages, and services the vehicles, trailers, landscaping equipment, heavy equipment, police vehicles, boats and fire apparatus needed to manage and maintain EBRPD properties. The department also repairs and maintains buildings and utilities infrastructure, including water utilities, roads and trails, and sanitation systems.

**Vehicles, Maintenance, and Fuel - Captured in annual cost per FTE above (May 2017)**

	Purchase price per vehicle	Fuel cost per vehicle per year	Maintenance cost per vehicle per year	Number of vehicles, per period						
				0	1-5	6-9	10-15	16-20	21-25	26-30
Total number of FTEs							4.05	5.05	7.05	8.05
New trucks purchased	\$27,600	\$1,200	\$1,300				0	0	0	0
Old trucks retired							0	0	0	0
Total trucks							0	0	0	0
New 4WDs purchased	\$46,000	\$2,400	\$2,000				0	0	0	0
Old 4WDs retired							0	0	0	0
Total 4WDs							0	0	0	0
New ATVs purchased	\$7,900	\$330	\$390				0	0	0	0
Old ATVs retired							0	0	0	0
Total ATVs							0	0	0	0
New dump trucks purchased	\$39,400	\$530	\$530				0	0	0	0
Old dump trucks retired							0	0	0	0
Total dump trucks							0	0	0	0
New tractors purchased	\$52,600	\$660	\$1,310				0	0	0	0
Old tractors retired							0	0	0	0
Total tractors							0	0	0	0
New auger, mower, scraper for tractor	\$52,600	\$0	\$130				0	0	0	0
Old auger, mower, scraper retired							0	0	0	0
Total auger, mower, scraper							0	0	0	0
New small tractors	\$18,400	\$390	\$390				0	0	0	0
Old small tractors retired							0	0	0	0
Total small tractors							0	0	0	0
New light 4WD vehicles	\$13,100	\$330	\$330				0	0	0	0
Old light 4WD vehicles retired							0	0	0	0
Total light 4WD vehicles							0	0	0	0
Total vehicle purchase cost per period							\$0	\$0	\$0	\$0
Total vehicle fuel and maintenance per year							\$0	\$0	\$0	\$0
Total vehicle fuel and maintenance per period							\$0	\$0	\$0	\$0

**Assumptions:**

Cost of 4WD truck includes cost of fire pumper, chain saw, sprayer, and small tool set for vehicle.

**Equipment and Materials - Captured in annual cost per FTE above (May 2017)**

	Number of new units bought per period						
	0	1-9	10-15	16-20	21-25	26-30	
New preserve area managed per period		8,083	4,042	4,042	4,042	4,042	
Total preserve area managed per period		8,083	12,125	16,167	20,208	24,250	
Capital cost of equipment and materials per year			\$0	\$0	\$0	\$0	
Operational cost of equipment and materials per year			\$0	\$0	\$0	\$0	
Total capital cost per period			\$0	\$0	\$0	\$0	
Total operational cost per period			\$0	\$0	\$0	\$0	

**Assumptions:**

\$0	Capital cost of equipment and materials per 1,000 preserve acres per year.
\$0	Operational cost of equipment and materials per 1,000 preserve acres per year.

Capital costs include the capital component of fire fighting equipment/gear, small tools (pliers, wrenches, screwdrivers, etc.), glasses, gloves, hard hats, rain gear, irrigation supplies, cargo container, landscape plants and grass, oak trees, lumber, and truck hauling services.

Operational costs include the operational component of fire fighting equipment/gear, small tools (pliers, wrenches, screwdrivers, etc.), glasses, gloves, hard hats, rain gear, irrigation supplies, cargo container, landscape plants and grass, oak trees, lumber, and truck hauling services.

Operational costs also include portable radios, small pumps, piping, generator, saw, and demolition hammers.

**Field Facilities - Captured in annual cost per FTE above (May 2017)**

	0	1-9	10-15	16-20	21-25	26-30
Total preserve area managed per period		8,083	12,125	16,167	20,208	24,250
Total field offices/parking areas			-	-	-	-
New field offices/parking areas			-	-	-	-
Cost per period for offices/workshops			\$0	\$0	\$0	\$0

**Assumptions:**

10,000	Number of acres per workshop/parking area
\$556,000	Cost to build a workshop/parking area

Note: Field facilities contain an area for equipment storage, a manager's office, a shared office, a locker room, and restrooms.

Based on experience to date, cost assumes donated portable building, with costs representing transportation, installation, utilities, etc.

**Facilities Maintenance and Utilities - Captured in annual cost per FTE above (May 2017)**

	Cost per facility per year	0	1-5	6-9	10-15	16-20	21-25	26-30
Total facilities per period		-	-	-	-	-	-	-
Maintenance cost per year	\$9,900				\$0	\$0	\$0	\$0
Utilities cost per year	\$5,300				\$0	\$0	\$0	\$0
Total cost per year					\$0	\$0	\$0	\$0
Total cost per period					\$0	\$0	\$0	\$0

**Water Pumping - Captured in annual cost per FTE above (May 2017)**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total preserve area managed				12,125	16,167	20,208	24,250
Total cost per year				\$0	\$0	\$0	\$0
Total cost per period				\$0	\$0	\$0	\$0
\$0	Annual cost for pump and well drilling per 1,000 acres						

**Contractors - operational: for 2017 update assume included in preserve management staffing cost**

Contractor category	Contract value per 5-year period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total pond area managed				13	20	28	35
Total preserve area managed				12,125	16,167	20,208	24,250
Routine dirt road maintenance				\$0	\$0	\$0	\$0
Feral pig management				\$0	\$0	\$0	\$0
Pond maintenance				\$0	\$0	\$0	\$0
Weed management				\$0	\$0	\$0	\$0
Other maintenance services				\$0	\$0	\$0	\$0
Total per period				\$0	\$0	\$0	\$0

**Assumptions:**

\$0	Cost for pond maintenance (dredging) per acre of pond every 5 years.
\$0	Cost of dirt road maintenance per 100 miles of road per year.
100	miles of dirt roads on preserves
4	miles of dirt roads per 1,000 acres of preserve
\$0	Cost of feral pig management per year per 1,000 acres managed
\$0	Cost of weed management per 1,000 acres of preserve per year.
\$0	Cost for other maintenance services per 1,000 acres of preserve per year.

Other maintenance services include mowing, grading, pest control, disking for fire breaks, fencing, alarms, janitorial services (pond maintenance subtracted based on the yearly pond maintenance costs above)

**Contractors - capital - Captured in annual cost per FTE above (May 2017)**

Contractor category	Contract value per period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total preserve area managed				12,125	16,167	20,208	24,250
Construction services				\$0	\$0	\$0	\$0

**Assumptions:**

\$0	Cost for construction services per 1,000 preserve acres per year
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Construction services includes roadway design, paving, fencing, grading, weather station, and boundary surveying services

**Recreation Facilities and Maintenance**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total facilities per period				-	-	-	-
Facilities cost - capital, per period				\$0	\$0	\$0	\$0
Facilities cost - maintenance and operations				\$0	\$0	\$0	\$0
Total facilities capital cost				\$0	\$0	\$0	\$0
Total cost per year				\$0	\$0	\$0	\$0
Total cost per period				\$0	\$0	\$0	\$0

**Assumptions:**

For this estimate, assumed costs covered by the East Bay Regional Park District.

\$0	Cost per unit for recreation facilities.
\$0	Annual maintenance and operations cost for recreation facilities

**HCP/NCCP Monitoring, Research, and Adaptive Management for Initial Urban Development Area**

**2017 Update**

(2016 dollars)

Capital costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital Subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational Costs</b>								
Program staff and overhead				\$113,082	\$357,435	\$392,528	\$392,528	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$7,500	\$6,250	\$6,250	\$6,250	
Field data collection (contractors)				\$1,530,879	\$1,741,261	\$2,162,226	\$2,518,534	
Directed research				\$570,000	\$475,000	\$475,000	\$475,000	
Adaptive management				\$189,500	\$189,500	\$189,500	\$189,500	
<b>Operational Subtotal</b>	\$0	\$466,449	\$430,860	\$2,410,961	\$2,769,446	\$3,225,504	\$3,581,812	
<b>Total</b>	\$0	\$466,449	\$430,860	\$2,410,961	\$2,769,446	\$3,225,504	\$3,581,812	\$12,885,034

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.025	0.025	0.025	0.025
Associate Planner and support	\$112				0.05	0.30	0.33	0.33
Total FTEs					0.075	0.325	0.358	0.358
Total cost per year					\$18,847	\$71,487	\$78,506	\$78,506
Total cost per period					\$113,082	\$357,435	\$392,528	\$392,528

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Technical Staff and Overhead (shared with planning and restoration/creation)**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Technical support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Cost per period					\$0	\$0	\$0	\$0

Assumptions:

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Travel (shared with planning and restoration/creation)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$7,500	\$6,250	\$6,250	\$6,250

**Assumption:**

\$6,250	annual cost based on Conservancy 2017 budget
0.20	Proportion of travel costs that are used for monitoring (40% used for planning and included in the planning spreadsheet, and 40% used for restoration and included in the restoration spreadsheet).

**Field Data Collection (Contractors)**

**On-going and Construction Monitoring**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total acres of land added to reserve for management and monitoring each period			8,083	4,042	4,042	4,042	4,042
New acres created/restored per period			13	78	65	65	65
Number of restoration sites per period			9	24	20	20	20
Number of preserve covered activities requiring pre-construction surveys and construction monitoring per period (sites)			2	6	5	5	5

Monitoring type	Cost per unit	Unit	Average area requiring monitoring <b>per year</b> (acres or sites) and average annual cost per period						
			0	1-5	6-9	10-15	16-20	21-25	26-30
			pre-construction surveys	\$2,694	1 site				5
subtotal						\$13,470	\$13,470	\$13,470	\$13,470
construction monitoring	\$5,957	1 site				1	1	1	1
subtotal						\$5,957	\$5,957	\$5,957	\$5,957
post-acquisition biological inventories	\$18	1 acre				674	808	808	808
subtotal						\$12,236	\$14,683	\$14,683	\$14,683
monitoring: restoration, creation and enhancement sites	\$10,776	10 acres				3	19	29	27
subtotal						\$3,233	\$20,474	\$31,250	\$29,095
status and trends monitoring: key covered species and ecosystems	\$18	1 acre				12,125	16,167	20,208	24,250
subtotal						\$220,251	\$293,668	\$367,084	\$440,501
Total cost per year						\$255,147	\$348,252	\$432,445	\$503,707
Total cost per period						\$1,530,879	\$1,741,261	\$2,162,226	\$2,518,534

**Assumptions:**  
 Implementing entity monitoring staff will plan, coordinate, and report on the monitoring categories described below. Contractors will conduct the field monitoring and data analysis.  
 Implementation monitoring will be conducted by the GIS/Database technician in conjunction with the other monitoring staff. The cost for the GIS/database technician's time will be covered by the program administration cost category. The cost for the monitoring staffs' time is assumed to be included in the other monitoring categories.  
 Preconstruction surveys are assumed to occur prior to construction of covered activities on the Preserve System. Preconstruction surveys are for the following species only: Townsend's big-eared bat, San Joaquin kit fox, golden eagle, burrowing owl, Swainson's hawk, and covered shrimp species. Surveys are assumed to require **one visit by two associate biologists at \$160/hour** each. They are assumed to occur in the same 5-year period in which construction occurs. **Assumes negative findings.**  
 Construction monitoring is assumed to occur periodically during construction of covered activities and conservation measures. An average of **seven visits by one staff biologist at \$100/hour** is assumed.

10%	% of times construction surveys are anticipated to be required for covered activities within the preserve system (it is anticipated that Implementing Entity will whenever possible avoid habitat and breeding season of covered species).
0.25	Ratio of area of other covered activities in preserves to area created/restored.

Planning, preconstruction surveys and construction monitoring for covered activities outside of preserves will be paid for by developers.  
 Post-acquisition inventories will build on planning surveys. Inventory will include mapping of noxious weeds.  
 Monitoring of restoration, creation, and enhancement sites is assumed to occur **4 times per year** for the 5-year period following the restoration activity and will require **two associate biologists at \$160/hr for one 8-hour day each visit**. It will include species-response monitoring. It is assumed to begin in the 5-year period after the creation/restoration/enhancement takes place.  
 Status and trends monitoring is assumed to occur after preserve land is purchased through year 30. Status and trend monitoring will build on planning surveys and post-acquisition inventories, when appropriate.

**Directed Research**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Average cost per year to fund directed research				\$95,000	\$95,000	\$95,000	\$95,000
Total cost per period				\$570,000	\$475,000	\$475,000	\$475,000

**Adaptive Management**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Average Independent Conservation Assessment Team cost per period				\$31,500	\$31,500	\$31,500	\$31,500
Average Science Advisors cost per period				\$158,000	\$158,000	\$158,000	\$158,000
Total cost per period				\$189,500	\$189,500	\$189,500	\$189,500

**Assumptions:**

Adaptive management experiments are covered under the monitoring staff and directed research categories.

It is assumed that the Independent Conservation Assessment Team will meet once every 4 years and have:

5	members
\$6,300	stipend per member per 5-year period

It is assumed that the Science Advisors will contain:

10	members
\$15,800	stipend per member per 5-year period

**Field monitoring and analysis contractors**

	Associate Biologist	Staff Biologist	
Base cost per hour	\$160	\$100	\$ per hour
Direct Expenses	\$5	\$3	3% of labor cost
Travel	\$27	\$27	\$ per day
assuming	50	50	miles
and	\$0.54	\$0.54	\$ per mile
Hours per day	8	8	hours per day
Total cost per hour including expenses and amortized per diem and travel	\$168.38	\$106.38	\$ per hour

**Assumptions:**

Bay Area billing rate, assuming all work will be conducted from a local office (no per diem needed).

**Remedial Measures for Initial Urban Development Area**  
**2017 Update**  
**(2016 dollars)**

Capital costs	Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Remedial measures	\$0	\$0	\$0	\$329,018	\$200,632	\$755,469	\$1,799,321	\$3,084,440
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$329,018</b>	<b>\$200,632</b>	<b>\$755,469</b>	<b>\$1,799,321</b>	<b>\$3,084,440</b>

Note: Actual costs are included in habitat restoration/creation cost category

**Remedial Measures**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost of created/restored habitat per period		\$2,439,332	\$1,470,246	\$6,988,585	\$5,823,821	\$5,823,821	\$5,823,821
Cost for remedial measures for created/restored habitat per period				\$243,933	\$147,025	\$698,859	\$1,747,146
Area of new preserve not including created/restored habitat per period	-	7,682	3,292	3,711	3,093	3,093	3,093
Cost for remedial measures for preserves per period				\$55,084	\$23,608	\$26,610	\$22,175
Cost for other remedial measures per period				\$30,000	\$30,000	\$30,000	\$30,000
Total cost per period				\$329,018	\$200,632	\$755,469	\$1,799,321

Assumptions:	
2%	Percent of annual preserve management and maintenance cost assumed to be needed for preserve remedial actions.
10%	Percent of created/restored habitat for which remedial measures will be required.
\$359	Cost per acre for preserve management and maintenance in years 26-30.
70%	Percent of land acquisition in years 1 - 9 occurring in years 1 - 5

Remedial actions are assumed to occur in the second 5-year period after habitat is created/restored or preserve land is purchased, with the exception of remedial actions for habitat created/restored in years 21-30. The cost for these remedial actions is included in years 26-30 so that it can be included in this cost estimate.

The remedial cost for preserve lands is assumed to be a percentage of the cost per acre for preserve management and maintenance in years 26-30, and is assumed to be needed once, in the second 5-year period after the preserve land is purchased.

The cost for other remedial measures includes the costs for restoration or maintenance of preserve areas because of other changed circumstances, such as wildfire.

**Contingency for Initial Urban Development Area  
2017 Update  
(2016 dollars)**

	0	1-5	6-9	10-15	16-20	21-25	26-30	Total
Total cost of program excluding land acquisition and habitat restoration capital costs	\$0	\$0	\$0	\$21,258,171	\$19,277,099	\$21,704,136	\$23,373,520	\$85,612,926
Contingency fund	\$0	\$0	\$0	\$1,062,909	\$963,855	\$1,085,207	\$1,168,676	\$4,280,646

Assumptions:

5.0% Percent of total program funding needed for contingency

## Post-Permit Costs for Initial Urban Development Area

### 2017 Update

(2016 dollars)

#### Post-Permit Costs

Cost Category	Annual Costs	Assumptions
<b>Total Cost</b>		
Program Administration	\$424,686	
Land Acquisition	\$0	
Planning and Design	\$0	
Habitat Restoration/Creation	\$0	
Environmental Compliance	\$0	
Preserve Management and Maintenance	\$1,738,847	
Monitoring, Research, and Adaptive Management	\$358,181	
Remedial Measures	\$0	
Contingency	\$0	
<b>Total</b>	<b>\$2,521,714</b>	

Capital Costs	Annual Costs	Assumptions
Program Administration	\$0	Included in staff and overhead costs
Land Acquisition: acquisition and site improvements	\$0	Acquisition complete during permit term
Planning and Design	\$0	Planning and design work complete during permit term
Habitat Restoration/Creation	\$0	Restoration/creation projects constructed during permit term
Preserve Management and Maintenance	\$0	Captured in annual operating costs
Monitoring, Research, and Adaptive Management	\$0	Captured in annual operating costs
Remedial Measures	\$0	Not required, post permit
<b>Total</b>	<b>\$0</b>	

Operational Costs	Annual Costs	Assumptions
Program Administration	\$424,686	Reduced staffing and no legal and financial contractor costs.
Land Acquisition: due diligence, transaction costs	\$0	Acquisition complete during permit term
Planning and Design	\$0	Planning and design work complete during permit term
Habitat Restoration/Creation	\$0	Restoration/creation projects constructed during permit term
Environmental Compliance	\$0	Not required, post permit
Preserve Management and Maintenance	\$1,738,847	Assume 100 percent of annual average costs in years 26 - 30
Monitoring, Research, and Adaptive Management	\$358,181	Assume 50 percent of annual average costs in years 26 - 30
Contingency	\$0	Not required, post permit
<b>Total</b>	<b>\$2,521,714</b>	

<b>Total preserve acres</b>	<b>24,250</b>
<b>Annual average cost per acre managed</b>	<b>\$104</b>
<b>Percent of average annual cost years 26 - 30</b>	<b>21%</b>

## **APPENDIX D: MAXIMUM UDA COST MODEL UPDATE**

The following tables provide comprehensive documentation for the cost model update based on estimated impacts for the maximum urban development area.

East Contra Costa County HCP/NCCP  
2017 Update  
Implementation Cost Data and Assumptions with  
Maximum Urban Development Area

## Summary of East Contra Costa HCP Implementation Costs for Maximum Urban Development Area

2017 Update

(2016 dollars rounded to the nearest \$10,000)

### Total Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$160,000	\$6,800,000	\$5,770,000	\$4,640,000	\$4,650,000	\$4,660,000	\$26,680,000
Land Acquisition	\$170,000	\$88,930,000	\$51,540,000	\$42,670,000	\$42,670,000	\$42,670,000	\$268,650,000
Planning and Design	\$0	\$1,930,000	\$2,110,000	\$1,640,000	\$1,060,000	\$1,060,000	\$7,810,000
Habitat Restoration/Creation	\$0	\$3,910,000	\$13,670,000	\$11,390,000	\$11,390,000	\$11,390,000	\$51,750,000
Environmental Compliance	\$0	\$770,000	\$1,060,000	\$990,000	\$820,000	\$0	\$3,640,000
Preserve Management and Maintenance	\$0	\$1,930,000	\$6,560,000	\$7,620,000	\$8,690,000	\$10,840,000	\$35,650,000
Monitoring, Research, and Adaptive Management	\$0	\$900,000	\$2,770,000	\$3,200,000	\$3,790,000	\$4,220,000	\$14,880,000
Remedial Measures	\$0	\$0	\$330,000	\$200,000	\$920,000	\$2,190,000	\$3,650,000
Contingency	\$0	\$0	\$1,190,000	\$1,130,000	\$1,210,000	\$1,360,000	\$4,890,000
<b>Total</b>	<b>\$330,000</b>	<b>\$105,170,000</b>	<b>\$85,000,000</b>	<b>\$73,480,000</b>	<b>\$75,200,000</b>	<b>\$78,390,000</b>	<b>\$417,600,000</b>

### Capital Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	INCLUDED IN STAFF AND OVERHEAD COSTS						
Land Acquisition: acquisition and site improvements	\$0	\$86,370,000	\$49,330,000	\$41,220,000	\$41,220,000	\$41,220,000	\$259,370,000
Planning and Design	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Habitat Restoration/Creation	\$0	\$0	\$8,530,000	\$7,110,000	\$7,110,000	\$7,110,000	\$29,850,000
Preserve Management and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$330,000	\$200,000	\$920,000	\$2,190,000	\$3,650,000
<b>Total</b>	<b>\$0</b>	<b>\$86,370,000</b>	<b>\$58,190,000</b>	<b>\$48,530,000</b>	<b>\$49,250,000</b>	<b>\$50,520,000</b>	<b>\$292,870,000</b>

### Operational Costs

Cost Category	Implementation Period (Years)						Total (2016)
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$160,000	\$6,800,000	\$5,770,000	\$4,640,000	\$4,650,000	\$4,660,000	\$26,680,000
Land Acquisition: transactional costs	\$170,000	\$2,560,000	\$2,220,000	\$1,450,000	\$1,450,000	\$1,450,000	\$9,280,000
Planning and Design	\$0	\$1,930,000	\$2,110,000	\$1,640,000	\$1,060,000	\$1,060,000	\$7,810,000
Habitat Restoration/Creation	\$0	\$3,910,000	\$5,140,000	\$4,280,000	\$4,280,000	\$4,280,000	\$21,900,000
Environmental Compliance	\$0	\$770,000	\$1,060,000	\$990,000	\$820,000	\$0	\$3,640,000
Preserve Management and Maintenance	\$0	\$1,930,000	\$6,560,000	\$7,620,000	\$8,690,000	\$10,840,000	\$35,650,000
Monitoring, Research, and Adaptive Management	\$0	\$900,000	\$2,770,000	\$3,200,000	\$3,790,000	\$4,220,000	\$14,880,000
Contingency	\$0	\$0	\$1,190,000	\$1,130,000	\$1,210,000	\$1,360,000	\$4,890,000
<b>Total</b>	<b>\$330,000</b>	<b>\$18,800,000</b>	<b>\$26,820,000</b>	<b>\$24,950,000</b>	<b>\$25,950,000</b>	<b>\$27,870,000</b>	<b>\$124,730,000</b>

## Summary of East Contra Costa HCP Implementation Costs for Maximum Urban Development Area

2017 Update

(2016 dollars not rounded)

### Total Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$159,352	\$6,795,011	\$5,773,643	\$4,636,266	\$4,650,330	\$4,664,394	\$26,678,996
Land Acquisition	\$165,742	\$88,927,630	\$51,541,900	\$42,670,811	\$42,670,811	\$42,670,811	\$268,647,705
Planning and Design	\$0	\$1,931,148	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972
Habitat Restoration/Creation	\$0	\$3,909,578	\$13,668,995	\$11,390,829	\$11,390,829	\$11,390,829	\$51,751,061
Environmental Compliance	\$0	\$770,553	\$1,064,764	\$992,070	\$817,070	\$0	\$3,644,457
Preserve Management and Maintenance	\$0	\$1,929,601	\$6,563,082	\$7,619,235	\$8,694,235	\$10,844,235	\$35,650,388
Monitoring, Research, and Adaptive Management	\$0	\$897,309	\$2,769,384	\$3,204,307	\$3,788,148	\$4,223,749	\$14,882,897
Remedial Measures	\$0	\$0	\$329,103	\$200,669	\$921,333	\$2,194,046	\$3,645,151
Contingency	\$0	\$0	\$1,187,771	\$1,128,603	\$1,211,024	\$1,363,789	\$4,891,187
<b>Total</b>	<b>\$325,094</b>	<b>\$105,160,830</b>	<b>\$85,012,706</b>	<b>\$73,477,810</b>	<b>\$75,208,651</b>	<b>\$78,416,724</b>	<b>\$417,601,814</b>

### Capital Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	INCLUDED IN STAFF AND OVERHEAD COSTS						
Land Acquisition: acquisition and site improvements	\$0	\$86,372,000	\$49,326,489	\$41,223,665	\$41,223,665	\$41,223,665	\$259,369,485
Planning and Design	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Habitat Restoration/Creation	\$0	\$0	\$8,527,611	\$7,106,343	\$7,106,343	\$7,106,343	\$29,846,639
Preserve Management and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$329,103	\$200,669	\$921,333	\$2,194,046	\$3,645,151
<b>Total</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$58,183,203</b>	<b>\$48,530,677</b>	<b>\$49,251,341</b>	<b>\$50,524,054</b>	<b>\$292,861,275</b>

### Operational Costs

Cost Category	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
Program Administration	\$159,352	\$6,795,011	\$5,773,643	\$4,636,266	\$4,650,330	\$4,664,394	\$26,678,996
Land Acquisition: due diligence, transaction costs	\$165,742	\$2,555,630	\$2,215,411	\$1,447,146	\$1,447,146	\$1,447,146	\$9,278,220
Planning and Design	\$0	\$1,931,148	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972
Habitat Restoration/Creation	\$0	\$3,909,578	\$5,141,384	\$4,284,487	\$4,284,487	\$4,284,487	\$21,904,422
Environmental Compliance	\$0	\$770,553	\$1,064,764	\$992,070	\$817,070	\$0	\$3,644,457
Preserve Management and Maintenance	\$0	\$1,929,601	\$6,563,082	\$7,619,235	\$8,694,235	\$10,844,235	\$35,650,388
Monitoring, Research, and Adaptive Management	\$0	\$897,309	\$2,769,384	\$3,204,307	\$3,788,148	\$4,223,749	\$14,882,897
Contingency	\$0	\$0	\$1,187,771	\$1,128,603	\$1,211,024	\$1,363,789	\$4,891,187
<b>Total</b>	<b>\$325,094</b>	<b>\$18,788,830</b>	<b>\$26,829,503</b>	<b>\$24,947,133</b>	<b>\$25,957,310</b>	<b>\$27,892,670</b>	<b>\$124,740,539</b>

NOTE: Original unit cost estimates for the 2006 HCP/NCCP were in 2005 dollars, inflated to 2006 dollars for use in the plan document.

**Consumer Price Index - All Urban Consumers**  
Original Data Value

Series Id: CUURA422SA0 Data extracted on: March 29, 2017 (8:35:58 PM)  
 Not Seasonally Adjusted  
 Area: San Francisco-Oakland-San Jose, CA  
 Item: All items  
 Base Period: 1982-84=100  
 Years: 2005 to 2017

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	2016 dollars
2005		201.2		202.5		201.2		203.0		205.9		203.4	202.7	201.5	203.9	0.7610
2006		207.1		208.9		209.1		210.7		211.0		210.4	209.2	207.9	210.6	0.7855
2007		213.688		215.842		216.123		216.240		217.949		218.485	216.048	214.736	217.361	0.8112
2008		219.612		222.074		225.181		225.411		225.824		218.528	222.767	221.730	223.804	0.8364
2009		222.166		223.854		225.692		225.801		226.051		224.239	224.395	223.305	225.484	0.8425
2010		226.145		227.697		228.110		227.954		228.107		227.658	227.469	226.994	227.944	0.8540
2011		229.981		234.121		233.646		234.608		235.331		234.327	233.390	232.082	234.698	0.8763
2012		236.880		238.985		239.806		241.170		242.834		239.533	239.650	238.099	241.201	0.8998
2013		242.677		244.675		245.935		246.072		246.617		245.711	245.023	243.894	246.152	0.9199
2014		248.615		251.495		253.317		253.354		254.503		252.273	251.985	250.507	253.463	0.9461
2015		254.910		257.622		259.117		259.917		261.019		260.289	258.572	256.723	260.421	0.9708
2016		262.600		264.565		266.041		267.853		270.306		269.483	266.344	263.911	268.777	1.0000
2017		271.626														

**Employment Cost Index (NAICS)**  
Original Data Value

Year	Qtr1	Qtr2	Qtr3	Qtr4	2016 dollars	
Series Id: CIU20100001200001	2005	98.0	98.8	99.5	100.0	0.7893
Not seasonally adjusted	2006	101.0	101.8	103.1	103.9	0.8200
Series Title: Total compensation for Private industry workers in	2007	104.9	105.9	106.7	107.3	0.8469
Ownership: Private industry workers	2008	108.3	109.0	109.9	110.3	0.8706
Component: Total compensation	2009	111.0	111.1	111.4	111.4	0.8792
Occupation: Professional and related occupations	2010	112.2	112.6	113.3	113.5	0.8958
Industry: All workers	2011	114.6	115.1	115.4	115.7	0.9132
Subcategory: All workers	2012	116.8	117.3	117.7	118.2	0.9329
Area: United States (National)	2013	118.9	119.5	120.2	120.5	0.9511
Periodicity: Index number	2014	121.0	121.9	122.5	122.9	0.9700
Years: 2005 to 2016	2015	123.7	124.1	124.5	124.9	0.9858
	2016	125.7	126.2	126.7	126.7	1.0000

**California Construction Cost Index, Department of General Services**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	2016 dollars
2006	4620	4603	4597	4600	4599	4593	4609	4616	4619	4867	4891	4877	4,674	0.74759
2007	4869	4868	4871	4872	4886	4842	4849	4851	4942	4943	4978	4981	4,896	0.78306
2008	4983	4983	4999	5004	5023	5065	5135	5142	5194	5393	5375	5322	5,135	0.82126
2009	5309	5295	5298	5296	5288	5276	5263	5265	5264	5259	5259	5262	5,278	0.84413
2010	5260	5262	5268	5270	5378	5394	5401	5401	5381	5591	5599	5596	5,400	0.86368
2011	5592	5624	5627	5636	5637	5643	5654	5667	5668	5675	5680	5680	5,649	0.90342
2012	5683	5683	5738	5740	5755	5754	5750	5778	5777	5780	5779	5768	5,749	0.91944
2013	5774	5782	5777	5786	5796	5802	5804	5801	5802	5911	5903	5901	5,820	0.93083
2014	5898	5896	5953	5956	5957	5961	5959	5959	5959	5969	5981	5977	5,952	0.95197
2015	6073	6077	6069	6062	6069	6055	6055	6055	6113	6114	6109	6108	6,080	0.97241
2016	6106	6132	6248	6249	6240	6238	6245	6244	6267	6343	6344	6373	6,252	1.00000
2017	6373	6373	6373											

The California Construction Cost index is developed based upon Building Cost Index (BCI) cost indices for San Francisco and Los Angeles produced by Engineering News Record (ENR) and reported in the second issue each month for the previous month. This table is updated at the end of each month.

The ENR BCI reports cost trends for specific construction trade labor and materials in the California marketplace.

This page last updated: 4/17/17

Available at: [https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable\\_2017/CCCI MasterListing\\_4-2017.pdf](https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable_2017/CCCI MasterListing_4-2017.pdf)

## Legend

red numbers are assumptions or data entered directly into the worksheet

blue numbers are links from other worksheets in the workbook

black numbers are calculations based on the above numbers

Cost factors are colored coded by primary source considered:

EBRPD (for HCP)
CCWD (for HCP)
Average of CCWD/EBRPD
ECCC Habitat Conservancy
J&S and EPS (for HCP)
AECOM, 2012
Updated by HEG, 2017
Updated with input from H.T. Harvey, 2017
Other estimated factors
Actual costs start-up and years 1 - 9
Estimate of EBRPD contributions to operational costs, start up and years 1-9
Summary actuals supercede model detail

**Acres Acquired, Managed, and Restored within HCP/NCCP Preserves for Maximum Urban Development Area  
2017 Update**

	Maximum UDA	Source
Total acres acquired/managed	30,200	(Table 5-9: mid-point of range)
Pond acres acquired	16	(Table 5-5a)

**Acres Acquired and Managed by Time Period**

	Implementation Period (Years)						Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30	
Total reserve acres acquired per period	-	10,987	5,489	4,574	4,574	4,574	30,200
Total reserve acres managed, per period	-	10,067	5,033	5,033	5,033	5,033	30,200
Total reserve acres managed, cumulative	-	10,067	15,100	20,133	25,167	30,200	30,200
Pond acres acquired per period	-	10.86	1.5	1.2	1.2	1.2	16
Pond acres added to management per period	-	5.33	2.7	2.7	2.7	2.7	16
Pond acres managed cumulative, including restoration	-	5.37	14.3	22.2	30.1	38.0	38.0

**Assumptions:**  
Actual acquisition accounted for in years 1-5 and 6-9; the net remaining requirement is allocated evenly over the remaining 21 years of the permit term.  
Management and monitoring on acquired land and ponds has not kept pace with actual acquisition; land is assumed to come under management in 6 equal increments over the 30-year per period.  
13,349.6 Total acres acquired through 2016  
1,682.3 Easement acres on parcels acquired through 2016  
680.0 Other acres (outside acquisition zones) not credited to reserve through 2016  
10,987.2 Total acres acquired and credited toward reserve

**Land Cover Type Restored/Created by Time Period**

Land Cover Type (acres except where noted)	Implementation Period (Years)						Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30	
oak savanna	-	-	47.1	39.3	39.3	39.3	165.0
riparian woodland/scrub	-	4.04	14.6	12.1	12.1	12.1	55.0
perennial wetland (jurisdictional boundary)	-	0.16	9.2	7.7	7.7	7.7	32.5
seasonal wetland (jurisdictional boundary)	-	5.79	13.7	11.4	11.4	11.4	53.6
alkali wetland (jurisdictional boundary)	-	2.12	6.1	5.1	5.1	5.1	23.6
slough/channel	-	-	20.6	17.1	17.1	17.1	72.0
open water	-	-	-	-	-	-	-
ponds	-	0.04	6.3	5.2	5.2	5.2	22.0
streams (miles)	-	1.10	1.3	1.1	1.1	1.1	5.8
<b>Total (acres)</b>	-	<b>12.82</b>	<b>118.4</b>	<b>98.7</b>	<b>98.7</b>	<b>98.7</b>	<b>427.2</b>

**Assumptions:**  
Actual restoration accounted for in years 1-9; the net remaining requirement is allocated evenly over the next 21 years of the permit term.  
For total acre calculation, streams are assumed to be 5 feet wide  
30% of perennial, seasonal or alkali wetland complex acreage assumed to be jurisdictional wetland; for compensatory restoration only.

	average acres/site or linear feet/site (streams)	% requiring substantial soil disturbance
<b>Defining sites:</b>		
riparian/woodland scrub sites by acreage conversion:	3	20%
wetlands and pond sites by acreage conversion	2.0	80%
stream sites by linear feet conversion:	1,000	90%

**Restoration sites that require significant soil disturbance by land-cover type** USED IN MONITORING COST ESTIMATE

Land Cover Type Restoration Sites	Implementation Period (Years)						Total
	0	1-9	10-15 (6 yr period)	16-20	21-25	26-30	
riparian woodland/scrub	-	0.3	1.0	0.8	0.8	0.8	3.7
perennial wetland	-	0.1	3.7	3.1	3.1	3.1	13.0
seasonal wetland	-	2.3	5.5	4.6	4.6	4.6	21.4
alkali wetland	-	0.8	2.5	2.0	2.0	2.0	9.4
ponds	-	-	8.2	6.9	6.9	6.9	28.8
streams (miles/acres converted to sites)	-	5.2	6.4	5.3	5.3	5.3	27.6
Total sites for monitoring cost estimate	-	8.7	27.2	22.7	22.7	22.7	103.9

**Assumptions:**  
Average acres/site and percent of sites requiring substantial soil disturbance calculated in table above.  
Seasonal, perennial, and alkali wetland acreages in Tables 5-16 and 5-17 are for wetland complexes; for cost estimates and revenue projections the wetted acres of these complexes are assumed to be 30% of the total acres.

**Summary of HCP/NCCP Personnel  
2017 Update**

		2012 UPDATE STAFFING						2017 UPDATE STAFFING						POST PERMIT STAFFING		
		Number of FTEs						Number of FTEs						Number of FTEs		
UPDATE STAFFING		0	1-5	6-10	11-15	16-20	21-25	26-30	0	1-5	6-9	10-15	16-20	21-25	26-30	
<b>Administrative staffing</b>																
Principal Planner				0.50	0.80	0.80	0.80	0.80				0.60	0.60	0.60	0.60	0.50
Senior Planner				0.30	0.50	0.50	0.50	0.50				-	-	-	-	0.05
Senior GIS Planner				0.25	0.25	0.25	0.25	0.25				0.05	0.05	0.05	0.05	0.05
Associate Planner				0.80	-	-	-	-				1.85	1.85	1.85	1.85	0.50
Assistant Planner/Planning Technician				0.25	0.50	0.50	0.50	0.50				0.30	0.30	0.30	0.30	0.15
Accountant				0.25	0.25	0.25	0.25	0.25				0.40	0.40	0.40	0.40	0.20
Admin – Secretary (included in rates)				-	-	-	-	-				-	-	-	-	-
IT Support Staff (included in rates)				-	-	-	-	-				-	-	-	-	-
<b>Total</b>				2.35	2.30	2.30	2.30	2.30				3.20	3.20	3.20	3.20	1.40
<b>Land acquisition staffing</b>																
Principal Planner				0.20	0.20	0.20	0.20	0.20				0.15	0.15	0.15	0.15	-
Senior GIS Planner												0.05	0.05	0.05	0.05	-
Associate Planner												0.30	0.20	0.20	0.20	-
<b>Total</b>				0.20	0.20	0.20	0.20	0.20				0.50	0.40	0.40	0.40	-
<b>Planning and design, restoration, and monitoring staffing</b>																
Principal Planner				0.10	-	-	-	-				0.05	0.05	0.05	0.05	-
Senior GIS Planner												0.05	0.05	0.05	0.05	-
Senior Planner				0.20	-	-	-	-				-	-	-	-	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Associate Planner				0.17	0.33	0.33	0.33	0.33				0.30	0.30	0.30	0.30	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.80	1.33	1.33	1.33	1.00				0.40	0.40	0.40	0.40	-
<b>Habitat restoration and creation staffing</b>																
Principal Planner				0.10	-	-	-	-				0.05	0.05	0.05	0.05	-
Associate Planner/Project Manager				0.20	-	-	-	-				0.30	0.30	0.30	0.30	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Project Manager				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.80	1.33	1.33	1.33	1.00				0.35	0.35	0.35	0.35	-
<b>Environmental compliance staffing</b>																
Principal Planner				-	-	-	-	-				0.05	0.05	0.05	-	-
Associate Planner				-	-	-	-	-				0.10	0.10	0.10	-	-
<b>Total</b>				-	-	-	-	-				0.15	0.15	0.15	-	-
<b>Preserve management and maintenance staffing</b>																
Principal Planner				0.10	-	-	-	-				0.025	0.025	0.025	0.025	0.025
Senior Planner				0.20	-	-	-	-				-	-	-	-	-
Associate Planner/Preserve Manager				1.00	1.00	1.00	1.00	1.00				0.05	0.05	0.05	0.05	0.05
Preserve Maintenance Staff				3.00	4.00	6.00	7.00	8.00				5.00	7.00	8.00	10.00	10.00
<b>Total</b>				4.30	5.00	7.00	8.00	9.00				5.075	7.075	8.075	10.075	10.075
<b>Monitoring and research staffing</b>																
Principal Planner				-	-	-	-	-				0.025	0.025	0.025	0.025	0.025
Senior Planner				0.10	-	-	-	-				-	-	-	-	-
Senior Scientist				0.17	0.33	0.33	0.33	0.33				-	-	-	-	-
Associate Planner				0.17	0.33	0.33	0.33	0.33				0.05	0.30	0.33	0.33	-
Technical Support				0.17	0.67	0.67	0.67	0.33				-	-	-	-	-
<b>Total</b>				0.60	1.33	1.33	1.33	1.00				0.075	0.325	0.358	0.358	0.025
<b>Overall Staffing Plan</b>																
Principal Planner				1.00	1.00	1.00	1.00	1.00				0.95	0.95	0.95	0.90	0.55
Senior Planner				1.00	0.50	0.50	0.50	0.50				-	-	-	-	-
Senior GIS Planner				0.25	0.25	0.25	0.25	0.25				0.15	0.15	0.15	0.15	0.05
Associate Planner/Preserve Manager				0.80	-	-	-	-				2.95	3.10	3.13	3.03	0.55
Assistant Planner/Planning Technician				0.25	0.50	0.50	0.50	0.50				0.30	0.30	0.30	0.30	0.15
Accountant				0.25	0.25	0.25	0.25	0.25				0.40	0.40	0.40	0.40	0.20
Admin – Secretary (included in rates)				-	-	-	-	-				-	-	-	-	-
IT Support Staff (included in rates)				-	-	-	-	-				-	-	-	-	-
Senior Scientist				0.50	1.00	1.00	1.00	1.00				-	-	-	-	-
Project Manager				0.50	1.00	1.00	1.00	1.00				-	-	-	-	-
Technical Support				0.50	2.00	2.00	2.00	1.00				-	-	-	-	-
Preserve Manager				1.00	1.00	1.00	1.00	1.00				-	-	-	-	-
Preserve Maintenance Staff				3.00	4.00	6.00	7.00	8.00				5.00	7.00	8.00	10.00	10.00
<b>Total</b>				9.05	11.50	13.50	14.50	14.50				9.75	11.90	12.93	14.78	11.50

**HCP/NCCP Program Administration for Maximum Urban Development Area**  
**2017 Update**  
**(2016 dollars)**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
<u>Capital Costs</u>								
<b>Capital Subtotal</b>	<b>INCLUDED IN STAFF AND OVERHEAD COSTS</b>							
<u>Operational Costs</u>								
Staff and overhead				\$4,587,012	\$3,822,510	\$3,822,510	\$3,822,510	
Other administrative costs				\$36,000	\$30,000	\$30,000	\$30,000	
Vehicle / mileage allowance				\$9,000	\$7,500	\$7,500	\$7,500	
Travel				\$36,000	\$30,000	\$30,000	\$30,000	
Insurance				\$120,000	\$100,000	\$100,000	\$100,000	
Legal assistance				\$600,000	\$300,000	\$300,000	\$300,000	
Financial analysis assistance				\$65,000	\$65,000	\$65,000	\$65,000	
Financial audit (annual)				\$120,000	\$100,000	\$100,000	\$100,000	
In-lieu funding for law enforcement and firefighting				\$50,631	\$56,256	\$70,320	\$84,384	
Public relations and outreach				\$150,000	\$125,000	\$125,000	\$125,000	
<b>Operational Subtotal</b>	<b>\$159,352</b>	<b>\$3,328,033</b>	<b>\$3,466,978</b>	<b>\$5,773,643</b>	<b>\$4,636,266</b>	<b>\$4,650,330</b>	<b>\$4,664,394</b>	
<b>Total</b>	<b>\$159,352</b>	<b>\$3,328,033</b>	<b>\$3,466,978</b>	<b>\$5,773,643</b>	<b>\$4,636,266</b>	<b>\$4,650,330</b>	<b>\$4,664,394</b>	<b>\$26,678,996</b>

**Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.60	0.60	0.60	0.60
Senior Planner and support	\$177				-	-	-	-
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				1.85	1.85	1.85	1.85
Planning Technician and support	\$104				0.30	0.30	0.30	0.30
Accountant and support	\$133				0.40	0.40	0.40	0.40
Total FTEs					3.20	3.20	3.20	3.20
Total cost per year					\$764,502	\$764,502	\$764,502	\$764,502
Total cost per period					\$4,587,012	\$3,822,510	\$3,822,510	\$3,822,510

**Notes/Assumptions:**

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

Some actual costs for program administration staff and contractors through 2016 are included in actual costs under land acquisition, planning and design, preserve management, restoration, monitoring and environmental compliance.

1,880 hours per year

**Other Administrative Costs**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
CHCPC membership (IEH)				\$30,000	\$25,000	\$25,000	\$25,000
Miscellaneous equipment and supplies				\$6,000	\$5,000	\$5,000	\$5,000
Cost per period				\$36,000	\$30,000	\$30,000	\$30,000

Assumption:  
\$5,000 annual cost for CHCPC membership, based on actual Conservancy experience through 2016 (Institute for Ecological Health)  
\$1,000 annual cost based on actual Conservancy experience through 2016

**Vehicle / Mileage Allowance**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$9,000	\$7,500	\$7,500	\$7,500

Assumption:  
\$1,500 annual cost based on actual Conservancy experience through 2016

**Travel**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$36,000	\$30,000	\$30,000	\$30,000

Assumption:  
\$6,000 annual cost based on actual Conservancy experience through 2016

**Insurance**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost per period				\$120,000	\$100,000	\$100,000	\$100,000

Assumption:  
\$20,000 annual cost based on actual Conservancy experience through 2016

**Legal Assistance**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$600,000	\$300,000	\$300,000	\$300,000	\$1,500,000

Assumptions:  
\$100,000 Annual cost for legal assistance, years 10 - 15  
\$60,000 Annual cost for legal assistance, after year 15

Note: The legal assistance category covers legal assistance required for program administration and (for years 6 - 10) the environmental compliance category. Legal assistance for land acquisition included in the due diligence cost factor in the land acquisition category. Legal assistance is also estimated for the environmental compliance category.

**Financial Analysis Assistance**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$65,000	\$65,000	\$65,000	\$65,000	\$260,000

Assumptions:

**\$65,000** Cost per period for financial analysis assistance

Financial analyst review will occur periodically over the life of the Plan (years 3, 6, 10, 15, 20 and 25).

Note: The financial analysis assistance category covers the periodic assistance of a financial analyst to review the program's cost/revenue balance, ensure that charges are adjusted in line with changing land costs and ensure compliance with State requirements on collection of fees.

**Annual Financial Audit**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$120,000	\$100,000	\$100,000	\$100,000	\$420,000

Assumptions:

**\$20,000** Cost per year for financial audit services based on Conservancy experience through 2016

Annual financial audit of the Conservancy's financial statements by an independent auditor are required by the JPA agreement and Government Code.

**In-Lieu Payments for Law Enforcement and Firefighting**

	Cost by Implementation Period (Years)						
	0	1-5	6-10	10-15	16-20	21-25	26-30
Total preserve area per period	-	-	10,067	15,100	20,133	25,167	30,200
In-lieu payments for law enforcement per year			\$2,221	\$3,331	\$4,441	\$5,552	\$6,662
In-lieu payments for firefighting per year			\$3,405	\$5,107	\$6,810	\$8,512	\$10,215
Total cost per year			\$5,626	\$8,438	\$11,251	\$14,064	\$16,877
Cost per period			\$28,128	\$50,630.51	\$56,256	\$70,320	\$84,384

Assumptions:

**\$4.53** In-lieu law enforcement funding per preserve acre

**\$2.96** In-lieu firefighting funding per preserve acre

In lieu costs per preserve acres are based on CCWD's annual in-lieu payments and the assumption that CCWD manages approximately 20,000 acres of preserve.

**Public Relations/Outreach**

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Total cost per year				\$25,000	\$25,000	\$25,000	\$25,000	\$100,000
Cost per period				\$150,000	\$125,000	\$125,000	\$125,000	\$525,000

**HCP/NCCP Land Acquisition for Maximum Urban Development Area**

**2017 Update**

(2016 dollars)

	Cost by Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
<b>Capital Costs</b>							
Acquisition	\$0	\$86,372,000	\$47,903,038	\$39,919,198	\$39,919,198	\$39,919,198	\$254,032,633
Site improvements	\$0	\$0	\$1,423,450	\$1,304,467	\$1,304,467	\$1,304,467	\$5,336,851
<b>Capital Subtotal</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$49,326,489</b>	<b>\$41,223,665</b>	<b>\$41,223,665</b>	<b>\$41,223,665</b>	<b>\$259,369,485</b>
<b>Operational Costs</b>							
Program staff and overhead	na	na	\$778,320	\$249,570	\$249,570	\$249,570	\$1,527,030
Due diligence	\$165,742	\$2,555,630	\$1,437,091	\$1,197,576	\$1,197,576	\$1,197,576	\$7,751,190
<b>Operational Subtotal</b>	<b>\$165,742</b>	<b>\$2,555,630</b>	<b>\$2,215,411</b>	<b>\$1,447,146</b>	<b>\$1,447,146</b>	<b>\$1,447,146</b>	<b>\$9,278,220</b>
<b>Total</b>	<b>\$165,742</b>	<b>\$88,927,630</b>	<b>\$51,541,900</b>	<b>\$42,670,811</b>	<b>\$42,670,811</b>	<b>\$42,670,811</b>	<b>\$268,647,705</b>

**Acquisition Cost over 30-year Program, Actuals year 1 - 9 + Projections Years 10 - 30 (2016 dollars)**

	Cost by Implementation Period (Years)						Total	Estimated Remainder 10-30
	0	1-9	10-15	16-20	21-25	26-30		
Acquisition Analysis Zone								
Zone 1	\$0	\$8,385,000	\$4,362,019	\$3,635,016	\$3,635,016	\$3,635,016	\$23,652,065	\$15,267,065
Zone 2	\$0	\$31,138,000	\$13,767,038	\$11,472,532	\$11,472,532	\$11,472,532	\$79,322,635	\$48,184,635
Zone 3	\$0	\$2,217,000	\$326,188	\$271,823	\$271,823	\$271,823	\$3,358,656	\$1,141,656
Zone 4	\$0	\$6,417,000	\$14,517,791	\$12,098,160	\$12,098,160	\$12,098,160	\$57,229,270	\$50,812,270
Zone 5	\$0	\$26,249,000	\$11,382,988	\$9,485,823	\$9,485,823	\$9,485,823	\$66,089,456	\$39,840,456
Zone 6 (incl. within ULL along Marsh Creek)	\$0	\$6,072,000	\$2,814,940	\$2,345,783	\$2,345,783	\$2,345,783	\$15,924,289	\$9,852,289
Outside Inventory Area	\$0	\$0	\$356,064	\$296,720	\$296,720	\$296,720	\$1,246,224	\$1,246,224
Outside Acquisition Zones	\$0	\$5,894,000	\$376,011	\$313,342	\$313,342	\$313,342	\$7,210,038	\$1,316,038
<b>Total</b>	<b>\$0</b>	<b>\$86,372,000</b>	<b>\$47,903,038</b>	<b>\$39,919,198</b>	<b>\$39,919,198</b>	<b>\$39,919,198</b>	<b>\$254,032,633</b>	<b>\$167,660,633</b>

Assumptions: Actual acquisition cost through year 9, in 2016 dollars. Updated 2016 land cost factors by cost category applied to remaining acquisition targets. Total remaining cost allocated evenly over remaining 21 years of the permit term. 34% 66%

See Appendix G and description of separate land cost model in Chapter 9.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.15	0.15	0.15	0.15
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.20	0.20	0.20
<b>Total FTEs</b>					0.50	0.40	0.40	0.40
<b>Total cost per year</b>					\$129,720	\$49,914	\$49,914	\$49,914
<b>Total cost per period</b>					\$778,320	\$249,570	\$249,570	\$249,570

Notes/Assumptions:

Actual staff costs for years 0 - 9 are included in the due diligence actuals below.

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Due Diligence**

Covers costs for appraisals, preliminary title report, escrow and other closing costs, boundary surveys, legal services, environmental and Phase 1 site assessment.

Includes Conservancy staff costs on land acquisition projects.

The 2006 cost model used more detailed unit costs. The result of applying those cost factors in the 2006 model was that due diligence represented about 4% of land acquisition costs.

For the 2012 and 2016 updates the model is simplified to assume due diligence costs (not including Conservancy staff costs) at 3% of land acquisition costs, roughly consistent with the experience of the Conservancy and EBRPD through 2016, during which time about 35 percent of the reserve goals for land acquisition took place. For years 10 -30, Conservancy staff time costs are separately estimated and included in Program Staff line item above.

	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Due Diligence	\$165,742	\$1,504,429	\$1,051,201	\$1,437,091	\$1,197,576	\$1,197,576	\$1,197,576	\$7,751,190

Assumptions:

3.0% Due diligence costs as a percentage of land acquisition cost.

**Planning Surveys (Pre-Acquisition)**

Based on Conservancy and EBRPD experience to date, initial property evaluation and planning is included in staff and consultant time.

Most significant field biological work is done post acquisition and is included as a monitoring cost.

**Site Improvements**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Demolition of old facilities				\$88,113	\$73,427	\$73,427	\$73,427
Repair of boundary fence				\$709,550	\$709,550	\$709,550	\$709,550
Repair and replacement of gates				\$296,426	\$247,021	\$247,021	\$247,021
Signs (boundary, landbank, etc.)				\$181,149	\$150,958	\$150,958	\$150,958
Other security (e.g., boarding up barns)				\$148,213	\$123,511	\$123,511	\$123,511
Total				\$1,423,450	\$1,304,467	\$1,304,467	\$1,304,467

Assumptions:

Most demolition to date is a condition of the transaction and assigned to the seller. Other site improvement costs included in EBRPD operations and maintenance costs to date.

\$8,026	Demolition of old facilities per 500 acres
\$5,400	Repair and replacement of gates per 100 acres
\$3,300	Signs (boundary, landbank, etc.) per 100 acres
\$2,700	Other security (e.g., boarding up barns) per 100 acres
300	Estimated number of parcels acquired years 10 - 30 assuming 100 acres per parcel
15,000	Average parcel boundary length in linear feet (from GIS analysis, grouping adjacent parcels with the same landowner)
\$5.26	Average cost per linear foot for boundary fence repair
15%	Proportion of boundary fence that needs repair

**HCP/NCCP Management and Restoration Planning and Design for Maximum Urban Development Area**  
**2017 Update**  
**(2016 dollars)**

Capital costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational costs</b>								
Program staff and overhead				\$578,664	\$482,220	\$482,220	\$482,220	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$15,000	\$12,500	\$12,500	\$12,500	
Contractors				\$1,520,400	\$1,140,300	\$570,150	\$570,150	
<b>Operational subtotal</b>	\$0	\$1,262,793	\$668,355	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	
<b>Total</b>	\$0	\$1,262,793	\$668,355	\$2,114,064	\$1,635,020	\$1,064,870	\$1,064,870	\$7,809,972

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	0.05
Senior GIS Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.30	0.30	0.30
Total FTEs					0.40	0.40	0.40	0.40
Total cost per year					\$96,444	\$96,444	\$96,444	\$96,444
Total cost per period					\$578,664	\$482,220	\$482,220	\$482,220

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies, .

**Technical Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Planning Technician and support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Total cost per period					\$0	\$0	\$0	\$0

**Notes/Assumptions:**

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Travel (shared with restoration and monitoring)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$15,000	\$12,500	\$12,500	\$12,500

**Assumption:**

\$6,250	annual cost based on Conservancy 2017 budget
0.40	proportion of travel costs that are used for planning (40% used for restoration and included in the restoration spreadsheet, and 20% used for monitoring and included in the monitoring spreadsheet)

**Contractors**

Contractor category	Contract value per period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Management planning				\$760,200	\$570,150	\$0	\$0
Restoration planning				\$760,200	\$570,150	\$570,150	\$570,150
Total per period			\$0	\$1,520,400	\$1,140,300	\$570,150	\$570,150

**Assumptions:**  
Restoration designs included in habitat restoration/creation cost as of 2017 update.

**The management and restoration planning and design staff and contractors will conduct the following activities:**

**Management Planning**

- Management plans prepared for cropland/pasture preserves
- Management plans prepared for natural area preserves
- Grazing leases developed or renewed
- Jurisdictional wetland delineation
- Exotic Plant Control Program (Preserve System-wide)
- Fire management/control plan (System-wide)

**Restoration Planning & Design (restoration construction designs included in the habitat restoration/creation cost category)**

- Pond creation plan and construction designs
- Wetland creation plan and construction designs
- Stream restoration plan and construction designs
- Oak savanna restoration plan and construction designs
- Riparian woodland/scrub restoration plan and construction designs

**HCP/NCCP Habitat Restoration/Creation for Maximum Urban Development Area**

**2017 Update**

(2016 dollars)

Capital Costs	Cost by Implementation Period (Years)						Total	
	0	1-5	6-9	10-15	16-20	21-25		26-30
Creation/Restoration				\$8,527,611	\$7,106,343	\$7,106,343	\$7,106,343	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital Subtotal</b>				<b>\$8,527,611</b>	<b>\$7,106,343</b>	<b>\$7,106,343</b>	<b>\$7,106,343</b>	
<b>Operational Costs</b>								
Program staff and overhead				\$478,836	\$399,030	\$399,030	\$399,030	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$15,000	\$12,500	\$12,500	\$12,500	
Contractors				\$4,647,548	\$3,872,957	\$3,872,957	\$3,872,957	
<b>Operational Subtotal</b>	<b>\$0</b>	<b>\$2,439,332</b>	<b>\$1,470,246</b>	<b>\$5,141,384</b>	<b>\$4,284,487</b>	<b>\$4,284,487</b>	<b>\$4,284,487</b>	
<b>Total</b>	<b>\$0</b>	<b>\$2,439,332</b>	<b>\$1,470,246</b>	<b>\$13,668,995</b>	<b>\$11,390,829</b>	<b>\$11,390,829</b>	<b>\$11,390,829</b>	<b>\$51,751,061</b>

**Land Cover Type Restored/Created**

Land Cover Type (acres)	Implementation Period (Years)						Total
	0	1-9	10-15	16-20	21-25	26-30	
oak savanna	-	-	47.1	39.3	39.3	39.3	165.0
riparian woodland/scrub	-	4.0	14.6	12.1	12.1	12.1	55.0
perennial wetland	-	0.2	9.2	7.7	7.7	7.7	32.5
seasonal wetland	-	5.8	13.7	11.4	11.4	11.4	53.6
alkali wetland	-	2.1	6.1	5.1	5.1	5.1	23.6
slough/channel	-	-	20.6	17.1	17.1	17.1	72.0
open water	-	-	-	-	-	-	-
ponds	-	0.0	6.3	5.2	5.2	5.2	22.0
streams (miles)	-	1.1	1.3	1.1	1.1	1.1	5.8
<b>Total (acres)</b>	<b>-</b>	<b>12.8</b>	<b>118.4</b>	<b>98.7</b>	<b>98.7</b>	<b>98.7</b>	<b>427.2</b>

**Cost of Restoration/Creation Construction**

Land Cover Type	Units	Cost per unit	Cost by Implementation Period (Years)					
			0	1-9	10-15	16-20	21-25	26-30
oak savanna	acres	\$15,000			\$848,571	\$707,143	\$707,143	\$707,143
riparian woodland/scrub	acres	\$42,199			\$737,308	\$614,423	\$614,423	\$614,423
perennial wetland	acres	\$68,846			\$763,364	\$636,136	\$636,136	\$636,136
seasonal wetland	acres	\$82,115			\$1,346,026	\$1,121,688	\$1,121,688	\$1,121,688
alkali wetland	acres	\$83,094			\$611,949	\$509,958	\$509,958	\$509,958
slough/channel	acres	\$62,538			\$1,543,789	\$1,286,491	\$1,286,491	\$1,286,491
open water	acres	\$91,251			\$0	\$0	\$0	\$0
ponds	acres	\$91,251			\$687,040	\$572,533	\$572,533	\$572,533
streams	linear feet	\$234			\$1,989,564	\$1,657,970	\$1,657,970	\$1,657,970
<b>Total</b>					<b>\$8,527,611</b>	<b>\$7,106,343</b>	<b>\$7,106,343</b>	<b>\$7,106,343</b>

**Assumptions:**  
Construction costs depend mostly on the amount, depth, and linear extent of earthwork expected, and whether water control structure are required. Plant propagation, seeding, and watering also included.

For 2017 update, unit costs increased based on change in the California Construction Cost Index published by the State of California Department of General Services. Available at: [https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable\\_2017/CCIMasterListing\\_4-2017.pdf](https://www.documents.dgs.ca.gov/resd/PMB/CCCI/Old/ccitable_2017/CCIMasterListing_4-2017.pdf)

20% Contingency factor for restoration projects; assumed higher than the standard contingency because of the higher degree of uncertainty in this portion of the conservation program.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	0.05
Associate Planner and support	\$112				0.30	0.30	0.30	0.30
Total FTEs					0.35	0.35	0.35	0.35
Total cost per year					\$79,806	\$79,806	\$79,806	\$79,806
Total cost per period					\$478,836	\$399,030	\$399,030	\$399,030
1,880 hours per year								

**Technical Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Associate Planner and support	\$112				-	-	-	-
Planning Technician and support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Cost per period					\$0	\$0	\$0	\$0

Assumptions:  
 Habitat Conservancy staff select sites, hire and oversee consultants for plans, specifications, and implementation. Staff shared with other implementation tasks; the amount listed is the estimated portion to support wetland mitigation creation/restoration.

Cost includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Travel (shared with planning and monitoring)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$15,000	\$12,500	\$12,500	\$12,500

Assumption:  
 \$6,250 annual cost based on Conservancy 2017 budget  
 0.40 proportion of travel costs that are used for restoration (40% used for planning and included in the planning spreadsheet, and 20% used for monitoring and included in the monitoring spreadsheet)

**Contractors**

Contractor category	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Design, plans, specifications, and engineering				\$2,814,112	\$2,345,093	\$2,345,093	\$2,345,093
Bid assistance				\$127,914	\$106,595	\$106,595	\$106,595
Construction oversight				\$852,761	\$710,634	\$710,634	\$710,634
Post-construction maintenance				\$852,761	\$710,634	\$710,634	\$710,634
Cost per period				\$4,647,548	\$3,872,957	\$3,872,957	\$3,872,957

Assumptions:  
 33% percent of total construction cost required to complete restoration design and plans, specifications, engineering and provide allowance for remedial measures  
 1.50% percent of total construction cost required for bid assistance  
 10% percent of total construction cost required for construction oversight  
 10% percent of total construction cost required for post construction maintenance

The total area of restoration that occurs in each period will be designed as three different projects (approximately 14 acres each). Design, plan, specification, and engineering work, bid assistance, and construction oversight will be conducted in the period in which construction takes place. Two years of post-construction maintenance will be conducted in the period after construction takes place to maintain irrigation systems, conducting weeding, etc. Management costs after success criteria are met is included in development fee paid for same site (wetland mitigation fee is in addition).

**HCP/NCCP Preserve Management and Maintenance for Maximum Urban Development Area**

**2017 Update**

(2016 dollars)

	Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
<b>Capital Costs</b>	0							
Vehicle purchase				Covered in facilities maintenance line item below.				
Equipment - capital								
Field facilities								
Contractors - capital								
Recreation facilities								
<b>Capital Subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational Costs</b>								
Program staff and overhead				\$49,914	\$41,595	\$41,595	\$41,595	
Preserve staff and overhead				\$4,293,168	\$4,987,640	\$5,692,640	\$7,102,640	
Facilities Maintenance/Vehicles and equipment				\$2,220,000	\$2,590,000	\$2,960,000	\$3,700,000	
Equipment - operational				\$0	\$0	\$0	\$0	
Facilities maintenance and utilities				Covered in facilities maintenance line item above.				
Water pumping								
Contractors - operational								
Recreation - operational				\$0	\$0	\$0	\$0	
<b>Operational Subtotal</b>	\$0	\$386,065	\$1,543,536	\$6,563,082	\$7,619,235	\$8,694,235	\$10,844,235	
<b>Total</b>	\$0	\$386,065	\$1,543,536	\$6,563,082	\$7,619,235	\$8,694,235	\$10,844,235	\$35,650,388

NOTE: Costs for years 1 - 9 include expenditures by the East Bay Regional Park District on land maintenance activities on Conservancy properties (staff costs, maintenance supplies, maintenance services from inception through 2016. Details provided by the East Contra Costa County Habitat Conservancy.

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and Support	\$177				0.025	0.025	0.025	0.025
Senior Planner and Support	\$177				-	-	-	-
<b>Total FTEs</b>					0.025	0.025	0.025	0.025
<b>Total cost per year</b>					\$8,319	\$8,319	\$8,319	\$8,319
<b>Total cost per period</b>					\$49,914	\$41,595	\$41,595	\$41,595

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Preserve Staff and Overhead**

Position	Preserve area per position (acres)	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
			0	1-5	6-9	10-15	16-20	21-25	26-30
Preserve Manager and support		\$112				0.05	0.05	0.05	0.05
Preserve maintenance staff	3,000	\$75				5.0	7.0	8.0	10.0
<b>Total FTEs</b>						5.05	7.05	8.05	10.05
<b>Total cost per year</b>						\$715,528	\$997,528	\$1,138,528	\$1,420,528
<b>Total cost per period</b>						\$4,293,168	\$4,987,640	\$5,692,640	\$7,102,640

**Notes/Assumptions:**

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year, excluding vacation

**Preserve maintenance including capital and operational costs for all maintenance activities (new cost approach for 2017 update)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per year				5.0	7.0	8.0	10.0
Total cost per period				\$370,000	\$518,000	\$592,000	\$740,000
				\$2,220,000	\$2,590,000	\$2,960,000	\$3,700,000

**Notes/Assumptions:**

Annual cost per FTE	\$74,000
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For 2017 update, revised the approach to this component of the cost estimate. Replaced detailed estimates of schedules for vehicle and equipment purchases, field facilities construction, and various maintenance activities with a per-FTE factor derived from analysis of the EBRPD budget for the Maintenance and Skilled Trades Department within the Parks Operations Division. This department acquires, manages, and services the vehicles, trailers, landscaping equipment, heavy equipment, police vehicles, boats and fire apparatus needed to manage and maintain EBRPD properties. The department also repairs and maintains buildings and utilities infrastructure, including water utilities, roads and trails, and sanitation systems.

**Vehicles, Maintenance, and Fuel - Captured in annual cost per FTE above (May 2017)**

	Purchase price per vehicle	Fuel cost per vehicle per year	Maintenance cost per vehicle per year	Number of vehicles, per period						
				0	1-5	6-9	10-15	16-20	21-25	26-30
Total number of FTEs							5.05	7.05	8.05	10.05
New trucks purchased	\$27,600	\$1,200	\$1,300				0	0	0	0
Old trucks retired							0	0	0	0
Total trucks							0	0	0	0
New 4WDs purchased	\$46,000	\$2,400	\$2,000				0	0	0	0
Old 4WDs retired							0	0	0	0
Total 4WDs							0	0	0	0
New ATVs purchased	\$7,900	\$330	\$390				0	0	0	0
Old ATVs retired							0	0	0	0
Total ATVs							0	0	0	0
New dump trucks purchased	\$39,400	\$530	\$530				0	0	0	0
Old dump trucks retired							0	0	0	0
Total dump trucks							0	0	0	0
New tractors purchased	\$52,600	\$660	\$1,310				0	0	0	0
Old tractors retired							0	0	0	0
Total tractors							0	0	0	0
New auger, mower, scraper for tractor	\$52,600	\$0	\$130				0	0	0	0
Old auger, mower, scraper retired							0	0	0	0
Total auger, mower, scraper							0	0	0	0
New small tractors	\$18,400	\$390	\$390				0	0	0	0
Old small tractors retired							0	0	0	0
Total small tractors							0	0	0	0
New light 4WD vehicles	\$13,100	\$330	\$330				0	0	0	0
Old light 4WD vehicles retired							0	0	0	0
Total light 4WD vehicles							0	0	0	0
Total vehicle purchase cost per period							\$0	\$0	\$0	\$0
Total vehicle fuel and maintenance per year							\$0	\$0	\$0	\$0
Total vehicle fuel and maintenance per period							\$0	\$0	\$0	\$0

**Assumptions:**

Cost of 4WD truck includes cost of fire pumper, chain saw, sprayer, and small tool set for vehicle.

**Equipment and Materials - Captured in annual cost per FTE above (May 2017)**

	Number of new units bought per period					
	0	1-9	10-15	16-20	21-25	26-30
New preserve area managed per period		10,067	5,033	5,033	5,033	5,033
Total preserve area managed per period		10,067	15,100	20,133	25,167	30,200
Capital cost of equipment and materials per year			\$0	\$0	\$0	\$0
Operational cost of equipment and materials per year			\$0	\$0	\$0	\$0
Total capital cost per period			\$0	\$0	\$0	\$0
Total operational cost per period			\$0	\$0	\$0	\$0

**Assumptions:**

\$0 Capital cost of equipment and materials per 1,000 preserve acres per year.

\$0 Operational cost of equipment and materials per 1,000 preserve acres per year.

Capital costs include the capital component of fire fighting equipment/gear, small tools (pliers, wrenches, screwdrivers, etc.), glasses, gloves, hard hats, rain gear, irrigation supplies, cargo container, landscape plants and grass, oak trees, lumber, and truck hauling services.

Operational costs include the operational component of fire fighting equipment/gear, small tools (pliers, wrenches, screwdrivers, etc.), glasses, gloves, hard hats, rain gear, irrigation supplies, cargo container, landscape plants and grass, oak trees, lumber, and truck hauling services.

Operational costs also include portable radios, small pumps, piping, generator, saw, and demolition hammers.

**Field Facilities - Captured in annual cost per FTE above (May 2017)**

	0	1-9	10-15	16-20	21-25	26-30
Total preserve area managed per period		10,067	15,100	20,133	25,167	30,200
Total field offices/parking areas			-	-	-	-
New field offices/parking areas			-	-	-	-
Cost per period for offices/workshops			\$0	\$0	\$0	\$0

**Assumptions:**

10,000 Number of acres per workshop/parking area

\$556,000 Cost to build a workshop/parking area

Note: Field facilities contain an area for equipment storage, a manager's office, a shared office, a locker room, and restrooms.

Based on experience to date, cost assumes donated portable building, with costs representing transportation, installation, utilities, etc.

**Facilities Maintenance and Utilities - Captured in annual cost per FTE above (May 2017)**

	Cost per facility per year	0	1-5	6-9	10-15	16-20	21-25	26-30
Total facilities per period		-	-	-	-	-	-	-
Maintenance cost per year	\$9,900				\$0	\$0	\$0	\$0
Utilities cost per year	\$5,300				\$0	\$0	\$0	\$0
Total cost per year					\$0	\$0	\$0	\$0
Total cost per period					\$0	\$0	\$0	\$0

**Water Pumping - Captured in annual cost per FTE above (May 2017)**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total preserve area managed				15,100	20,133	25,167	30,200
Total cost per year				\$0	\$0	\$0	\$0
Total cost per period				\$0	\$0	\$0	\$0
\$0	Annual cost for pump and well drilling per 1,000 acres						

**Contractors - operational: for 2017 update assume included in preserve management staffing cost**

Contractor category	Contract value per 5-year period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total pond area managed				14	22	30	38
Total preserve area managed				15,100	20,133	25,167	30,200
Routine dirt road maintenance				\$0	\$0	\$0	\$0
Feral pig management				\$0	\$0	\$0	\$0
Pond maintenance				\$0	\$0	\$0	\$0
Weed management				\$0	\$0	\$0	\$0
Other maintenance services				\$0	\$0	\$0	\$0
<b>Total per period</b>				\$0	\$0	\$0	\$0

**Assumptions:**

\$0	Cost for pond maintenance (dredging) per acre of pond every 5 years.
\$0	Cost of dirt road maintenance per 100 miles of road per year.
100	miles of dirt roads on preserves
3	miles of dirt roads per 1,000 acres of preserve
\$0	Cost of feral pig management per year per 1,000 acres managed
\$0	Cost of weed management per 1,000 acres of preserve per year.
\$0	Cost for other maintenance services per 1,000 acres of preserve per year.

Other maintenance services include mowing, grading, pest control, disking for fire breaks, fencing, alarms, janitorial services (pond maintenance subtracted based on the yearly pond maintenance costs above)

**Contractors - capital - Captured in annual cost per FTE above (May 2017)**

Contractor category	Contract value per period						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total preserve area managed				15,100	20,133	25,167	30,200
Construction services				\$0	\$0	\$0	\$0

**Assumptions:**

\$0	Cost for construction services per 1,000 preserve acres per year
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Construction services includes roadway design, paving, fencing, grading, weather station, and boundary surveying services

**Recreation Facilities and Maintenance**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total facilities per period				-	-	-	-
Facilities cost - capital, per period				\$0	\$0	\$0	\$0
Facilities cost - maintenance and operations				\$0	\$0	\$0	\$0
<b>Total facilities capital cost</b>				\$0	\$0	\$0	\$0
<b>Total cost per year</b>				\$0	\$0	\$0	\$0
<b>Total cost per period</b>				\$0	\$0	\$0	\$0

**Assumptions:**

For this estimate, assumed costs covered by the East Bay Regional Park District.

\$0	Cost per unit for recreation facilities.
\$0	Annual maintenance and operations cost for recreation facilities

**HCP/NCCP Monitoring, Research, and Adaptive Management for Maximum Urban Development Area**

**2017 Update**

(2016 dollars)

Capital costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Vehicle purchase (included in overhead and contractor cost)								
<b>Capital Subtotal</b>				\$0	\$0	\$0	\$0	
<b>Operational Costs</b>								
Program staff and overhead				\$113,082	\$357,435	\$392,528	\$392,528	
Technical staff and overhead				\$0	\$0	\$0	\$0	
Travel				\$7,500	\$6,250	\$6,250	\$6,250	
Field data collection (contractors)				\$1,889,302	\$2,176,122	\$2,724,870	\$3,160,471	
Directed research				\$570,000	\$475,000	\$475,000	\$475,000	
Adaptive management				\$189,500	\$189,500	\$189,500	\$189,500	
<b>Operational Subtotal</b>	\$0	\$466,449	\$430,860	\$2,769,384	\$3,204,307	\$3,788,148	\$4,223,749	
<b>Total</b>	\$0	\$466,449	\$430,860	\$2,769,384	\$3,204,307	\$3,788,148	\$4,223,749	\$14,882,897

**Program Staff and Overhead**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.025	0.025	0.025	0.025
Associate Planner and support	\$112				0.05	0.30	0.33	0.33
Total FTEs					0.075	0.325	0.358	0.358
Total cost per year					\$18,847	\$71,487	\$78,506	\$78,506
Total cost per period					\$113,082	\$357,435	\$392,528	\$392,528

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

**Technical Staff and Overhead (shared with planning and restoration/creation)**

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Senior scientist and support	\$177				-	-	-	-
Technical support	\$104				-	-	-	-
Total FTEs					-	-	-	-
Total cost per year					\$0	\$0	\$0	\$0
Cost per period					\$0	\$0	\$0	\$0

**Assumptions:**

Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

**Travel (shared with planning and restoration/creation)**

	Cost by Implementation Period (Years)						
	0	1-5	6-9	10-15	16-20	21-25	26-30
Total cost per period				\$7,500	\$6,250	\$6,250	\$6,250

**Assumption:**

\$6,250	annual cost based on Conservancy 2017 budget
0.20	Proportion of travel costs that are used for monitoring (40% used for planning and included in the planning spreadsheet, and 40% used for restoration and included in the restoration spreadsheet).

**Field Data Collection (Contractors)**

**On-going and Construction Monitoring**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Total acres of land added to reserve for management and monitoring each period			10,067	5,033	5,033	5,033	5,033
New acres created/restored per period			13	118	99	99	99
Number of restoration sites per period			9	27	23	23	23
Number of preserve covered activities requiring pre-construction surveys and construction monitoring per period (sites)			2	7	6	6	6

Monitoring type	Cost per unit	Unit	Average area requiring monitoring <b>per year</b> (acres or sites) and average annual cost per period						
			0	1-5	6-9	10-15	16-20	21-25	26-30
			pre-construction surveys	\$2,694	1 site				6
subtotal						\$16,164	\$16,164	\$16,164	\$16,164
construction monitoring	\$5,957	1 site				1	1	1	1
subtotal						\$5,957	\$5,957	\$5,957	\$5,957
post-acquisition biological inventories	\$18	1 acre				839	1,007	1,007	1,007
subtotal						\$15,238	\$18,286	\$18,286	\$18,286
monitoring: restoration, creation and enhancement sites	\$10,776	10 acres				3	27	44	40
subtotal						\$3,233	\$29,095	\$47,414	\$43,104
status and trends monitoring: key covered species and ecosystems	\$18	1 acre				15,100	20,133	25,167	30,200
subtotal						\$274,292	\$365,722	\$457,153	\$548,583
Total cost per year						\$314,884	\$435,224	\$544,974	\$632,094
Total cost per period						\$1,889,302	\$2,176,122	\$2,724,870	\$3,160,471

**Assumptions:**  
 Implementing entity monitoring staff will plan, coordinate, and report on the monitoring categories described below. Contractors will conduct the field monitoring and data analysis.  
 Implementation monitoring will be conducted by the GIS/Database technician in conjunction with the other monitoring staff. The cost for the GIS/database technician's time will be covered by the program administration cost category. The cost for the monitoring staffs' time is assumed to be included in the other monitoring categories.  
 Preconstruction surveys are assumed to occur prior to construction of covered activities on the Preserve System. Preconstruction surveys are for the following species only: Townsend's big-eared bat, San Joaquin kit fox, golden eagle, burrowing owl, Swainson's hawk, and covered shrimp species. Surveys are assumed to require **one visit by two associate biologists at \$160/hour** each. They are assumed to occur in the same 5-year period in which construction occurs. **Assumes negative findings.**  
 Construction monitoring is assumed to occur periodically during construction of covered activities and conservation measures. An average of **seven visits by one staff biologist at \$100/hour** is assumed.

10%	% of times construction surveys are anticipated to be required for covered activities within the preserve system (it is anticipated that Implementing Entity will whenever possible avoid habitat and breeding season of covered species).
0.25	Ratio of area of other covered activities in preserves to area created/restored.

Planning, preconstruction surveys and construction monitoring for covered activities outside of preserves will be paid for by developers.  
 Post-acquisition inventories will build on planning surveys. Inventory will include mapping of noxious weeds.  
 Monitoring of restoration, creation, and enhancement sites is assumed to occur **4 times per year** for the 5-year period following the restoration activity and will require **two associate biologists at \$160/hr for one 8-hour day each visit**. It will include species-response monitoring. It is assumed to begin in the 5-year period after the creation/restoration/enhancement takes place.  
 Status and trends monitoring is assumed to occur after preserve land is purchased through year 30. Status and trend monitoring will build on planning surveys and post-acquisition inventories, when appropriate.

**Directed Research**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Average cost per year to fund directed research				\$95,000	\$95,000	\$95,000	\$95,000
Total cost per period				\$570,000	\$475,000	\$475,000	\$475,000

**Adaptive Management**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Average Independent Conservation Assessment Team cost per period				\$31,500	\$31,500	\$31,500	\$31,500
Average Science Advisors cost per period				\$158,000	\$158,000	\$158,000	\$158,000
Total cost per period				\$189,500	\$189,500	\$189,500	\$189,500

**Assumptions:**

Adaptive management experiments are covered under the monitoring staff and directed research categories.

It is assumed that the Independent Conservation Assessment Team will meet once every 4 years and have:

5	members
\$6,300	stipend per member per 5-year period

It is assumed that the Science Advisors will contain:

10	members
\$15,800	stipend per member per 5-year period

**Field monitoring and analysis contractors**

	Associate Biologist	Staff Biologist	
Base cost per hour	\$160	\$100	\$ per hour
Direct Expenses	\$5	\$3	3% of labor cost
Travel	\$27	\$27	\$ per day
assuming	50	50	miles
and	\$0.54	\$0.54	\$ per mile
Hours per day	8	8	hours per day
Total cost per hour including expenses and amortized per diem and travel	\$168.38	\$106.38	\$ per hour

**Assumptions:**

Bay Area billing rate, assuming all work will be conducted from a local office (no per diem needed).

## HCP/NCCP Environmental Compliance for Maximum Urban Development Area

### 2017 Update

(2016 dollars)

Operational Costs	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Program staff and overhead				\$226,164	\$188,470	\$188,470	\$0	
Legal assistance				\$210,000	\$175,000	\$0	\$0	
NEPA/CEQA				\$493,300	\$493,300	\$493,300	\$0	
CWA 404				\$0	\$0	\$0	\$0	
CWA 401				\$24,700	\$24,700	\$24,700	\$0	
CDFG 1602				\$20,500	\$20,500	\$20,500	\$0	
NHPA				\$53,200	\$53,200	\$53,200	\$0	
Other	\$0	\$632,307	\$138,246	\$36,900	\$36,900	\$36,900	\$0	
<b>Total</b>	<b>\$0</b>	<b>\$632,307</b>	<b>\$138,246</b>	<b>\$1,064,764</b>	<b>\$992,070</b>	<b>\$817,070</b>	<b>\$0</b>	<b>\$3,644,457</b>

### Program Staff and Overhead

Position	Hourly Cost per FTE with Overhead & Support	Number of FTEs						
		0	1-5	6-9	10-15	16-20	21-25	26-30
Principal Planner and support	\$177				0.05	0.05	0.05	-
Associate Planner and support	\$112				0.10	0.10	0.10	-
	Total FTEs				0.15	0.15	0.15	-
	Total cost per year				\$37,694	\$37,694	\$37,694	\$0
	Total cost per period				\$226,164	\$188,470	\$188,470	\$0

Note: Hourly cost factor includes staff salary and benefits, salaries and benefits of administrative support staff (secretaries, clerks, IT staff, etc.) and associated overhead, including space and utility costs, office furniture, equipment, and supplies.

1,880 hours per year

### Legal Assistance

Legal Assistance	Cost by Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Cost per period				\$210,000	\$175,000	\$0	\$0	\$385,000

#### Assumptions:

\$35,000 Annual cost for legal assistance with wetland permitting, years 10 - 20

### Number of Projects Requiring Environmental Compliance

Project size	Size Range	Number							Total
		0	1-5	6-9	10-15	16-20	21-25	26-30	
Small/simple	up to 10 acres or up to 0.1 stream miles				4	4	4	-	20
Medium/more complex	10.1-50 acres or 0.1-0.5 stream miles				4	4	4	-	20
Large/most complex	over 50 acres or 0.5 stream miles				2	2	2	-	10
	Total projects				10	10	10	-	30

#### Assumptions:

Of the total of approximately 50 projects that would require environmental compliance, 1/5 would require compliance in each 5-year period between years 1 and 25.

**Environmental Compliance Cost per Project Size and Compliance Category (2016 dollars)**

Project size	Size Range	Estimate Project Cost within DFG jurisdiction		Project Impacts to Wetlands for CWA 401		Compliance Category					
				Minimum	Maximum	CEQA	CWA 404	CWA 401	CDFG 1602	NHPA	Other
Small/simple	up to 10 acres or up to 0.1 stream miles	\$ 2,000	\$ 25,000	0.001	0.01	\$6,490	\$0	\$1,800	\$983	\$3,245	\$3,077
Medium/more complex	10.1-50 acres or 0.1-0.5 stream miles	\$ 25,001	\$ 100,000	0.0121	0.07	\$51,923	\$0	\$2,340	\$2,109	\$4,543	\$3,692
Large/most complex	over 50 acres or 0.5 stream miles	\$ 100,001	\$500,000 or more	0.073	0.30	\$129,809	\$0	\$4,063	\$4,048	\$11,034	\$4,923

**Assumptions:**

Assumed wetland impact determined by AECOM based experience with typical projects that would be expected to be implemented by the Conservancy. For example wetland restoration/creation projects, stream restoration projects, adaptive management measures for existing wetland features and facilities improvements. In general, it is expected that impacts to wetlands and streams would be avoided if at all possible. Of the stream length indicated, assumed only 10% of that length would be impacted and an average stream width of 10 feet.

For NEPA/CEQA, 401/404 and 1602 compliance, varying costs have more to do with project complexity than with project size.

Clean Water Act 401 and 1602 permits will be done on a per-project basis

Cultural compliance permits will be done on a per-project basis.

Contra Costa Conservancy staff will prepare permit applications and notification for the 401, 404 and 1600 applications, thereby resulting in no consultant cost for permit preparation. This table also assumes that the permits for Water Quality Certification (CWA 401) and Streambed Alteration Agreement (DFG 1602) will not be secured under programmatic or Master permit processes.

Permitted projects would be completed within the time limit allotted for the permits; no extensions or re-application would be required.

The "other" compliance category could include county grading permits, road encroachment permits, or other local approvals.

**NEPA/CEQA**

Depending on the level of detail that is provided for specific projects, they may or may not be able to be covered under the HCP EIR/EIS.

For those without sufficient detail, additional environmental documentation may need to be prepared.

It is likely that the majority of those would be in the form of mitigated negative declarations.

Because it is difficult to provide a cost estimate for a project without knowing details such as location, size, etc., the following are some rough numbers based on level of controversy:

Small scale non-controversial projects = Cat Excl/Cat Exemp

Medium scale more controversial projects = IS MND/EA FONSI

Larger scale more controversial projects = EIR/EIS

All land acquisitions would be a categorical exemption under CEQA as well as under NEPA, when NEPA applies.

**401/404**

The cost of conducting wetland delineations is not included under CWA 404/401 compliance; it is expected that delineation would be covered under land acquisition costs.

Each project implemented under the HCP will qualify for compliance under the USACE 404 regional permit program for the inventory area; there is no fee for 404 permit applications

Tasks associated with Section 402 compliance are not included in this cost estimate.

CWA 401 fee cost estimate is based on impacts to jurisdictional waters of the state rather than project size. Fee is an average based on the minimum and maximum expected impacts. State Water

Resources Control Board Fiscal Year 2016-2017 Water Quality Certification Dredge and Fill Application Fee Calculator (Effective Date 11/16/2016) Available:

[http://www.waterboards.ca.gov/water\\_issues/programs/cwa401/](http://www.waterboards.ca.gov/water_issues/programs/cwa401/)

**NHPA**

Archaeological surveys can be conducted at an intensive level at a rate of 40 acres per person per day.

No more than one cultural resource will be identified per 40 acres or part thereof.

This scope of work and cost estimate does not include tasks necessary for significance evaluations and resolution of adverse effects.

**CDFG 1602**

DFG 1602 costs are estimated based on the assumed cost of project activities within DFW jurisdiction per Fish and Game Code Sections 1600-1616, and the fee schedule corresponding to the project costs. Average cost based on mean of minimum and maximum fee amounts for standard agreements.

California Department of Fish and Wildlife Lake and Streambed Alteration Agreements and Fees, Effective October 1, 2016. Available:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=130459&inline>

**Remedial Measures for Maximum Urban Development Area**  
**2017 Update**  
**(2016 dollars)**

Capital costs	Implementation Period (Years)							Total
	0	1-5	6-9	10-15	16-20	21-25	26-30	
Remedial measures	\$0	\$0	\$0	\$329,103	\$200,669	\$921,333	\$2,194,046	\$3,645,151
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$329,103</b>	<b>\$200,669</b>	<b>\$921,333</b>	<b>\$2,194,046</b>	<b>\$3,645,151</b>

Note: Actual costs are included in habitat restoration/creation cost category

**Remedial Measures**

	0	1-5	6-9	10-15	16-20	21-25	26-30
Cost of created/restored habitat per period		\$2,439,332	\$1,470,246	\$8,527,611	\$7,106,343	\$7,106,343	\$7,106,343
Cost for remedial measures for created/restored habitat per period				\$243,933	\$147,025	\$852,761	\$2,131,903
Area of new preserve not including created/restored habitat per period	-	7,682	3,292	5,371	4,476	4,476	4,476
Cost for remedial measures for preserves per period				\$55,170	\$23,644	\$38,572	\$32,143
Cost for other remedial measures per period				\$30,000	\$30,000	\$30,000	\$30,000
Total cost per period				\$329,103	\$200,669	\$921,333	\$2,194,046

Assumptions:	
2%	Percent of annual preserve management and maintenance cost assumed to be needed for preserve remedial actions.
10%	Percent of created/restored habitat for which remedial measures will be required.
\$359	Cost per acre for preserve management and maintenance in years 26-30.
70%	Percent of land acquisition in years 1 - 9 occurring in years 1 - 5

Remedial actions are assumed to occur in the second 5-year period after habitat is created/restored or preserve land is purchased, with the exception of remedial actions for habitat created/restored in years 21-30. The cost for these remedial actions is included in years 26-30 so that it can be included in this cost estimate.

The remedial cost for preserve lands is assumed to be a percentage of the cost per acre for preserve management and maintenance in years 26-30, and is assumed to be needed once, in the second 5-year period after the preserve land is purchased.

The cost for other remedial measures includes the costs for restoration or maintenance of preserve areas because of other changed circumstances, such as wildfire.

**Contingency Fund for Maximum Urban Development Area  
2017 Update  
(2016 dollars)**

	0	1-5	6-9	10-15	16-20	21-25	26-30	Total
Total cost of program excluding land acquisition and habitat restoration capital costs	\$0	\$0	\$0	\$23,755,424	\$22,572,053	\$24,220,473	\$27,275,781	\$97,823,731
Contingency	\$0	\$0	\$0	\$1,187,771	\$1,128,603	\$1,211,024	\$1,363,789	\$4,891,187

Assumptions:

5.0% Percent of total program funding needed for contingency

## Post-Permit Costs for Initial Urban Development Area

### 2017 Update

(2016 dollars)

#### Post-Permit Costs

Cost Category	Annual Costs	Assumptions
<b>Total Cost</b>		
Program Administration	\$428,011	
Land Acquisition	\$0	
Planning and Design	\$0	
Habitat Restoration/Creation	\$0	
Environmental Compliance	\$0	
Preserve Management and Maintenance	\$2,168,847	
Monitoring, Research, and Adaptive Management	\$422,375	
Remedial Measures	\$0	
Contingency	\$0	
<b>Total</b>	<b>\$3,019,233</b>	

Capital Costs	Annual Costs	Assumptions
Program Administration	\$0	Included in staff and overhead costs
Land Acquisition: acquisition and site improvements	\$0	Acquisition complete during permit term
Planning and Design	\$0	Planning and design work complete during permit term
Habitat Restoration/Creation	\$0	Restoration/creation projects constructed during permit term
Preserve Management and Maintenance	\$0	Captured in annual operating costs
Monitoring, Research, and Adaptive Management	\$0	Captured in annual operating costs
Remedial Measures	\$0	Not required, post permit
<b>Total</b>	<b>\$0</b>	

Operational Costs	Annual Costs	Assumptions
Program Administration	\$428,011	Reduced staffing and no legal and financial contractor costs.
Land Acquisition: due diligence, transaction costs	\$0	Acquisition complete during permit term
Planning and Design	\$0	Planning and design work complete during permit term
Habitat Restoration/Creation	\$0	Restoration/creation projects constructed during permit term
Environmental Compliance	\$0	Not required, post permit
Preserve Management and Maintenance	\$2,168,847	Assume 100 percent of annual average costs in years 26 - 30
Monitoring, Research, and Adaptive Management	\$422,375	Assume 50 percent of annual average costs in years 26 - 30
Contingency	\$0	Not required, post permit
<b>Total</b>	<b>\$3,019,233</b>	

<b>Total preserve acres</b>	<b>30,200</b>
<b>Annual average cost per acre managed</b>	<b>\$100</b>
<b>Percent of average annual cost years 26 - 30</b>	<b>19%</b>

## **APPENDIX E: ENDOWMENT MODEL**

**Tables E.1** and **E.2** present the endowment model results for the initial and maximum UDA, respectively.

**Table E.1: Endowment Fund - Initial Urban Development Area (2016 Dollars)**

<b>Year</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>
Opening Fund Balance <sup>1</sup>	\$2,202,896	\$4,497,108	\$6,865,881	\$9,311,640	\$11,836,886	\$14,444,203	\$17,136,257	\$19,915,803
Revenue	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078
Investment Earnings <sup>2</sup>	<u>107,134</u>	<u>181,696</u>	<u>258,681</u>	<u>338,168</u>	<u>420,239</u>	<u>504,977</u>	<u>592,468</u>	<u>682,804</u>
Total Revenues	\$2,294,212	\$2,368,774	\$2,445,759	\$2,525,246	\$2,607,317	\$2,692,055	\$2,779,546	\$2,869,882
Net Post-Permit Costs <sup>3</sup>	-	-	-	-	-	-	-	-
Net Cash Flow	\$2,294,212	\$2,368,774	\$2,445,759	\$2,525,246	\$2,607,317	\$2,692,055	\$2,779,546	\$2,869,882
Closing Fund Balance	\$4,497,108	\$6,865,881	\$9,311,640	\$11,836,886	\$14,444,203	\$17,136,257	\$19,915,803	\$22,785,685
<b>Year</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>	<i>23</i>	<i>24</i>	<i>25</i>
Opening Fund Balance <sup>1</sup>	\$22,785,685	\$25,748,838	\$28,808,292	\$31,967,180	\$35,228,731	\$38,596,283	\$42,073,279	\$45,663,279
Revenue	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078
Investment Earnings <sup>2</sup>	<u>776,075</u>	<u>872,377</u>	<u>971,810</u>	<u>1,074,473</u>	<u>1,180,474</u>	<u>1,289,919</u>	<u>1,402,922</u>	<u>1,519,597</u>
Total Revenues	\$2,963,153	\$3,059,455	\$3,158,888	\$3,261,551	\$3,367,552	\$3,476,997	\$3,590,000	\$3,706,675
Net Post-Permit Costs <sup>3</sup>	-	-	-	-	-	-	-	-
Net Cash Flow	\$2,963,153	\$3,059,455	\$3,158,888	\$3,261,551	\$3,367,552	\$3,476,997	\$3,590,000	\$3,706,675
Closing Fund Balance	\$25,748,838	\$28,808,292	\$31,967,180	\$35,228,731	\$38,596,283	\$42,073,279	\$45,663,279	\$49,369,954

<sup>1</sup> Opening balance is fair share of total revenue contribution associated with prior development (Years 0-9).

<sup>2</sup> Interest earnings estimated based  $(\text{Opening Fund Balance} + (\text{Annual Fee Revenue} / 2)) \times (\text{Annual Interest Rate})$ . Annual interest rate equals 3.25% real rate of return (net of inflation and administrative fees) based on estimates by National Fish and Wildlife Foundation for similar endowments.

<sup>3</sup> Annual post-permit costs are net of ongoing revenue from leases equal to 50 percent of average annual amount for years 5-9.

Sources: Appendix C (Post Permit Costs tab); National Fish and Wildlife Foundation.

**Table E.1: Endowment Fund Cash Flow - Initial Urban Development Area (2016 Dollars) (continued)**

Year	2033 26	2034 27	2035 28	2036 29	2037 30	Ongoing 31+	Total Year 1 - 30
Opening Fund Balance	\$49,369,954	\$53,197,095	\$57,148,619	\$61,228,567	\$65,441,113	\$69,790,566	\$2,202,896
Fee Revenue	2,187,078	2,187,078	2,187,078	2,187,078	2,187,078	-	45,928,632
Investment Earnings <sup>2</sup>	<u>1,640,064</u>	<u>1,764,446</u>	<u>1,892,870</u>	<u>2,025,468</u>	<u>2,162,376</u>	<u>2,268,193</u>	<u>21,659,038</u>
Total Revenues	\$3,827,142	\$3,951,524	\$4,079,948	\$4,212,546	\$4,349,454	\$2,268,193	\$-
Net Post-Permit Costs <sup>2</sup>	-	-	-	-	-	<u>2,268,193</u>	-
Net Cash Flow	\$3,827,142	\$3,951,524	\$4,079,948	\$4,212,546	\$4,349,454	\$-	\$-
Closing Fund Balance	\$53,197,095	\$57,148,619	\$61,228,567	\$65,441,113	\$69,790,566	\$69,790,566	\$69,790,566

<sup>1</sup> Opening balance is fair share of total revenue contribution associated with prior development (Years 0-9).

<sup>2</sup> Interest earnings estimated based  $(\text{Opening Fund Balance} + (\text{Annual Fee Revenue} / 2)) \times (\text{Annual Interest Rate})$ . Annual interest rate equals 3.25% real rate of return (net of inflation and administrative fees) based on estimates by National Fish and Wildlife Foundation for similar endowments.

<sup>3</sup> Annual post-permit costs are net of ongoing revenue from leases equal to 50 percent of average annual amount for years 5-9.

Sources: Appendix C (Post Permit Costs tab); National Fish and Wildlife Foundation.

**Table E.2: Endowment Fund - Maximum Urban Development Area (2016 Dollars)**

<b>Year</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>
Opening Fund Balance <sup>1</sup>	\$1,748,669	\$4,577,926	\$7,499,134	\$10,515,281	\$13,629,453	\$16,844,836	\$20,164,719	\$23,592,498
Revenue	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094
Investment Earnings <sup>2</sup>	<u>101,163</u>	<u>193,114</u>	<u>288,053</u>	<u>386,078</u>	<u>487,289</u>	<u>591,789</u>	<u>699,685</u>	<u>811,088</u>
Total Revenues	\$2,829,257	\$2,921,208	\$3,016,147	\$3,114,172	\$3,215,383	\$3,319,883	\$3,427,779	\$3,539,182
Net Post-Permit Costs <sup>3</sup>	-	-	-	-	-	-	-	-
Net Cash Flow	\$2,829,257	\$2,921,208	\$3,016,147	\$3,114,172	\$3,215,383	\$3,319,883	\$3,427,779	\$3,539,182
Closing Fund Balance	\$4,577,926	\$7,499,134	\$10,515,281	\$13,629,453	\$16,844,836	\$20,164,719	\$23,592,498	\$27,131,680
<b>Year</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>	<i>23</i>	<i>24</i>	<i>25</i>
Opening Fund Balance <sup>1</sup>	\$27,131,680	\$30,785,885	\$34,558,852	\$38,454,439	\$42,476,634	\$46,629,550	\$50,917,436	\$55,344,678
Revenue	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094
Investment Earnings <sup>2</sup>	<u>926,111</u>	<u>1,044,873</u>	<u>1,167,494</u>	<u>1,294,101</u>	<u>1,424,822</u>	<u>1,559,792</u>	<u>1,699,148</u>	<u>1,843,034</u>
Total Revenues	\$3,654,205	\$3,772,967	\$3,895,588	\$4,022,195	\$4,152,916	\$4,287,886	\$4,427,242	\$4,571,128
Net Post-Permit Costs <sup>3</sup>	-	-	-	-	-	-	-	-
Net Cash Flow	\$3,654,205	\$3,772,967	\$3,895,588	\$4,022,195	\$4,152,916	\$4,287,886	\$4,427,242	\$4,571,128
Closing Fund Balance	\$30,785,885	\$34,558,852	\$38,454,439	\$42,476,634	\$46,629,550	\$50,917,436	\$55,344,678	\$59,915,806

<sup>1</sup> Opening balance is fair share of total revenue contribution associated with prior development (Years 0-9).

<sup>2</sup> Interest earnings estimated based  $(\text{Opening Fund Balance} + (\text{Annual Fee Revenue} / 2)) \times (\text{Annual Interest Rate})$ . Annual interest rate equals 3.25% real rate of return (net of inflation and administrative fees) based on estimates by National Fish and Wildlife Foundation for similar endowments.

<sup>3</sup> Annual post-permit costs are net of ongoing revenue from leases equal to 50 percent of average annual amount for years 5-9.

Sources: Appendix D (Post Permit Costs tab); National Fish and Wildlife Foundation.

**Table E.2: Endowment Fund Cash Flow - Maximum Urban Development Area (2016 Dollars) (continued)**

Year	2033	2034	2035	2036	2037	Ongoing	Total
	26	27	28	29	30	31+	Year 1 - 30
Opening Fund Balance <sup>1</sup>	\$59,915,806	\$64,635,495	\$69,508,574	\$74,540,028	\$79,735,004	\$85,098,817	\$1,748,669
Revenue	2,728,094	2,728,094	2,728,094	2,728,094	2,728,094	-	57,289,973
Investment Earnings <sup>2</sup>	<u>1,991,595</u>	<u>2,144,985</u>	<u>2,303,360</u>	<u>2,466,882</u>	<u>2,635,719</u>	<u>2,765,712</u>	<u>26,060,175</u>
Total Revenues	\$4,719,689	\$4,873,079	\$5,031,454	\$5,194,976	\$5,363,813	\$2,765,712	\$-
Net Post-Permit Costs <sup>3</sup>	-	-	-	-	-	<u>2,765,712</u>	-
Net Cash Flow	\$4,719,689	\$4,873,079	\$5,031,454	\$5,194,976	\$5,363,813	\$0	\$-
Closing Fund Balance	\$64,635,495	\$69,508,574	\$74,540,028	\$79,735,004	\$85,098,817	\$85,098,817	\$85,098,817

<sup>1</sup> Opening balance is fair share of total revenue contribution associated with prior development (Years 0-9).

<sup>2</sup> Interest earnings estimated based (Opening Fund Balance + (Annual Fee Revenue / 2)) x (Annual Interest Rate). Annual interest rate equals 3.25% real rate of return (net of inflation and administrative fees) based on estimates by National Fish and Wildlife Foundation for similar endowments.

<sup>3</sup> Annual post-permit costs are net of ongoing revenue from leases equal to 50 percent of average annual amount for years 5-9.

Sources: Appendix D (Post Permit Costs tab); National Fish and Wildlife Foundation.

## APPENDIX F: ACTUAL REVENUE THROUGH 2016

The following tables provide detail for revenue received in Year 0-9 (2007 through 2016) of the Plan.

**Table F.1** provides the index used to inflate actual costs and revenues from prior years to 2016 dollars. The index is based on changes in the Conservancy’s mitigation fee schedule, thus replicating the same index used to reflect inflation in Plan costs. The Conservancy’s fees are adjusted annually based on published price indices and periodically based on prior audits (the 2011 and 2013 audit).<sup>26</sup>

**Table F.1: Inflation Index**

Plan Year	Fee Adopted in Year...	Uses Inflation Index Data for Year...	Is Applied to Fiscal Data For Year...	Represents Current Dollars For Year...	Zone 1 Fee	Inflation Index	
9	2017	2016	2016	\$2016	\$13,491.41	1.0000	2017 Audit
8	2016	2015	2015	\$2015	12,788.47	0.9479	
7	2015	2014	2014	\$2014	11,877.42	0.8804	
6	2014	2013	2013	\$2013	11,146.99	0.8262	
5	2013	2012	2012	\$2012	10,076.00	0.7468	2013 Audit
4	2012	2011	2011	\$2011	10,584.32	0.7845	
3	2011	2010	2010	\$2010	10,662.15	0.7903	
2	2010	2009	2009	\$2009	10,558.09	0.7826	
1	2009	2008	2008	\$2008	10,731.11	0.7954	
0	2008	2007	2007	\$2007	12,077.65	0.8952	
0	2007	2006	2006	\$2006	12,456.88	0.9233	
0	2006	2005	2005	\$2005	11,919.00	0.8835	2006 Plan

Note: Fees for all three UDA zones increase at the same rate. The Zone 1 fee is used in this table. Fees reflect those charged to Participating Special Entities by the Conservancy, and include both annual inflation adjustments and periodic adjustments based on prior audits, as required by the 2006 Plan.

Source: ECCC Habitat Conservancy.

**Table F.2** shows actual revenue to date by source in current dollars (the year received) and inflated to 2016 dollars.

<sup>26</sup> See the 2006 Plan, Chapter 9, pp. 30-31 and Table 9-7.

**Table F.2: Revenue Summary 2007-2016 (Years 0-9)**

	Year	Thru 2012	2013	2014	2015	2016	Total	Annual Avg.
	Plan Year	0-5	6	7	8	9	0-9	6-9
<b>Current Dollars</b>								
<b>Mitigation Fees</b>								
Development Fee		\$1,335,717	\$1,703,067	\$514,563	\$975,432	\$794,365	\$5,323,144	\$996,857
Wetland Mitigation Fee		383,296	4,087	207,226	17,564	67,651	679,824	74,132
Rural Road Fee		1,065,044	122,792	70,351	18,529	35,818	1,312,534	61,873
Temporary Impact Fee		<u>830,779</u>	<u>296,551</u>	<u>432,631</u>	<u>59,577</u>	<u>84,252</u>	<u>1,703,790</u>	<u>218,253</u>
Subtotal		\$3,614,836	\$2,126,497	\$1,224,771	\$1,071,102	\$982,086	\$9,019,292	\$1,351,114
<b>Other Fees &amp; Exactions</b>								
Administrative Charges		182,004	62,452	35,448	25,816	8,658	314,378	33,094
Payments For Non-covered Activities		3,148,462	-	-	-	-	3,148,462	-
Other Development Exactions		<u>812,310</u>	<u>146,502</u>	<u>38,298</u>	<u>141,709</u>	<u>20,160</u>	<u>1,158,979</u>	<u>86,667</u>
Subtotal		\$4,142,776	\$208,954	\$73,746	\$167,525	\$28,818	\$4,621,819	\$119,761
<b>Local, State &amp; Federal Funds</b>								
State/Federal Funds		30,584,482	1,444,339	14,947,687	1,809,042	7,363,644	56,149,194	6,391,178
Local Land Capital Funds		15,602,742	18,500	5,098,850	224,250	789,700	21,734,042	1,532,825
Local Operating Funds		<u>1,565,808</u>	<u>614,805</u>	<u>534,131</u>	<u>574,651</u>	<u>590,776</u>	<u>3,880,171</u>	<u>578,591</u>
Subtotal		\$47,753,032	\$2,077,644	\$20,580,668	\$2,607,943	\$8,744,120	\$81,763,407	\$8,502,594
<b>Other Funds</b>								
Interest Earnings		182,210	2,937	6,441	12,912	19,905	224,405	10,549
Miscellaneous		<u>13,401</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>243</u>	<u>13,644</u>	<u>61</u>
Subtotal		\$195,611	\$2,937	\$6,441	\$12,912	\$20,148	\$238,049	\$10,610
<b>Total</b>		<b>\$55,706,255</b>	<b>\$4,416,032</b>	<b>\$21,885,626</b>	<b>\$3,859,482</b>	<b>\$9,775,172</b>	<b>\$95,642,567</b>	<b>\$9,984,078</b>

**Table F.2: Revenue Summary 2007-2016 (Years 0-9) (continued)**

	Year	Thru 2012	2013	2014	2015	2016	Total	Annual Avg.
	Plan Year	0-5	6	7	8	9	0-9	6-9
<i>Development Fee Index</i>		<i>varies</i>	<i>0.7879</i>	<i>0.8716</i>	<i>0.9288</i>	<i>1.0000</i>		
<b>Constant Dollars (2016 \$)</b>								
<b>Mitigation Fees</b>								
Development Fee		\$1,597,438	2,161,527	590,366	1,050,207	794,365	\$6,193,903	\$1,149,116
Wetland Mitigation Fee		462,897	5,187	237,754	18,910	67,651	792,399	82,376
Rural Road Fee		1,287,188	155,847	80,715	19,949	35,818	1,579,517	73,082
Temporary Impact Fee		<u>991,153</u>	<u>376,382</u>	<u>496,364</u>	<u>64,144</u>	<u>84,252</u>	<u>2,012,295</u>	<u>255,286</u>
Subtotal		\$4,338,676	\$2,698,943	\$1,405,199	\$1,153,210	\$982,086	\$10,578,114	\$1,559,860
<b>Other Fees &amp; Exactions</b>								
Administrative Charges		218,645	79,264	40,670	27,795	8,658	375,032	39,097
Payments For Non-Covered Activities		3,358,635	-	-	-	-	3,358,635	-
Other Development Exactions		<u>978,158</u>	<u>185,940</u>	<u>43,940</u>	<u>152,572</u>	<u>20,160</u>	<u>1,380,770</u>	<u>100,653</u>
Subtotal		\$4,555,438	\$265,204	\$84,610	\$180,367	\$28,818	\$5,114,437	\$139,750
<b>Local, State &amp; Federal Funds</b>								
State/Federal Funds		36,605,167	1,833,150	17,149,710	1,947,720	7,363,644	64,899,391	7,073,556
Local Land Capital Funds		18,384,051	23,480	5,849,989	241,441	789,700	25,288,661	1,726,153
Local Operating Funds		<u>1,845,638</u>	<u>780,308</u>	<u>612,817</u>	<u>618,703</u>	<u>590,776</u>	<u>4,448,242</u>	<u>650,651</u>
Subtotal		\$56,834,856	\$2,636,938	\$23,612,516	\$2,807,864	\$8,744,120	\$94,636,294	\$9,450,360
<b>Other Funds</b>								
Interest Earnings		191,774	3,728	7,390	13,902	19,905	236,699	11,231
Miscellaneous		<u>13,855</u>	-	-	-	<u>243</u>	<u>14,098</u>	<u>61</u>
Subtotal		\$205,629	\$3,728	\$7,390	\$13,902	\$20,148	\$250,797	\$11,292
<b>Total</b>		<b>\$65,934,599</b>	<b>\$5,604,813</b>	<b>\$25,109,715</b>	<b>\$4,155,343</b>	<b>\$9,775,172</b>	<b>\$110,579,642</b>	<b>\$11,161,261</b>

Sources: ECCO Habitat Conservancy, Table F.1.



## MEMORANDUM

To: Abigail Fateman, East Contra Costa County Habitat Conservancy  
From: Robert Spencer, Urban Economics  
Date: February 17, 2021  
Subject: 2020 Updated Mitigation Fee Schedule

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The *East Contra Costa Habitat Conservation Plan and Natural Community Conservation Plan* (the Plan) requires that the East Contra Costa County Habitat Conservancy (the Conservancy) periodically update the Plan's funding model to ensure that mitigation fees generated by development and other activities covered by the Plan are adequately covering their fair share of total Plan costs. This "periodic audit" as it is called in the Plan (or "fee audit") results in an updated mitigation fee schedule based on a comprehensive review of all Plan costs and revenues. In between periodic audits the Conservancy updates fees annually based on inflation indexes prescribed by the Plan.

Local jurisdictions that are permittees under the Plan (the County of Contra Costa and the cities of Brentwood, Clayton, Oakley, and Pittsburg) impose the Plan's mitigation fees on development projects covered by the Plan within their respective jurisdictions, and forward fee revenue to the Conservancy to fund Plan implementation. For a small share of activities covered by the Plan, the Conservancy imposes the Plan's mitigation fees directly on "participating special entities" (PSEs) such as public utilities that seek coverage under the Plan.

To date the Conservancy has been imposing mitigation fees on PSEs based on the results of the 2013 Fee Audit adjusted annually for inflation. Due to prior litigation, local jurisdictions have been imposing mitigation fees on development projects based on the original 2006 fees included in the Plan, also adjusted annually for inflation. Consequently, two mitigation fee schedules have been used to implement the Plan, one used by local jurisdictions for most covered activities, and one used by the Conservancy for that small share of covered activities associated with PSEs.

The Conservancy completed a fee audit in 2017 (*Mitigation Fee Audit and Nexus Study*) as required by the Plan but did not adjust the PSE fee schedule pending the resolution of the prior litigation. Now that the prior litigation has been resolved, the Conservancy can adopt the 2017 Fee Audit and both local jurisdictions and PSEs can now use the same mitigation fee schedule.

The updated 2020 mitigation fee schedule based on the 2017 Fee Audit is shown in Table 1. The fee schedule is based on the mitigation fees from the 2017 Fee Audit adjusted for inflation for the intervening three years (2018, 2019, and 2020).

The updated fee schedule results in only a modest change (+/- 5%) to the current development fees that are by all projects covered under the Plan. Wetland fees, paid in addition to the development fee fees when specific land cover types are disturbed, change more substantially because of the results of the 2013 and 2017 Fee Audits.

This fee schedule will be adjusted again for annual inflation this spring and again in 2022. The next periodic review will be conducted in 2022 with results reflected into the 2023 fee schedule.

**Table 1: 2020 Mitigation Fee Schedule Based On 2017 Fee Audit**

Land Cover	Fee Basis	Current 2020 Fee		Updated 2020 Fee Based On 2017 Fee Audit	Change from Current 2020 Fee	
		Cities/ County	Conservancy		Cities/ County	Conservancy
<b>Development Fee</b>						
Zone 1	per acre	\$17,140	\$15,694	<b>\$16,442</b>	(4.1%)	4.8%
Zone 2	per acre	\$34,280	\$31,387	<b>\$32,884</b>	(4.1%)	4.8%
Zone 3	per acre	\$8,571	\$7,847	<b>\$8,221</b>	(4.1%)	4.8%
<b>Wetland Fee</b>						
Riparian	per acre	\$84,240	\$109,088	<b>\$99,235</b>	17.8%	(9.0%)
Perennial Wetland	per acre	\$115,275	\$160,276	<b>\$150,393</b>	30.5%	(6.2%)
Seasonal Wetland	per acre	\$249,763	\$371,531	<b>\$351,945</b>	40.9%	(5.3%)
Alkali Wetland	per acre	\$236,462	\$375,291	<b>\$355,792</b>	50.5%	(5.2%)
Ponds	per acre	\$125,621	\$203,316	<b>\$193,666</b>	54.2%	(4.7%)
Aquatic (Open Water)	per acre	\$63,549	\$101,658	<b>\$96,834</b>	52.4%	(4.7%)
Slough / Channel	per acre	\$143,355	\$148,158	<b>\$138,277</b>	(3.5%)	(6.7%)
Streams (<=25 ft. wide)	per ln ft.	\$687	\$414	<b>\$510</b>	(25.7%)	23.2%
Streams (>25 ft. wide)	per ln ft.	\$1,035	\$621	<b>\$766</b>	(26.0%)	23.3%

## Index data used for Annual Fee Adjustments

Index	2017	2018	2019	2020
CPI	269.483	277.414	289.896	297.007
HPI	327.44	359.22	318.3	376.06

The changes in the two indices utilized to calculate annual adjustments to the HCP/NCCP mitigation fees are shown above. The two indices include:

- The Consumer Price Index data for the San Francisco-Oakland-San Jose Combined Statistical Area for all Urban consumers. In 2013/2014 the index name was changed, and the San Francisco-Oakland-San Jose index is used. Additional information regarding this index can be found at: [www.bls.gov/eag/eag.ca\\_sanfrancisco\\_msa.htm](http://www.bls.gov/eag/eag.ca_sanfrancisco_msa.htm).
- The Home Price Index data for the Oakland-Fremont-Hayward, CA Metropolitan Division (MSAD). In 2013/2014 the index name was changed name from Oakland-Fremont-Hayward, CA to Oakland-Hayward-Berkeley, however the area did not change. Additional information regarding this index can be found at: [www.ofheo.gov/HPI.asp](http://www.ofheo.gov/HPI.asp).

## DEFENSE AND INDEMNIFICATION AGREEMENT

This defense and indemnification agreement (“**Agreement**”) is entered into by and among County of Contra Costa, a political subdivision of the State of California (“**County**”), and the cities of Brentwood (“**Brentwood**”), Clayton (“**Clayton**”), Oakley (“**Oakley**”), Pittsburg (“**Pittsburg**”), each a municipal corporation (individually a “**Participating Agency**” and together “**Participating Agencies**”), and the East Contra Costa County Habitat Conservancy (“**Conservancy**”), by and through their undersigned counsel, including all employees, agents, representatives, legal assistants, staff, and agents of such counsel (collectively, the “**Parties**,” and each a “**Party**”). This Agreement is dated April 5, 2021 for the convenience of the Parties. The Agreement takes effect upon execution as provided for in Section 7.

### RECITALS

- A. In 2007, the Cities and County formed a joint powers authority (the Conservancy) for purposes of implementing the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (“**Plan**”) as authorized under state and federal law.
- B. To ensure that the Plan implementation fees generated by development and other covered activities adequately cover a share of Plan costs, the Plan requires a fee audit in years 3, 6, 10, 15, 20, and 25 of Plan implementation, where year 1 is the first full calendar year of Plan implementation (see Chapter 9 of the Plan). In 2007, the Cities and County adopted Plan implementation fees pursuant to the Plan (“**2007 Fees**”) and began collecting the fees in 2008. Consistent with the financial planning presented in Chapter 9 of the Plan, 2007 is year 0, 2008 is year 1, and 2016 is year 9 of Plan implementation.
- C. The Conservancy has completed an evaluation of existing Plan implementation fees and conservancy expenditures for year 10 (2017) as required by the Plan, based on data as of December 31, 2016 (year 9), and has recommended an updated implementation fee schedule for adoption by the Participating Agencies (the “**2017 Fees**”). The next audit is required in year 15, or 2022.
- D. Interested parties have submitted written and oral comments to the Conservancy regarding previous Plan fee audits and Conservancy recommendations for updated Plan implementation fees, which comments asserted legal error with respect to the Plan and Plan fees and the required periodic review of Plan fees and Conservancy expenses.
- E. The Parties have concluded there is a substantial likelihood of:
  - 1) continued administrative challenges; and
  - 2) litigation to be filed against the Conservancy, Cities, and County collectively and/or individually, challenging the proposed and existing fees, as well as a potential legal challenge to the Plan and the Conservancy’s actions and recommendations (individually and together the “**Covered Action**,” as defined in Section 2, below).

- F. The comments made by interested third parties pertain to facts and legal issues common to the Parties, and the Parties, as anticipated potential defendants, acknowledge that they share a common interest in defending against claims made by third parties, and they may wish to make joint efforts in preparation against any defense of anticipated actions or proceedings.
- G. The Parties have informally cooperated as to the overall actions of the Conservancy, the Plan, along with the proposed revisions to existing fees as well as the required periodic fee audits. The Parties wish to continue pursuing their separate, but common, interests in connection with the defense of the Plan, existing fees and proposed fees, and the periodic fee audits while sharing otherwise privileged information relevant to collective interests, and to make clear that, in doing so, they do not waive nor intend to waive any applicable privilege or other protection, whether attorney-client privilege, the work product doctrine, or any other protection available by law.

**THEREFORE**, in consideration of the mutual covenants herein contained, the Parties agree as follows:

**1. Cooperation in Defense in Any Future Action.**

The Parties shall cooperate in any Covered Action, as defined in Section 2, below, by and through their respective attorneys, and shall be subject to the terms of this Agreement.

**2. Scope of Covered Actions.**

Actions covered by this Agreement (each a “**Covered Action**”) involve any claim, action, or proceeding brought against a Participating Agency which seeks to invalidate (including injunctive and declaratory relief), either facially or as applied to an individual property owner or applicant, any of the following:

- a. The Plan;
- b. The Participating Agency’s 2007 Fees;
- c. The Participating Agency’s 2017 Fees, provided the 2017 Fees conform to the recommendation of the Conservancy Board as adopted on February 22, 2021;
- d. The Participating Agency’s 2022 Fees, provided the 2022 Fees conform to the recommendation of the Conservancy Board; or
- e. The five year accounting as required by Government Code section 66001 as performed in 2018.

Covered Actions do not include any claims, actions, or proceedings brought solely on grounds that a Participating Agency failed to satisfy all procedural steps (e.g., public notice, hearing, availability of public documents) in advance of the adoption of the 2017 Fees, or any claim arising from the intentional misconduct of the Participating Agency’s officers or employees.

**3. Defense and Indemnity.**

- a. Conservancy agrees to defend, indemnify, and hold harmless each Participating Agency, its agents, officers and employees from any claim, action, or proceeding against the Participating Agency or its agents, officers or employees for any Covered Action, as defined in Section 2, or actions seeking to impose personal liability against such officers,

agents, or employees resulting from their involvement in any and all proceedings or actions taken by a Participating Agency in connection with any Covered Action, as defined in Section 2. The Conservancy's duty to defend, indemnify, and hold harmless each Participating Agency shall include any claim for attorney's fees, costs of court, or expenses of litigation claimed by or awarded to any third-party in the Covered Action.

b. The Participating Agency will promptly notify Conservancy of any such claim, action, or proceeding that comes to the Participating Agency's attention.

c. Through legal counsel, Conservancy shall keep the defendant Participating Agency informed of the status of litigation, and at the option of the defendant Participating Agency, shall periodically consult with respect to the litigation. At the option of the defendant Participating Agency, the attorneys for the Conservancy and the Participating Agency's attorneys will jointly determine litigation strategy in any claim, action, or proceeding. At the option of the defendant Participating Agency and at no additional cost to the Conservancy, the defendant Participating Agency's attorneys will participate with the Conservancy's attorneys in any portion of the claim, action, or proceeding, including reviewing pleadings prior to filing, and participation in settlement discussion, mediation, and settlement conferences.

d. The Conservancy and each defendant Participating Agency will cooperate to negotiate mutually agreeable terms of settlement of any claim, action or proceeding involving a Covered Action. Conservancy shall not be required to pay or perform any settlement of such claim, action, or proceeding unless the settlement is approved in writing by Conservancy or its designees and the Participating Agency shall not be required to pay or perform any settlement of such claim, action, or proceeding unless the settlement is approved in writing by Participating Agency. Each Participating Agency shall retain complete discretion to approve or disapprove any proposed settlement of any claim, action, or proceeding involving a Covered Action. The Participating Agency shall not be required to consent to any settlement of such claim, action, or proceeding that imposes any financial liability upon the Participating Agency unless Conservancy agrees to fully assume, pay, and discharge such liability at no cost to the Participating Agency, and provides the Participating Agency with adequate security to ensure that such liability will be fully paid and discharged by the Conservancy. In the event that a Participating Agency and the Conservancy are unable to agree upon the terms and conditions of a settlement, a Participating Agency shall have the option to settle the Covered Action on terms within its sole discretion; however, the Conservancy shall not be required to pay any sums as part of the settlement.

e. The Parties shall cooperate with each other. A Participating Agency subject to a Covered Action and this Agreement shall, at no expense to the Conservancy, provide staff other than legal staff as reasonably necessary to respond to litigation.

f. A Participating Agency may, at its sole discretion and its sole expense, elect to participate in the defense of any Covered Action.

g. The Conservancy may elect to provide defense of matters not defined as a Covered Action which are filed in conjunction with a Covered Action. The Conservancy shall promptly notify a Participating Agency, in writing, of any limitation of coverage under this Agreement.

h. These defense and indemnity provisions shall constitute the sole and exclusive remedy for any claim that each Participating Agency may have against Conservancy arising out of or related to any claim, action, or proceeding against a Participating Agency or its agents, officers, or employees for any Covered Action as defined in Section 2.

#### **4. Independent Representation.**

Nothing in this Agreement shall be construed to affect, constrain, or inhibit the separate and independent representation of each Party by its respective counsel according to what counsel believes to be in that Party's best interests. The Parties recognize each other's right to conduct separate research, investigations and witness interviews, and devise separate legal strategies, without necessarily sharing any such information with any other Party to this Agreement. Nothing contained herein shall be deemed to create an attorney-client relationship between any Party and attorney that does not represent that Party.

#### **5. No Disqualification of Counsel.**

The fact that any counsel has executed this Agreement on behalf of a Party shall not be used as a basis for seeking to disqualify such counsel from representing that Party in any proceeding, and no counsel who has executed this Agreement on behalf of a Party shall be disqualified from examining or cross-examining any other Party's witnesses who testify in any proceeding because of such counsel's execution of the Agreement. The Parties further agree that each Party's attorneys may examine or cross-examine any other Party's witnesses who testify in any judicial proceeding.

#### **6. Termination.**

A Party may withdraw from this Agreement at any time by notifying counsel for the other Parties of its withdrawal from the Agreement, which will thereupon be terminated as to that Party. This Agreement shall expire upon the formal action of the Conservancy Board to recommend updated Plan implementation fees based on a periodic fee audit, which is currently scheduled for review in 2022.

#### **7. Addition of Parties.**

This Agreement shall be binding upon and as between the Parties executing it. This Agreement shall take effect upon execution by at least two Parties, and shall take effect as to each other Party on the date that Party executes it. The inclusion of the signature blocks is for convenience only, and the execution by all named Parties is not a condition precedent to its legal effectiveness. Upon written consent of each Party that has executed this Agreement, parties other than the Participating Agencies and the Conservancy may be permitted to join in this Agreement in the future.

#### **8. Modification.**

No modification of this Agreement shall be effective unless it is in writing and signed by all Parties that, at the time the modification is made, are signatories to this Agreement.

**9. No Waiver.**

No Party shall have the authority to waive any applicable privilege or doctrine on behalf of any other Party. No waiver of any privilege or doctrine by the conduct of any Party shall be applicable to any other Party.

**10. No Third-Party Beneficiaries.**

Unless specifically set forth, nothing in this Agreement is intended to, nor shall it be construed to, create rights inuring to the benefit of third parties.

**11. Governing Law.**

This Agreement shall be governed by the laws of the State of California.

**12. Authority.**

Each of the undersigned attorneys has been authorized by the Party that he or she represents to execute this Agreement on behalf of that Party.

**13. Counterparts and Facsimile Signatures.**

This Agreement may be executed in counterparts. A scanned or facsimile copy containing an authorized signature shall be deemed an original.

**IN WITNESS WHEREOF** the following counsel hereby execute and deliver this Agreement on behalf of themselves and their respective clients.

J. CHRISTOPHER BEALE  
CONSERVANCY COUNSEL

Dated: \_\_\_\_\_, 2021

\_\_\_\_\_  
By: J. Christopher Beale  
Attorney for EAST CONTRA COSTA COUNTY  
HABITAT CONSERVANCY

MARY ANN MCNETT MASON  
COUNTY COUNSEL

Dated: \_\_\_\_\_, 2021

\_\_\_\_\_  
By: Thomas L. Geiger  
Assistant County Counsel  
Attorneys for CONTRA COSTA COUNTY

DAMIEN BROWER

\_\_\_\_\_  
By: Damien Brower  
City Attorney  
Attorney for CITY OF BRENTWOOD

Dated: \_\_\_\_\_, 2021

MALATHY SUBRAMANIAN

\_\_\_\_\_  
By: Malathy Subramanian  
City Attorney  
Attorney for CITY OF CLAYTON

Dated: \_\_\_\_\_, 2021

DEREK COLE

\_\_\_\_\_  
By: Derek Cole  
City Attorney  
Attorney for CITY OF OAKLEY

Dated: \_\_\_\_\_, 2021

DONNA MOONEY

\_\_\_\_\_  
By: Donna Mooney  
City Attorney  
Attorney for CITY OF PITTSBURG

Dated: \_\_\_\_\_, 2021



Contra  
Costa  
County

To: Board of Supervisors  
From: AD HOC COMMITTEE ON SUSTAINABILITY, Supervisors John Gioia & Federal D. Glover  
Date: August 3, 2021

Subject: Building Electrification Ordinance for New Construction

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**RECOMMENDATION(S):**

AUTHORIZE the Conservation and Development Director, or designee, to develop an ordinance amending the County building code to require electricity as the sole source of power, and to prohibit the installation of natural gas piping, for all newly constructed residential and non-residential building types where the California Energy Commission (CEC) has accepted studies demonstrating the cost effectiveness of such requirement(s) for all climate zones in Contra Costa County; and

REFER to the Sustainability Committee on whether newly constructed restaurants and industrial buildings, such as life sciences and manufacturing, should be required to be all-electric in a future amendment to the County building code.

**FISCAL IMPACT:**

This activity could be accomplished with existing staff. Technical assistance for the development of the ordinance is provided through funding from the Bay Area Regional Energy Network. There is no direct cost to the County if the Board chooses to use existing cost-effectiveness studies, which are used to demonstrate

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Demian Hardman-Saldana,  
925-655-2816

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

### FISCAL IMPACT: (CONT'D)

the findings and supporting analyses required under Section 10-106 of the State's Building Energy Efficiency Standards to adopt amendments to a locally adopted building code that increase energy code requirements beyond the State-wide minimum requirements, commonly referred to as a "reach code." Cost effectiveness studies substantiate that the initial cost paid by an owner to install the improvements at the time of construction will be paid back in savings over time. The County may also request the CEC to conduct studies, at no cost to the County, to determine the cost effectiveness of building electrification in additional building types not covered by existing studies.

The County could also choose to hire a technical consultant at the County's expense to complete its own independent cost-effectiveness study for any particular building type. However, this approach is not recommended because CEC staff has confirmed that it can assist with providing cost-effectiveness studies, if requested by the County.

### BACKGROUND:

On September 22, 2020, the Board of Supervisors adopted a Climate Emergency Resolution, which included among other things, that the County should develop policies to require newly constructed buildings to be fully powered by electricity. The built environment is one of the largest sources of greenhouse gas emissions in the County and in California.

On May 24, 2021, the Sustainability Committee received a report from staff on the requirements needed to amend the County building code to require that certain types of newly constructed buildings be powered only by electricity, including the requirement that such amendments be demonstrated to be cost-effective for the property owner.

An alternative to amending the County building code to require full electrification of newly constructed buildings would be to wait for such requirements to be incorporated into the California Building Code. The next State building code update will occur in mid-2022 with an effective date of January 1, 2023. This code update is expected to require in most cases where gas equipment is being installed for new construction the building also be designed to be electric ready. It is also expected that an all-electric building code for new construction would not be required until the 2025 building code is adopted, which would become effective on January 1, 2026.

### SUSTAINABILITY COMMITTEE RECOMMENDATION(S)

The Sustainability Committee recommends that the Board of Supervisors authorize staff to develop an ordinance amending the County building code to require that newly constructed buildings be powered only by electricity for all building types where studies have already been accepted by the CEC demonstrating the cost effectiveness of such requirements for the property owner. Table 1 below is a list of all the building types recommended by the Committee where cost-effectiveness studies have been completed that cover Contra Costa County (Climate Zones 3 and 12).

**Table 1**

<b><i>- Cost-Effectiveness Studies Completed - Building Types Recommended by Sustainability Committee</i></b>
<b><i>Residential</i></b>
Low-Rise Residential (Single-Family or Multi-Family, 3 stories or less)
<i>Detached Accessory Dwelling Units (ADUs)*</i>
<i>Mid-Rise Residential (4 to 7 stories) *</i>
<i>High-Rise Residential (8 stories or higher) *</i>
<b><i>Non-Residential</i></b>
<i>Hotel</i>
<i>Office</i>
<i>Retail</i>
* Cost-effectiveness studies obtained from the CEC that were not included in the report to the Sustainability Committee on May 24, 2021.

The Committee’s initial recommendation was to direct staff to have the Statewide IOU Team complete cost-effectiveness studies for Detached Accessory Dwelling Units, Mid-Rise, and High-Rise Residential building types. However, at the time this recommendation was made, County staff had not been informed by the CEC that cost-effectiveness studies had been completed for all these building types. In summary, the reports for the additional residential building types found that an all-electric only building code were cost-effective for all climate zones in Contra Costa County. These reports are provided in Exhibit B, attached.

Since the Committee did not provide specific direction on obtaining cost-effectiveness studies for other building types beyond the building types listed in Table 1 above, staff recommends the Board of Supervisors refer to the Sustainability Committee on whether newly constructed restaurants and industrial buildings, such as life sciences and manufacturing be required to be all-electric in a future amendment to the County building code.

#### OUTREACH TO BUILDING INDUSTRY

At the direction of the Sustainability Committee, County staff also met with staff from the Building Industry Association (BIA) and East Bay Leadership Council (EBLC) to solicit feedback on the Committee’s recommendation to the Board. Paramount to our conversation was that the building industry should be given sufficient time to adapt to the building code changes so that projects in the pipeline for new construction would not require a redesign to comply with such changes. The BIA also expressed concerns related to the costs of operating all-electric homes (see attached letter for additional detail) while acknowledging that many jurisdictions in the Bay Area have or will soon prohibit the use

of natural gas in new construction based on anticipated greenhouse gas emissions reductions.

CONSEQUENCE OF NEGATIVE ACTION:

The County would not implement one of the actions specified in its Climate Emergency Resolution adopted by the Board of Supervisors on September 22, 2020.

ATTACHMENTS

Exhibit A- Sub Committee Rpt.

Exhibit B-2019 Cost-effectiveness Study

BIA Comment Letter

Building Electrification Ordinance for New Construction-Presentation



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

Meeting Date: 05/24/2021

Subject: RECEIVE UPDATE on Building Electrification Reach Code, and PROVIDE DIRECTION.

Submitted For: John Kopchik,

Department: Conservation & Development

Referral No.: N/A

Referral Name: N/A

Presenter: Demian Hardman, Senior Energy Planner Contact: Demian Hardman (925)655-2816

#### Referral History:

At the direction of the Sustainability Committee at its December 2019 meeting, Department of Conservation and Development (DCD) staff provided a report to the Committee in February 2020 with some initial research on the status of new building electrification ordinances for new construction adopted by various jurisdictions throughout the Bay Area. The Committee provided direction to DCD staff to report to the Committee in the future to discuss a potential building electrification ordinance.

#### Referral Update:

On September 22, 2020, the Board of Supervisors adopted a Climate Emergency Resolution that states the County should develop policies to require all new construction to be fully electric through the adoption of reach building codes.

This report summarizes the requirements needed by the State for the County to adopt a reach code to develop a building electrification ordinance. Staff requests that the Committee provide direction on (1) the timing of developing a reach code, (2) the type of reach code, and (3) if the County should consider initiating its own study to determine the cost-effectiveness of other building types beyond what has already been studied in Contra Costa County.

#### State Reach Code Requirements

In California, Title 24 of the Code of Regulations sets the building code standards for all jurisdictions statewide. The Energy Code is Part 6 of Title 24 and regulates building energy efficiency such as building envelope, mechanical systems, and lighting. However, local governments can adopt more stringent requirements which are known as reach codes. An example of an energy reach code is a modification to the energy code requiring that all new construction buildings in a specific jurisdiction use only high efficiency, electric equipment.

Both California law and Federal law apply to locally adopted reach does. California law sets out the process that local governments, such as the County, must use to adopt a reach code and establishes certain

requirements for these types of ordinances. Federal law sets the standards for building appliances, and among other things, prohibits local ordinances from preempting those standards.

Special requirements are specified in Section 10-106 of the Building Energy Efficiency Standards and Public Resources Code Section 25402.1(h)2. In general, a reach code must be at least as stringent as the statewide code and meet the following requirements:

1. A reach code must be cost effective.
2. Requires a minimum of two public hearings prior to adoption.
3. Be approved by the California Energy Commission (CEC).
4. Be re-approved by the CEC every three years with each Energy Code update.

### **Cost-effectiveness Requirements**

All reach codes must be shown to be cost effective. To be cost effective, the money saved from the reduced energy costs needs to be enough to cover the initial cost within a reasonable period of time. Cost-effectiveness is usually demonstrated through a study prepared by a consultant. However, local governments, such as the County, may use any study that applies to the climate zone(s) in which their jurisdiction is located. Most studies are developed under the auspices of the Statewide Investor Owned Utilities Codes and Standards Team (Statewide IOU Team) and funded by ratepayer funds. Local jurisdictions may request that a cost effectiveness study be conducted by the Statewide IOU Team.

The County may use the following Statewide IOU Team cost effectiveness studies that include Contra Costa County (Climate zones 3 and 12):

- 2019 Cost-effectiveness Study: Low-Rise Residential (Attachment 1), and
- 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study (Attachment 2).

Each cost-effectiveness study includes two (2) criteria that may be used for determining cost-effectiveness. These are the On-Bill Benefit/Cost Ratio and TDV Benefit/Cost Ratio. The On-bill benefit-to-cost ratio is a customer-based approach to evaluating cost-effectiveness. It includes energy values based upon estimated site energy usage and customer on-bill savings using electricity and natural gas utility rate schedules over the useful life of the measure/package studies. The Time Dependent Valuation (TDV) is the cost-effectiveness and energy valuation methodology used to develop and implement the Title 24 Building code. The TDV of energy is a participant cost-effectiveness metric to evaluate whether a Title 24 measure will save consumers money on their utility bill over the life of a new building. The values of TDV are constructed from a long-term forecast of hourly electricity, natural gas, and propane costs to building owners consistent with the latest CEC forecasts and outlook for California's energy sectors.

The low-rise residential study covers all single-family homes and multi-family buildings with three stories or less. Generally, the study found that electrification for single-family homes, or adding additional requirements beyond electrification, such as for energy efficiency measures, photovoltaic (PV), high efficiency appliances, or battery storage are considered cost-effective. However, based on the On-Bill Benefit/Cost Ratio cost-effectiveness criteria, electrification alone was not cost-effective due to large variations in cost data.

The nonresidential new construction study included office, retail, and hotel buildings. The study found that the all-electric option for all these building types is considered cost-effective, except under the *On-Bill* Benefit/Cost Ratio cost-effectiveness criteria for office buildings. Office buildings were also not cost-effective when including electrification with high efficiency appliances, or when including electrification and photovoltaic in the central and eastern parts of the County (climate zone 12) using the *On-Bill* Benefit/Cost Ratio criteria.

However, both studies found that when using the TDV Benefit/Cost Ratio cost-effectiveness criteria, electrification as well as adding additional measures beyond electrification, such as energy efficiency, solar

photovoltaic (PV), high efficiency appliances, or battery storage were considered cost-effective.

If the County wants to include other building types beyond what was included in the studies listed above in a proposed reach code, the County would either have to (1) hire its own consultant to complete the study, or (2) request that the Statewide IOU Team complete a specific study for the County, which would not require any out-of-pocket cost to the County. If the County requests the Statewide IOU Team complete a specific study, it may take several months to complete. If the County were to hire in independent consultant, the County would have to cover the cost for completing the study. The cost range for cost-effectiveness studies are dependent on complexity and range of building types included in the study.

### **Energy Code Cycles and Reach Codes**

The California Energy Code is updated every three years, with the code usually becoming more stringent with each update. Because local energy codes must be more stringent than the statewide code, each local code needs to be re-approved whenever the statewide code is updated to ensure that the local energy code is still at least as stringent as the statewide code. Attached is a list from the Building Decarbonization Coalition with all the jurisdictions that have adopted a reach code in the state as of January 2021 (Attachment 3).

The next energy code update will occur in mid-2022 and become effective January 2023. The current 2022 Energy Code Update Rulemaking (Docket Log # 21-BSTD-01) specifies several subsections that mostly look to having equipment be designed to be electric ready. It is anticipated that CALGreen 2022 will have an electric-ready option, but electrification will not be required until probably 2025. For this next code cycle, CALGreen is currently focusing on being electrification-ready. However, there have been some reports that non-residential buildings like high-rise multi-family residences, hotels, offices, restaurants, and schools may be required to install rooftop solar and battery storage. DCD staff will provide a verbal update on this at the Committee meeting.

### **Options for Committee Consideration**

Reach codes can require one or more specific energy efficiency improvements (prescriptive reach codes) or can require a building to use less energy than average through a variety of optional measures (performance reach codes). For example, requiring reduced outdoor lighting (City of Fremont) and requiring cool roofs (Cities of Brisbane and San Mateo) are prescriptive reach codes. Performance reach codes require energy modeling and are generally more complicated. Performance reach codes usually require exceeding minimum building energy performance by a certain percentage. For example, the cities of Healdsburg, Novato, and Mill Valley have performance reach codes that require a minimum building energy performance of 15% for new construction. The prescriptive and performance approaches can also be combined as a hybrid reach code.

Beyond implementing an all-electric reach code, options also include requiring more stringent energy efficiency measures, requiring battery storage or high efficiency appliances.

Staff is requesting the Committee provide direction on the following:

1. Whether the reach code should be developed for the current building code or be developed for the 2022 building code (effective January 2023).
2. Determine the type of reach code, such as prescriptive, performance, or a hybrid version, and
3. Whether the County should consider developing its own cost-effectiveness study to determine the cost-effectiveness of other building types beyond what has already been studied either by (a) Initiating its own study independently at the County's cost through a consultant or (b) by requesting the Statewide IOU Team to develop a study at no direct cost. Based on the direction in the September 2021 Climate Emergency Resolution, staff is not recommending an electrification requirement for existing buildings.

Recommendation(s)/Next Step(s):

RECEIVE REPORT on building electrification reach code requirements and PROVIDE DIRECTION as appropriate.

Fiscal Impact (if any):

N/A

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Attachments-Y

Attachment 1. Cost-Effectiveness Study, Low-Rise Residential

Attachment 2. Cost-Effectiveness Study, Non-Residential New Construction

Attachment 3. CA Jurisdictions That Have Adopted Reach Codes

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# Building Electrification Reach Code Options

BOS Sustainability Committee  
May 24, 2021

**Demian Hardman-Saldana**

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Contra Costa County

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# Report Overview



State Building  
Code/Reach Code  
Requirements



Types of Reach  
Codes/Other  
Jurisdictions



Cost-Effectiveness  
Studies/Requirements



Energy Code Cycle and  
Reach Code Timeline



Options for Committee  
Consideration

# Legal Requirements for Reach Codes

Energy efficiency reach codes are similar to other local ordinances, but there are special requirements for reach codes. Like other local laws, reach codes cannot conflict with federal requirements (federal preemption).

1. A reach code must be at least as stringent as the statewide code.
2. A reach code must be cost effective.
3. Requires a minimum of two public hearings prior to adoption.
4. Must be approved by the California Energy Commission.
5. A reach code needs to be re-approved with each Energy Code update.



# Types of Reach Codes

Reach Code Type	Examples
<b>Prescriptive codes</b> Require one or more specific energy efficiency measures	<ul style="list-style-type: none"><li>✓ Requiring solar on one or more types of new buildings</li><li>✓ Requiring reduced outdoor lighting</li><li>✓ Requiring cool roofs</li></ul>
<b>Performance codes</b> Require a building to perform more efficiently based on accepted computer modelling and allow trade-offs between energy efficiency measures.	<ul style="list-style-type: none"><li>✓ Exceeding minimum building energy performance by 15%</li><li>✓ Exceeding minimum building energy performance if solar panels are not installed (by different amounts for different types of development)</li></ul>
<b>Hybrid</b> A combination of prescriptive and performance reach codes	<ul style="list-style-type: none"><li>✓ Waiving solar and performance requirements if a home is all-electric or is Passive House certified</li></ul>

# Types of Reach Codes to Consider for New Construction Projects

- All electric by Building Type:
  - **Low Rise Residential (SF or MF, 3 Stories or Less)\***
  - *County-Owned Properties*
  - High Rise Residential (4 or more stories)
  - Non-Residential
    - **Hotel\*, Retail\*, Office\***, Restaurants, Life Sciences, or Industrial
- All electric Preferred
  - May choose All Electric, or Mixed-Fuel (Natural Gas)
    - **Mixed-Fuel** – Most jurisdictions require an increased building efficiency using the performance code approach (i.e. 15% more efficient than existing code requirements).
    - **All Electric** – Buildings only using electricity just need to meet minimum energy code standards or may require additional measures, such as battery storage and solar.

\*Cost-effectiveness Study Available Now for these building types for Contra Costa County.

# Jurisdictions that Adopted Reach Codes (Attachment 3)

Jurisdiction	Approach			Systems			Building Types							Add-Ons		
	Natural Gas Infrastructure Moratorium	All-Electric Reach	Electric-Preferred	Whole Building	Water Heating	Space Heating	Low Rise Residential	City-Owned Properties	High Rise Residential	Hotel	Retail	Office	Restaurant	Life Sciences	Additional Solar	Electric Vehicles
Alameda	X			X				X								
Albany			X				X				X	X			X	X
Berkeley*	X		X	X			X	X	X	X	X	X	X	X	X	X
Brisbane		X			X	X	X	X	X	X	X	X	X			X
Burlingame		X		X	X	X	X	X	X	X	X	X		X		X
Campbell		X			X	X	X									X
Carlsbad	X	X			X		X								X	X
Cupertino		X		X			X	X	X	X	X	X				X
Davis			X	X			X									
East Palo Alto		X		X			X	X	X	X	X		X			X
Hayward		X	X	X			X	X	X	X	X	X	X	X	X	X
Healdsburg		X			X	X	X	X	X	X	X	X	X	X		
Los Altos		X		X	X	X	X	X	X	X	X					X
Los Altos Hills		X			X	X	X	X	X	X	X	X				
Los Gatos		X		X			X									X
Marin County			X	X			X	X	X	X	X	X	X	X		X
Menlo Park		X			X	X	X	X	X	X	X	X			X	X
Millbrae		X			X	X	X	X	X	X	X	X	X			X
Mill Valley			X	X			X		X							X
Milpitas			X	X			X	X	X	X	X	X	X			X

Source: Building Decarbonization Coalition

# Reach Code - City of Richmond Example

Electrification Ordinance Mandates the Following:

1. New Residential Buildings require an electric fuel source for **space heating, water heating and clothes dryers**.
  - Natural gas allowed for cooktops and fireplaces.
  - Prewiring for future electric appliance is required where natural gas appliances are used\*
2. Nonresidential building require electricity as the fuel source for all appliances.
  - Exceptions for life science buildings space heating, public agency owned and operated emergency operations centers, and cookware for nonresidential kitchens.
    - If exception granted, natural gas appliance locations must be electrically prewired for future electric appliance installation\*
  - New Construction nonresidential buildings must install a minimum amount of on-site solar production based on square footage.

\*Expected in New 2022 Building Code

Proposed  
Building Code  
Changes for  
2022 being  
considered  
Effective January  
1, 2023

- Add new prescriptive solar photovoltaic and battery requirements for the following newly constructed nonresidential building types: **high-rise multifamily, hotel-motel, tenant-space, office, medical office or clinic, restaurant, grocery store, retail store, school, and theater/auditorium/convention center buildings**;
- Add new requirements that **mixed fuel buildings (Natural Gas) be electric ready**, meaning that electrical connections and other features needed to allow use of non-combustion equipment options are installed at the time of initial construction, such as **Electric Cooktop Ready, Electric Clothes Dryer Ready, and electric panel upgrades**
- **Improve nonresidential and multifamily efficiency standards** for building envelopes (e.g., exterior walls, windows, roofs, and floors, including among other things).

# Cost-Effectiveness Studies/Requirements

## Studies Completed for Contra Costa County:

- **2019 Cost-effectiveness Study: Low-Rise Residential New Construction (Attachment 1)**
  - Single-Family Homes
  - Multi-Family Buildings (Up to 3 Stories)
- **2019 Nonresidential New Construction Reach Code Cost Effectiveness Study (Attachment 2)**
  - Office
  - Retail
  - Hotel Buildings

County would need to conduct its own study if wants to include other building types (i.e. restaurants, or industrial buildings) in Reach Code:

- State IOU Codes and Standards Team to conduct Study for County at no direct cost to County; or
- County may conduct its own study – County would need to pay for it out-of-pocket.

Source: <https://explorer.localenergycodes.com/contra-costa-county>



# Reach Code Timeline Overview

Reach Code Step	Anticipated Month
Decide on What to Pursue	May 2021
Cost Effectiveness Study	Use existing Cost-effectiveness studies or 2-3 month estimate for County to conduct specific study
Develop Draft Ordinance	2-3 Months
Public Hearing 1	September 2021/December 2021
Public Hearing 2	November 2021/January 2022
Submittal to the Energy Commission	December 2021/February 2022
Submittal to the Building Standards Commission	November 2021/March 2022
Reach Code Effective	Feb/March 2022/June 2022

# Options for Committee Consideration

Whether the reach code should be developed for the 2022 Building Code (Effective January 2023) or for current code.

Determine the type of reach code: Prescriptive, Performance, or Hybrid

County develop its own cost-effectiveness study to include other building types not already studied?

- Have Statewide IOU Team develop study at no direct cost to County, or
- County initiate its own cost-effectiveness study at County's expense

Questions?

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A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11  
Local Energy Efficiency Ordinances

## **2019 Cost-effectiveness Study: Low-Rise Residential New Construction**

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Last Modified: August 01, 2019

## **LEGAL NOTICE**

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## Acronyms

2020 PV\$	Present value costs in 2020
ACH50	Air Changes per Hour at 50 pascals pressure differential
ACM	Alternative Calculation Method
AFUE	Annual Fuel Utilization Efficiency
B/C	Lifecycle Benefit-to-Cost Ratio
BEopt	Building Energy Optimization Tool
BSC	Building Standards Commission
CAHP	California Advanced Homes Program
CBECC-Res	Computer program developed by the California Energy Commission for use in demonstrating compliance with the California Residential Building Energy Efficiency Standards
CFI	California Flexible Installation
CFM	Cubic Feet per Minute
CMFNH	California Multifamily New Homes
CO <sub>2</sub>	Carbon Dioxide
CPC	California Plumbing Code
CZ	California Climate Zone
DHW	Domestic Hot Water
DOE	Department of Energy
DWHR	Drain Water Heat Recovery
EDR	Energy Design Rating
EER	Energy Efficiency Ratio
EF	Energy Factor
GHG	Greenhouse Gas
HERS Rater	Home Energy Rating System Rater
HPA	High Performance Attic
HPWH	Heat Pump Water Heater
HSPF	Heating Seasonal Performance Factor
HVAC	Heating, Ventilation, and Air Conditioning
IECC	International Energy Conservation Code
IOU	Investor Owned Utility
kBtu	kilo-British thermal unit
kWh	Kilowatt Hour
LBNL	Lawrence Berkeley National Laboratory

LCC	Lifecycle Cost
LLAHU	Low Leakage Air Handler Unit
VLLDCS	Verified Low Leakage Ducts in Conditioned Space
MF	Multifamily
NAECA	National Appliance Energy Conservation Act
NEEA	Northwest Energy Efficiency Alliance
NEM	Net Energy Metering
NPV	Net Present Value
NREL	National Renewable Energy Laboratory
PG&E	Pacific Gas and Electric Company
PV	Photovoltaic
SCE	Southern California Edison
SDG&E	San Diego Gas and Electric
SEER	Seasonal Energy Efficiency Ratio
SF	Single Family
CASE	Codes and Standards Enhancement
TDV	Time Dependent Valuation
Therm	Unit for quantity of heat that equals 100,000 British thermal units
Title 24	Title 24, Part 6
TOU	Time-Of-Use
UEF	Uniform Energy Factor
ZNE	Zero-net Energy

# 1 Introduction

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (Energy Commission, 2018b) is maintained and updated every three years by two state agencies, the California Energy Commission (Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances, or reach codes, that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable.

This report documents cost-effective combinations of measures that exceed the minimum state requirements, the 2019 Building Energy Efficiency Standards, effective January 1, 2020, for new single family and low-rise (one- to three-story) multifamily residential construction. The analysis includes evaluation of both mixed fuel and all-electric homes, documenting that the performance requirements can be met by either type of building design. Compliance package options and cost-effectiveness analysis in all sixteen California climate zones (CZs) are presented (see Appendix A – California Climate Zone Map for a graphical depiction of Climate Zone locations). All proposed package options include a combination of efficiency measures and on-site renewable energy.

## 2 Methodology and Assumptions

This analysis uses two different metrics to assess cost-effectiveness. Both methodologies require estimating and quantifying the incremental costs and energy savings associated with energy efficiency measures. The main difference between the methodologies is the manner in which they value energy and thus the cost savings of reduced or avoided energy use.

- **Utility Bill Impacts (On-Bill):** Customer-based Lifecycle Cost (LCC) approach that values energy based upon estimated site energy usage and customer on-bill savings using electricity and natural gas utility rate schedules over a 30-year duration accounting for discount rate and energy cost inflation.
- **Time Dependent Valuation (TDV):** Energy Commission LCC methodology, which is intended to capture the “societal value or cost” of energy use including long-term projected costs such as the cost of providing energy during peak periods of demand and other societal costs such as projected costs for carbon emissions, as well as grid transmission and distribution impacts. This metric values energy use differently depending on the fuel source (gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods (Horii et al., 2014). This is the methodology used by the Energy Commission in evaluating cost-effectiveness for efficiency measures in Title 24, Part 6.

### 2.1 Building Prototypes

The Energy Commission defines building prototypes which it uses to evaluate the cost-effectiveness of proposed changes to Title 24 requirements. At the time that this report was written, there are two single family prototypes and one low-rise multifamily prototype. All three are used in this analysis in development of the above-code packages. Table 1 describes the basic characteristics of each prototype. Additional details on the prototypes can be found in the Alternative Calculation Method (ACM) Approval Manual (Energy Commission, 2018a). The prototypes have equal geometry on all walls, windows and roof to be orientation neutral.



**Table 1: Prototype Characteristics**

Characteristic	Single Family One-Story	Single Family Two-Story	Multifamily
Conditioned Floor Area	2,100 ft <sup>2</sup>	2,700 ft <sup>2</sup>	6,960 ft <sup>2</sup> : (4) 780 ft <sup>2</sup> & (4) 960 ft <sup>2</sup> units
Num. of Stories	1	2	2
Num. of Bedrooms	3	3	(4) 1-bed & (4) 2-bed units
Window-to-Floor Area Ratio	20%	20%	15%

Source: 2019 Alternative Calculation Method Approval Manual (California Energy Commission, 2018a).

The Energy Commission’s protocol for single family prototypes is to weight the simulated energy impacts by a factor that represents the distribution of single-story and two-story homes being built statewide, assuming 45 percent single-story and 55 percent two-story. Simulation results in this study are characterized according to this ratio, which is approximately equivalent to a 2,430-square foot (ft<sup>2</sup>) house.<sup>1</sup>

The methodology used in the analyses for each of the prototypical building types begins with a design that precisely meets the minimum 2019 prescriptive requirements (zero compliance margin). Table 150.1-A in the 2019 Standards (Energy Commission, 2018b) lists the prescriptive measures that determine the baseline design in each climate zone. Other features are consistent with the Standard Design in the ACM Reference Manual (Energy Commission, 2019), and are designed to meet, but not exceed, the minimum requirements. Each prototype building has the following features:

- Slab-on-grade foundation.
- Vented attic.
- High performance attic in climate zones where prescriptively required (CZ 4, 8-16) with insulation installed at the ceiling and below the roof deck per Option B. (Refer to Table 150.1-A in the 2019 Standards.)
- Ductwork located in the attic for single family and within conditioned space for multifamily.

Both mixed fuel and all-electric prototypes are evaluated in this study. While in past code cycles an all-electric home was compared to a home with gas for certain end-uses, the 2019 code includes separate prescriptive and performance paths for mixed-fuel and all-electric homes. The fuel specific characteristics of the mixed fuel and all-electric prototypes are defined according to the 2019 ACM Reference Manual and described in Table 2.<sup>2</sup>

<sup>1</sup> 2,430 ft<sup>2</sup> = (45% x 2,100 ft<sup>2</sup>) + (55% x 2,700 ft<sup>2</sup>)

<sup>2</sup> Standards Section 150.1(c)8.A.iv.a specifies that compact hot water distribution design and a drain water heat recovery system or extra PV capacity are required when a heat pump water heater is installed prescriptively. The efficiency of the distribution and the drain water heat recovery systems as well as the location of the water heater applied in this analysis are based on the Standard Design assumptions in CBECC-Res which result in a zero-compliance margin for the 2019 basecase model.



**Table 2: Characteristics of the Mixed Fuel vs All-Electric Prototype**

Characteristic	Mixed Fuel	All-Electric
Space Heating/Cooling <sup>1</sup>	Gas furnace 80 AFUE Split A/C 14 SEER, 11.7 EER	Split heat pump 8.2 HSPF, 14 SEER, 11.7 EER
Water Heater <sup>1,2, 3, 4</sup>	Gas tankless UEF = 0.81	50gal HPWH UEF = 2.0 SF: located in the garage MF CZ 2,4,6-16: located in living space MF CZ 1,3,5: located in exterior closet
Hot Water Distribution	Code minimum. All hot water lines insulated	Basic compact distribution credit, (CZ 6-8,15) Expanded compact distribution credit, compactness factor = 0.6 (CZ 1-5,9-14,16)
Drain Water Heat Recovery Efficiency	None	CZ 1: unequal flow to shower = 42% CZ 16: equal flow to shower & water heater = 65% None in other CZs
Cooking	Gas	Electric
Clothes Drying	Gas	Electric

<sup>1</sup>Equipment efficiencies are equal to minimum federal appliance efficiency standards.

<sup>2</sup>The multifamily prototype is evaluated with individual water heaters. HPWHs located in the living space do not have ducting for either inlet or exhaust air; CBECC-Res does not have the capability to model ducted HPWHs.

<sup>3</sup>UEF = uniform energy factor. HPWH = heat pump water heater. SF = single family. MF = multifamily.

<sup>4</sup>CBECC-Res applies a 50gal water heater when specifying a storage water heater. Hot water draws differ between the prototypes based on number of bedrooms.

## 2.2 Measure Analysis

The California Building Energy Code Compliance simulation tool, CBECC-RES 2019.1.0, was used to evaluate energy impacts using the 2019 Title 24 prescriptive standards as the benchmark, and the 2019 TDV values. TDV is the energy metric used by the Energy Commission since the 2005 Title 24 energy code to evaluate compliance with the Title 24 standards.

Using the 2019 baseline as the starting point, prospective energy efficiency measures were identified and modeled in each of the prototypes to determine the projected energy (Therm and kWh) and compliance impacts. A large set of parametric runs were conducted to evaluate various options and develop packages of measures that exceed minimum code performance. The analysis utilizes a parametric tool based on Micropas<sup>3</sup> to automate and manage the generation of CBECC-Res input files. This allows for quick evaluation of various efficiency measures across multiple climate zones and prototypes and improves quality control. The batch process functionality of CBECC-Res is utilized to simulate large groups of input files at once. Annual utility costs were calculated using hourly data output from CBECC-Res and electricity and natural gas tariffs for each of the investor owned utilities (IOUs).

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<sup>3</sup> Developed by Ken Nittler of Enercomp, Inc.



The Reach Codes Team selected packages and measures based on cost-effectiveness as well as decades of experience with residential architects, builders, and engineers along with general knowledge of the relative acceptance of many measures.

### **2.2.1 Federal Preemption**

The Department of Energy (DOE) sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act (NAECA), including heating, cooling, and water heating equipment. Since state and local governments are prohibited from adopting policies that mandate higher minimum efficiencies than the federal standards require, the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency equipment. While this study is limited by federal preemption, in practice builders may use any package of compliant measures to achieve the performance goals, including high efficiency appliances. Often, these measures are the simplest and most affordable measures to increase energy performance.

### **2.2.2 Energy Design Rating**

The 2019 Title 24 code introduces California's Energy Design Rating (EDR) as the primary metric to demonstrate compliance with the energy code. EDR is still based on TDV but it uses a building that is compliant with the 2006 International Energy Conservation Code (IECC) as the reference building. The reference building has an EDR score of 100 while a zero-net energy (ZNE) home has an EDR score of zero (Energy Commission, 2018d). See Figure 1 for a graphical representation of this. While the Reference Building is used to determine the rating, the Proposed Design is still compared to the Standard Design based on the prescriptive baseline assumptions to determine compliance.

The EDR is calculated by CBECC-Res and has two components:

1. An "Efficiency EDR" which represents the building's energy use without solar generation.<sup>4</sup>
2. A "Total EDR" that represents the final energy use of the building based on the combined impact of efficiency measures, PV generation and demand flexibility.

For a building to comply, two criteria are required:

- (1) the proposed Efficiency EDR must be equal to or less than the Efficiency EDR of the Standard Design, and
- (2) the proposed Total EDR must be equal to or less than the Total EDR of the Standard Design.

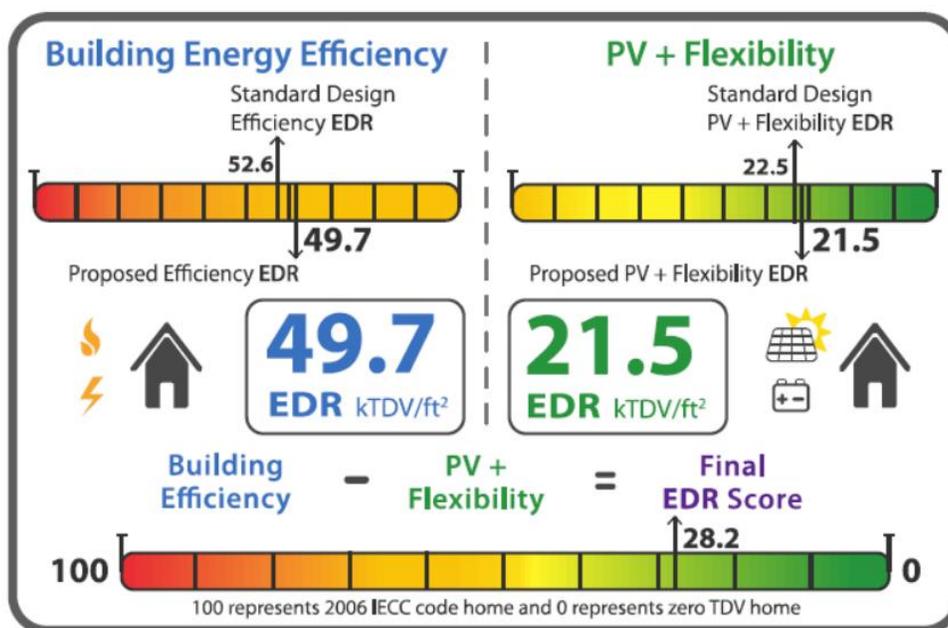
Single family prototypes used in this analysis that are minimally compliant with the 2019 Title 24 code achieve a Total EDR between 20 and 35 in most climates.

This concept, consistent with California's "loading order" which prioritizes energy efficiency ahead of renewable generation, requires projects meet a minimum Efficiency EDR before PV is credited but allows for PV to be traded off with additional efficiency when meeting the Total EDR. A project may improve on building efficiency beyond the minimum required and subsequently reduce the PV generation capacity required to achieve the required Total EDR but may not increase the size of the PV system and trade this off with a reduction of efficiency measures. Figure 1 graphically summarizes how both Efficiency EDR and PV / demand flexibility EDR are used to calculate the Total EDR used in the 2019 code and in this analysis.

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<sup>4</sup> While there is no compliance credit for solar PV as there is under the 2016 Standards, the credit for installing electric storage battery systems that meet minimum qualifications can be applied to the Efficiency EDR.





**Figure 1: Graphical description of EDR scores** (courtesy of Energy Code Ace<sup>5</sup>)

Results from this analysis are presented as EDR Margin, a reduction in the EDR score relative to the Standard Design. EDR Margin is a better metric to use than absolute EDR in the context of a reach code because absolute values vary, based on the home design and characteristics such as size and orientation. This approach aligns with how compliance is determined for the 2019 Title 24 code, as well as utility incentive programs, such as the California Advanced Homes Program (CAHP) & California Multifamily New Homes (CMFNH), which require minimum performance criteria based on an EDR Margin for low-rise residential projects. The EDR Margin is calculated according to Equation 1 for the two efficiency packages and Equation 2 for the Efficiency & PV and Efficiency & PV/Battery packages (see Section 2.3).

#### Equation 1

$$EDR Margin_{efficiency} = Standard Design \mathbf{Efficiency} EDR - Proposed Design \mathbf{Efficiency} EDR$$

#### Equation 2

$$EDR Margin_{efficiency \& PV} = Standard Design \mathbf{Total} EDR - Proposed Design \mathbf{Total} EDR$$

### 2.2.3 Energy Efficiency Measures

Following are descriptions of each of the efficiency measures evaluated under this analysis. Because not all of the measures described below were found to be cost-effective and cost-effectiveness varied by climate zone, not all measures are included in all packages and some of the measures listed are not included in any final package. For a list of measures included in each efficiency package by climate zone, see Appendix D – Single Family Measure Summary and Appendix F – Multifamily Measure Summary.

**Reduced Infiltration (ACH50):** Reduce infiltration in single family homes from the default infiltration assumption of five (5) air changes per hour at 50 Pascals (ACH50)<sup>6</sup> by 40 to 60 percent to either 3 ACH50 or 2 ACH50. HERS

<sup>5</sup> <https://energycodeace.com/>

<sup>6</sup> Whole house leakage tested at a pressure difference of 50 Pascals between indoors and outdoors.

rater field verification and diagnostic testing of building air leakage according to the procedures outlined in the 2019 Reference Appendices RA3.8 (Energy Commission, 2018c). This measure was not applied to multifamily homes because CBECC-Res does not allow reduced infiltration credit for multifamily buildings.

**Improved Fenestration:** Reduce window U-factor to 0.24. The prescriptive U-factor is 0.30 in all climates. In climate zones 1, 3, 5, and 16 where heating loads dominate, an increase in solar heat gain coefficient (SHGC) from the default assumption of 0.35 to 0.50 was evaluated in addition to the reduction in U-factor.

**Cool Roof:** Install a roofing product that's rated by the Cool Roof Rating Council to have an aged solar reflectance (ASR) equal to or greater than 0.25. Steep-sloped roofs were assumed in all cases. Title 24 specifies a prescriptive ASR of 0.20 for Climate Zones 10 through 15 and assumes 0.10 in other climate zones.

**Exterior Wall Insulation:** Decrease wall U-factor in 2x6 walls to 0.043 from the prescriptive requirement of 0.048 by increasing exterior insulation from one-inch R-5 to 1-1/2 inch R-7.5. This was evaluated for single family buildings only in all climate zones except 6 and 7 where the prescriptive requirement is higher (U-factor of 0.065) and improving beyond the prescriptive value has little impact.

**High Performance Attics (HPA):** HPA with R-38 ceiling insulation and R-30 insulation under the roof deck. In climates where HPA is already required prescriptively this measure requires an incremental increase in roof insulation from R-19 or R-13 to R-30. In climates where HPA is not currently required (Climate Zones 1 through 3, and 5 through 7), this measure adds roof insulation to an uninsulated roof as well as increasing ceiling insulation from R-30 to R-38 in Climate Zones 3, 5, 6 and 7.

**Slab Insulation:** Install R-10 perimeter slab insulation at a depth of 16-inches. For climate zone 16, where slab insulation is required, prescriptively this measure increases that insulation from R-7 to R-10.

**Duct Location (Ducts in Conditioned Space):** Move the ductwork and equipment from the attic to inside the conditioned space in one of the three following ways.

1. Locate ductwork in conditioned space. The air handler may remain in the attic provided that 12 linear feet or less of duct is located outside the conditioned space including the air handler and plenum. Meet the requirements of 2019 Reference Appendices RA3.1.4.1.2. (Energy Commission, 2018c)
2. All ductwork and equipment located entirely in conditioned space meeting the requirements of 2019 Reference Appendices RA3.1.4.1.3. (Energy Commission, 2018c)
3. All ductwork and equipment located entirely in conditioned space with ducts tested to have less than or equal to 25 cfm leakage to outside. Meet the requirements of Verified Low Leakage Ducts in Conditioned Space (VLLDCS) in the 2019 Reference Appendices RA3.1.4.3.8. (Energy Commission, 2018c)

Option 1 and 2 above apply to single family only since the basecase for multifamily assumes ducts are within conditioned space. Option 3 applies to both single family and multifamily cases.

**Reduced Distribution System (Duct) Leakage:** Reduce duct leakage from 5% to 2% and install a low leakage air handler unit (LLAHU). This is only applicable to single family homes since the basecase for multifamily assumes ducts are within conditioned space and additional duct leakage credit is not available.

**Low Pressure Drop Ducts:** Upgrade the duct distribution system to reduce external static pressure and meet a maximum fan efficacy of 0.35 Watts per cfm for gas furnaces and 0.45 Watts per cfm for heat pumps operating at full speed. This may involve upsizing ductwork, reducing the total effective length of ducts, and/or selecting low pressure drop components such as filters. Fan watt draw must be verified by a HERS rater according to the procedures outlined in the 2019 Reference Appendices RA3.3 (Energy Commission, 2018c). New federal regulations that went into effect July 3, 2019 require higher fan efficiency for gas furnaces than for heat pumps and air handlers, which is why the recommended specification is different for mixed fuel and all-electric homes.



**HERS Verification of Hot Water Pipe Insulation:** The California Plumbing Code (CPC) requires pipe insulation on all hot water lines. This measure provides credit for HERS rater verification of pipe insulation requirements according to the procedures outlined in the 2019 Reference Appendices RA3.6.3. (Energy Commission, 2018c)

**Compact Hot Water Distribution:** Two credits for compact hot water distribution were evaluated.

1. **Basic Credit:** Design the hot water distribution system to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6 (Energy Commission, 2018c). In many single family homes this may require moving the water heater from an exterior to an interior garage wall. Multifamily homes with individual water heaters are expected to easily meet this credit with little or no alteration to plumbing design. CBECC-Res software assumes a 30% reduction in distribution losses for the basic credit.
2. **Expanded Credit:** Design the hot water distribution system to meet minimum requirements for the expanded compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA3.6.5 (Energy Commission, 2018c). In addition to requiring HERS verification that the minimum requirements for the basic compact distribution credit are met, this credit also imposes limitations on pipe location, maximum pipe diameter, and recirculation system controls allowed.

**Drain Water Heat Recovery (DWHR):** For multifamily buildings add DWHR that serves the showers in an unequal flow configuration (pre-heated water is piped directly to the shower) with 50% efficiency. This upgrade assumes all apartments are served by a DWHR with one unit serving each apartment individually. For a slab-on-grade building this requires a horizontal unit for the first-floor apartments.

### **Federally Preempted Measures:**

The following additional measures were evaluated. Because these measures require upgrading appliances that are federally regulated to high efficiency models, they cannot be used to show cost-effectiveness in a local ordinance. The measures and packages are presented here to show that there are several options for builders to meet the performance targets. Heating and cooling capacities are autosized by CBECC-Res in all cases.

**High Efficiency Furnace:** For the mixed-fuel prototypes, upgrade natural gas furnace to one of two condensing furnace options with an efficiency of 92% or 96% AFUE.

**High Efficiency Air Conditioner:** For the mixed-fuel prototypes, upgrade the air conditioner to either single-stage SEER 16 / EER 13 or two-stage SEER 18 / EER 14 equipment.

**High Efficiency Heat Pump:** For the all-electric prototypes, upgrade the heat pump to either single-stage SEER 16 / EER 13 / HSPF 9 or two-stage SEER 18 / EER 14 / HSPF 10 equipment.

**High Efficiency Tankless Water Heater:** For the mixed-fuel prototype, upgrade tankless water heater to a condensing unit with a rated Uniform Energy Factor (UEF) of 0.96.

**High Efficiency Heat Pump Water Heater (HPWH):** For the all-electric prototypes, upgrade the federal minimum heat pump water heater to a HPWH that meets the Northwest Energy Efficiency Alliance (NEEA)<sup>7</sup> Tier 3 rating. The evaluated NEEA water heater is an 80gal unit and is applied to all three building prototypes. Using the same

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<sup>7</sup> Based on operational challenges experienced in the past, NEEA established rating test criteria to ensure newly installed HPWHs perform adequately, especially in colder climates. The NEEA rating requires an Energy Factor equal to the ENERGY STAR performance level and includes requirements regarding noise and prioritizing heat pump use over supplemental electric resistance heating.



water heater provides consistency in performance across all the equipment upgrade cases, even though hot water draws differ across the prototypes.

## 2.3 Package Development

Three to four packages were evaluated for each prototype and climate zone, as described below.

- 1) **Efficiency – Non-Preempted**: This package uses only efficiency measures that don't trigger federal preemption issues including envelope, and water heating and duct distribution efficiency measures.
- 2) **Efficiency – Equipment, Preempted**: This package shows an alternative design that applies HVAC and water heating equipment that are more efficient than federal standards. The Reach Code Team considers this more reflective of how builders meet above code requirements in practice.
- 3) **Efficiency & PV**: Using the Efficiency – Non-Preempted Package as a starting point<sup>8</sup>, PV capacity is added to offset most of the estimated electricity use. This only applies to the all-electric case, since for the mixed fuel cases, 100% of the projected electricity use is already being offset as required by 2019 Title 24, Part 6.
- 4) **Efficiency & PV/Battery**: Using the Efficiency & PV Package as a starting point, PV capacity is added as well as a battery system.

### 2.3.1 Solar Photovoltaics (PV)

Installation of on-site PV is required in the 2019 residential code. The PV sizing methodology in each package was developed to offset annual building electricity use and avoid oversizing which would violate net energy metering (NEM) rules.<sup>9</sup> In all cases, PV is evaluated in CBECC-Res according to the California Flexible Installation (CFI) assumptions.

The Reach Code Team used two options within the CBECC-Res software for sizing the PV system, described below. Analysis was conducted to determine the most appropriate sizing method for each package which is described in the results.

- Standard Design PV – the same PV capacity as is required for the Standard Design case<sup>10</sup>
- Specify PV System Scaling – a PV system sized to offset a specified percentage of the estimated electricity use of the Proposed Design case

### 2.3.2 Energy Storage (Batteries)

A battery system was evaluated in CBECC-Res with control type set to "Time of Use" and with default efficiencies of 95% for both charging and discharging. The "Time of Use" option assumes batteries are charged anytime PV generation is greater than the house load but controls when the battery storage system discharges. During the summer months (July – September) the battery begins to discharge at the beginning of the peak period at a maximum rate until fully discharged. During discharge the battery first serves the house load but will

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<sup>8</sup> In cases where there was no cost-effective Efficiency – Non-Preempted Package, the most cost-effective efficiency measures for that climate zone were also included in the Efficiency & PV Package in order to provide a combination of both efficiency and PV beyond code minimum.

<sup>9</sup> NEM rules apply to the IOU territories only.

<sup>10</sup> The Standard Design PV system is sized to offset the electricity use of the building loads which are typically electric in a mixed fuel home, which includes all loads except space heating, water heating, clothes drying, and cooking.



discharge to the electric grid if there is excess energy available. During other months the battery discharges whenever the PV system does not cover the entire house load and does not discharge to the electric grid. This control option is considered to be most reflective of the current products on the market. This control option requires an input for the “First Hour of the Summer Peak” and the Statewide CASE Team applied the default hour in CBECC-Res which differs by climate zone (either a 6pm or 7pm start). The Self Utilization Credit was taken when the battery system was modeled.

## 2.4 Incremental Costs

Table 4 below summarizes the incremental cost assumptions for measures evaluated in this study. Incremental costs represent the equipment, installation, replacement, and maintenance costs of the proposed measures relative to the base case.<sup>11</sup> Replacement costs are applied to HVAC and DHW equipment, PV inverters, and battery systems over the 30-year evaluation period. There is no assumed maintenance on the envelope, HVAC, or DHW measures since there should not be any additional maintenance cost for a more efficient version of the same system type as the baseline. Costs were estimated to reflect costs to the building owner. When costs were obtained from a source that didn’t already include builder overhead and profit, a markup of ten percent was added. All costs are provided as present value in 2020 (2020 PV\$). Costs due to variations in furnace, air conditioner, and heat pump capacity by climate zone were not accounted for in the analysis.

Equipment lifetimes applied in this analysis for the water heating and space conditioning measures are summarized in Table 3.

**Table 3: Lifetime of Water Heating & Space Conditioning Equipment Measures**

Measure	Lifetime
Gas Furnace	20
Air Conditioner	20
Heat Pump	15
Gas Tankless Water Heater	20
Heat Pump Water Heater	15

Source: City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis Draft (TRC, 2018) which is based on the Database of Energy Efficiency Resources (DEER).<sup>12</sup>

<sup>11</sup> Interest costs due to financing are not included in the incremental costs presented in the Table 4 but are accounted for in the lifetime cost analysis. All first costs are assumed to be financed in a mortgage, see Section 2.5 for details.

<sup>12</sup> <http://www.deeresources.com>



**Table 4: Incremental Cost Assumptions**

Measure	Performance Level	Incremental Cost (2020 PV\$)		Source & Notes
		Single Family	Multifamily (Per Dwelling Unit)	
<b>Non-Preempted Measures</b>				
Reduced Infiltration	3.0 vs 5.0 ACH50	\$391	n/a	NREL's BEopt cost database (\$0.115/ft <sup>2</sup> for 3 ACH50 & \$0.207/ft <sup>2</sup> for 2 ACH50) + \$100 HERS rater verification.
	2.0 vs 5.0 ACH50	\$613	n/a	
Window U-factor	0.24 vs 0.30	\$2,261	\$607	\$4.23/ft <sup>2</sup> window area based on analysis conducted for the 2019 and 2022 Title 24 cycles (Statewide CASE Team, 2018).
Window SHGC	0.50 vs 0.35	\$0	\$0	Data from CASE Report along with direct feedback from Statewide CASE Team that higher SHGC does not necessarily have any incremental cost (Statewide CASE Team, 2017d). Applies to CZ 1,3,5,16.
Cool Roof - Aged Solar Reflectance	0.25 vs 0.20	\$237	\$58	Costs based on 2016 Cost-effectiveness Study for Cool Roofs reach code analysis for 0.28 solar reflectance product. (Statewide Reach Codes Team, 2017b).
	0.20 vs 0.10	\$0	\$0	
Exterior Wall Insulation	R-7.5 vs R-5	\$818	n/a	Based on increasing exterior insulation from 1" R-5 to 1.5" R-7.5 in a 2x6 wall (Statewide CASE Team, 2017c). Applies to single family only in all climates except CZ 6, 7.
Under-Deck Roof Insulation (HPA)	R-13 vs R-0	\$1,338	\$334	Costs for R-13 (\$0.64/ft <sup>2</sup> ), R-19 (\$0.78/ft <sup>2</sup> ) and R-30 (\$1.61/ft <sup>2</sup> ) based on data presented in the 2019 HPA CASE Report (Statewide CASE Team, 2017b) along with data collected directly from builders during the 2019 CASE process. The R-30 costs include additional labor costs for cabling. Costs for R-38 from NREL's BEopt cost database.
	R-19 vs R-13	\$282	\$70	
	R-30 vs R-19	\$1,831	\$457	
	R-38 vs R-30	\$585	\$146	
Attic Floor Insulation	R-38 vs R-30	\$584	\$146	NREL's BEopt cost database: \$0.34/ft <sup>2</sup> ceiling area
Slab Edge Insulation	R-10 vs R-0	\$553	\$121	\$4/linear foot of slab perimeter based on internet research. Assumes 16in depth.
	R-10 vs R-7	\$157	\$21	\$1.58/linear foot of slab perimeter based on NREL's BEopt cost database. This applies to CZ 16 only where R-7 slab edge insulation is required prescriptively. Assumes 16in depth.
Duct Location	<12 feet in attic	\$358	n/a	Costs based on a 2015 report on the Evaluation of Ducts in Conditioned Space for New California Homes (Davis Energy Group, 2015). HERS verification cost of \$100 for the Verified Low Leakage Ducts in Conditioned Space credit.
	Ducts in Conditioned Space	\$658	n/a	
	Verified Low Leakage Ducts in Conditioned Space	\$768	\$110	



**Table 4: Incremental Cost Assumptions**

Measure	Performance Level	Incremental Cost (2020 PV\$)		Source & Notes
		Single Family	Multifamily (Per Dwelling Unit)	
Distribution System Leakage	2% vs 5%	\$96	n/a	1-hour labor. Labor rate of \$96 per hour is from 2019 RSMeans for sheet metal workers and includes an average City Cost Index for labor for California cities & 10% for overhead and profit. Applies to single family only since ducts are assumed to be in conditioned space for multifamily
	Low Leakage Air Handler	\$0	n/a	Negligible cost based on review of available products. There are more than 6,000 Energy Commission certified units and the list includes many furnace and heat pump air handler product lines from the major manufacturers, including minimum efficiency, low cost product lines.
Low Pressure Drop Ducts (Fan W/cfm)	0.35 vs 0.45	\$96	\$48	Costs assume one-hour labor for single family and half-hour per multifamily apartment. Labor rate of \$96 per hour is from 2019 RSMeans for sheet metal workers and includes an average City Cost Index for labor for California cities.
	0.45 vs 0.58	\$96	\$48	
Hot Water Pipe Insulation	HERS verified	\$110	\$83	Cost for HERS verification only, based on feedback from HERS raters. \$100 per single family home and \$75 per multifamily unit before markup.
Compact Hot Water Distribution	Basic credit	\$150	\$0	For single family add 20-feet venting at \$12/ft to locate water heater on interior garage wall, less 20-feet savings for less PEX and pipe insulation at \$4.88/ft. Costs from online retailers. Many multifamily buildings are expected to meet this credit without any changes to distribution design.
	Expanded credit	n/a	\$83	Cost for HERS verification only. \$75 per multifamily unit before markup. This was only evaluated for multifamily buildings.
Drain Water Heat Recovery	50% efficiency	n/a	\$690	Cost from the 2019 DWHR CASE Report assuming a 2-inch DWHR unit. The CASE Report multifamily costs were based on one unit serving 4 dwelling units with a central water heater. Since individual water heaters serve each dwelling unit in this analysis, the Reach Code Team used single family costs from the CASE Report. Costs in the CASE Report were based on a 46.1% efficient unit, a DWHR device that meets the 50% efficiency assumed in this analysis may cost a little more. (Statewide CASE Team, 2017a).
<b>Federally Pre-empted Measures</b>				
Furnace AFUE	92% vs 80%	\$139	\$139	Equipment costs from online retailers for 40-kBtu/h unit. Cost saving for 6-feet of venting at \$26/foot due to lower cost venting requirements for condensing (PVC) vs non-condensing (stainless) furnaces. Replacement at year 20 assumes a 50% reduction in first cost. Value at year 30 based on remaining useful life is included.
	96% vs 80%	\$244	\$244	
Air Conditioner SEER/EER	16/13 vs 14/11.7	\$111	\$111	Costs from online retailers for 2-ton unit. Replacement at year 20 assumes a 50% reduction in first cost. Value at year 30 based on remaining useful life is included.
	18/14 vs 14/11.7	\$1,148	\$1,148	



**Table 4: Incremental Cost Assumptions**

Measure	Performance Level	Incremental Cost (2020 PV\$)		Source & Notes
		Single Family	Multifamily (Per Dwelling Unit)	
Heat Pump SEER/EER /HSPF	16/13/9 vs 14/11.7/8.2	\$411	\$411	Costs from online retailers for 2-ton unit. Replacement at year 15 assumes a 50% reduction in first cost.
	18/14/10 vs 14/11.7/8.2	\$1,511	\$1,511	
Tankless Water Heater Energy Factor	0.96 vs 0.81	\$203	\$203	Equipment costs from online retailers for 40-kBtu/h unit. Cost saving for 6-feet of venting at \$26/foot due to lower cost venting requirements for condensing (PVC) vs non-condensing (stainless) furnaces. Replacement at year 15 assumes a 50% reduction in first cost.
HPWH	NEEA Tier 3 vs 2.0 EF	\$294	\$294	Equipment costs from online retailers. Replacement at year 15 assumes a 50% reduction in first cost.
<b>PV + Battery</b>				
PV System	System size varies	\$3.72/W-DC	\$3.17/W-DC	First costs are from LBNL's Tracking the Sun 2018 costs (Barbose et al., 2018) and represent costs for the first half of 2018 of \$3.50/W-DC for residential system and \$2.90/W-DC for non-residential system ≤500 kW-DC. These costs were reduced by 16% for the solar investment tax credit, which is the average credit over years 2020-2022. Inverter replacement cost of \$0.14/W-DC present value includes replacements at year 11 at \$0.15/W-DC (nominal) and at year 21 at \$0.12/W-DC (nominal) per the 2019 PV CASE Report (California Energy Commission, 2017). System maintenance costs of \$0.31/W-DC present value assume \$0.02/W-DC (nominal) annually per the 2019 PV CASE Report (California Energy Commission, 2017). 10% overhead and profit added to all costs
Battery	System size varies by building type	\$656/kWh	\$656/kWh	\$633/kWh first cost based on the PV Plus Battery Study report (Statewide Reach Codes Team, 2018) as the average cost of the three systems that were analyzed. This cost was reduced by 16% for the solar investment tax credit, which is the average credit over years 2020-2022. Replacement cost at year 15 of \$100/kWh based on target price reductions (Penn, 2018).



## 2.5 Cost-effectiveness

Cost-effectiveness was evaluated for all sixteen climate zones and is presented based on both TDV energy, using the Energy Commission’s LCC methodology, and an On-Bill approach using residential customer utility rates. Both methodologies require estimating and quantifying the value of the energy impact associated with energy efficiency measures over the life of the measures (30 years) as compared to the prescriptive Title 24 requirements.

Results are presented as a lifecycle benefit-to-cost (B/C) ratio, a net present value (NPV) metric which represents the cost-effectiveness of a measure over a 30-year lifetime taking into account discounting of future savings and costs and financing of incremental first costs. A value of one indicates the NPV of the savings over the life of the measure is equivalent to the NPV of the lifetime incremental cost of that measure. A value greater than one represents a positive return on investment. The B/C ratio is calculated according to Equation 3.

### Equation 3

$$\text{Benefit-to-Cost Ratio} = \frac{\text{NPV of lifetime benefit}}{\text{NPV of lifetime cost}}$$

In most cases the benefit is represented by annual utility savings or TDV savings and the cost by incremental first cost and replacement costs. However, in some cases a measure may have incremental cost savings but with increased energy related costs. In this case, the benefit is the lower first cost and the cost is the increase in utility bills. The lifetime costs or benefits are calculated according to Equation 4.

### Equation 4

$$\text{NPV of lifetime cost/benefit} = \sum_{t=1}^n \text{Annual cost/benefit}_t * (1 + r)^t$$

Where:

- $n$  = analysis term
- $r$  = discount rate

The following summarizes the assumptions applied in this analysis to both methodologies.

- Analysis term of 30-years
- Real discount rate of 3 percent
- Inflation rate of 2 percent
- First incremental costs are financed into a 30-year mortgage
- Mortgage interest rate of 4.5 percent
- Average tax rate of 20 percent (to account for tax savings due to loan interest deductions)

### 2.5.1 On-Bill Customer Lifecycle Cost

Residential utility rates were used to calculate utility costs for all cases and determine On-Bill customer cost-effectiveness for the proposed packages. The Reach Codes Team obtained the recommended utility rates from each IOU based on the assumption that the reach codes go into effect January of 2020. Annual utility costs were calculated using hourly electricity and gas output from CBECC-Res and applying the utility tariffs summarized in Table 5. Appendix B – Utility Tariff Details includes the utility rate schedules used for this study. The applicable residential time-of-use (TOU) rate was applied to all cases.<sup>13</sup> Annual electricity production in excess of annual electricity consumption is credited to the utility account at the applicable wholesale rate based on the approved

<sup>13</sup> Under NEM rulings by the CPUC (D-16-01-144, 1/28/16), all new PV customers shall be in an approved TOU rate structure. <https://www.cpuc.ca.gov/General.aspx?id=3800>



NEM2 tariffs for that utility. Minimum daily use billing and mandatory non-bypassable charges have been applied. Future change to the NEM tariffs are likely; however, there is a lot of uncertainty about what those changes will be and if they will become effective during the 2019 code cycle (2020-2022).

The net surplus compensation rates for each utility are as follows:<sup>14</sup>

- PG&E: \$0.0287 / kWh
- SCE: \$0.0301 / kWh
- SDG&E: \$0.0355 / kWh

Utility rates were applied to each climate zone based on the predominant IOU serving the population of each zone according to Two SCE tariff options were evaluated: TOU-D-4-9 and TOU-D-PRIME. The TOU-D-PRIME rate is only available to customers with heat pumps for either space or water heating, a battery storage system, or an electric vehicle and therefore was only evaluated for the all-electric cases and the Efficiency & PV/Battery packages. The rate which resulted in the lowest annual cost to the customer was used for this analysis, which was TOU-D-4-9 in all cases with the exception of the single family all-electric cases in Climate Zone 14.

Table 5. Climate Zones 10 and 14 are evaluated with both SCE/SoCalGas and SDG&E tariffs since each utility has customers within these climate zones. Climate Zone 5 is evaluated under both PG&E and SoCalGas natural gas rates.

Two SCE tariff options were evaluated: TOU-D-4-9 and TOU-D-PRIME. The TOU-D-PRIME rate is only available to customers with heat pumps for either space or water heating, a battery storage system, or an electric vehicle and therefore was only evaluated for the all-electric cases and the Efficiency & PV/Battery packages. The rate which resulted in the lowest annual cost to the customer was used for this analysis, which was TOU-D-4-9 in all cases with the exception of the single family all-electric cases in Climate Zone 14.

**Table 5: IOU Utility Tariffs Applied Based on Climate Zone**

Climate Zones	Electric / Gas Utility	Electricity (Time-of-use)	Natural Gas
1-5, 11-13, 16	PG&E	E-TOU, Option B	G1
5	PG&E / SoCalGas	E-TOU, Option B	GR
6, 8-10, 14, 15	SCE / SoCal Gas	TOU-D-4-9 or TOU-D-PRIME	GR
7, 10, 14	SDG&E	TOU-DR1	GR

Source: Utility websites, See Appendix B – Utility Tariff Details for details on the tariffs applied.

Utility rates are assumed to escalate over time, using assumptions from research conducted by Energy and Environmental Economics (E3) in the 2019 study Residential Building Electrification in California study (Energy & Environmental Economics, 2019). Escalation of natural gas rates between 2019 and 2022 is based on the currently filed General Rate Cases (GRCs) for PG&E, SoCalGas and SDG&E. From 2023 through 2025, gas rates are assumed to escalate at 4% per year above inflation, which reflects historical rate increases between 2013 and 2018. Escalation of electricity rates from 2019 through 2025 is assumed to be 2% per year above inflation, based on electric utility estimates. After 2025, escalation rates for both natural gas and electric rates are assumed to drop to a more conservative 1% escalation per year above inflation for long-term rate trajectories beginning in 2026 through 2050. See Appendix B – Utility Tariff Details for additional details.

<sup>14</sup> Net surplus compensation rates based on 1-year average February 2018 – January 2019.



### 2.5.2 TDV Lifecycle Cost

Cost-effectiveness was also assessed using the Energy Commission’s TDV LCC methodology. TDV is a normalized monetary format developed and used by the Energy Commission for comparing electricity and natural gas savings, and it considers the cost of electricity and natural gas consumed during different times of the day and year. The 2019 TDV values are based on long term discounted costs of 30 years for all residential measures. The CBEC-Res simulation software outputs are in terms of TDV kBTUs. The present value of the energy cost savings in dollars is calculated by multiplying the TDV kBTU savings by a net present value (NPV) factor, also developed by the Energy Commission. The NPV factor is \$0.173/TDV kBtu for residential buildings.

Like the customer B/C ratio, a TDV B/C ratio value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure. A value greater than one represents a positive return on investment. The ratio is calculated according to Equation 5.

#### Equation 5

$$TDV \text{ Benefit} - to - Cost \text{ Ratio} = \frac{TDV \text{ energy savings} * NPV \text{ factor}}{NPV \text{ of lifetime incremental cost}}$$

### 2.6 Electrification Evaluation

In addition to evaluating upgrades to mixed fuel and all-electric buildings independently that do not result in fuel switching, the Reach Code Team also analyzed the impact on construction costs, utility costs, and TDV when a builder specifies and installs electric appliances instead of the gas appliances typically found in a mixed fuel building. This analysis compared the code compliant mixed fuel prototype, which uses gas for space heating, water heating, cooking, and clothes drying, with the code compliant all-electric prototype. It also compared the all-electric Efficiency & PV Package with the code compliance mixed fuel prototype. In these cases, the relative costs between natural gas and electric appliances, differences between in-house electricity and gas infrastructure and the associated infrastructure costs for providing gas to the building were also included.

A variety of sources were reviewed when determining incremental costs. The sources are listed below.

- SMUD All-Electric Homes Electrification Case Study (EPRI, 2016)
- City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis (TRC, 2018)
- Building Electrification Market Assessment (E3, 2019)
- Decarbonization of Heating Energy Use in California Buildings (Hopkins et al., 2018)
- Analysis of the Role of Gas for a Low-Carbon California Future (Navigant, 2008)
- Rulemaking No. 15-03-010 An Order Instituting Rulemaking to Identify Disadvantaged Communities in the San Joaquin Valley and Analyze Economically Feasible Options to Increase Access to Affordable Energy in Those Disadvantages Communities (California Public Utilities Commission, 2016)
- 2010-2012 WO017 Ex Ante Measure Cost Study: Final Report (Itron, 2014)
- Natural gas infrastructure costs provided by utility staff through the Reach Code subprogram
- Costs obtained from builders, contractors and developers

Incremental costs are presented in Table 6. Values in parentheses represent a lower cost or cost reduction in the electric option relative to mixed fuel. The costs from the available sources varied widely, making it difficult to develop narrow cost estimates for each component. For certain components data is provided with a low to high range as well as what were determined to be typical costs and ultimately applied in this analysis. Two sets of typical costs are presented, one which is applied in the On-Bill cost effectiveness methodology and another applied in the TDV methodology. Details of these differences are explained in the discussion of site gas infrastructure costs in the following pages.



**Table 6: Incremental Costs – All-Electric Code Compliant Home Compared to a Mixed Fuel Code Compliant Home**

Measure	Incremental Cost (2020 PV\$) Single Family <sup>1</sup>				Incremental Cost (2020 PV\$) Multifamily <sup>1</sup> (Per Dwelling Unit)			
	Low	High	Typical (On-Bill)	Typical (TDV)	Low	High	Typical (On-Bill)	Typical (TDV)
Heat Pump vs Gas Furnace/Split AC	(\$2,770)	\$620	(\$221)		Same as Single Family			
Heat Pump Water Heater vs Gas Tankless	(\$1,120)	\$1,120	\$0					
Electric vs Gas Clothes Dryer <sup>2</sup>	(\$428)	\$820	\$0					
Electric vs Gas Cooking <sup>2</sup>	\$0	\$1,800	\$0					
Electric Service Upgrade	\$200	\$800	\$600		\$150	\$600	\$600	
In-House Gas Infrastructure	(\$1,670)	(\$550)	(\$800)		(\$600)	(\$150)	(\$600)	
Site Gas Infrastructure	(\$25,000)	(\$900)	(\$5,750)	(\$11,836)	(\$16,250)	(\$310)	(\$3,140)	(\$6,463)
<b>Total First Cost</b>	<b>(\$30,788)</b>	<b>\$3,710</b>	<b>(\$6,171)</b>	<b>(\$12,257)</b>	<b>(\$20,918)</b>	<b>\$4,500</b>	<b>(\$3,361)</b>	<b>(\$6,684)</b>
<b>Present Value of Equipment Replacement Cost</b>			<b>\$1,266</b>				<b>\$1,266</b>	
<b>Lifetime Cost Including Replacement &amp; Financing of First Cost</b>			<b>(\$5,349)</b>	<b>(\$11,872)</b>			<b>(\$2,337)</b>	<b>(\$5,899)</b>

<sup>1</sup>Low and high costs represent the potential range of costs and typical represents the costs used in this analysis and determined to be most representative of the conditions described in this report. Two sets of typical costs are presented, one which is applied in the On-Bill cost effectiveness methodology and another applied in the TDV methodology.

<sup>2</sup>Typical costs assume electric resistance technology. The high range represents higher end induction cooktops and heat pump clothes dryers. Lower cost induction cooktops are available.

Typical incremental costs for switching from a mixed fuel design to an all-electric design are based on the following assumptions:

**Appliances:** The Reach Code Team determined that the typical first installed cost for electric appliances is very similar to that for natural gas appliances. This was based on information provided by HVAC contractors, plumbers and builders as well as a review of other studies. After review of various sources, the Reach Code Team concluded that the cost difference between gas and electric resistance options for clothes dryers and stoves is negligible and that the lifetimes of the two technologies are also similar.

**HVAC:** Typical HVAC incremental costs were based on the City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis (TRC, 2018) which assumes approximately \$200 first cost savings for the heat pump relative to the gas furnace and air conditioner. Table 6 also includes the present value of the incremental replacement costs for the heat pump based on a 15-year lifetime and a 20-year lifetime for the gas furnace in the mixed fuel home.

**DHW:** Typical costs for the water heating system were based on equivalent installed first costs for the HPWH and tankless gas water heater. This accounts for slightly higher equipment cost but lower installation labor due to the elimination of the gas flue. Incremental replacement costs for the HPWH are based on a 15-year lifetime and a 20-year lifetime for the tankless water heater.

For multifamily, less data was available and therefore a range of low and high costs is not provided. The typical first cost for multifamily similarly is expected to be close to the same for the mixed fuel and all-electric designs. However, there are additional considerations with multifamily such as greater complexity for venting of natural gas appliances as well as for locating the HPWH within the conditioned space (all climates except Climate Zones 1, 3, and 5, see Table 2) that may impact the total costs.

**Electric service upgrade:** The study assumes an incremental cost to run 220V service to each appliance of \$200 per appliance for single family homes and \$150 per appliance per multifamily apartment based on cost estimates from builders and contractors. The Reach Code Team reviewed production builder utility plans for



mixed-fuel homes and consulted with contractors to estimate which electricity and/or natural gas services are usually provided to the dryer and oven. Typical practice varied, with some builders providing both gas and electric service to both appliances, others providing both services to only one of the appliances, and some only providing gas. For this study, the Reach Code Team determined that for single family homes the typical cost is best qualified by the practice of providing 220V service and gas to either the dryer and the oven and only gas service to the other. For multifamily buildings it's assumed that only gas is provided to the dryer and oven in the mixed fuel home.

It is assumed that no upgrades to the electrical panel are required and that a 200 Amp panel is typically installed for both mixed fuel and all-electric new construction homes. There are no incremental electrical site infrastructure requirements.

**In-house gas infrastructure (from meter to appliances)**: Installation cost to run a gas line from the meter to the appliance location is \$200 per appliance for single family and \$150 per appliance per multifamily apartment based on cost estimates from builders and contractors. The cost estimate includes providing gas to the water heater, furnace, dryer and cooktop.

**Site gas infrastructure**: The cost-effective analysis components with the highest degree of variability are the costs for on-site gas infrastructure. These costs can be project dependent and may be significantly impacted by such factors as utility territory, site characteristics, distance to the nearest gas main and main location, joint trenching, whether work is conducted by the utility or a private contractor, and number of dwelling units per development. All gas utilities participating in this study were solicited for cost information. The typical infrastructure costs for single family homes presented in Table 6 are based on cost data provided by PG&E and reflect those for a new subdivision in an undeveloped area requiring the installation of natural gas infrastructure, including a main line. Infrastructure costs for infill development can also be highly variable and may be higher than in an undeveloped area. The additional costs associated with disruption of existing roads, sidewalks, and other structures can be significant. Total typical costs in Table 6 assume \$10,000 for extension of a gas main, \$1,686 for a service lateral, and \$150 for the meter.

Utility Gas Main Extensions rules<sup>15</sup> specify that the developer has the option to only pay 50% of the total cost for a main extension after subtraction of allowances for installation of gas appliances. This 50% refund and the appliance allowance deductions are accounted for in the site gas infrastructure costs under the On-Bill cost-effectiveness methodology. The net costs to the utility after partial reimbursement from the developer are included in utility ratebase and recovered via rates to all customers. The total cost of \$5,750 presented in Table 6 reflects a 50% refund on the \$10,000 extension and appliance deductions of \$1,086 for a furnace, water heater, cooktop, and dryer. Under the On-Bill methodology this analysis assumes this developer option will remain available through 2022 and that the cost savings are passed along to the customer.

The 50% refund and appliance deductions were not applied to the site gas infrastructure costs under the TDV cost-effectiveness methodology based on input received from the Energy Commission and agreement from the Reach Code technical advisory team that the approach is appropriate. TDV cost savings impacts extend beyond the customer and account for societal impacts of energy use. Accounting for the full cost of the infrastructure upgrades was determined to be justified when evaluating under the TDV methodology.

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<sup>15</sup> PG&E Rule 15: [https://www.pge.com/tariffs/tm2/pdf/GAS\\_RULES\\_15.pdf](https://www.pge.com/tariffs/tm2/pdf/GAS_RULES_15.pdf)

SoCalGas Rule 20: <https://www.socalgas.com/regulatory/tariffs/tm2/pdf/20.pdf>

SDG&E Rule 15: [http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-RULES\\_GRULE15.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-RULES_GRULE15.pdf)



Less information was available for the costs associated with gas infrastructure for low-rise multifamily development. The typical cost in Table 6 for the On-Bill methodology is based on TRC's City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis (TRC, 2018). These costs, provided by the City of Palo Alto, are approximately \$25,100 for an 8-unit new construction building and reflect connection to an existing main for infill development. Specific costs include plan review, connection charges, meter and manifold, plumbing distribution, and street cut fees. While these costs are specifically based on infill development and from one municipal utility, the estimates are less than those provided by PG&E reflecting the average cost differences charged to the developer between single family and multifamily in an undeveloped area (after accounting for deductions per the Gas Main Extensions rule). To convert costs charged to the developer to account for the full infrastructure upgrade cost (costs applied in the TDV methodology analysis), a factor of 2.06<sup>16</sup> was calculated based on the single family analysis. This same factor was applied to the multifamily cost of \$3,140 to arrive at \$6,463 (see Table 6).

## 2.7 Greenhouse Gas Emissions

Equivalent CO<sub>2</sub> emission savings were calculated based on outputs from the CBECC-Res simulation software. Electricity emissions vary by region and by hour of the year. CBECC-Res applies two distinct hourly profiles, one for Climate Zones 1 through 5 and 11 through 13 and another for Climate Zones 6 through 10 and 14 through 16. For natural gas a fixed factor of 0.005307 metric tons/therm is used. To compare the mixed fuel and all-electric cases side-by-side, greenhouse gas (GHG) emissions are presented as CO<sub>2</sub>-equivalent emissions per square foot of conditioned floor area.

## 3 Results

The primary objective of the evaluation is to identify cost-effective, non-preempted performance targets for both single family and low-rise multifamily prototypes, under both mixed fuel and all-electric cases, to support the design of local ordinances requiring new low-rise residential buildings to exceed the minimum state requirements. The packages presented are representative examples of designs and measures that can be used to meet the requirements. In practice, a builder can use any combination of non-preempted or preempted compliant measures to meet the requirements.

This analysis covered all sixteen climate zones and evaluated two efficiency packages, including a non-preempted package and a preempted package that includes upgrades to federally regulated equipment, an Efficiency & PV Package for the all-electric scenario only, and an Efficiency & PV/Battery Package. For the efficiency-only packages, measures were refined to ensure that the non-preempted package was cost-effective based on one of the two metrics applied in this study, TDV or On-Bill. The preempted equipment package, which the Reach Code Team considers to be a package of upgrades most reflective of what builders commonly apply to exceed code requirements, was designed to be cost-effective based on the On-Bill cost-effectiveness approach.

Results are presented as EDR Margin instead of compliance margin. EDR is the metric used to determine code compliance in the 2019 cycle. Target EDR Margin is based on taking the calculated EDR Margin for the case and rounding down to the next half of a whole number. Target EDR Margin for the Efficiency Package are defined based on the lower of the EDR Margin of the non-preempted package and the equipment, preempted package. For example, if for a particular case the cost-effective non-preempted package has an EDR Margin of 3 and the preempted package an EDR Margin of 4, the Target EDR Margin is set at 3.

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<sup>16</sup> This factor includes the elimination of the 50% refund for the main extension and adding back in the appliance allowance deductions.

For a package to qualify, a minimum EDR Margin of 0.5 was required. This is to say that a package that only achieved an EDR Margin of 0.4, for example, was not considered. An EDR Margin less than 0.5 generally corresponds to a compliance margin lower than 5% and was considered too small to ensure repeatable results. In certain cases, the Reach Code Team did not identify a cost-effective package that achieved the minimum EDR Margin of 0.5.

Although some of the efficiency measures evaluated were not cost-effective and were eliminated, the following measures are included in at least one package:

- Reduced infiltration
- Improved fenestration
- Improved cool roofs
- High performance attics
- Slab insulation
- Reduced duct leakage
- Verified low leakage ducts in conditioned space
- Low pressure-drop distribution system
- Compact hot water distribution system, basic and expanded
- High efficiency furnace, air conditioner & heat pump (*preempted*)
- High efficiency tankless water heater & heat pump water heater (*preempted*)

### 3.1 PV and Battery System Sizing

The approach to determining the size of the PV and battery systems varied based on each package and the source fuel. Table 7 describes the PV and battery sizing approaches applied to each of the four packages. For the **Efficiency Non-preempted and Efficiency – Equipment, Preempted packages** a different method was applied to each the two fuel scenarios. In all **mixed fuel cases**, the PV was sized to offset 100% of the estimated electrical load and any electricity savings from efficiency measures were traded off with a smaller PV system. Not downsizing the PV system after adding efficiency measures runs the risk of producing more electricity than is consumed, reducing cost-effectiveness and violating NEM rules. While the impact of this in most cases is minor, analysis confirmed that cost-effectiveness improved when reducing the system size to offset 100% of the electricity usage as opposed to keeping the PV system the same size as the Standard Design.

In the **all-electric Efficiency cases**, the PV system size was left to match the Standard Design (Std Design PV), and the inclusion of energy efficiency measures was not traded off with a reduced capacity PV system. Because the PV system is sized to meet the electricity load of a mixed fuel home, it is cost-effective to keep the PV system the same size and offset a greater percentage of the electrical load.

For the **Efficiency & PV case on the all-electric home**, the Reach Code Team evaluated PV system sizing to offset 100%, 90% and 80% of the total calculated electricity use. Of these three, sizing to 90% proved to be the most cost-effective based on customer utility bills. This is a result of the impact of the annual minimum bill which is around \$120 across all the utilities. The “sweet spot” is a PV system that reduces electricity bills just enough to match the annual minimum bill; increasing the PV size beyond this adds first cost but does not result in utility bill savings.



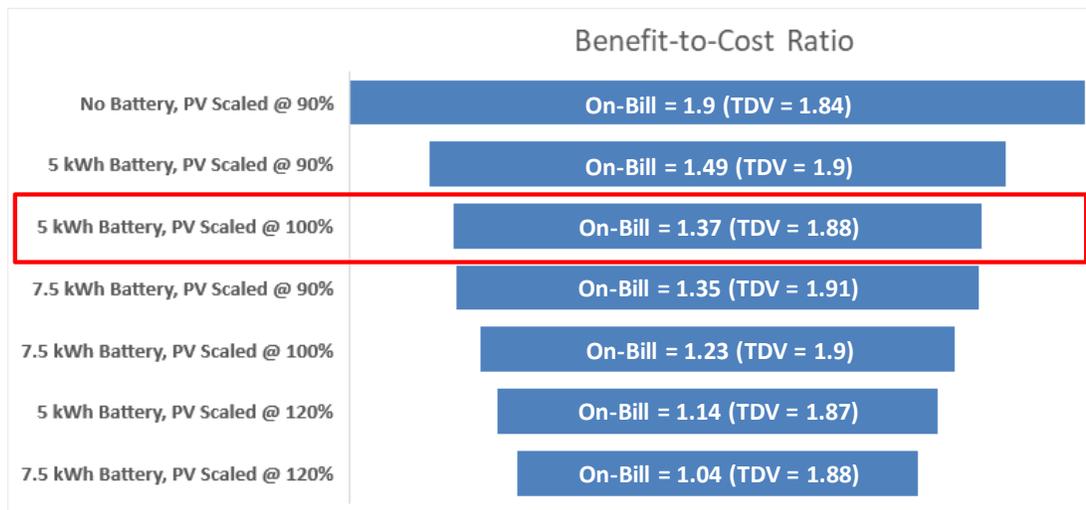
**Table 7: PV & Battery Sizing Details by Package Type**

Package	Mixed Fuel	All-Electric
Efficiency (Envelope & Equipment)	PV Scaled @ 100% electricity	Std Design PV
Efficiency & PV	n/a	PV Scaled @ 90%
Efficiency & PV/Battery	PV Scaled @ 100% electricity 5kWh / SF home 2.75kWh/ MF apt	PV Scaled @ 100% 5kWh / SF home 2.75kWh/ MF apt

A sensitivity analysis was conducted to determine the appropriate battery and PV capacity for the Efficiency & PV/Battery Packages using the 1-story 2,100 square foot prototype in Climate Zone 12. Results are shown in Figure 2. The current version of CBECC-Res requires a minimum battery size of 5 kWh to qualify for the self-utilization credit. CBECC-Res allows for PV oversizing up to 160% of the building’s estimated electricity load when battery storage systems are installed; however, the Reach Code Team considered this high, potentially problematic from a grid perspective, and likely not acceptable to the utilities or customers. The Reach Code Team compared cost-effectiveness of 5kWh and 7.5kWh battery systems as well as of PV systems sized to offset 90%, 100%, or 120% of the estimated electrical load.

Results show that from an on-bill perspective a smaller battery size is more cost-effective. The sensitivity analysis also showed that increasing the PV capacity from 90% to 120% of the electricity use reduced cost-effectiveness. From the TDV perspective there was little difference in results across all the scenarios, with the larger battery size being marginally more cost-effective. Based on these results, the Reach Code Team applied to the Efficiency & PV/Battery Package a 5kWh battery system for single family homes with PV sized to offset 100% of the electricity load. Even though PV scaled to 90% was the most cost-effective, sizing was increased to 100% to evaluate greater generation beyond the Efficiency & PV Package and to achieve zero net electricity. These results also show that in isolation, the inclusion of a battery system reduces cost-effectiveness compared to the same size PV system without batteries.

For multifamily buildings the battery capacity was scaled to reflect the average ratio of battery size to PV system capacity (kWh/kW) for the single family Efficiency & PV Package. This resulted in a 22kWh battery for the multifamily building, or 2.75kWh per apartment.



**Figure 2: B/C ratio comparison for PV and battery sizing**



### 3.2 Single Family Results

Table 8 through Table 10 contain cost effectiveness findings for the single family packages. Table 8 summarizes the package costs for all of the mixed fuel and all-electric efficiency, PV and battery packages. The mixed fuel results are evaluated and presented relative to a mixed fuel code compliant basecase while the all-electric results are relative to an all-electric code compliant basecase.

Table 9 and Table 10 present the B/C ratios for all the single family packages according to both the On-Bill and TDV methodologies for the mixed fuel and the all-electric cases, respectively. Results are cost-effective based on TDV for all cases except for Climate Zone 7 where no cost-effective combination of non-preempted efficiency measures was found that met the minimum 0.5 EDR Margin threshold. Cases where the B/C ratio is indicated as “>1” refer to instances where there are incremental cost savings in addition to annual utility bill savings. In these cases, there is no cost associated with the upgrade and benefits are realized immediately.

Figure 3 presents a comparison of Total EDRs for single family buildings and Figure 4 presents the EDR Margin results. Each graph compares the mixed fuel and all-electric cases as well as the various packages. The EDR Margin for the **Efficiency Package** for most climates is between 1.0 and 5.5 for mixed fuel cases and slightly higher, between 1.5 and 6.5, for the all-electric design. No cost-effective **mixed fuel or all-electric non-preempted Efficiency package** was found Climate Zone 7.

For the **mixed fuel case, the Efficiency & PV/Battery** Package increased the EDR Margin to values between 7.0 and 10.5. Because of the limitations on oversizing PV systems to offset natural gas use it is not feasible to achieve higher EDR Margins by increasing PV system capacity.

For the **all-electric case, the Efficiency & PV** Package resulted in EDR Margins of 11.0 to 19.0 for most climates; adding a battery system increased the EDR Margin by an additional 7 to 13 points. Climate zones 1 and 16, which have high heating loads, have much higher EDR Margins for the Efficiency & PV package (26.5-31.0). The Standard Design PV, which is what is applied in the all-electric Efficiency Package, is not sized to offset any of the heating load. When the PV system is sized to offset 90% of the total electricity use, the increase is substantial as a result. In contrast, in Climate Zone 15 the Standard Design PV system is already sized to cover the cooling electricity load, which represents 40% of whole building electricity use. Therefore, increasing the PV size to offset 90% of the electric load in this climate only results in adding approximately 120 Watts of PV capacity and subsequently a negligible impact on the EDR.

Additional results details can be found in Appendix C – Single Family Detailed Results with summaries of measures included in each of the packages in Appendix D – Single Family Measure Summary. A summary of results by climate zone is presented in Appendix G – Results by Climate Zone.



Table 8: Single Family Package Lifetime Incremental Costs

Climate Zone	Mixed Fuel			All-Electric			
	Non-Preempted	Equipment - Preempted	Efficiency & PV/Battery	Non-Preempted	Equipment - Preempted	Efficiency & PV	Efficiency & PV/Battery
<b>CZ01</b>	+\$1,355	+\$1,280	+\$5,311	+\$7,642	+\$2,108	+\$18,192	+\$24,770
<b>CZ02</b>	+\$1,504	+\$724	+\$5,393	+\$3,943	+\$2,108	+\$12,106	+\$18,132
<b>CZ03</b>	+\$1,552	+\$1,448	+\$5,438	+\$1,519	+\$2,108	+\$8,517	+\$14,380
<b>CZ04</b>	+\$1,556	+\$758	+\$5,434	+\$1,519	+\$2,108	+\$8,786	+\$14,664
<b>CZ05</b>	+\$1,571	+\$772	+\$5,433	+\$1,519	+\$2,108	+\$8,307	+\$14,047
<b>CZ06</b>	+\$1,003	+\$581	+\$4,889	+\$926	+\$846	+\$6,341	+\$12,036
<b>CZ07</b>	n/a	+\$606	+\$4,028	n/a	+\$846	+\$4,436	+\$9,936
<b>CZ08</b>	+\$581	+\$586	+\$4,466	+\$926	+\$412	+\$5,373	+\$11,016
<b>CZ09</b>	+\$912	+\$574	+\$4,785	+\$1,180	+\$846	+\$5,778	+\$11,454
<b>CZ10</b>	+\$1,648	+\$593	+\$5,522	+\$1,773	+\$949	+\$6,405	+\$12,129
<b>CZ11</b>	+\$3,143	+\$1,222	+\$7,026	+\$3,735	+\$2,108	+\$10,827	+\$17,077
<b>CZ12</b>	+\$1,679	+\$654	+\$5,568	+\$3,735	+\$2,108	+\$11,520	+\$17,586
<b>CZ13</b>	+\$3,060	+\$611	+\$6,954	+\$4,154	+\$2,108	+\$10,532	+\$16,806
<b>CZ14</b>	+\$1,662	+\$799	+\$5,526	+\$4,154	+\$2,108	+\$10,459	+\$16,394
<b>CZ15</b>	+\$2,179	-\$936	+\$6,043	+\$4,612	+\$2,108	+\$5,085	+\$11,382
<b>CZ16</b>	+\$3,542	+\$2,441	+\$7,399	+\$5,731	+\$2,108	+\$16,582	+\$22,838



Table 9: Single Family Package Cost-Effectiveness Results for the Mixed Fuel Case <sup>1,2</sup>

CZ	Utility	Efficiency							Efficiency & PV/Battery			
		Non-Preempted			Equipment - Preempted			Target	Total	On-Bill	TDV	Target
EDR	On-Bill	TDV	EDR	On-Bill	TDV	EDR	EDR	EDR				
Margin	B/C	B/C	Margin	Ratio	Ratio	Ratio	Margin	Margin	Ratio	Ratio	Margin	
01	PG&E	5.3	3.4	2.8	6.9	4.9	4.1	5.0	10.6	0.9	1.6	10.5
02	PG&E	3.3	1.6	1.7	3.3	3.8	3.6	3.0	10.1	0.5	1.6	10.0
03	PG&E	3.0	1.3	1.3	4.1	1.9	2.0	2.5	10.0	0.4	1.4	10.0
04	PG&E	2.5	0.9	1.2	2.7	2.4	2.7	2.5	10.1	0.3	1.5	10.0
05	PG&E	2.7	1.1	1.2	2.6	2.3	2.5	2.5	9.4	0.4	1.3	9.0
05	PG&E/SoCalGas	2.7	0.9	1.2	2.6	2.0	2.5	2.5	9.4	0.3	1.3	9.0
06	SCE/SoCalGas	2.0	0.7	1.2	2.0	1.6	2.0	1.5	9.8	0.8	1.3	9.5
07	SDG&E	0.0	-	-	1.5	1.5	1.4	0.0	9.2	0.1	1.3	9.0
08	SCE/SoCalGas	1.3	0.6	1.4	1.6	1.3	1.8	1.0	8.4	0.9	1.3	8.0
09	SCE/SoCalGas	2.6	0.7	2.0	2.9	1.8	3.7	2.5	8.8	1.0	1.5	8.5
10	SCE/SoCalGas	3.2	0.6	1.3	3.2	2.0	3.8	3.0	9.6	1.0	1.5	9.5
10	SDG&E	3.2	0.8	1.3	3.2	2.6	3.8	3.0	9.6	0.6	1.5	9.5
11	PG&E	4.3	0.8	1.2	5.1	2.5	3.7	4.0	9.2	0.4	1.5	9.0
12	PG&E	3.5	1.2	1.8	3.4	3.3	4.6	3.0	9.6	0.4	1.7	9.5
13	PG&E	4.6	0.8	1.3	5.8	5.3	8.4	4.5	9.7	0.4	1.6	9.5
14	SCE/SoCalGas	5.0	1.6	2.5	5.8	4.0	6.1	4.5	9.0	1.3	1.7	9.0
14	SDG&E	5.0	1.9	2.5	5.8	4.9	6.1	4.5	9.0	1.2	1.7	9.0
15	SCE/SoCalGas	4.8	1.0	1.6	5.0	>1	>1	4.5	7.1	1.1	1.5	7.0
16	PG&E	5.4	1.6	1.5	6.2	2.2	2.2	5.0	10.5	0.9	1.4	10.5

<sup>1</sup>">1" indicates cases where there are both first cost savings and annual utility bill savings.

<sup>2</sup>Information about the measures included for each climate zone are described in Appendix D – Single Family Measure Summary.



Table 10: Single Family Package Cost-Effectiveness Results for the All-Electric Case<sup>1,2</sup>

CZ	Utility	Efficiency							Efficiency & PV				Efficiency & PV/Battery			
		Non-Preempted			Equipment - Preempted			Target	Total	On-Bill	TDV	Target	Total	On-Bill	TDV	Target
		Efficiency EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio	Efficiency EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio	Efficiency EDR Margin								
01	PG&E	15.2	1.8	1.7	6.9	2.9	2.7	6.5	31.4	1.8	1.5	31.0	41.2	1.4	1.4	41.0
02	PG&E	4.9	1.2	1.1	5.1	2.3	2.1	4.5	19.4	1.8	1.4	19.0	30.1	1.4	1.4	30.0
03	PG&E	4.7	2.6	2.4	4.4	1.8	1.6	4.0	18.5	2.2	1.7	18.0	29.3	1.5	1.6	29.0
04	PG&E	3.4	1.9	1.8	3.9	1.5	1.5	3.0	17.2	2.1	1.6	17.0	28.6	1.5	1.6	28.5
05	PG&E	4.4	2.6	2.3	4.4	1.9	1.7	4.0	18.2	2.3	1.8	18.0	28.7	1.6	1.6	28.5
05	PG&E/SoCalGas	4.4	2.6	2.3	4.4	1.9	1.7	4.0	18.2	2.3	1.8	18.0	28.7	1.6	1.6	28.5
06	SCE/SoCalGas	2.0	1.3	1.4	2.9	2.2	2.3	2.0	14.3	1.2	1.5	14.0	26.1	1.2	1.4	26.0
07	SDG&E	0.0	-	-	2.2	1.6	1.7	0.0	11.3	1.9	1.5	11.0	24.2	1.3	1.5	24.0
08	SCE/SoCalGas	1.6	0.6	1.2	1.8	2.8	3.0	1.5	10.9	1.0	1.5	10.5	21.6	1.1	1.4	21.5
09	SCE/SoCalGas	2.8	0.8	2.0	3.3	2.1	3.2	2.5	11.5	1.1	1.6	11.5	21.3	1.1	1.5	21.0
10	SCE/SoCalGas	3.1	0.9	1.5	3.4	2.3	3.2	3.0	11.1	1.1	1.5	11.0	21.2	1.1	1.5	21.0
10	SDG&E	3.1	1.1	1.5	3.4	2.6	3.2	3.0	11.1	1.7	1.5	11.0	21.2	1.4	1.5	21.0
11	PG&E	4.6	1.2	1.5	5.9	3.0	3.3	4.5	14.2	1.8	1.6	14.0	23.2	1.5	1.6	23.0
12	PG&E	3.8	0.8	1.1	5.1	2.0	2.5	3.5	15.7	1.7	1.4	15.5	25.4	1.3	1.5	25.0
13	PG&E	5.1	1.1	1.4	6.0	2.9	3.3	5.0	13.4	1.7	1.5	13.0	22.5	1.4	1.5	22.0
14	SCE/SoCalGas	5.6	1.0	1.5	6.0	2.3	3.1	5.5	15.5	1.2	1.6	15.5	23.9	1.4	1.6	23.5
14	SDG&E	5.6	1.3	1.5	6.0	2.9	3.1	5.5	15.5	1.8	1.6	15.5	23.9	1.7	1.6	23.5
15	SCE/SoCalGas	5.6	1.1	1.6	7.3	3.3	4.5	5.5	6.2	1.1	1.6	6.0	13.5	1.2	1.5	13.0
16	PG&E	9.7	1.7	1.7	4.9	2.4	2.3	4.5	27.0	2.1	1.6	26.5	35.4	1.7	1.5	35.0

<sup>1</sup>">1" indicates cases where there are both first cost savings and annual utility bill savings.

<sup>2</sup>Information about the measures included for each climate zone are described in Appendix D – Single Family Measure Summary



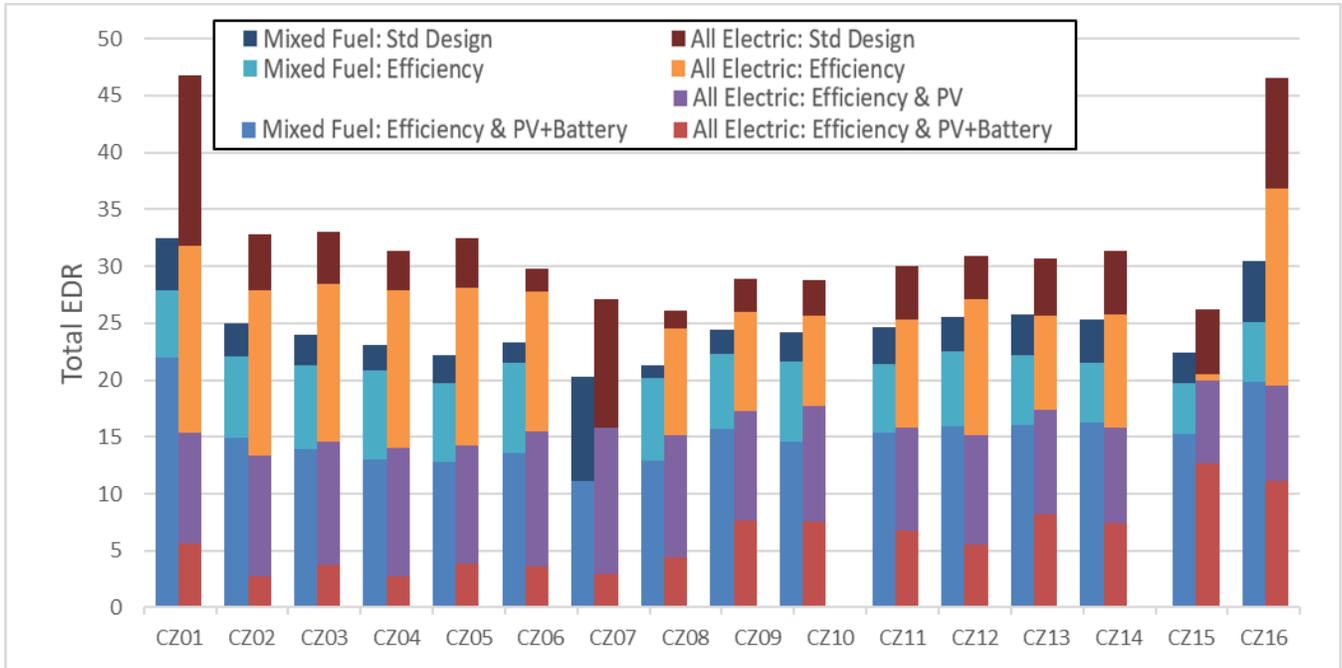


Figure 3: Single family Total EDR comparison

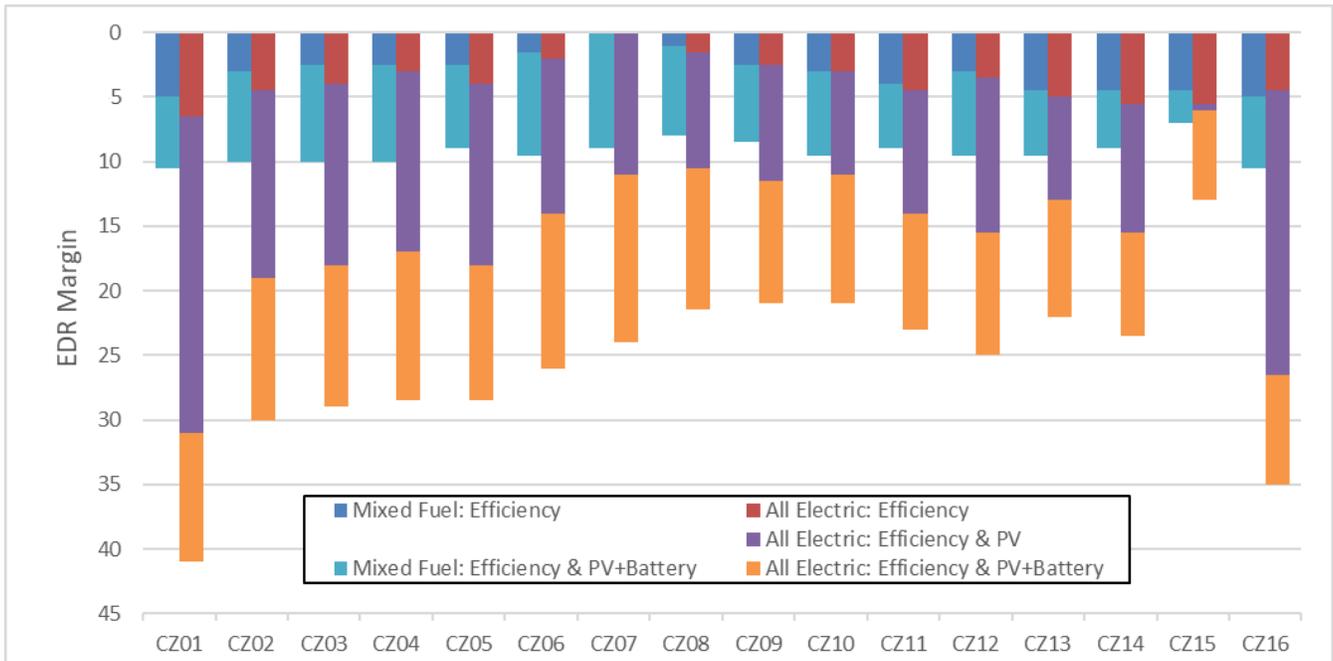


Figure 4: Single family EDR Margin comparison (based on Efficiency EDR Margin for the Efficiency packages and the Total EDR Margin for the Efficiency & PV and Efficiency & PV/Battery packages)



### 3.2.1 GHG Emission Reductions

Figure 5 compares annual GHG emissions for both mixed fuel and all-electric single family 2019 code compliant cases with Efficiency, Efficiency & PV and Efficiency & PV/Battery packages. GHG emissions vary by climate but are consistently higher in mixed fuel cases than all-electric. Standard Design mixed fuel emissions range from 1.3 (CZ 7) to 3.3 (CZ 16) lbs CO<sub>2</sub>e/square foot of floor area, where all-electric Standard Design emissions range from 0.7 to 1.7 lbs CO<sub>2</sub>e/ ft<sup>2</sup>. Adding efficiency, PV and batteries to the mixed fuel code compliant prototype reduces GHG emissions by 20% on average to between 1.0 and 1.8 lbs CO<sub>2</sub>e/ft<sup>2</sup>, with the exception of Climate Zones 1 and 16. Adding efficiency, PV and batteries to the all-electric code compliant prototype reduces annual GHG emissions by 65% on average to 0.8 lbs CO<sub>2</sub>e/ft<sup>2</sup> or less. None of the cases completely eliminate GHG emissions. Because of the time value of emissions calculation for electricity in CBEECC-Res, there is always some amount of GHG impacts with using electricity from the grid.

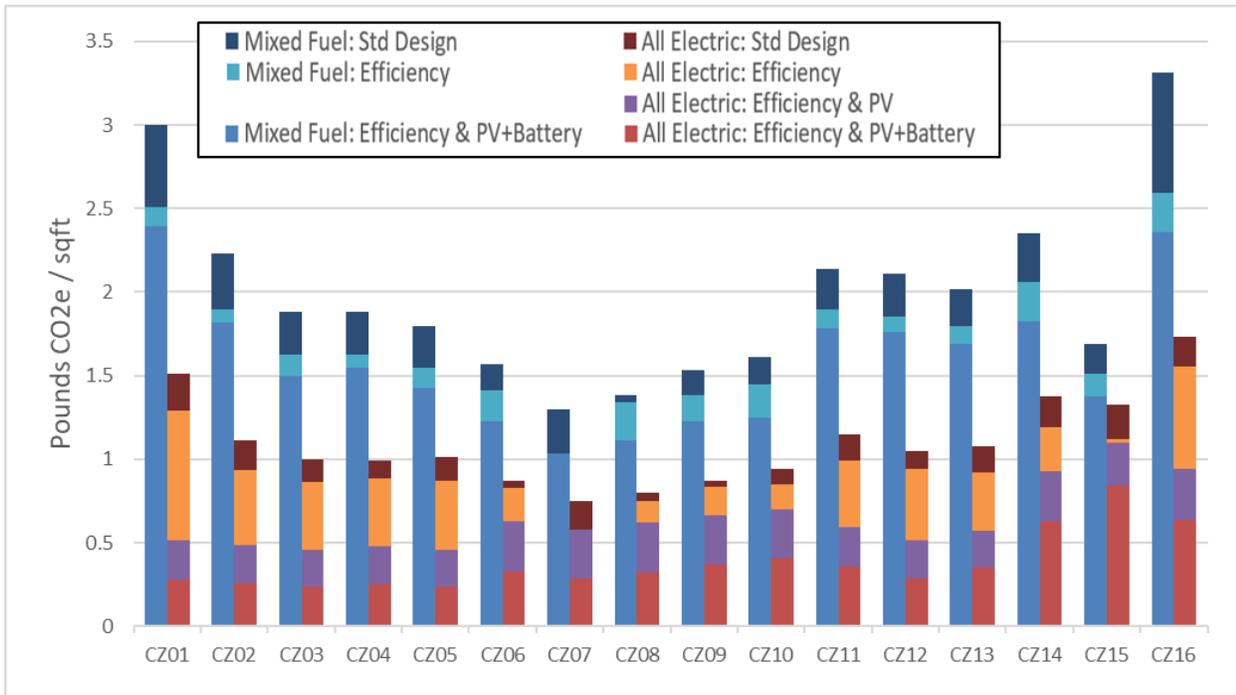


Figure 5: Single family greenhouse gas emissions comparison

### 3.3 Multifamily Results

Table 11 through Table 13 contain cost effectiveness findings for the multifamily packages. Table 11 summarizes the package costs for all the mixed fuel and all-electric efficiency, PV and battery packages.

Table 12 and Table 13 present the B/C ratios for all the packages according to both the On-Bill and TDV methodologies for the mixed fuel and the all-electric cases, respectively. All the packages are cost-effective based on TDV except Climate Zone 3 for the all-electric cases where no cost-effective combination of non-preempted efficiency measures was found that met the minimum 0.5 EDR Margin threshold. Cases where the B/C ratio is indicated as “>1” refer to instances where there are incremental cost savings in addition to annual utility bill savings. In these cases, there is no cost associated with this upgrade and benefits are realized immediately.

It is generally more challenging to achieve equivalent savings targets cost-effectively for the multifamily cases than for the single family cases. With less exterior surface area per floor area the impact of envelope measures



is diminished in multifamily buildings. Ducts are already assumed to be within conditioned space and therefore only one of the duct measures found to be cost-effective in single family homes can be applied.

Figure 6 presents a comparison of Total EDRs for the multifamily cases and Figure 7 presents the EDR Margin results. Each graph compares the mixed fuel and all-electric cases as well as the various packages. Cost-effective efficiency packages were found for all **mixed fuel cases**. The Target EDR Margins for the **mixed fuel Efficiency Package** are 0.5 for Climate Zones 3, 5 and 7, between 1.0 and 2.5 for Climate Zones 1, 2, 4, 6, 8 through 12 and 16, and between 3.0 and 4.0 in Climate Zones 13 through 15. For the **all-electric case, no cost-effective non-preempted efficiency packages** were found in Climate Zone 3. The Target EDR Margins are between 0.5 and 2.5 for Climate Zones 2, 4 through 10 and 12, and between 3.0 and 4.0 in Climate Zones 1, 11, and 13 through 16.

For the **mixed fuel case, the Efficiency & PV/Battery Package** results in an EDR Margin of between 8.5 and 11.5 across all climate zones. Most of these packages were not found to be cost-effective based on utility bill savings alone, but they all are cost-effective based on TDV energy savings. For the **all-electric case, the Efficiency & PV Package** resulted in EDR Margins of 10.5 to 17.5 for most climates; adding a battery system increased the EDR Margin by an additional 10 to 15 points. Climate zones 1 and 16, which have high heating loads, have much higher EDR Margins for the **Efficiency & PV package** (19.5-22.5). The Standard Design PV, which is what is applied in the **Efficiency Package**, is not sized to offset any of the heating load. When the PV system is sized to offset 90% of the total electricity use, the increase is substantial as a result. In Climate Zone 15 the Standard Design PV system is already sized to cover the cooling electricity load, which represents 30% of whole building electricity use. Therefore, increasing the PV size to offset 90% of the electric load in this climate only results in adding approximately 240 Watts of PV capacity per apartment and subsequently a much smaller impact on the EDR than in other climate zones. Because of the limitations on oversizing PV systems to offset natural gas use it is not feasible to achieve comparable EDR Margins for the mixed fuel case as in the all-electric case.

Additional results details can be found in Appendix E – Multifamily Detailed Results with summaries of measures included in each of the packages in Appendix F – Multifamily Measure Summary. A summary of results by climate zone is presented in Appendix G – Results by Climate Zone.



**Table 11: Multifamily Package Incremental Costs per Dwelling Unit**

Climate Zone	Mixed Fuel			All-Electric			
	Non-Preempted	Equipment - Preempted	Efficiency & PV/Battery	Non-Preempted	Equipment - Preempted	Efficiency & PV	Efficiency & PV/Battery
<b>CZ01</b>	+\$960	+\$507	+\$3,094	+\$949	+\$795	+\$5,538	+\$8,919
<b>CZ02</b>	+\$309	+\$497	+\$2,413	+\$361	+\$795	+\$3,711	+\$6,833
<b>CZ03</b>	+\$175	+\$403	+\$2,279	n/a	+\$795	+\$3,272	+\$6,344
<b>CZ04</b>	+\$329	+\$351	+\$2,429	+\$361	+\$795	+\$3,158	+\$6,201
<b>CZ05</b>	+\$180	+\$358	+\$2,273	+\$247	+\$795	+\$3,293	+\$6,314
<b>CZ06</b>	+\$190	+\$213	+\$2,294	+\$231	+\$361	+\$2,580	+\$5,590
<b>CZ07</b>	+\$90	+\$366	+\$2,188	+\$202	+\$361	+\$2,261	+\$5,203
<b>CZ08</b>	+\$250	+\$213	+\$2,353	+\$231	+\$361	+\$2,240	+\$5,249
<b>CZ09</b>	+\$136	+\$274	+\$2,234	+\$231	+\$361	+\$2,232	+\$5,236
<b>CZ10</b>	+\$278	+\$250	+\$2,376	+\$361	+\$361	+\$2,371	+\$5,395
<b>CZ11</b>	+\$850	+\$317	+\$2,950	+\$1,011	+\$795	+\$3,601	+\$6,759
<b>CZ12</b>	+\$291	+\$434	+\$2,394	+\$1,011	+\$795	+\$3,835	+\$6,943
<b>CZ13</b>	+\$831	+\$290	+\$2,936	+\$1,011	+\$795	+\$3,462	+\$6,650
<b>CZ14</b>	+\$874	+\$347	+\$2,957	+\$1,011	+\$795	+\$3,356	+\$6,380
<b>CZ15</b>	+\$510	-\$157	+\$2,604	+\$1,011	+\$1,954	+\$1,826	+\$5,020
<b>CZ16</b>	+\$937	+\$453	+\$3,028	+\$843	+\$795	+\$4,423	+\$7,533



Table 12: Multifamily Package Cost-Effectiveness Results for the Mixed Fuel Case<sup>1,2</sup>

CZ	Utility	Efficiency							Efficiency & PV/Battery			
		Non-Preempted			Equipment - Preempted			Target	Total	On-Bill	TDV	Target
EDR	On-Bill	TDV	EDR	On-Bill	TDV	Efficiency	EDR	EDR				
Margin	B/C	B/C	Margin	Ratio	Ratio	Margin	Ratio	Margin	Ratio	Ratio	Margin	
01	PG&E	3.4	1.1	1.2	2.3	1.3	1.4	2.0	11.5	0.4	1.2	11.5
02	PG&E	1.8	1.0	1.7	2.3	1.1	1.5	1.5	10.9	0.2	1.6	10.5
03	PG&E	0.6	1.0	1.1	1.6	1.1	1.2	0.5	10.3	0.1	1.4	10.0
04	PG&E	1.3	0.8	1.2	1.9	1.1	1.7	1.0	11.2	0.2	1.6	11.0
05	PG&E	0.5	1.0	1.0	1.5	1.2	1.3	0.5	9.9	0.2	1.4	9.5
05	PG&E/SoCalGas	0.5	0.8	1.0	1.5	1.1	1.3	0.5	9.9	0.1	1.4	9.5
06	SCE/SoCalGas	1.3	0.6	1.5	1.3	1.4	1.7	1.0	10.7	0.6	1.4	10.5
07	SDG&E	0.9	0.7	2.2	2.0	1.1	1.4	0.5	11.0	0.0	1.4	11.0
08	SCE/SoCalGas	1.5	0.7	1.4	1.1	1.4	1.7	1.0	9.9	0.7	1.3	9.5
09	SCE/SoCalGas	1.8	1.5	3.3	2.8	1.7	2.9	1.5	9.7	0.9	1.5	9.5
10	SCE/SoCalGas	1.7	0.8	1.7	2.9	2.0	3.3	1.5	10.4	1.0	1.6	10.0
10	SDG&E	1.7	1.1	1.7	2.9	2.6	3.3	1.5	10.4	0.2	1.6	10.0
11	PG&E	2.9	0.7	1.2	3.2	1.8	3.3	2.5	10.5	0.4	1.6	10.5
12	PG&E	1.9	1.1	2.2	2.8	1.2	2.2	1.5	10.3	0.3	1.7	10.0
13	PG&E	3.1	0.6	1.3	3.4	2.0	3.8	3.0	10.7	0.4	1.6	10.5
14	SCE/SoCalGas	3.1	0.7	1.2	3.3	2.0	3.0	3.0	9.6	1.1	1.4	9.5
14	SDG&E	3.1	0.9	1.2	3.3	2.5	3.0	3.0	9.6	0.5	1.4	9.5
15	SCE/SoCalGas	4.2	1.4	2.3	4.4	>1	>1	4.0	8.8	1.3	1.7	8.5
16	PG&E	2.4	1.1	1.2	2.9	1.8	2.1	2.0	9.9	0.5	1.3	9.5

<sup>1</sup>">1" indicates cases where there are both first cost savings and annual utility bill savings.

<sup>2</sup>Information about the measures included for each climate zone are described in Appendix F – Multifamily Measure Summary.



Table 13: Multifamily Package Cost-effectiveness Results for the All-Electric Case<sup>1,2</sup>

CZ	Utility	Efficiency							Efficiency & PV				Efficiency & PV/Battery				
		Non-Preempted			Equipment - Preempted				Target Efficiency EDR Margin	Total EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio	Target Total EDR Margin	Total EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio	Target Total EDR Margin
		Efficiency EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio	Efficiency EDR Margin	On-Bill B/C Ratio	TDV B/C Ratio										
01	PG&E	3.6	1.6	1.4	3.3	2.4	2.3	3.0	22.5	2.0	1.5	22.5	34.5	1.3	1.4	34.5	
02	PG&E	1.9	1.7	2.1	3.2	1.6	1.6	1.5	17.5	2.4	1.8	17.5	30.9	1.4	1.7	30.5	
03	PG&E	0.0	-	-	2.7	1.7	1.6	0.0	16.1	2.4	1.7	16.0	29.5	1.3	1.6	29.5	
04	PG&E	1.4	1.4	1.5	2.2	1.2	1.1	1.0	15.0	2.4	1.8	15.0	28.9	1.3	1.8	28.5	
05	PG&E	0.6	1.1	0.9	3.6	2.1	2.0	0.5	17.1	2.5	1.8	17.0	30.3	1.4	1.7	30.0	
05	PG&E/SoCalGas	0.6	1.1	0.9	3.6	2.1	2.0	0.5	17.1	2.5	1.8	17.0	30.3	1.4	1.7	30.0	
06	SCE/SoCalGas	1.0	0.7	1.3	2.2	1.6	1.9	1.0	13.8	1.2	1.7	13.5	27.5	1.2	1.6	27.5	
07	SDG&E	0.6	0.6	1.0	1.9	1.6	1.7	0.5	12.8	2.1	1.8	12.5	27.1	1.2	1.6	27.0	
08	SCE/SoCalGas	1.2	0.9	1.7	1.9	1.6	1.8	1.0	11.6	1.3	1.8	11.5	24.2	1.2	1.6	24.0	
09	SCE/SoCalGas	1.6	1.3	2.7	1.5	1.6	1.6	1.5	11.3	1.3	1.9	11.0	23.3	1.3	1.7	23.0	
10	SCE/SoCalGas	1.8	1.2	2.0	1.8	1.7	2.0	1.5	10.8	1.3	1.8	10.5	23.3	1.3	1.7	23.0	
10	SDG&E	1.8	1.5	2.0	1.8	2.0	2.0	1.5	10.8	2.1	1.8	10.5	23.3	1.4	1.7	23.0	
11	PG&E	3.5	1.4	1.6	3.9	2.0	2.3	3.5	13.4	2.2	1.8	13.0	25.3	1.4	1.8	25.0	
12	PG&E	2.6	0.9	1.1	2.9	1.6	1.6	2.5	14.4	2.1	1.6	14.0	26.6	1.3	1.7	26.5	
13	PG&E	3.3	1.3	1.6	3.8	2.0	2.3	3.0	12.2	2.1	1.7	12.0	23.9	1.4	1.7	23.5	
14	SCE/SoCalGas	3.7	1.2	1.6	3.8	1.6	2.2	3.5	14.0	1.4	1.9	14.0	24.8	1.4	1.8	24.5	
14	SDG&E	3.7	1.5	1.6	3.8	2.0	2.2	3.5	14.0	2.2	1.9	14.0	24.8	1.7	1.8	24.5	
15	SCE/SoCalGas	4.4	1.5	2.3	6.4	1.2	1.7	4.0	7.1	1.4	2.1	7.0	16.9	1.3	1.8	16.5	
16	PG&E	4.1	2.1	2.1	3.2	1.6	1.7	3.0	19.6	2.6	1.9	19.5	29.9	1.6	1.7	29.5	

<sup>1</sup>">1" indicates cases where there are both first cost savings and annual utility bill savings.

<sup>2</sup>Information about the measures included for each climate zone are described in Appendix F – Multifamily Measure Summary.



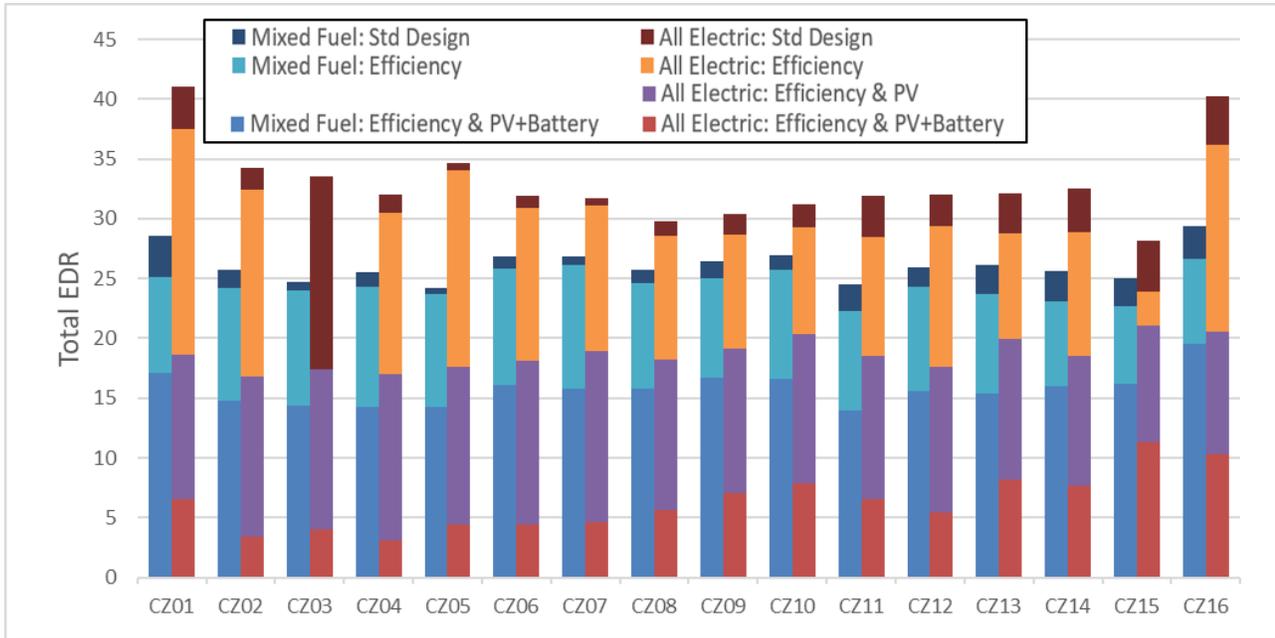


Figure 6: Multifamily Total EDR comparison

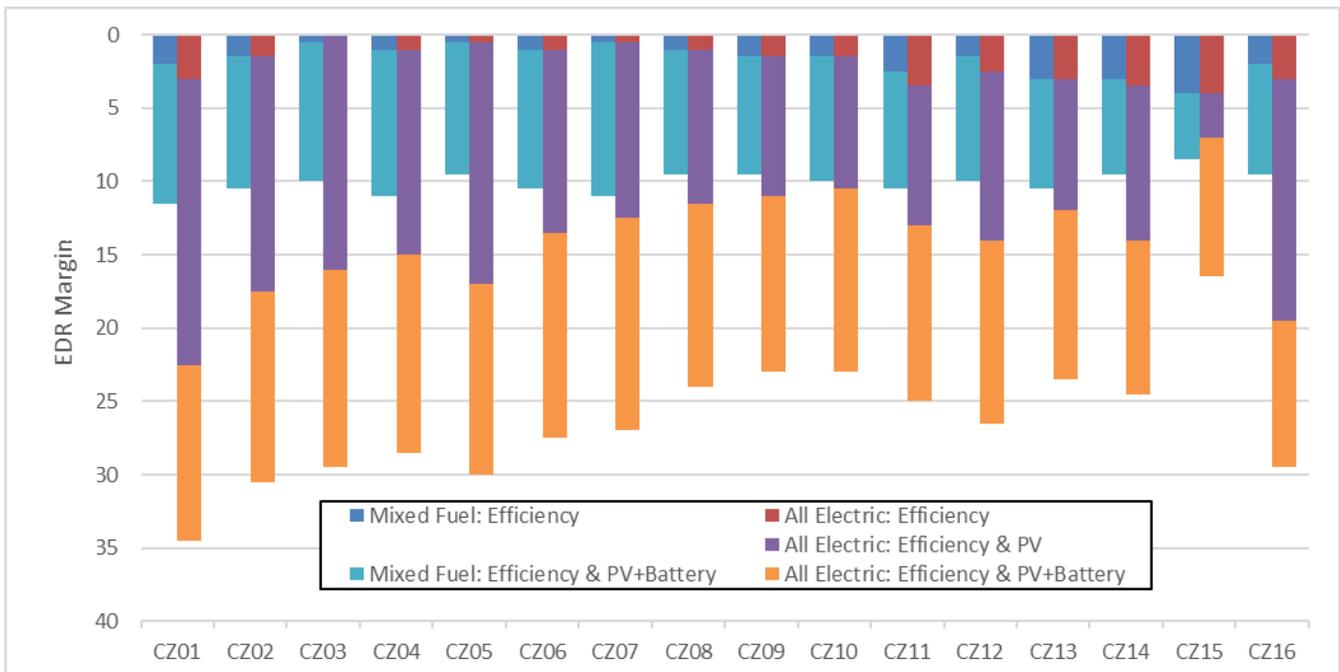


Figure 7: Multifamily EDR Margin comparison (based on Efficiency EDR Margin for the Efficiency packages and the Total EDR Margin for the Efficiency & PV and Efficiency & PV/Battery packages)



### 3.3.1 GHG Emission Reductions

Figure 8 compares annual GHG emissions for both mixed fuel and all-electric multifamily 2019 code compliant cases with Efficiency, Efficiency & PV and Efficiency & PV/Battery packages. GHG emissions vary by climate but are consistently higher in mixed fuel cases than all-electric. Standard design mixed fuel emissions range from 2.0 to 3.0 lbs CO<sub>2</sub>e/square foot of floor area, where all-electric standard design emissions range from 1.2 to 1.7 lbs CO<sub>2</sub>e/ ft<sup>2</sup>. Adding PV, batteries and efficiency to the mixed fuel code compliant prototype reduces annual GHG emissions by 17% on average to between 1.7 and 2.2 lbs CO<sub>2</sub>e/ft<sup>2</sup>, except Climate Zone 16. Adding PV, batteries and efficiency to the all-electric code compliant prototype reduces annual GHG emissions by 64% on average to 0.6 lbs CO<sub>2</sub>e/ft<sup>2</sup> or less with the exception of Climate Zones 14, 15 and 16. As in the single family case, none of the cases completely eliminate GHG emissions because of the time value of emissions calculation for electricity in CBECC-Res.

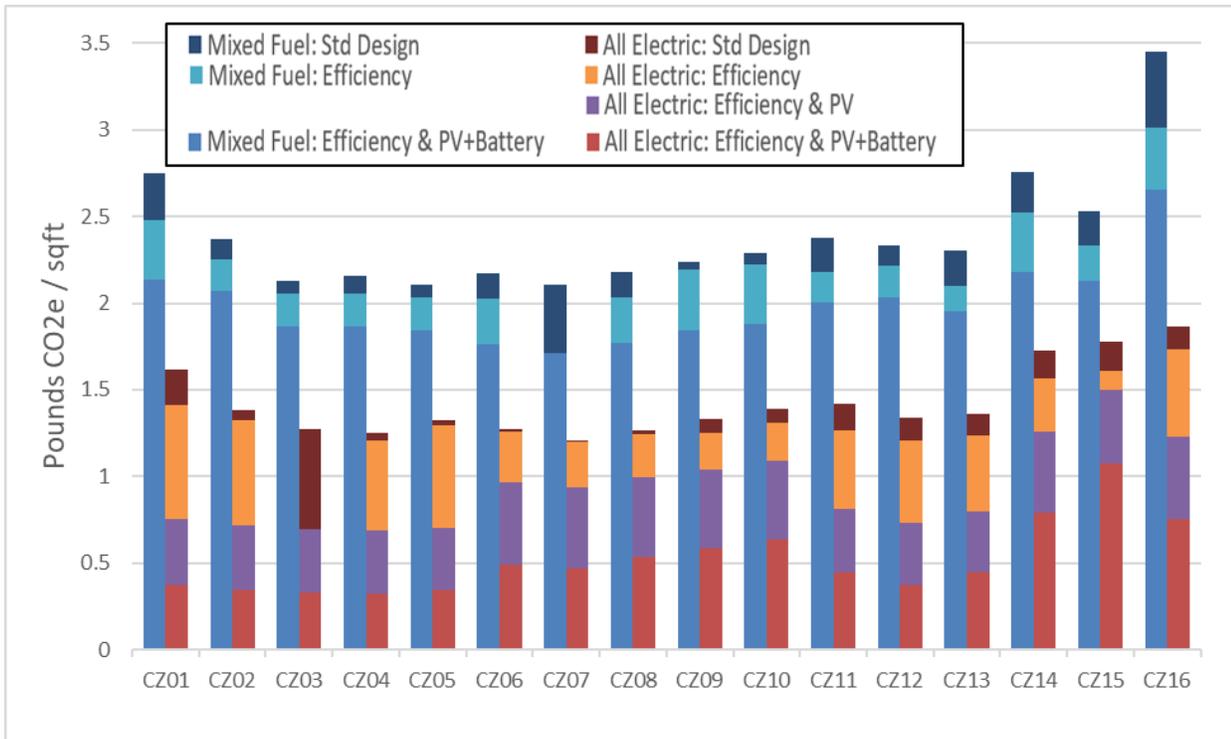


Figure 8: Multifamily greenhouse gas emissions comparison

### 3.4 Electrification Results

Cost-effectiveness results comparing mixed fuel and all-electric cases are summarized below. The tables show average annual utility bill impacts and lifetime utility bill impacts, which account for fuel escalation for electricity and natural gas (see Section 2.5), lifetime equipment cost savings, and both On-Bill and TDV cost-effectiveness (B/C ratio). Positive utility bill values indicate lower utility costs for the all-electric home relative to the mixed fuel case while negative values in red and parenthesis indicate higher utility costs for the all-electric case. Lifetime equipment cost savings include savings due to eliminating natural gas infrastructure and replacement costs for appliances based on equipment life. Positive values for the lifetime equipment cost savings indicate lower installed costs for the all-electric and negative values indicate higher costs. B/C ratios 1.0 or greater indicate positive cost-effectiveness. Cases where the B/C ratio is indicated as “>1” refer to instances where there was incremental cost savings in addition to annual utility bill savings. In these cases, there is no cost associated with this upgrade and benefits are realized immediately.



Three scenarios were evaluated:

1. **2019 Code Compliant:** Compares a 2019 code compliant all-electric home with a 2019 code compliant mixed fuel home.
2. **Efficiency & PV Package:** Compares an all-electric home with efficiency and PV sized to 90% of the annual electricity use to a 2019 code compliant mixed fuel home. The first cost savings in the code compliant all-electric house is invested in above code efficiency and PV reflective of the Efficiency & PV packages described above.
3. **Neutral Cost Package:** Compares an all-electric home with PV beyond code minimum with a 2019 code compliant mixed fuel home. The PV system for the all-electric case is sized to result in a zero lifetime incremental cost relative to a mixed fuel home.

### ***3.4.1 Single Family***

Table 14, Table 15, Figure 9, Figure 10, and Figure 11 present results of cost-effectiveness analysis for electrification of single family buildings, according to both the On-Bill and TDV methodologies. Based on typical cost assumptions arrived at for this analysis, the lifetime equipment costs for the single family code compliant all-electric option are approximately \$5,350 less than the mixed fuel code compliant option. Cost savings are entirely due to the elimination of gas infrastructure, which was assumed to be a savings of \$5,750. When evaluating cost-effectiveness based on TDV, the Utility Gas Main Extensions rules 50% refund and appliance allowance deduction are not applied and therefore the cost savings are twice as much.

Under the Efficiency & PV Package and the On-Bill analysis, the incremental cost of the efficiency and PV is typically more than the cost savings seen in the code compliant case, which results in a net cost increase in most climate zones for the all-electric case. In climates with small heating loads (7 and 15) there continues to be an incremental cost savings for the all-electric home. With the TDV analysis, there is still an incremental cost savings in all climates except 1 and 16 for single family.

Utility impacts differ by climate zone and utility, but utility costs for the code compliant all-electric option are typically higher than for the compliant mixed fuel design. There are utility cost savings across all climate zones and building types for the all-electric Efficiency & PV Package, resulting in a more cost-effective option.

The all-electric code compliant option is cost-effective based on the On-Bill approach for single family homes in Climate Zones 6 through 9, 10 (SCE/SoCalGas territory only), and 15. The code compliant option is cost-effective based on the TDV methodology in all climate zones except 1 and 16. If the same costs used for the On-Bill approach are also used for the TDV approach (incorporating the Utility Gas Main Extensions rules 50% refund and appliance allowance deduction), the all-electric code compliant option is cost-effective in Climate Zones 6 through 10. The Efficiency & PV all-electric option is cost-effective in all climate zones based on both the On-Bill and TDV methodologies. In many cases it is cost-effective immediately with lower equipment and utility costs.

The last set of results in Table 14 shows the neutral cost case where the cost savings for the all-electric code compliant home is invested in a larger PV system, resulting in a lifetime incremental cost of zero based on the On-Bill approach. This package results in utility cost savings in all cases except Climate Zones 1, 14 (SCE/SoCalGas territory only), and 16. For these three cases the Reach Code Team evaluated how much additional PV would be required to result in a cost-effective package. These results are presented in Table 15 and show that an additional 1.6kW in Climate Zone 1 results in a B/C ratio of 1.1. For Climate Zone 14 and 16 adding 0.25kW and 1.2kW, respectively, results in a B/C ratio of 1.2. Neutral cost cases are cost-effective based on the TDV methodology in all climate zones except 16.

### ***3.4.2 Multifamily***

Multifamily results are found in Table 16, Table 17, Figure 12, Figure 13, and Figure 14. Lifetime costs for the multifamily code compliant all-electric option are approximately \$2,300 less than the mixed fuel code compliant option, entirely due to the elimination of gas infrastructure. When evaluating cost-effectiveness based on TDV,



the Utility Gas Main Extensions rules 50% refund and appliance allowance deduction are not applied and therefore the cost savings are approximately 2.5 times higher.

With the Efficiency & PV Package and the On-Bill analysis, due to the added cost of the efficiency and PV there is a net cost increase for the all-electric case in all climate zones for except 7, 8, 9, and 15. With the TDV analysis, there is still an incremental cost savings in all climates. Like the single family results, utility costs are typically higher for the code compliant all-electric option but lower than the code compliant mixed fuel option with the Efficiency & PV Package.

The all-electric code compliant option is cost-effective based on the On-Bill approach for multifamily in Climate Zones 6 through 9, 10 and 14 (SCE/SoCalGas territory only), and 15. Based on the TDV methodology, the code compliant option for multifamily is cost-effective for all climate zones. If the same costs used for the On-Bill approach are also used for the TDV approach (incorporating the Utility Gas Main Extensions rules 50% refund and appliance allowance deduction), the all-electric code compliant option is cost-effective in Climate Zones 8 and 9. Like the single family cases, the Efficiency & PV all-electric option is cost-effective in all climate zones based on both the On-Bill and TDV methodologies.

The last set of results in Table 16 show the neutral cost case where the cost savings for the all-electric code compliant home is invested in a larger PV system, resulting in a lifetime incremental cost of zero based on the On-Bill approach. This package results in utility cost savings in all cases except Climate Zone 1. For this case the Reach Code Team evaluated how much additional PV would be required to result in a cost-effective package. These results are presented in Table 17 and show that an additional 0.3kW per apartment results in a B/C ratio of 1.1. Neutral cost cases are cost-effective based on the TDV methodology in all climate zones except 16.

**Table 14: Single Family Electrification Results**

CZ	Utility	On-Bill Cost-effectiveness <sup>1</sup>						TDV Cost-effectiveness		
		Average Annual Utility Bill Savings			Lifetime NPV			Lifetime NPV		
		Electricity	Natural Gas	Net Utility Savings	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio <sup>2</sup>	TDV Cost Savings	Equipment Cost Savings	TDV B/C Ratio
<b>2019 Code Compliant Home</b>										
01	PG&E	-\$1,194	+\$712	-\$482	-\$14,464	+\$5,349	0.4	-\$13,081	+\$11,872	0.9
02	PG&E	-\$825	+\$486	-\$340	-\$10,194	+\$5,349	0.5	-\$7,456	+\$11,872	1.6
03	PG&E	-\$717	+\$391	-\$326	-\$9,779	+\$5,349	0.5	-\$7,766	+\$11,872	1.5
04	PG&E	-\$710	+\$387	-\$322	-\$9,671	+\$5,349	0.6	-\$7,447	+\$11,872	1.6
05	PG&E	-\$738	+\$367	-\$371	-\$11,128	+\$5,349	0.5	-\$8,969	+\$11,872	1.3
05	PG&E/SoCalGas	-\$738	+\$370	-\$368	-\$11,034	+\$5,349	0.5	-\$8,969	+\$11,872	1.3
06	SCE/SoCalGas	-\$439	+\$289	-\$149	-\$4,476	+\$5,349	1.2	-\$4,826	+\$11,872	2.5
07	SDG&E	-\$414	+\$243	-\$171	-\$5,134	+\$5,349	1.0	-\$4,678	+\$11,872	2.5
08	SCE/SoCalGas	-\$347	+\$249	-\$97	-\$2,921	+\$5,349	1.8	-\$3,971	+\$11,872	3.0
09	SCE/SoCalGas	-\$377	+\$271	-\$107	-\$3,199	+\$5,349	1.7	-\$4,089	+\$11,872	2.9
10	SCE/SoCalGas	-\$403	+\$280	-\$123	-\$3,684	+\$5,349	1.5	-\$4,458	+\$11,872	2.7
10	SDG&E	-\$496	+\$297	-\$198	-\$5,950	+\$5,349	0.9	-\$4,458	+\$11,872	2.7
11	PG&E	-\$810	+\$447	-\$364	-\$10,917	+\$5,349	0.5	-\$7,024	+\$11,872	1.7
12	PG&E	-\$740	+\$456	-\$284	-\$8,533	+\$5,349	0.6	-\$6,281	+\$11,872	1.9
13	PG&E	-\$742	+\$413	-\$329	-\$9,870	+\$5,349	0.5	-\$6,480	+\$11,872	1.8
14	SCE/SoCalGas	-\$661	+\$413	-\$248	-\$7,454	+\$5,349	0.7	-\$7,126	+\$11,872	1.7
14	SDG&E	-\$765	+\$469	-\$296	-\$8,868	+\$5,349	0.6	-\$7,126	+\$11,872	1.7
15	SCE/SoCalGas	-\$297	+\$194	-\$103	-\$3,090	+\$5,349	1.7	-\$5,364	+\$11,872	2.2
16	PG&E	-\$1,287	+\$712	-\$575	-\$17,250	+\$5,349	0.3	-\$17,391	+\$11,872	0.7



2019 Energy Efficiency Ordinance Cost-effectiveness Study

CZ	Utility	On-Bill Cost-effectiveness <sup>1</sup>						TDV Cost-effectiveness		
		Average Annual Utility Bill Savings			Lifetime NPV			Lifetime NPV		
		Electricity	Natural Gas	Net Utility Savings	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio <sup>2</sup>	TDV Cost Savings	Equipment Cost Savings	TDV B/C Ratio
<b>Efficiency &amp; PV Package</b>										
01	PG&E	-\$99	+\$712	+\$613	+\$18,398	-\$12,844	1.4	+\$13,364	-\$6,321	2.1
02	PG&E	-\$89	+\$486	+\$397	+\$11,910	-\$6,758	1.8	+\$9,307	-\$234	39.7
03	PG&E	-\$87	+\$391	+\$304	+\$9,119	-\$3,169	2.9	+\$6,516	+\$3,355	>1
04	PG&E	-\$85	+\$387	+\$302	+\$9,074	-\$3,438	2.6	+\$6,804	+\$3,086	>1
05	PG&E	-\$98	+\$367	+\$268	+\$8,054	-\$2,959	2.7	+\$5,625	+\$3,564	>1
05	PG&E/SoCalGas	-\$98	+\$370	+\$272	+\$8,148	-\$2,959	2.8	+\$5,625	+\$3,564	>1
06	SCE/SoCalGas	-\$188	+\$289	+\$102	+\$3,049	-\$992	3.1	+\$4,585	+\$5,531	>1
07	SDG&E	-\$137	+\$243	+\$106	+\$3,174	+\$912	>1	+\$2,176	+\$7,436	>1
08	SCE/SoCalGas	-\$160	+\$249	+\$89	+\$2,664	-\$25	107.9	+\$3,965	+\$6,499	>1
09	SCE/SoCalGas	-\$169	+\$271	+\$102	+\$3,067	-\$429	7.1	+\$5,368	+\$6,094	>1
10	SCE/SoCalGas	-\$173	+\$280	+\$107	+\$3,216	-\$1,057	3.0	+\$5,165	+\$5,466	>1
10	SDG&E	-\$137	+\$297	+\$160	+\$4,805	-\$1,057	4.5	+\$5,165	+\$5,466	>1
11	PG&E	-\$147	+\$447	+\$300	+\$8,988	-\$5,478	1.6	+\$9,776	+\$1,045	>1
12	PG&E	-\$92	+\$456	+\$364	+\$10,918	-\$6,172	1.8	+\$9,913	+\$352	>1
13	PG&E	-\$144	+\$413	+\$269	+\$8,077	-\$5,184	1.6	+\$8,960	+\$1,339	>1
14	SCE/SoCalGas	-\$241	+\$413	+\$172	+\$5,164	-\$5,111	1.0	+\$9,850	+\$1,412	>1
14	SDG&E	-\$139	+\$469	+\$330	+\$9,910	-\$5,111	1.9	+\$9,850	+\$1,412	>1
15	SCE/SoCalGas	-\$107	+\$194	+\$87	+\$2,603	+\$264	>1	+\$2,598	+\$6,787	>1
16	PG&E	-\$130	+\$712	+\$582	+\$17,457	-\$11,234	1.6	+\$9,536	-\$4,710	2.0
<b>Neutral Cost Package</b>										
01	PG&E	-\$869	+\$712	-\$157	-\$4,704	+\$0	0	-\$6,033	+\$6,549	1.1
02	PG&E	-\$445	+\$486	+\$40	+\$1,213	+\$0	>1	+\$868	+\$6,505	>1
03	PG&E	-\$335	+\$391	+\$56	+\$1,671	+\$0	>1	+\$483	+\$6,520	>1
04	PG&E	-\$321	+\$387	+\$66	+\$1,984	+\$0	>1	+\$1,062	+\$6,521	>1
05	PG&E	-\$335	+\$367	+\$31	+\$938	+\$0	>1	-\$163	+\$6,519	40.1
05	PG&E/SoCalGas	-\$335	+\$370	+\$34	+\$1,031	+\$0	>1	-\$163	+\$6,519	40.1
06	SCE/SoCalGas	-\$227	+\$289	+\$63	+\$1,886	+\$0	>1	+\$3,258	+\$6,499	>1
07	SDG&E	-\$72	+\$243	+\$171	+\$5,132	+\$0	>1	+\$3,741	+\$6,519	>1
08	SCE/SoCalGas	-\$144	+\$249	+\$105	+\$3,162	+\$0	>1	+\$4,252	+\$6,515	>1
09	SCE/SoCalGas	-\$170	+\$271	+\$100	+\$3,014	+\$0	>1	+\$4,271	+\$6,513	>1
10	SCE/SoCalGas	-\$199	+\$280	+\$81	+\$2,440	+\$0	>1	+\$3,629	+\$6,494	>1
10	SDG&E	-\$155	+\$297	+\$143	+\$4,287	+\$0	>1	+\$3,629	+\$6,494	>1
11	PG&E	-\$426	+\$447	+\$21	+\$630	+\$0	>1	+\$1,623	+\$6,504	>1
12	PG&E	-\$362	+\$456	+\$94	+\$2,828	+\$0	>1	+\$2,196	+\$6,525	>1
13	PG&E	-\$370	+\$413	+\$43	+\$1,280	+\$0	>1	+\$1,677	+\$6,509	>1
14	SCE/SoCalGas	-\$416	+\$413	-\$4	-\$107	+\$0	0	+\$2,198	+\$6,520	>1
14	SDG&E	-\$391	+\$469	+\$79	+\$2,356	+\$0	>1	+\$2,198	+\$6,520	>1
15	SCE/SoCalGas	-\$98	+\$194	+\$97	+\$2,900	+\$0	>1	+\$2,456	+\$6,483	>1
16	PG&E	-\$878	+\$712	-\$166	-\$4,969	+\$0	0	-\$8,805	+\$6,529	0.7

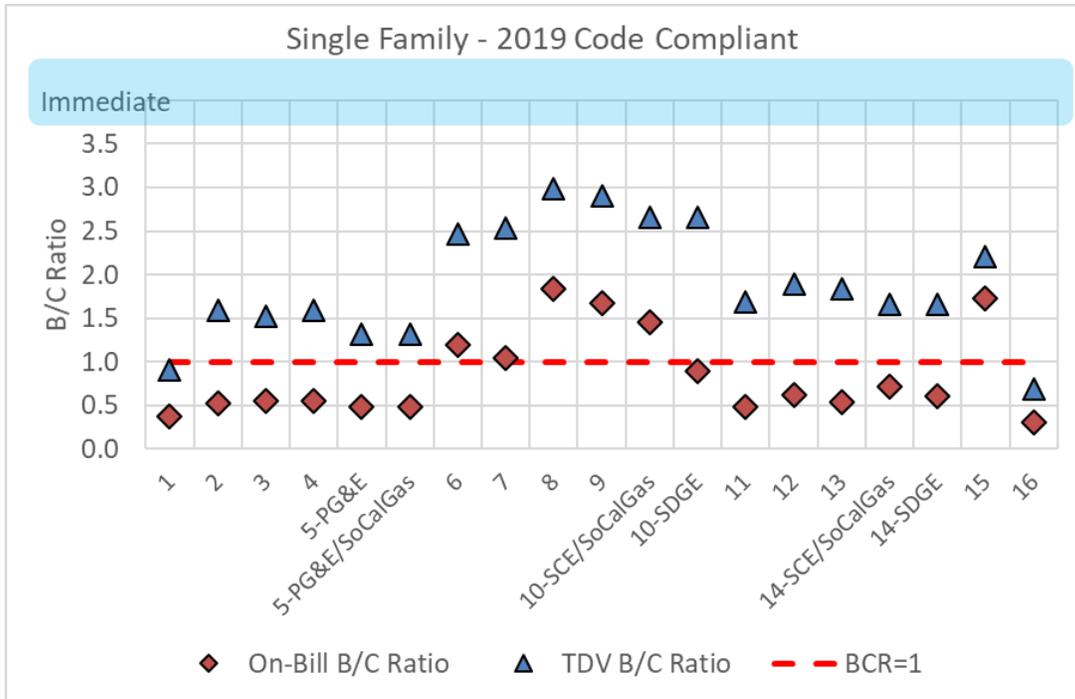
<sup>1</sup>Red values in parentheses indicate an increase in utility bill costs or an incremental first cost for the all-electric home.

<sup>2</sup>>1" indicates cases where there are both first cost savings and annual utility bill savings.



**Table 15: Comparison of Single Family On-Bill Cost Effectiveness Results with Additional PV**

CZ	Utility	Neutral Cost				Min. Cost Effectiveness			
		PV Capacity (kW)	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio	PV Capacity (kW)	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio
01	PG&E	4.7	-\$4,704	+\$0	0	6.3	+\$6,898	-\$6,372	1.1
14	SCE/SoCalGas	4.5	-\$107	+\$0	0	4.8	+\$1,238	-\$1,000	1.2
16	PG&E	4.1	-\$4,969	+\$0	0	5.3	+\$5,883	-\$4,753	1.2



**Figure 9: B/C ratio results for a single family all-electric code compliant home versus a mixed fuel code compliant home**



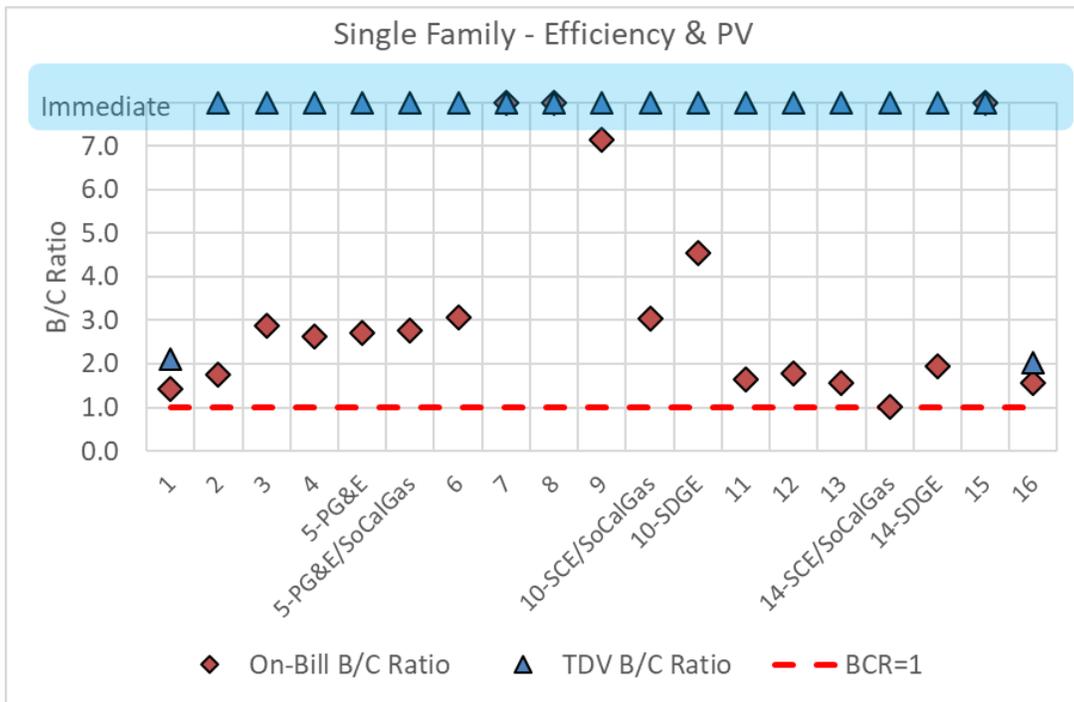


Figure 10: B/C ratio results for the single family Efficiency & PV all-electric home versus a mixed fuel code compliant home

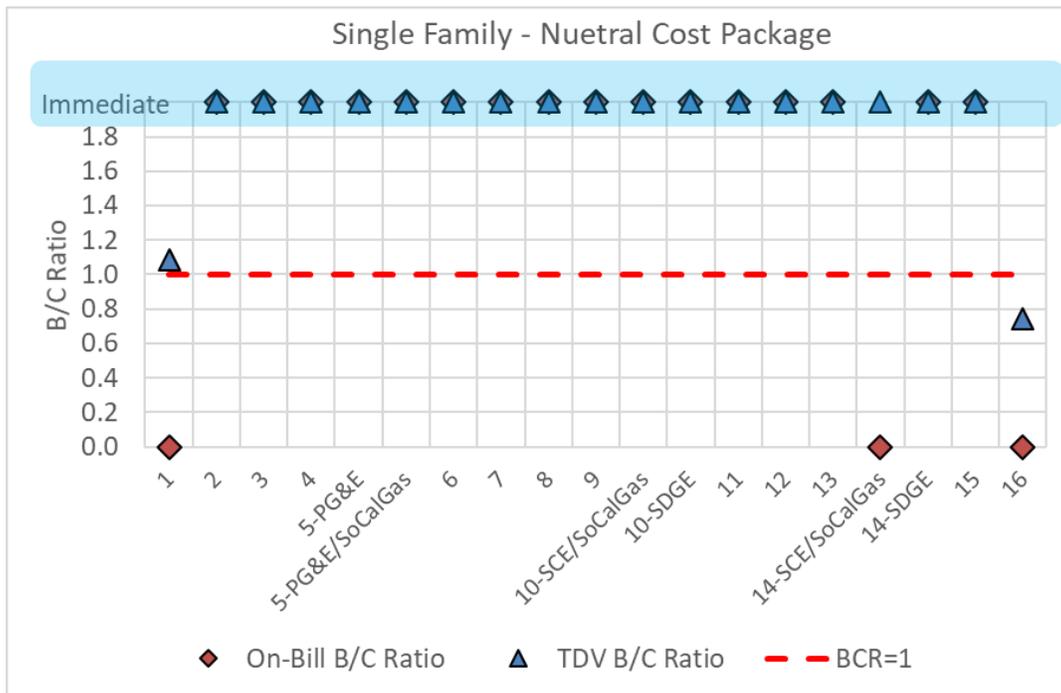


Figure 11: B/C ratio results for the single family neutral cost package all-electric home versus a mixed fuel code compliant home



Table 16: Multifamily Electrification Results (Per Dwelling Unit)

CZ	Utility	On-Bill Cost-effectiveness <sup>1</sup>						TDV Cost-effectiveness		
		Average Annual Utility Bill Savings			Lifetime NPV			Lifetime NPV		
		Electricity	Natural Gas	Net Utility Savings	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio <sup>2</sup>	TDV Cost Savings	Equipment Cost Savings	TDV B/C Ratio
<b>2019 Code Compliant Home</b>										
01	PG&E	-\$396	+\$193	-\$203	-\$6,079	+\$2,337	0.4	-\$5,838	+\$5,899	1.0
02	PG&E	-\$310	+\$162	-\$148	-\$4,450	+\$2,337	0.5	-\$4,144	+\$5,899	1.4
03	PG&E	-\$277	+\$142	-\$135	-\$4,041	+\$2,337	0.6	-\$4,035	+\$5,899	1.5
04	PG&E	-\$264	+\$144	-\$120	-\$3,595	+\$2,337	0.6	-\$3,329	+\$5,899	1.8
05	PG&E	-\$297	+\$140	-\$157	-\$4,703	+\$2,337	0.5	-\$4,604	+\$5,899	1.3
05	PG&E/SoCalGas	-\$297	+\$178	-\$119	-\$3,573	+\$2,337	0.7	-\$4,604	+\$5,899	1.3
06	SCE/SoCalGas	-\$191	+\$161	-\$30	-\$902	+\$2,337	2.6	-\$2,477	+\$5,899	2.4
07	SDG&E	-\$206	+\$136	-\$70	-\$2,094	+\$2,337	1.1	-\$2,390	+\$5,899	2.5
08	SCE/SoCalGas	-\$169	+\$157	-\$12	-\$349	+\$2,337	6.7	-\$2,211	+\$5,899	2.7
09	SCE/SoCalGas	-\$177	+\$159	-\$18	-\$533	+\$2,337	4.4	-\$2,315	+\$5,899	2.5
10	SCE/SoCalGas	-\$183	+\$159	-\$23	-\$697	+\$2,337	3.4	-\$2,495	+\$5,899	2.4
10	SDG&E	-\$245	+\$139	-\$106	-\$3,192	+\$2,337	0.7	-\$2,495	+\$5,899	2.4
11	PG&E	-\$291	+\$153	-\$138	-\$4,149	+\$2,337	0.6	-\$4,420	+\$5,899	1.3
12	PG&E	-\$277	+\$155	-\$122	-\$3,665	+\$2,337	0.6	-\$3,557	+\$5,899	1.7
13	PG&E	-\$270	+\$146	-\$124	-\$3,707	+\$2,337	0.6	-\$3,821	+\$5,899	1.5
14	SCE/SoCalGas	-\$255	+\$187	-\$69	-\$2,062	+\$2,337	1.1	-\$3,976	+\$5,899	1.5
14	SDG&E	-\$328	+\$175	-\$154	-\$4,607	+\$2,337	0.5	-\$3,976	+\$5,899	1.5
15	SCE/SoCalGas	-\$154	+\$142	-\$12	-\$367	+\$2,337	6.4	-\$2,509	+\$5,899	2.4
16	PG&E	-\$404	+\$224	-\$180	-\$5,411	+\$2,337	0.4	-\$5,719	+\$5,899	1.0
<b>Efficiency &amp; PV Package</b>										
01	PG&E	-\$19	+\$193	+\$174	+\$5,230	-\$3,202	1.6	+\$2,467	+\$361	>1
02	PG&E	-\$10	+\$162	+\$152	+\$4,549	-\$1,375	3.3	+\$2,605	+\$2,187	>1
03	PG&E	-\$12	+\$142	+\$130	+\$3,910	-\$936	4.2	+\$1,632	+\$2,626	>1
04	PG&E	-\$8	+\$144	+\$136	+\$4,080	-\$822	5.0	+\$2,381	+\$2,740	>1
05	PG&E	-\$19	+\$140	+\$121	+\$3,635	-\$956	3.8	+\$1,403	+\$2,606	>1
05	PG&E/SoCalGas	-\$19	+\$178	+\$159	+\$4,765	-\$956	5.0	+\$1,403	+\$2,606	>1
06	SCE/SoCalGas	-\$84	+\$161	+\$77	+\$2,309	-\$243	9.5	+\$1,940	+\$3,319	>1
07	SDG&E	-\$49	+\$136	+\$87	+\$2,611	+\$75	>1	+\$1,583	+\$3,638	>1
08	SCE/SoCalGas	-\$74	+\$157	+\$83	+\$2,480	+\$96	>1	+\$1,772	+\$3,658	>1
09	SCE/SoCalGas	-\$76	+\$159	+\$82	+\$2,469	+\$104	>1	+\$1,939	+\$3,667	>1
10	SCE/SoCalGas	-\$79	+\$159	+\$80	+\$2,411	-\$34	70.9	+\$1,737	+\$3,528	>1
10	SDG&E	-\$77	+\$139	+\$61	+\$1,842	-\$34	54.2	+\$1,737	+\$3,528	>1
11	PG&E	-\$25	+\$153	+\$128	+\$3,834	-\$1,264	3.0	+\$2,080	+\$2,298	>1
12	PG&E	-\$11	+\$155	+\$144	+\$4,316	-\$1,498	2.9	+\$2,759	+\$2,064	>1
13	PG&E	-\$26	+\$146	+\$121	+\$3,625	-\$1,125	3.2	+\$2,083	+\$2,437	>1
14	SCE/SoCalGas	-\$99	+\$187	+\$87	+\$2,616	-\$1,019	2.6	+\$2,422	+\$2,543	>1
14	SDG&E	-\$86	+\$175	+\$88	+\$2,647	-\$1,019	2.6	+\$2,422	+\$2,543	>1
15	SCE/SoCalGas	-\$67	+\$142	+\$75	+\$2,247	+\$511	>1	+\$1,276	+\$4,073	>1
16	PG&E	-\$24	+\$224	+\$200	+\$5,992	-\$2,087	2.9	+\$2,629	+\$1,476	>1



		On-Bill Cost-effectiveness <sup>1</sup>						TDV Cost-effectiveness		
		Average Annual Utility Bill Savings			Lifetime NPV			Lifetime NPV		
CZ	Utility	Electricity	Natural Gas	Net Utility Savings	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio <sup>2</sup>	TDV Cost Savings	Equipment Cost Savings	TDV B/C Ratio
<b>Neutral Cost Package</b>										
01	PG&E	-\$228	+\$193	-\$35	-\$1,057	+\$0	0	-\$2,267	+\$3,564	1.6
02	PG&E	-\$115	+\$162	+\$47	+\$1,399	+\$0	>1	+\$59	+\$3,563	>1
03	PG&E	-\$81	+\$142	+\$61	+\$1,843	+\$0	>1	+\$138	+\$3,562	>1
04	PG&E	-\$64	+\$144	+\$80	+\$2,402	+\$0	>1	+\$983	+\$3,563	>1
05	PG&E	-\$90	+\$140	+\$50	+\$1,490	+\$0	>1	-\$152	+\$3,564	23.4
05	PG&E/SoCalGas	-\$90	+\$178	+\$87	+\$2,620	+\$0	>1	-\$152	+\$3,564	23.4
06	SCE/SoCalGas	-\$90	+\$161	+\$71	+\$2,144	+\$0	>1	+\$1,612	+\$3,562	>1
07	SDG&E	-\$32	+\$136	+\$105	+\$3,135	+\$0	>1	+\$1,886	+\$3,560	>1
08	SCE/SoCalGas	-\$67	+\$157	+\$90	+\$2,705	+\$0	>1	+\$1,955	+\$3,564	>1
09	SCE/SoCalGas	-\$71	+\$159	+\$87	+\$2,623	+\$0	>1	+\$1,924	+\$3,561	>1
10	SCE/SoCalGas	-\$78	+\$159	+\$81	+\$2,431	+\$0	>1	+\$1,588	+\$3,561	>1
10	SDG&E	-\$71	+\$139	+\$68	+\$2,033	+\$0	>1	+\$1,588	+\$3,561	>1
11	PG&E	-\$93	+\$153	+\$59	+\$1,783	+\$0	>1	-\$48	+\$3,562	74.0
12	PG&E	-\$82	+\$155	+\$73	+\$2,184	+\$0	>1	+\$739	+\$3,564	>1
13	PG&E	-\$79	+\$146	+\$68	+\$2,034	+\$0	>1	+\$310	+\$3,560	>1
14	SCE/SoCalGas	-\$141	+\$187	+\$45	+\$1,359	+\$0	>1	+\$747	+\$3,562	>1
14	SDG&E	-\$137	+\$175	+\$38	+\$1,131	+\$0	>1	+\$747	+\$3,562	>1
15	SCE/SoCalGas	-\$50	+\$142	+\$92	+\$2,771	+\$0	>1	+\$1,738	+\$3,560	>1
16	PG&E	-\$194	+\$224	+\$30	+\$900	+\$0	>1	-\$1,382	+\$3,564	2.6

<sup>1</sup>Red values in parentheses indicate an increase in utility bill costs or an incremental first cost for the all-electric home.

<sup>2</sup>>1" indicates cases where there are both first cost savings and annual utility bill savings.

**Table 17: Comparison of Multifamily On-Bill Cost Effectiveness Results with Additional PV (Per Dwelling Unit)**

CZ	Utility	Neutral Cost				Min. Cost Effectiveness			
		PV Capacity (kW)	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio	PV Capacity (kW)	Utility Bill Savings	Equipment Cost Savings	On-Bill B/C Ratio
01	PG&E	2.7	-\$1,057	+\$0	0	3.0	+\$1,198	-\$1,052	1.1



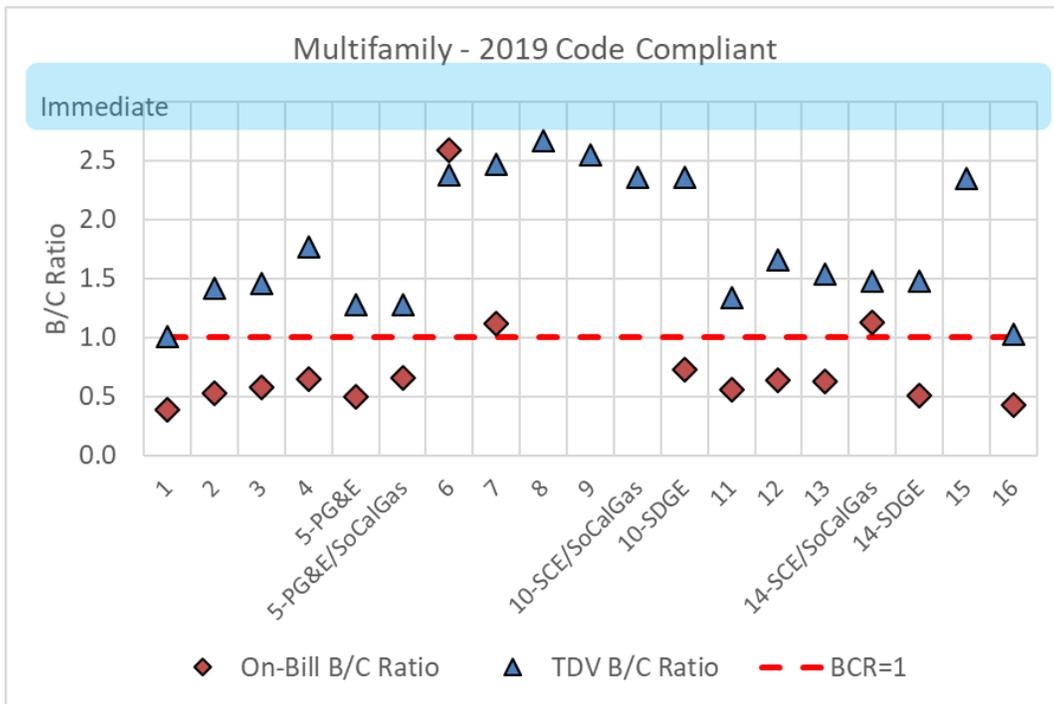


Figure 12: B/C ratio results for a multifamily all-electric code compliant home versus a mixed fuel code compliant home

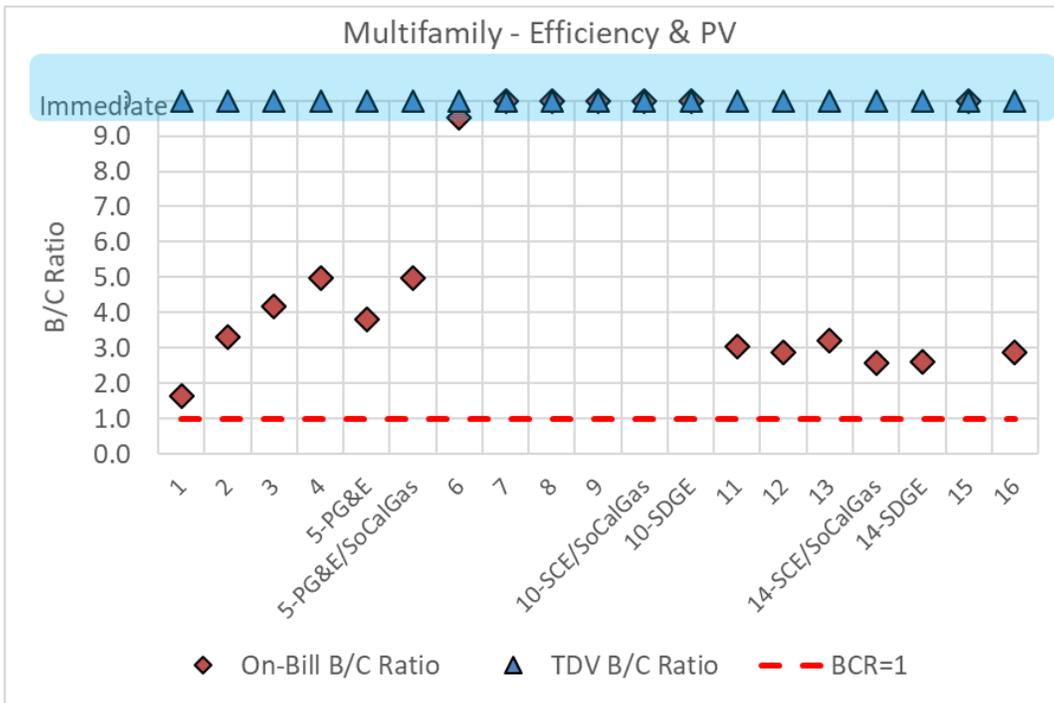
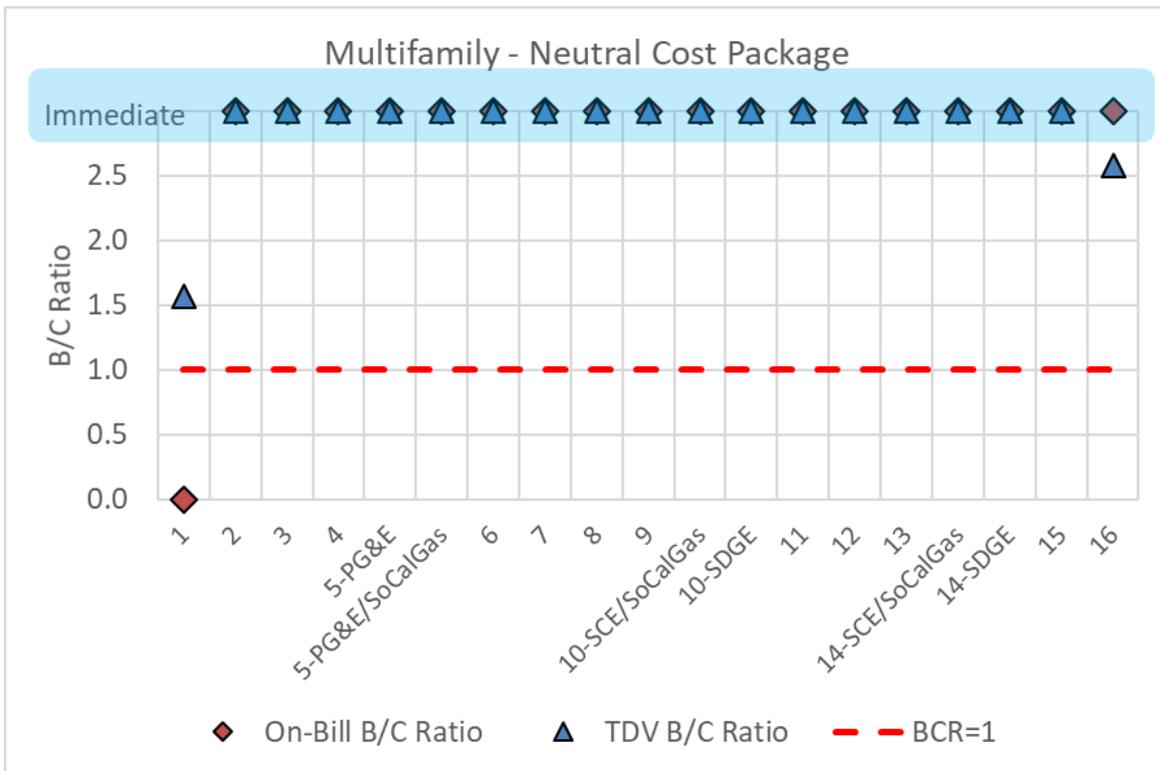


Figure 13: B/C ratio results for the multifamily Efficiency & PV all-electric home versus a mixed fuel code compliant home





**Figure 14: B/C ratio results for the multifamily neutral cost package all-electric home versus a mixed fuel code compliant home**

## 4 Conclusions & Summary

This report evaluated the feasibility and cost-effectiveness of “above code” performance specifications through the application of efficiency measures, PV, and electric battery storage in all 16 California climate zones. The analysis found cost-effective packages across the state for both single family and low-rise multifamily buildings. For the building types and climate zones where cost-effective packages were identified, the results of this analysis can be used by local jurisdictions to support the adoption of reach codes. Cost-effectiveness was evaluated according to two metrics: On-Bill customer lifecycle benefit-to-cost and TDV lifecycle benefit-to-cost. While all the above code targets presented are based on packages that are cost-effective under at least one of these metrics, they are not all cost-effective under both metrics. Generally, the test for being cost-effective under the TDV methodology is less challenging than under the On-Bill methodology. Therefore, all packages presented are cost-effective based on TDV, and may or may not be cost-effective based on the On-Bill method. It is up to each jurisdiction to determine what metric is most appropriate for their application. A summary of results by climate zone are presented in Appendix G – Results by Climate Zone.

Above code targets are presented as Target EDR Margin, which have been defined for each scenario where a cost-effective package was identified. Target EDR Margins represent the maximum “reach” values that meet the requirements. Jurisdictions may adopt less stringent requirements. For the Efficiency Package the Target EDR Margin was defined based on the lower EDR Margin of the Efficiency – Non-Preempted Package and the Efficiency – Equipment, Preempted Package. For example, if the cost-effective Non-Preempted package has an EDR Margin of 3 and the Preempted package an EDR Margin of 4, the Target EDR Margin is set at 3.

The average incremental cost for the single family Efficiency packages is ~\$1,750. The Efficiency & PV Package average incremental cost is \$9,180 and for the Efficiency & PV/Battery Package it is approximately \$5,600 for the



mixed fuel cases and \$15,100 for the all-electric cases. The incremental costs for each multifamily apartment are approximately 30-40% lower. See Table 8 and Table 11 for a summary of package costs by case.

Table 18 and Table 19 summarize the maximum Target EDR Margins determined to be cost effective for each package for single family and multifamily, respectively. Cases labeled as “n/a” in the tables indicate where no cost-effective package was identified under either On-Bill or TDV methodology.

This analysis also looked at the GHG emissions impacts of the various packages. An all-electric design reduces GHG emissions 40-50% in most cases relative to a comparable mixed fuel design.

There is significant interest throughout California on electrification of new buildings. The Reach Code Team assembled data on the cost differences between a code compliant mixed fuel building and a code compliant all-electric building. Based on lifetime equipment cost savings (the difference in first cost for equipment and infrastructure combined with incremental replacement costs) of \$5,349 for an all-electric single family home this analysis found that from a customer on-bill perspective, the all-electric code compliant option is cost-effective in Climates Zones 6 through 9, 10 (SCE/SoCalGas territory only), and 15, and cost-effective in all climate zones except 1 and 16 based on TDV. For multifamily buildings, based on a cost savings of \$2,337 per apartment, the code compliant option is cost-effective in Climates Zones 6 through 9, 10 & 14 (SCE/SoCalGas territory only), and 15, and cost-effective based on TDV.

Adding efficiency and PV to the code compliant all-electric buildings increases the cost-effectiveness in all climate zones. The Efficiency & PV Package is cost-effective when compared to a mixed fuel code compliant building in all climate zones for both single family and multifamily buildings based on both the On-Bill and TDV methodologies. The Efficiency & PV package adds PV to offset 90% of the electricity use of the home. While this results in higher installed costs, the reduced lifetime utility costs are larger (\$0 to \$6,000 lifetime incremental equipment costs in many climates for single family homes and an associated \$4,500 to \$13,500 lifetime utility cost savings across the same cases), resulting in positive B/C ratios for all cases.

The Reach Code Team also evaluated a neutral cost electrification scenario where the cost savings for the all-electric code compliant home is invested in a larger PV system, resulting in a lifetime incremental cost of zero based on the On-Bill approach. This package results in utility cost savings and positive on-bill B/C ratio in all cases except Climate Zones 1 and 16 for single family, and Climate Zone 1 for low-rise multifamily. Increasing the PV sizes in those climates by approximately 30% resulted in positive on-bill B/C ratios, while still not resulting in oversizing of PV systems.

Other studies have shown that cost-effectiveness of electrification increases with high efficiency space conditioning and water heating equipment in the all-electric home. This was not directly evaluated in this analysis but based on the favorable cost-effectiveness results of the Equipment, Preempted package for the individual mixed fuel and all-electric upgrades it's expected that applying similar packages to the electrification analysis would result in increased cost-effectiveness.

The Reach Code Team found there can be substantial variability in first costs, particularly related to natural gas infrastructure. Costs are project-dependent and will be impacted by such factors as site characteristics, distance to the nearest gas main, joint trenching, whether work is conducted by the utility or a private contractor, and number of homes per development among other things. While the best cost data available to the Reach Code Team was applied in this analysis, individual projects may experience different costs, either higher or lower than the estimates presented here.



**Table 18: Summary of Single Family Target EDR Margins**

Climate Zone	Mixed Fuel		All-Electric		
	Efficiency	Efficiency & PV/Battery	Efficiency	Efficiency & PV	Efficiency & PV/Battery
01	5.0	10.5	6.5	31.0	41.0
02	3.0	10.0	4.5	19.0	30.0
03	2.5	10.0	4.0	18.0	29.0
04	2.5	10.0	3.0	17.0	28.5
05	2.5	9.0	4.0	18.0	28.5
06	1.5	9.5	2.0	14.0	26.0
07	n/a	9.0	n/a	11.0	24.0
08	1.0	8.0	1.5	10.5	21.5
09	2.5	8.5	2.5	11.5	21.0
10	3.0	9.5	3.0	11.0	21.0
11	4.0	9.0	4.5	14.0	23.0
12	3.0	9.5	3.5	15.5	25.0
13	4.5	9.5	5.0	13.0	22.0
14	4.5	9.0	5.5	15.5	23.5
15	4.5	7.0	5.5	6.0	13.0
16	5.0	10.5	4.5	26.5	35.0

**Table 19: Summary of Multifamily Target EDR Margins**

Climate Zone	Mixed Fuel		All-Electric		
	Efficiency	Efficiency & PV/Battery	Efficiency	Efficiency & PV	Efficiency & PV/Battery
01	2.0	11.5	3.0	22.5	34.5
02	1.5	10.5	1.5	17.5	30.5
03	0.5	10.0	n/a	16.0	29.5
04	1.0	11.0	1.0	15.0	28.5
05	0.5	9.5	0.5	17.0	30.0
06	1.0	10.5	1.0	13.5	27.5
07	0.5	11.0	0.5	12.5	27.0
08	1.0	9.5	1.0	11.5	24.0
09	1.5	9.5	1.5	11.0	23.0
10	1.5	10.0	1.5	10.5	23.0
11	2.5	10.5	3.5	13.0	25.0
12	1.5	10.0	2.5	14.0	26.5
13	3.0	10.5	3.0	12.0	23.5
14	3.0	9.5	3.5	14.0	24.5
15	4.0	8.5	4.0	7.0	16.5
16	2.0	9.5	3.0	19.5	29.5



## 5 References

- California Energy Commission. 2017. Rooftop Solar PV System. Measure number: 2019-Res-PV-D Prepared by Energy and Environmental Economics, Inc. <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>
- California Energy Commission. 2018a. 2019 Alternative Calculation Method Approval Manual. CEC-400-2018-023-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-023/CEC-400-2018-023-CMF.pdf>
- California Energy Commission. 2018b. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. CEC-400-2018-020-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf>
- California Energy Commission. 2018c. 2019 Reference Appendices. CEC-400-2018-021-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-021/CEC-400-2018-021-CMF.pdf>
- California Energy Commission. 2018d. 2019 Residential Compliance Manual. CEC-400-2018-017-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-017/CEC-400-2018-017-CMF.pdf>
- California Energy Commission. 2019. 2019 Residential Alternative Calculation Method Reference Manual. CEC-400-2019-005-CMF. May 2019. California Energy Commission. <https://www.energy.ca.gov/2019publications/CEC-400-2019-005/CEC-400-2019-005-CMF.pdf>
- California Public Utilities Commission. 2016. Rulemaking No. 15-03-010 An Order Instituting Rulemaking to Identify Disadvantaged Communities in the San Joaquin Valley and Analyze Economically Feasible Options to Increase Access to Affordable Energy in Those Disadvantages Communities. Proposed Decision of Commissioner Guzman Aceves. April 07, 2017. <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M183/K389/183389022.PDF>
- Davis Energy Group. 2015. Evaluation of Ducts in Conditioned Space for New California Homes. Prepared for Pacific Gas and Electric Company. March 2015. <https://www.etcc-ca.com/reports/evaluation-ducts-conditioned-space-new-california-homes>
- Energy & Environmental Economics. 2019. Residential Building Electrification in California. April 2019. [https://www.ethree.com/wp-content/uploads/2019/04/E3\\_Residential\\_Building\\_Electrification\\_in\\_California\\_April\\_2019.pdf](https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf)
- EPRI. 2016. SMUD All-Electric Homes Electrification Case Study: Summary for the Three-Prong Test Discussion. Electric Power Research Institute, Inc. September. 2016. Presentation to Sacramento Municipal Utility District.
- Horii, B., E. Cutter, N. Kapur, J. Arent, and D. Conotyannis. 2014. “Time Dependent Valuation of Energy for Developing Building Energy Efficiency Standards.” [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09\\_workshop/2017\\_TDV\\_Documents/](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents/)
- Itron. 2014. 2010-2012 WO017 Ex Ante Measure Cost Study: Final Report. Itron. May 2014. Presented to California Public Utilities Commission.
- Barbose, Galen and Darghouth, Naim. 2018. Tracking the Sun. Installed Price Trends for Distributed Photovoltaic Systems in the United States – 2018 Edition. Lawrence Berkeley National Laboratory. September 2018. [https://emp.lbl.gov/sites/default/files/tracking\\_the\\_sun\\_2018\\_edition\\_final\\_0.pdf](https://emp.lbl.gov/sites/default/files/tracking_the_sun_2018_edition_final_0.pdf)
- Navigant. 2018. Analysis of the Role of Gas for a Low-Carbon California Future. July 24, 2018. Prepared for Southern California Gas Company. [https://www.socalgas.com/1443741887279/SoCalGas\\_Renewable\\_Gas\\_Final-Report.pdf](https://www.socalgas.com/1443741887279/SoCalGas_Renewable_Gas_Final-Report.pdf)



Penn, Ivan. 2018. Cheaper Battery Is Unveiled as a Step to a Carbon-Free Grid. The New York Times. September 2018. <https://www.nytimes.com/2018/09/26/business/energy-environment/zinc-battery-solar-power.html>. Accessed January 29, 2019.

Statewide CASE Team. 2017a. Codes and Standards Enhancement (CASE) Initiative Drain Water Heat Recovery – Final Report. July 2017. [http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report\\_DWHR\\_Final\\_September-2017.pdf](http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report_DWHR_Final_September-2017.pdf)

Statewide CASE Team. 2017b. Codes and Standards Enhancement (CASE) Initiative High Performance Attics – Final Report. September 2017. [http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report\\_HPA\\_Final\\_September-2017.pdf](http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report_HPA_Final_September-2017.pdf)

Statewide CASE Team. 2017c. Codes and Standards Enhancement (CASE) Initiative High Performance Walls – Final Report. September 2017. [http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report\\_HPW\\_Final\\_September-2017.pdf](http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report_HPW_Final_September-2017.pdf)

Statewide CASE Team. 2017d. Codes and Standards Enhancement (CASE) Initiative Residential High Performance Windows & Doors – Final Report. August 2017. [http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report\\_Res-Windows-and-Doors\\_Final\\_September-2017.pdf](http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report_Res-Windows-and-Doors_Final_September-2017.pdf)

Statewide CASE Team. 2018. Energy Savings Potential and Cost-Effectiveness Analysis of High Efficiency Windows in California. Prepared by Frontier Energy. May 2018. <https://www.etcc-ca.com/reports/energy-savings-potential-and-cost-effectiveness-analysis-high-efficiency-windows-california>

Statewide Reach Codes Team. 2016. CALGreen Cost-Effectiveness Study. Prepared for Pacific Gas and Electric Company. Prepared by Davis Energy Group. November 2016. [http://localenergycodes.com/download/50/file\\_path/fieldList/2016%20RNC%20Tiers%201-2%20Cost-Eff%20Report](http://localenergycodes.com/download/50/file_path/fieldList/2016%20RNC%20Tiers%201-2%20Cost-Eff%20Report)

Statewide Reach Codes Team. 2017a. CALGreen All-Electric Cost-Effectiveness Study. Prepared for Pacific Gas and Electric Company. Prepared by Davis Energy Group. October 2017. [http://localenergycodes.com/download/276/file\\_path/fieldList/2016%20RNC%20All-Electric%20Cost-Eff%20Report](http://localenergycodes.com/download/276/file_path/fieldList/2016%20RNC%20All-Electric%20Cost-Eff%20Report)

Statewide Reach Codes Team. 2017b. 2016 Title 24 Residential Reach Code Recommendations: Cost-effectiveness Analysis for All California Climate Zones. Prepared for Southern California Edison. Prepared by TRC Energy Services. August 2017. [http://localenergycodes.com/download/283/file\\_path/fieldList/2016%20RNC%20Reach%20Code%20Tier%203%20Cost-Eff%20Report](http://localenergycodes.com/download/283/file_path/fieldList/2016%20RNC%20Reach%20Code%20Tier%203%20Cost-Eff%20Report)

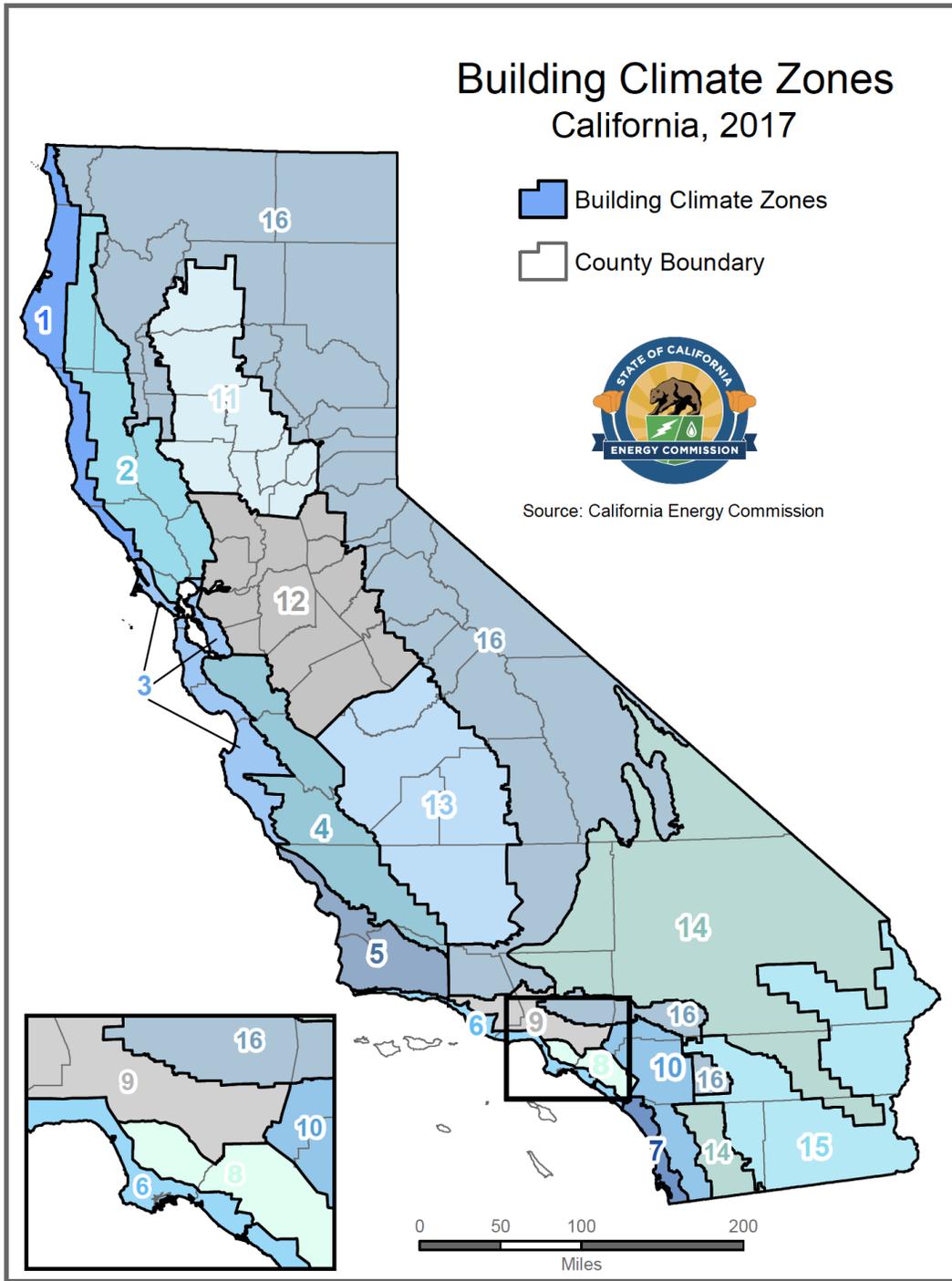
Statewide Reach Codes Team. 2018. PV + Battery Storage Study. Prepared for Pacific Gas and Electric Company. Prepared by EnergySoft. July, 2018. [http://localenergycodes.com/download/430/file\\_path/fieldList/PV%20Plus%20Battery%20Storage%20Report](http://localenergycodes.com/download/430/file_path/fieldList/PV%20Plus%20Battery%20Storage%20Report)

Hopkins, Asa, Takahashi, Kenji, Glick, Devi, Whited, Melissa. 2018. Decarbonization of Heating Energy Use in California Buildings. Synapse Energy Economics, Inc. October 2018. <http://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>

TRC. 2018. City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis Draft. September 2018. <https://cityofpaloalto.org/civicax/filebank/documents/66742>



## Appendix A - California Climate Zone Map



**Figure 15: Map of California Climate Zones** (courtesy of the California Energy Commission<sup>17</sup>)

<sup>17</sup> [https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)



## Appendix B – Utility Tariff Details

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**PG&E**

The following pages provide details on the PG&E electricity and natural gas tariffs applied in this study. Table 20 describes the baseline territories that were assumed for each climate zone.

**Table 20: PG&E Baseline Territory by Climate Zone**

	Baseline Territory
CZ01	V
CZ02	X
CZ03	T
CZ04	X
CZ05	T
CZ11	R
CZ12	S
CZ13	R
CZ16	Y

The PG&E monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending January 2019 according to the rates shown below.

Pacific Gas and Electric Company  
Residential Non-CARE and CARE Gas Tariff Rates  
January 1, 2018, to Present  
(\$/therm)<sup>1/</sup>

Effective Date	Advice Letter Number	Minimum Transportation Charge <sup>2/</sup> (per day)	Procurement Charge	Transportation Charge <sup>2/</sup>		TOTAL Residential Non-CARE Schedules Charge <sup>3/</sup>	
				Baseline	Excess	Baseline	Excess
01/01/18	3918-G	\$0.09863	\$0.37310	\$0.91828	\$1.46925	\$1.29138	\$1.84235
02/01/18	3931-G	\$0.09863	\$0.40635	\$0.91828	\$1.46925	\$1.32463	\$1.87560
03/01/18	3941-G	\$0.09863	\$0.32103	\$0.91828	\$1.46925	\$1.23931	\$1.79028
04/01/18	3959-G	\$0.09863	\$0.34783	\$0.91828	\$1.46925	\$1.26611	\$1.81708
05/01/18	3969-G	\$0.09863	\$0.26995	\$0.91828	\$1.46925	\$1.18823	\$1.73920
06/01/18	3980-G	\$0.09863	\$0.21571	\$0.91828	\$1.46925	\$1.13399	\$1.68496
07/01/18	3984-G	\$0.09863	\$0.22488	\$0.93438	\$1.49502	\$1.15926	\$1.71990
08/01/18	3995-G	\$0.09863	\$0.28814	\$0.93438	\$1.49502	\$1.22252	\$1.78316
09/01/18	4008-G	\$0.09863	\$0.25597	\$0.93438	\$1.49502	\$1.19035	\$1.75099
10/01/18	4018-G	\$0.09863	\$0.27383	\$0.93438	\$1.49502	\$1.20821	\$1.76885
11/01/18	4034-G	\$0.09863	\$0.35368	\$0.93438	\$1.49502	\$1.28806	\$1.84870
12/01/18	4046-G	\$0.09863	\$0.42932	\$0.93438	\$1.49502	\$1.36370	\$1.92434
01/01/19	4052-G	\$0.09863	\$0.43394 <sup>7/</sup>	\$0.99414	\$1.59063	\$1.42808	\$2.02457

<sup>1/</sup> Unless otherwise noted  
<sup>2/</sup> Effective July 1, 2005, the Transportation Charge will be no less than the Minimum Transportation Charge of \$0.09863 (per day). Applicable to Rate Schedule G-1 only and does not apply to submetered tenants of master-metered customers served under gas Rate Schedule GS and GT.  
<sup>3/</sup> Schedule G-PPPS (Public Purpose Program Surcharge) needs to be added to the TOTAL Non-CARE Charge and TOTAL CARE Charge for bill calculation. See Schedule G-PPPS for details and exempt customers.  
<sup>4/</sup> CARE Schedules include California Solar Initiative (CSI) Exemption in accordance with Advice Letter 3257-G-A.  
<sup>5/</sup> Per dwelling unit per day (Multifamily Service)  
<sup>6/</sup> Per installed space per day (Mobilehome Park Service)  
<sup>7/</sup> This procurement rate includes a charge of \$0.03686 per therm to reflect account balance amortizations in accordance with Advice Letter 3157-G.  
<sup>8/</sup> Residential bill credit of (\$29.85) per household, annual bill credit occurring in the October 2018 bill cycle, thereafter in the April bill cycle.  
 Seasons: Winter = Nov-Mar Summer = April-Oct





**Pacific Gas and Electric Company**  
 U 39 San Francisco, California

Cancelling Revised Cal. P.U.C. Sheet No. 43533-E  
 Revised Cal. P.U.C. Sheet No. 42728-E

**ELECTRIC SCHEDULE E-TOU  
 RESIDENTIAL TIME-OF-USE SERVICE**

Sheet 4

RATES:  
 (Cont'd.)

**OPTION B TOTAL RATES**

Total Energy Rates (\$ per kWh)	PEAK	OFF-PEAK
Summer (all usage)	\$0.37188 (R)	\$0.26882 (R)
Winter (all usage)	\$0.23441 (R)	\$0.21561 (R)

Delivery Minimum Bill Amount (\$ per meter per day)      \$0.32854

California Climate Credit (per household, per semi-annual payment occurring in the April and October bill cycles)      (\$39.42)

Total bundled service charges shown on customer's bills are unbundled according to the component rates shown below. Where the delivery minimum bill amount applies, the customer's bill will equal the sum of (1) the delivery minimum bill amount plus (2) for bundled service, the generation rate times the number of kWh used. For revenue accounting purposes, the revenues from the delivery minimum bill amount will be assigned to the Transmission, Transmission Rate Adjustments, Reliability Services, Public Purpose Programs, Nuclear Decommissioning, Competition Transition Charges, Energy Cost Recovery Amount, DWR Bond, and New System Generation Charges based on kWh usage times the corresponding unbundled rate component per kWh, with any residual revenue assigned to Distribution.\*\*\*

**UNBUNDLING OF OPTION B TOTAL RATES**

Generation	PEAK	OFF-PEAK
Summer (all usage)	\$0.21238	\$0.10932
Winter (all usage)	\$0.10554	\$0.08674
Distribution**		
Summer (all usage)	\$0.10716 (R)	\$0.10716 (R)
Winter (all usage)	\$0.07653 (R)	\$0.07653 (R)
Transmission* (all usage)	\$0.02469 (R)	
Transmission Rate Adjustments* (all usage)	\$0.00214	
Reliability Services* (all usage)	\$0.00260	
Public Purpose Programs (all usage)	\$0.01413	
Nuclear Decommissioning (all usage)	\$0.00020	
Competition Transition Charges (all usage)	\$0.00132	
Energy Cost Recovery Amount (all usage)	(\$0.00005)	
DWR Bond (all usage)	\$0.00503 (R)	
New System Generation Charge (all usage)**	\$0.00228	

\* Transmission, Transmission Rate Adjustments and Reliability Service charges are combined for presentation on customer bills.  
 \*\* Distribution and New System Generation Charges are combined for presentation on customer bills.  
 \*\*\* This same assignment of revenues applies to direct access and community choice aggregation customers.

(Continued)

Advice	5444-E	Issued by	Submitted	December 18, 2018
Decision	18-08-013	<b>Robert S. Kenney</b>	Effective	January 1, 2019
		Vice President, Regulatory Affairs	Resolution	





Revised Cal. P.U.C. Sheet No. 34735-G  
 Cancelling Revised Cal. P.U.C. Sheet No. 34691-G

**GAS SCHEDULE G-1  
 RESIDENTIAL SERVICE**

Sheet 1

**APPLICABILITY:** This rate schedule<sup>1</sup> applies to natural gas service to Core End-Use Customers on PG&E's Transmission and/or Distribution Systems. To qualify, service must be to individually-metered single family premises for residential use, including those in a multifamily complex, and to separately-metered common areas in a multifamily complex where Schedules GM, GS, or GT are not applicable. Common area accounts that are separately metered by PG&E have an option of switching to a core commercial rate schedule. Common area accounts are those accounts that provide gas service to common use areas as defined in Rule 1.

Per D.15-10-032 and D.18-03-017, transportation rates include GHG Compliance Cost for non-covered entities. Customers who are directly billed by the Air Resources Board (ARB), i.e., covered entities, are exempt from paying AB 32 GHG Compliance Costs through PG&E's rates.<sup>2</sup> A "Cap-and-Trade Cost Exemption" credit for these costs will be shown as a line item on exempt customers' bills.<sup>3,4</sup>

**TERRITORY:** Schedule G-1 applies everywhere within PG&E's natural gas Service Territory.

**RATES:** Customers on this schedule pay a Procurement Charge and a Transportation Charge, per meter, as shown below. The Transportation Charge will be no less than the Minimum Transportation Charge, as follows:

<u>Minimum Transportation Charge:</u> <sup>5</sup>		<u>Per Day</u>	
		\$0.09863	
		<u>Per Therm</u>	
	<u>Baseline</u>		<u>Excess</u>
<u>Procurement:</u>	\$0.43394 (l)		\$0.43394 (l)
<u>Transportation Charge:</u>	\$0.99414 (l)		\$1.59063 (l)
<b>Total:</b>	\$1.42808 (l)		\$2.02457 (l)
California Natural Gas Climate Credit (per Household, annual payment occurring in October 2018 bill cycle, and thereafter in the April bill cycle)	(\$25.45) (l)		

Public Purpose Program Surcharge:  
 Customers served under this schedule are subject to a gas Public Purpose Program (PPP) Surcharge under Schedule G-PPPS.

See Preliminary Statement, Part B for the Default Tariff Rate Components.

The Procurement Charge on this schedule is equivalent to the rate shown on informational Schedule G-CP—Gas Procurement Service to Core End-Use Customers.

<sup>1</sup> PG&E's gas tariffs are available online at [www.pge.com](http://www.pge.com).  
<sup>2</sup> Covered entities are not exempt from paying costs associated with LUAF Gas and Gas used by Company Facilities.  
<sup>3</sup> The exemption credit will be equal to the effective non-exempt AB 32 GHG Compliance Cost Rate (\$ per therm) included in Preliminary Statement – Part B, multiplied by the customer's billed volumes (therms) for each billing period.  
<sup>4</sup> PG&E will update its billing system annually to reflect newly exempt or newly excluded customers to conform with lists of Directly Billed Customers provided annually by the ARB.  
<sup>5</sup> The Minimum Transportation charge does not apply to submetered tenants of master-metered customers served under gas rate Schedules GS and GT.

(Continued)

<i>Advice</i>	4052-G	<i>Issued by</i>	<i>Submitted</i>	December 21, 2018
<i>Decision</i>	97-10-065 & 98-07-025	<i>Robert S. Kenney</i> <i>Vice President, Regulatory Affairs</i>	<i>Effective</i>	January 1, 2019
			<i>Resolution</i>	



**SCE**

The following pages provide details on are the SCE electricity tariffs applied in this study. Table 21 describes the baseline territories that were assumed for each climate zone.

**Table 21: SCE Baseline Territory by Climate Zone**

	<b>Baseline Territory</b>
CZ06	6
CZ08	8
CZ09	9
CZ10	10
CZ14	14
CZ15	15

	Delivery	Generation	Total Rate
<b>TOU-Default-Rate-1 (On-Peak 4:00 pm - 9:00 pm)</b>			
Energy Charge - \$/kWh			
Summer Season - On-Peak	0.19880	0.20072	0.39952
Mid-Peak	0.19880	0.05948	0.25828
Off-Peak	0.15574	0.06023	0.21597
Winter Season - Mid-Peak	0.19880	0.08308	0.28188
Off-Peak	0.15574	0.11309	0.26883
Super-Off-Peak	0.15062	0.01344	0.16406
Basic Charge - \$/day			
Single-Family Residence	0.031	0.000	0.031
Multi-Family Residence	0.024	0.000	0.024
Minimum Charge - \$/day			
Single Family Residence	0.338	0.000	0.338
Multi-Family Residence	0.338	0.000	0.338
Baseline Credit - \$/kWh	(0.06512)	0.00000	(0.06512)



	Delivery	Generation	Total Rate
<b>TOU-D-Rate PRIME</b>			
Energy Charge - \$/kWh			
Summer Season - On-Peak	0.15926	0.19811	0.35737
Mid-Peak	0.15926	0.10092	0.26018
Off-Peak	0.08308	0.04687	0.12995
Winter Season - Mid-Peak	0.16268	0.16761	0.33029
Off-Peak	0.08081	0.04331	0.12412
Super-Off-Peak	0.08081	0.04331	0.12412
Customer Charge - \$/day	0.395	0.000	0.395

TOU Period	Weekdays		Weekends and Holidays	
	Summer	Winter	Summer	Winter
On-Peak	4 p.m. - 9 p.m.			
Mid-Peak		4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	All other hours	9 p.m. - 8 a.m.	All other hours	9 p.m. - 8 a.m.
Super-Off-Peak		8 a.m. - 4 p.m.		8 a.m. - 4 p.m.

**PROPOSED**  
(7 Year Average 2010-2016)

Summer kWh per Day			Winter kWh per Day		
Baseline Region	Basic	All Electric	Baseline Region	Basic	All Electric
05	17.2	17.9	05	18.7	29.1
06	11.4	8.8	06	11.3	13.0
08	12.6	9.8	08	10.6	12.7
09	16.5	12.4	09	12.3	14.3
10	18.9	15.8	10	12.5	17.0
13	22.0	24.6	13	12.6	24.3
14	18.7	18.3	14	12.0	21.3
15	46.4	24.1	15	9.9	18.2
16	14.4	13.5	16	12.6	23.1



**SoCalGas**

Following are the SoCalGas natural gas tariffs applied in this study. Table 22 describes the baseline territories that were assumed for each climate zone.

**Table 22: SoCalGas Baseline Territory by Climate Zone**

	Baseline Territory
CZ05	2
CZ06	1
CZ08	1
CZ09	1
CZ10	1
CZ14	2
CZ15	1

SOUTHERN CALIFORNIA GAS COMPANY Revised CAL P.U.C. SHEET NO. 55854-G  
 LOS ANGELES, CALIFORNIA CANCELING Revised CAL P.U.C. SHEET NO. 55828-G

Schedule No. GR			Sheet 1
<b>RESIDENTIAL SERVICE</b>			
(Includes GR, GR-C and GT-R Rates)			
<b>APPLICABILITY</b>			
The GR rate is applicable to natural gas procurement service to individually metered residential customers.			
The GR-C, cross-over rate, is a core procurement option for individually metered residential core transportation customers with annual consumption over 50,000 therms, as set forth in Special Condition 10.			
The GT-R rate is applicable to Core Aggregation Transportation (CAT) service to individually metered residential customers, as set forth in Special Condition 11.			
The California Alternate Rates for Energy (CARE) discount of 20%, reflected as a separate line item on the bill, is applicable to income-qualified households that meet the requirements for the CARE program as set forth in Schedule No. G-CARE.			
<b>TERRITORY</b>			
Applicable throughout the service territory.			
<b>RATES</b>			
	<u>GR</u>	<u>GR-C</u>	<u>GT-R</u>
Customer Charge, per meter per day:	16.438¢	16.438¢	16.438¢
For "Space Heating Only" customers, a daily Customer Charge applies during the winter period from November 1 through April 30 <sup>1/</sup> :			
	33.149¢	33.149¢	33.149¢
<b>Baseline Rate, per therm (baseline usage defined in Special Conditions 3 and 4):</b>			
Procurement Charge: <sup>2/</sup>	41.589¢	42.676¢	N/A
Transmission Charge:	63.566¢	63.566¢	63.566¢
Total Baseline Charge:	105.155¢	106.242¢	63.566¢
<b>Non-Baseline Rate, per therm (usage in excess of baseline usage):</b>			
Procurement Charge: <sup>2/</sup>	41.589¢	42.676¢	N/A
Transmission Charge:	96.806¢	96.806¢	96.806¢
Total Non-Baseline Charge:	138.395¢	139.482¢	96.806¢
<sup>1/</sup> For the summer period beginning May 1 through October 31, with some exceptions, usage will be accumulated to at least 20 Ccf (100 cubic feet) before billing.			
(Footnotes continue next page.)			

R  
R  
R  
R

(Continued)

(TO BE INSERTED BY UTILITY)  
 ADVICE LETTER NO. 5410  
 DECISION NO.  
 106

ISSUED BY  
**Dan Skopec**  
 Vice President  
 Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)  
 SUBMITTED Jan 7, 2019  
 EFFECTIVE Jan 10, 2019  
 RESOLUTION NO. G-3351



**SDG&E**

Following are the SDG&E electricity and natural gas tariffs applied in this study. Table 23 describes the baseline territories that were assumed for each climate zone.

**Table 23: SDG&E Baseline Territory by Climate Zone**

	Baseline Territory
CZ07	Coastal
CZ10	Inland
CZ14	Mountain



San Diego Gas & Electric Company  
San Diego, California

Revised Cal. P.U.C. Sheet No. 31320-E

Canceling Revised Cal. P.U.C. Sheet No. 31103-E

**SCHEDULE TOU-DR1** Sheet 2  
**RESIDENTIAL TIME-OF-USE**

RATES

Total Rates:

Description – TOU DR1	UDC Total Rate	DWR-BC Rate	EECC Rate + DWR Credit	Total Rate
<b>Summer:</b>				
On-Peak	0.29562	R 0.00503	R 0.35013	R 0.65078
Off-Peak	0.29562	R 0.00503	R 0.11235	R 0.41300
Super Off-Peak	0.29562	R 0.00503	R 0.05739	R 0.35804
<b>Winter:</b>				
On-Peak	0.32037	R 0.00503	R 0.07618	R 0.40158
Off-Peak	0.32037	R 0.00503	R 0.06762	R 0.39302
Super Off-Peak	0.32037	R 0.00503	R 0.05812	R 0.38352
Summer Baseline Adjustment Credit up to 130% of Baseline	(0.19921)	I		(0.19921)
Winter Baseline Adjustment Credit up to 130% of Baseline	(0.16853)	I		(0.16853)
Minimum Bill (\$/day)	0.329			0.329

Description – TOU DR1	UDC Total Rate	DWR-BC Rate	EECC Rate + DWR Credit	Total Rate	Total Effective Care Rate
<b>Summer – CARE</b>					
<b>Rates:</b>					
On-Peak	0.29494	R 0.00000	0.35013	R 0.64507	R 0.41628
Off-Peak	0.29494	R 0.00000	0.11235	R 0.40729	R 0.26077
Super Off-Peak	0.29494	R 0.00000	0.05739	R 0.35233	R 0.22483
<b>Winter – CARE</b>					
<b>Rates:</b>					
On-Peak	0.31989	R 0.00000	0.07618	R 0.39587	R 0.25330
Off-Peak	0.31989	R 0.00000	0.06762	R 0.38731	R 0.24770
Super Off-Peak	0.31989	R 0.00000	0.05812	R 0.37781	R 0.24149
Summer Baseline Adjustment Credit up to 130% of Baseline	(0.19921)	I		(0.19921)	I (0.13028)
Winter Baseline Adjustment Credit up to 130% of Baseline	(0.16853)	I		(0.16853)	I (0.11022)
Minimum Bill (\$/day)	0.164			0.164	0.164

Note:

- (1) Total Rates consist of UDC, Schedule DWR-BC (Department of Water Resources Bond Charge), and Schedule EECC (Electric Energy Commodity Cost) rates, with the EECC rates reflecting a DWR Credit.
- (2) Total Rates presented are for customers that receive commodity supply and delivery service from Utility.
- (3) DWR-BC charges do not apply to CARE customers.
- (4) As identified in the rates tables, customer bills will also include line-item summer and winter credits for usage up to 130% of baseline to provide the rate capping benefits adopted by Assembly Bill 1X and Senate Bill 695.

(Continued)

2C11	Issued by	Submitted	Dec 28, 2018
Advice Ltr. No. 3326-E	<b>Dan Skopec</b>	Effective	Jan 1, 2019
Decision No. _____	Vice President Regulatory Affairs	Resolution No. _____	





San Diego Gas & Electric Company  
San Diego, California

Revised Cal. P.U.C. Sheet No. 23614-G

Canceling Revised Cal. P.U.C. Sheet No. 23601-G

**SCHEDULE GR**

Sheet 1

RESIDENTIAL NATURAL GAS SERVICE  
(Includes Rates for GR, GR-C, GTC/GTCA)

APPLICABILITY

The GR rate is applicable to natural gas procurement service for individually metered residential customers.

The GR-C, cross-over rate, is a core procurement option for individually metered residential core transportation customers with annual consumption over 50,000 therms, as set forth in Special Condition 10.

The GTC/GTCA rate is applicable to intrastate gas transportation-only services to individually metered residential customers, as set forth in Special Condition 11.

Customers taking service under this schedule may be eligible for a 20% California Alternate Rate for Energy (CARE) program discount, reflected as a separate line item on the bill, if they qualify to receive service under the terms and conditions of Schedule G-CARE.

TERRITORY

Within the entire territory served natural gas by the utility.

RATES

	<u>GR</u>	<u>GR-C</u>	<u>GTC/GTCA<sup>1/</sup></u>
<u>Baseline Rate</u> , per therm (baseline usage defined in Special Conditions 3 and 4):			
Procurement Charge: <sup>2/</sup> .....	\$0.41614	\$0.41614 R	N/A
Transmission Charge: .....	<u>\$1.01230</u>	<u>\$1.01230</u>	<u>\$1.01230</u>
Total Baseline Charge: .....	\$1.42844	\$1.42844 R	\$1.01230
<u>Non-Baseline Rate</u> , per therm (usage in excess of baseline usage):			
Procurement Charge: <sup>2/</sup> .....	\$0.41614	\$0.41614 R	N/A
Transmission Charge: .....	<u>\$1.19980</u>	<u>\$1.19980</u>	<u>\$1.19980</u>
Total Non-Baseline Charge: .....	\$1.61594	\$1.61594 R	\$1.19980
<u>Minimum Bill</u> , per day: <sup>3/</sup>			
Non-CARE customers: .....	\$0.09863	\$0.09863	\$0.09863
CARE customers: .....	\$0.07890	\$0.07890	\$0.07890

<sup>1/</sup> The rates for core transportation-only customers, with the exception of customers taking service under Schedule GT-NGV, include any FERC Settlement Proceeds Memorandum Account (FSPMA) credit adjustments.

<sup>2/</sup> This charge is applicable to Utility Procurement Customers and includes the GPC and GPC-A Procurement Charges shown in Schedule GPC which are subject to change monthly as set forth in Special Condition 7.

<sup>3/</sup> Effective starting May 1, 2017, the minimum bill is calculated as the minimum bill charge of \$0.09863 per day times the number of days in the billing cycle (approximately \$3 per month) with a 20% discount applied for CARE customer resulting in a minimum bill charge of \$0.07890 per day (approximately \$2.40 per month).

(Continued)

1C5  
Advice Ltr. No. 2735-G  
Decision No. \_\_\_\_\_

Issued by  
**Dan Skopec**  
Vice President  
Regulatory Affairs

Submitted Jan 7, 2019  
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**Escalation Assumptions**

The average annual escalation rates in the following table were used in this study and are from E3’s 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). These rates are applied to the 2019 rate schedules over a thirty-year period beginning in 2020. SDG&E was not covered in the E3 study. The Reach Code Team reviewed SDG&E’s GRC filing and applied the same approach that E3 applied for PG&E and SoCalGas to arrive at average escalation rates between 2020 and 2022.

**Table 24: Real Utility Rate Escalation Rate Assumptions**

	Statewide Electric Residential Average Rate (%/year, real)	Natural Gas Residential Core Rate (%/yr escalation, real)		
		PG&E	SoCalGas	SDG&E
2020	2.0%	1.48%	6.37%	5.00%
2021	2.0%	5.69%	4.12%	3.14%
2022	2.0%	1.11%	4.12%	2.94%
2023	2.0%	4.0%	4.0%	4.0%
2024	2.0%	4.0%	4.0%	4.0%
2025	2.0%	4.0%	4.0%	4.0%
2026	1.0%	1.0%	1.0%	1.0%
2027	1.0%	1.0%	1.0%	1.0%
2028	1.0%	1.0%	1.0%	1.0%
2029	1.0%	1.0%	1.0%	1.0%
2030	1.0%	1.0%	1.0%	1.0%
2031	1.0%	1.0%	1.0%	1.0%
2032	1.0%	1.0%	1.0%	1.0%
2033	1.0%	1.0%	1.0%	1.0%
2034	1.0%	1.0%	1.0%	1.0%
2035	1.0%	1.0%	1.0%	1.0%
2036	1.0%	1.0%	1.0%	1.0%
2037	1.0%	1.0%	1.0%	1.0%
2038	1.0%	1.0%	1.0%	1.0%
2039	1.0%	1.0%	1.0%	1.0%
2040	1.0%	1.0%	1.0%	1.0%
2041	1.0%	1.0%	1.0%	1.0%
2042	1.0%	1.0%	1.0%	1.0%
2043	1.0%	1.0%	1.0%	1.0%
2044	1.0%	1.0%	1.0%	1.0%
2045	1.0%	1.0%	1.0%	1.0%
2046	1.0%	1.0%	1.0%	1.0%
2047	1.0%	1.0%	1.0%	1.0%
2048	1.0%	1.0%	1.0%	1.0%
2049	1.0%	1.0%	1.0%	1.0%



## Appendix C – Single Family Detailed Results

**Table 25: Single Family Mixed Fuel Efficiency Package Cost-Effectiveness Results**

CZ	Utility	BASECASE					Non-Preempted							Equipment - Preempted								
		Total EDR	Efficiency EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio
1	PG&E	32.5	54.2	23	3.0	3.3	27.9	49.0	5.3	18.8%	2.5	3.2	3.4	2.8	26.0	47.3	6.9	25.1%	2.3	3.2	4.9	4.1
2	PG&E	25.0	46.0	12	2.2	2.8	22.0	42.7	3.3	16.3%	1.9	2.8	1.6	1.7	21.8	42.6	3.3	16.4%	1.9	2.8	3.8	3.6
3	PG&E	23.9	46.9	10	1.9	2.7	21.3	43.9	3.0	16.7%	1.6	2.7	1.3	1.3	20.1	42.8	4.1	22.8%	1.5	2.7	1.9	2.0
4	PG&E	23.1	44.9	8	1.9	2.7	20.8	42.4	2.5	13.9%	1.7	2.7	0.9	1.2	20.5	42.2	2.7	14.9%	1.6	2.7	2.4	2.7
5	PG&E	22.2	44.4	10	1.8	2.6	19.7	41.7	2.7	16.7%	1.6	2.5	1.1	1.2	19.7	41.7	2.6	16.2%	1.5	2.5	2.3	2.5
5	PG&E/SoCalGas	22.2	44.4	10	1.8	2.6	19.7	41.7	2.7	16.7%	1.6	2.5	0.9	1.2	19.7	41.7	2.6	16.2%	1.5	2.5	2.0	2.5
6	SCE/SoCalGas	23.3	49.9	10	1.6	2.7	21.5	47.8	2.0	12.1%	1.5	2.7	0.7	1.2	21.5	47.9	2.0	11.8%	1.4	2.7	1.6	2.0
7	SDG&E	20.3	49.1	5	1.3	2.6	20.3	49.1	0.0	0.0%	1.3	2.6	-	-	18.8	47.6	1.5	12.4%	1.2	2.6	1.5	1.4
8	SCE/SoCalGas	21.3	46.9	10	1.4	2.9	20.1	45.6	1.3	7.7%	1.3	2.9	0.6	1.4	19.7	45.3	1.6	9.4%	1.3	2.9	1.3	1.8
9	SCE/SoCalGas	24.5	47.7	13	1.5	2.9	22.3	45.1	2.6	11.7%	1.5	2.9	0.7	2.0	21.9	44.8	2.9	13.4%	1.4	2.9	1.8	3.7
10	SCE/SoCalGas	24.2	46.3	10	1.6	3.0	21.7	43.1	3.2	14.3%	1.5	3.0	0.6	1.3	21.5	43.1	3.2	14.6%	1.4	3.0	2.0	3.8
10	SDG&E	24.2	46.3	10	1.6	3.0	21.7	43.1	3.2	14.3%	1.5	3.0	0.8	1.3	21.5	43.1	3.2	14.6%	1.4	3.0	2.6	3.8
11	PG&E	24.6	44.9	11	2.1	3.6	21.3	40.6	4.3	16.4%	1.9	3.4	0.8	1.2	20.7	39.9	5.1	19.2%	1.8	3.4	2.5	3.7
12	PG&E	25.5	44.8	12	2.1	3.0	22.5	41.3	3.5	14.9%	1.9	2.9	1.2	1.8	22.5	41.4	3.4	14.4%	1.9	3.0	3.3	4.6
13	PG&E	25.7	46.5	11	2.0	3.8	22.2	41.9	4.6	16.9%	1.8	3.6	0.8	1.3	21.2	40.7	5.8	21.4%	1.7	3.6	5.3	8.4
14	SCE/SoCalGas	25.3	46.3	15	2.3	3.2	21.5	41.3	5.0	18.5%	2.1	3.0	1.6	2.5	20.8	40.4	5.8	21.7%	2.0	3.0	4.0	6.1
14	SDG&E	25.3	46.3	15	2.3	3.2	21.5	41.3	5.0	18.5%	2.1	3.0	1.9	2.5	20.8	40.4	5.8	21.7%	2.0	3.0	4.9	6.1
15	SCE/SoCalGas	22.4	49.1	11	1.7	5.4	19.7	44.3	4.8	14.8%	1.6	5.0	1.0	1.6	19.5	44.1	5.0	15.4%	1.5	5.0	>1	>1
16	PG&E	30.4	48.9	22	3.3	2.7	25.0	43.5	5.4	20.6%	2.6	2.7	1.6	1.5	24.8	42.7	6.2	23.5%	2.7	2.6	2.2	2.2

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



**Table 26: Single Family Mixed Fuel Efficiency & PV/Battery Package Cost-Effectiveness Results**

CZ	Utility	BASECASE				Efficiency & PV/Battery						
		Total EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio
1	PG&E	32.5	23	3.0	3.3	21.9	10.6	31.8%	2.4	3.3	0.9	1.6
2	PG&E	25.0	12	2.2	2.8	14.9	10.1	27.3%	1.8	2.9	0.5	1.6
3	PG&E	23.9	10	1.9	2.7	13.9	10.0	27.7%	1.5	2.8	0.4	1.4
4	PG&E	23.1	8	1.9	2.7	13.0	10.1	24.9%	1.5	2.8	0.3	1.5
5	PG&E	22.2	10	1.8	2.6	12.8	9.4	29.7%	1.4	2.6	0.4	1.3
5	PG&E/SoCalGas	22.2	10	1.8	2.6	12.8	9.4	29.7%	1.4	2.6	0.3	1.3
6	SCE/SoCalGas	23.3	10	1.6	2.7	13.6	9.8	20.1%	1.2	2.8	0.8	1.3
7	SDG&E	20.3	5	1.3	2.6	11.1	9.2	9.0%	1.0	2.7	0.1	1.3
8	SCE/SoCalGas	21.3	10	1.4	2.9	12.9	8.4	23.7%	1.1	3.0	0.9	1.3
9	SCE/SoCalGas	24.5	13	1.5	2.9	15.7	8.8	24.7%	1.2	3.0	1.0	1.5
10	SCE/SoCalGas	24.2	10	1.6	3.0	14.6	9.6	27.3%	1.3	3.1	1.0	1.5
10	SDG&E	24.2	10	1.6	3.0	14.6	9.6	27.3%	1.3	3.1	0.6	1.5
11	PG&E	24.6	11	2.1	3.6	15.4	9.2	29.4%	1.8	3.5	0.4	1.5
12	PG&E	25.5	12	2.1	3.0	15.9	9.6	28.9%	1.8	3.0	0.4	1.7
13	PG&E	25.7	11	2.0	3.8	16.1	9.7	28.9%	1.7	3.7	0.4	1.6
14	SCE/SoCalGas	25.3	15	2.3	3.2	16.3	9.0	30.1%	1.8	3.1	1.3	1.7
14	SDG&E	25.3	15	2.3	3.2	16.3	9.0	30.1%	1.8	3.1	1.2	1.7
15	SCE/SoCalGas	22.4	11	1.7	5.4	15.3	7.1	25.1%	1.4	5.1	1.1	1.5
16	PG&E	30.4	22	3.3	2.7	19.9	10.5	32.6%	2.4	2.8	0.9	1.4

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



**Table 27: Single Family All-Electric Efficiency Package Cost-Effectiveness Results**

CZ	Utility	BASECASE					Non-Preempted							Equipment - Preempted								
		Total EDR	Efficiency EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio
1	PG&E	46.8	68.2	36	1.5	3.3	31.8	53.0	15.2	40.2%	1.0	3.3	1.8	1.7	39.9	61.3	6.9	18.3%	1.3	3.3	2.9	2.7
2	PG&E	32.8	53.7	16	1.1	2.8	27.9	48.7	4.9	20.5%	0.9	2.8	1.2	1.1	27.7	48.5	5.1	21.2%	0.9	2.8	2.3	2.1
3	PG&E	33.1	55.6	14	1.0	2.7	28.5	50.9	4.7	20.6%	0.8	2.7	2.6	2.4	28.7	51.2	4.4	19.6%	0.9	2.7	1.8	1.6
4	PG&E	31.3	52.8	12	1.0	2.7	27.9	49.4	3.4	15.5%	0.9	2.7	1.9	1.8	27.4	48.9	3.9	17.6%	0.9	2.7	1.5	1.5
5	PG&E	32.5	54.2	16	1.0	2.6	28.1	49.9	4.4	19.7%	0.9	2.6	2.6	2.3	28.0	49.8	4.4	20.3%	0.9	2.6	1.9	1.7
5	PG&E/SoCalGas	32.5	54.2	16	1.0	2.6	28.1	49.9	4.4	19.7%	0.9	2.6	2.6	2.3	28.0	49.8	4.4	20.3%	0.9	2.6	1.9	1.7
6	SCE/SoCalGas	29.7	55.8	12	0.9	2.7	27.7	53.8	2.0	10.9%	0.8	2.7	1.3	1.4	26.8	53.0	2.9	16.0%	0.8	2.7	2.2	2.3
7	SDG&E	27.1	55.3	7	0.7	2.6	27.1	55.3	0.0	0.0%	0.7	2.6	-	-	24.8	53.0	2.2	16.9%	0.7	2.6	1.6	1.7
8	SCE/SoCalGas	26.1	51.5	10	0.8	2.9	24.5	49.9	1.6	8.9%	0.8	2.9	0.6	1.2	24.4	49.7	1.8	9.7%	0.8	2.9	2.8	3.0
9	SCE/SoCalGas	28.8	51.9	13	0.9	2.9	26.0	49.1	2.8	12.5%	0.8	2.9	0.8	2.0	25.5	48.6	3.3	14.7%	0.8	2.9	2.1	3.2
10	SCE/SoCalGas	28.8	50.7	11	0.9	3.0	25.7	47.6	3.1	14.0%	0.9	3.0	0.9	1.5	25.3	47.2	3.4	15.5%	0.8	3.0	2.3	3.2
10	SDG&E	28.8	50.7	11	0.9	3.0	25.7	47.6	3.1	14.0%	0.9	3.0	1.1	1.5	25.3	47.2	3.4	15.5%	0.8	3.0	2.6	3.2
11	PG&E	30.0	50.2	12	1.1	3.6	25.4	45.6	4.6	16.2%	1.0	3.6	1.2	1.5	24.1	44.3	5.9	20.8%	0.9	3.6	3.0	3.3
12	PG&E	30.9	50.1	13	1.0	3.0	27.1	46.3	3.8	15.3%	0.9	3.0	0.8	1.1	25.8	45.0	5.1	20.4%	0.9	3.0	2.0	2.5
13	PG&E	30.7	51.5	13	1.1	3.8	25.7	46.4	5.1	17.4%	0.9	3.8	1.1	1.4	24.7	45.4	6.0	20.9%	0.9	3.8	2.9	3.3
14	SCE/SoCalGas	31.3	52.2	16	1.4	3.2	25.7	46.6	5.6	18.9%	1.2	3.2	1.0	1.5	25.3	46.2	6.0	20.5%	1.2	3.2	2.3	3.1
14	SDG&E	31.3	52.2	16	1.4	3.2	25.7	46.6	5.6	18.9%	1.2	3.2	1.3	1.5	25.3	46.2	6.0	20.5%	1.2	3.2	2.9	3.1
15	SCE/SoCalGas	26.2	52.8	8	1.3	5.4	20.6	47.2	5.6	16.8%	1.1	5.4	1.1	1.6	18.9	45.5	7.3	21.8%	1.0	5.4	3.3	4.5
16	PG&E	46.5	64.6	39	1.7	2.7	36.8	54.9	9.7	25.2%	1.4	2.7	1.7	1.7	41.6	59.7	4.9	12.7%	1.6	2.7	2.4	2.3



**Table 28: Single Family All-Electric Efficiency & PV-PV/Battery Package Cost-Effectiveness Results**

CZ	Utility	BASECASE				Efficiency & PV							Efficiency & PV/Battery						
		Total EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW	On-Bill B/C Ratio	TDV B/C Ratio
1	PG&E	46.8	36	1.5	3.3	15.4	31.4	40.2%	0.5	6.0	1.8	1.5	5.6	41.2	51.9%	0.3	6.76	1.4	1.4
2	PG&E	32.8	16	1.1	2.8	13.4	19.4	20.5%	0.5	4.9	1.8	1.4	2.7	30.1	31.5%	0.3	5.51	1.4	1.4
3	PG&E	33.1	14	1.0	2.7	14.6	18.5	20.6%	0.5	4.5	2.2	1.7	3.7	29.3	31.6%	0.2	5.10	1.5	1.6
4	PG&E	31.3	12	1.0	2.7	14.1	17.2	15.5%	0.5	4.5	2.1	1.6	2.8	28.6	26.5%	0.2	5.15	1.5	1.6
5	PG&E	32.5	16	1.0	2.6	14.3	18.2	19.7%	0.5	4.3	2.3	1.8	3.8	28.7	32.7%	0.2	4.84	1.6	1.6
5	PG&E/SoCalGas	32.5	16	1.0	2.6	14.3	18.2	19.7%	0.5	4.3	2.3	1.8	3.8	28.7	32.7%	0.2	4.84	1.6	1.6
6	SCE/SoCalGas	29.7	12	0.9	2.7	15.5	14.3	10.9%	0.6	4.1	1.2	1.5	3.6	26.1	18.9%	0.3	4.68	1.2	1.4
7	SDG&E	27.1	7	0.7	2.6	15.8	11.3	0.7%	0.6	3.7	1.9	1.5	2.9	24.2	6.7%	0.3	4.21	1.3	1.5
8	SCE/SoCalGas	26.1	10	0.8	2.9	15.1	10.9	8.9%	0.6	4.0	1.0	1.5	4.5	21.6	24.9%	0.3	4.54	1.1	1.4
9	SCE/SoCalGas	28.8	13	0.9	2.9	17.3	11.5	12.5%	0.7	4.1	1.1	1.6	7.6	21.3	25.5%	0.4	4.66	1.1	1.5
10	SCE/SoCalGas	28.8	11	0.9	3.0	17.7	11.1	14.0%	0.7	4.2	1.1	1.5	7.6	21.2	27.0%	0.4	4.78	1.1	1.5
10	SDG&E	28.8	11	0.9	3.0	17.7	11.1	14.0%	0.7	4.2	1.7	1.5	7.6	21.2	27.0%	0.4	4.78	1.4	1.5
11	PG&E	30.0	12	1.1	3.6	15.8	14.2	16.2%	0.6	5.4	1.8	1.6	6.8	23.2	29.2%	0.4	6.11	1.5	1.6
12	PG&E	30.9	13	1.0	3.0	15.2	15.7	15.3%	0.5	5.0	1.7	1.4	5.6	25.4	29.3%	0.3	5.62	1.3	1.5
13	PG&E	30.7	13	1.1	3.8	17.3	13.4	17.4%	0.6	5.4	1.7	1.5	8.2	22.5	29.4%	0.4	6.14	1.4	1.5
14	SCE/SoCalGas	31.3	16	1.4	3.2	15.8	15.5	18.9%	0.9	4.8	1.2	1.6	7.4	23.9	30.9%	0.6	5.39	1.4	1.6
14	SDG&E	31.3	16	1.4	3.2	15.8	15.5	18.9%	0.9	4.8	1.8	1.6	7.4	23.9	30.9%	0.6	5.39	1.7	1.6
15	SCE/SoCalGas	26.2	8	1.3	5.4	20.0	6.2	16.8%	1.1	5.5	1.1	1.6	12.7	13.5	27.0%	0.8	6.25	1.2	1.5
16	PG&E	46.5	39	1.7	2.7	19.6	27.0	25.2%	0.9	5.5	2.1	1.6	11.1	35.4	34.3%	0.6	6.17	1.7	1.5

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



## Appendix D – Single Family Measure Summary

**Table 29: Single Family Mixed Fuel Efficiency – Non-Preempted Package Measure Summary**

<u>CZ</u>	<u>Duct</u>	<u>Infiltratio</u>	<u>Wall</u>	<u>Attic</u>	<u>Roof</u>	<u>Glazing</u>	<u>Slab</u>	<u>DHW</u>	<u>HVAC</u>	<u>PV</u>
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
2	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
4	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
6	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	1.0 PV scaling
8	< 12 ft ducts in attic	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
9	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
11	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
13	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
14	VLLDCS	3 ACH50	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
15	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 30: Single Family Mixed Fuel Efficiency – Equipment, Preempted Package Measure Summary**

<u>CZ</u>	<u>Duct</u>	<u>Infiltratio</u>	<u>Wall</u>	<u>Attic</u>	<u>Roof</u>	<u>Glazing</u>	<u>Slab</u>	<u>DHW</u>	<u>HVAC</u>	<u>PV</u>
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	96 AFUE, 0.35W/cfm	1.0 PV scaling
2	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	96 AFUE, 0.35W/cfm	1.0 PV scaling
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	96 AFUE, 0.35W/cfm	1.0 PV scaling
4	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	96 AFUE, 0.35W/cfm	1.0 PV scaling
5	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	96 AFUE, 0.35W/cfm	1.0 PV scaling
6	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	92 AFUE, 0.35W/cfm	1.0 PV scaling
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	92 AFUE, 0.35W/cfm	1.0 PV scaling
8	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	92 AFUE, 0.35W/cfm	1.0 PV scaling
9	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
10	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
11	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	18 SEER, 96 AFUE, 0.35W/cfm	1.0 PV scaling
12	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
13	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
14	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
15	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	18 SEER, 96 AFUE, 0.35W/cfm	1.0 PV scaling

LLAHU - Low Leakage Air Handling Unit

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 31: Single Family Mixed Fuel Efficiency & PV/Battery Package Measure Summary**

CZ	Duct	Infiltration	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
2	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
4	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
6	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	Code Min	1.0 PV scaling + 5kWh batt
8	< 12 ft ducts in attic	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
9	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
11	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
13	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
14	VLLDCS	3 ACH50	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
15	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 5kWh batt

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 32: Single Family All-Electric Efficiency – Non-Preempted Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltratio</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
2	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
4	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
6	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Std Design PV
8	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
11	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
12	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
13	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
14	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
15	VLLDCS	Code Min	0.043 wall	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
16	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	Code Min	Code Min	0.45 W/cfm	Std Design PV

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 33: Single Family All-Electric Efficiency – Equipment, Preempted Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltratio</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
2	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
3	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
4	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
5	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
6	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
8	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
9	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
10	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
11	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
12	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
13	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
14	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
15	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
16	LLAHU + 2% leakage	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV

LLAHU - Low Leakage Air Handling Unit

VVLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 34: Single Family All-Electric Efficiency & PV Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltratio</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
2	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
4	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
6	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
8	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
11	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
12	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
13	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
14	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
15	VLLDCS	Code Min	0.043 wall	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
16	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



**Table 35: Single Family All-Electric Efficiency & PV/Battery Package Measure Summary**

CZ	Duct	Infiltration	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
2	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
3	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
4	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
6	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
8	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
11	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
12	VLLDCS	Code Min	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
13	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
14	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
15	VLLDCS	Code Min	0.043 wall (SF); 0.048 wall (MF)	R-38 + R-30 attic	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt
16	VLLDCS	3 ACH50	Code Min	R-38 + R-30 attic	Code Min	0.24/0.50 windows	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 5kWh batt

VLLDCS – Verified Low Leakage Ducts in Conditioned Space



## Appendix E - Multifamily Detailed Results

Table 36: Multifamily Mixed Fuel Efficiency Package Cost-Effectiveness Results

Climate Zone	Utility	BASECASE					Non-Preempted							Equipment - Preempted								
		Total EDR	Efficiency EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW per Building	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio
01	PG&E	28.6	60.7	23	2.7	15.9	25.1	57.3	3.4	19.3%	2.3	16.0	1.1	1.2	26.4	58.4	2.3	12.2%	2.5	15.9	1.3	1.4
02	PG&E	25.7	56.5	12	2.4	13.9	24.2	54.7	1.8	9.9%	2.3	13.8	1.0	1.7	23.6	54.2	2.3	12.5%	2.2	13.9	1.1	1.5
03	PG&E	24.7	57.8	10	2.1	13.5	24.0	57.2	0.6	4.7%	2.1	13.5	1.0	1.1	23.1	56.2	1.6	11.2%	1.9	13.4	1.1	1.2
04	PG&E	25.5	56.8	8	2.2	13.6	24.3	55.5	1.3	7.7%	2.1	13.5	0.8	1.2	23.8	54.9	1.9	10.9%	2.0	13.5	1.1	1.7
05	PG&E	24.2	57.4	10	2.1	12.6	23.7	56.9	0.5	4.4%	2.0	12.6	1.0	1.0	22.7	55.9	1.5	10.9%	1.9	12.6	1.2	1.3
05	PG&E/SoCalGas	24.2	57.4	10	2.1	12.6	23.7	56.9	0.5	4.4%	2.0	12.6	0.8	1.0	22.7	55.9	1.5	10.9%	1.9	12.6	1.1	1.3
06	SCE/SoCalGas	26.8	63.2	10	2.2	13.9	25.8	61.9	1.3	7.0%	2.1	13.8	0.6	1.5	25.5	61.9	1.3	7.4%	2.0	13.9	1.4	1.7
07	SDG&E	26.8	64.5	5	2.1	13.2	26.1	63.6	0.9	5.3%	2.1	13.1	0.7	2.2	25.0	62.5	2.0	12.2%	2.0	13.2	1.1	1.4
08	SCE/SoCalGas	25.7	61.8	10	2.2	14.6	24.6	60.3	1.5	7.4%	2.1	14.5	0.7	1.4	24.6	60.7	1.1	5.7%	2.0	14.6	1.4	1.7
09	SCE/SoCalGas	26.4	59.7	13	2.2	14.7	25.0	57.9	1.8	8.2%	2.2	14.4	1.5	3.3	24.1	56.9	2.8	12.9%	2.1	14.4	1.7	2.9
10	SCE/SoCalGas	27.0	58.7	10	2.3	15.1	25.7	57.0	1.7	7.7%	2.2	14.9	0.8	1.7	24.7	55.8	2.9	13.0%	2.1	14.8	2.0	3.3
10	SDG&E	27.0	58.7	10	2.3	15.1	25.7	57.0	1.7	7.7%	2.2	14.9	1.1	1.7	24.7	55.8	2.9	13.0%	2.1	14.8	2.6	3.3
11	PG&E	24.5	54.5	11	2.4	16.6	22.3	51.6	2.9	11.9%	2.2	16.3	0.7	1.2	22.2	51.3	3.2	13.2%	2.2	16.1	1.8	3.3
12	PG&E	25.9	55.3	12	2.3	14.9	24.3	53.4	1.9	8.8%	2.2	14.8	1.1	2.2	23.5	52.5	2.8	12.8%	2.1	14.7	1.2	2.2
13	PG&E	26.1	55.9	11	2.3	17.5	23.7	52.8	3.1	12.1%	2.1	17.1	0.6	1.3	23.7	52.5	3.4	13.2%	2.1	16.9	2.0	3.8
14	SCE/SoCalGas	25.6	55.9	15	2.8	14.6	23.1	52.8	3.1	12.8%	2.5	14.3	0.7	1.2	23.2	52.6	3.3	13.3%	2.5	14.2	2.0	3.0
14	SDG&E	25.6	55.9	15	2.8	14.6	23.1	52.8	3.1	12.8%	2.5	14.3	0.9	1.2	23.2	52.6	3.3	13.3%	2.5	14.2	2.5	3.0
15	SCE/SoCalGas	25.0	59.2	11	2.5	21.6	22.7	55.0	4.2	12.9%	2.4	20.4	1.4	2.3	22.6	54.8	4.4	13.5%	2.3	20.4	>1	>1
16	PG&E	29.4	57.3	22	3.5	13.4	26.6	54.9	2.4	11.3%	3.0	13.7	1.1	1.2	26.9	54.4	2.9	13.1%	3.1	13.2	1.8	2.1

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



**Table 37: Multifamily Mixed Fuel Efficiency & PV/Battery Package Cost-Effectiveness Results**

CZ	Utility	BASECASE				Efficiency & PV/Battery						
		Total EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW per Building	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio
01	PG&E	28.6	23	2.7	15.9	17.1	11.5	29.3%	2.1	16.5	0.4	1.2
02	PG&E	25.7	12	2.4	13.9	14.8	10.9	16.9%	2.1	14.2	0.2	1.6
03	PG&E	24.7	10	2.1	13.5	14.4	10.3	10.7%	1.9	13.9	0.1	1.4
04	PG&E	25.5	8	2.2	13.6	14.3	11.2	15.7%	1.9	13.9	0.2	1.6
05	PG&E	24.2	10	2.1	12.6	14.3	9.9	9.4%	1.8	13.1	0.2	1.4
05	PG&E/SoCalGas	24.2	10	2.1	12.6	14.3	9.9	9.4%	1.8	13.1	0.1	1.4
06	SCE/SoCalGas	26.8	10	2.2	13.9	16.1	10.7	10.0%	1.8	14.2	0.6	1.4
07	SDG&E	26.8	5	2.1	13.2	15.8	11.0	7.3%	1.7	13.6	0.0	1.4
08	SCE/SoCalGas	25.7	10	2.2	14.6	15.8	9.9	13.4%	1.8	14.9	0.7	1.3
09	SCE/SoCalGas	26.4	13	2.2	14.7	16.7	9.7	15.2%	1.8	14.9	0.9	1.5
10	SCE/SoCalGas	27.0	10	2.3	15.1	16.6	10.4	13.7%	1.9	15.3	1.0	1.6
10	SDG&E	27.0	10	2.3	15.1	16.6	10.4	13.7%	1.9	15.3	0.2	1.6
11	PG&E	24.5	11	2.4	16.6	14.0	10.5	19.9%	2.0	16.7	0.4	1.6
12	PG&E	25.9	12	2.3	14.9	15.6	10.3	17.8%	2.0	15.2	0.3	1.7
13	PG&E	26.1	11	2.3	17.5	15.4	10.7	20.1%	2.0	17.5	0.4	1.6
14	SCE/SoCalGas	25.6	15	2.8	14.6	16.0	9.6	20.8%	2.2	14.7	1.1	1.4
14	SDG&E	25.6	15	2.8	14.6	16.0	9.6	20.8%	2.2	14.7	0.5	1.4
15	SCE/SoCalGas	25.0	11	2.5	21.6	16.2	8.8	18.9%	2.1	20.9	1.3	1.7
16	PG&E	29.4	22	3.5	13.4	19.5	9.9	19.3%	2.7	14.1	0.5	1.3

“inf” = indicates cases where there is both first cost savings and annual utility bill savings.



**Table 38: Multifamily All-Electric Efficiency Package Cost-Effectiveness Results**

CZ	Utility	BASECASE					Non-Preempted							Equipment - Preempted								
		Total EDR	Efficiency EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW per Building	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Efficiency EDR	Efficiency EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio
01	PG&E	41.1	70.6	36	1.6	15.9	37.5	67.0	3.6	14.6%	1.5	15.9	1.6	1.4	37.1	67.3	3.3	18.4%	1.4	15.9	2.4	2.3
02	PG&E	34.3	63.4	16	1.4	13.9	32.4	61.5	1.9	9.1%	1.3	13.9	1.7	2.1	31.1	60.2	3.2	15.1%	1.3	13.9	1.6	1.6
03	PG&E	33.5	64.2	14	1.3	13.5	33.5	64.2	0.0	0.0%	1.3	13.5	-	-	30.4	61.5	2.7	19.5%	1.1	13.5	1.7	1.6
04	PG&E	32.0	61.4	12	1.3	13.6	30.5	60.0	1.4	8.0%	1.2	13.6	1.4	1.5	29.7	59.2	2.2	12.2%	1.2	13.6	1.2	1.1
05	PG&E	34.7	65.4	16	1.3	12.6	34.1	64.8	0.6	3.4%	1.3	12.6	1.1	0.9	30.6	61.8	3.6	23.5%	1.2	12.6	2.1	2.0
05	PG&E/SoCalGas	34.7	65.4	16	1.3	12.6	34.1	64.8	0.6	3.4%	1.3	12.6	1.1	0.9	30.6	61.8	3.6	23.5%	1.2	12.6	2.1	2.0
06	SCE/SoCalGas	31.9	65.9	12	1.3	13.9	30.9	64.9	1.0	5.9%	1.3	13.9	0.7	1.3	29.8	63.7	2.2	13.0%	1.2	13.9	1.6	1.9
07	SDG&E	31.7	66.6	7	1.2	13.2	31.1	66.0	0.6	4.6%	1.2	13.2	0.6	1.0	29.7	64.7	1.9	13.6%	1.1	13.2	1.6	1.7
08	SCE/SoCalGas	29.8	63.6	10	1.3	14.6	28.6	62.4	1.2	6.5%	1.2	14.6	0.9	1.7	27.9	61.7	1.9	10.3%	1.2	14.6	1.6	1.8
09	SCE/SoCalGas	30.4	61.9	13	1.3	14.7	28.7	60.3	1.6	8.1%	1.3	14.7	1.3	2.7	28.8	60.4	1.5	7.4%	1.2	14.7	1.6	1.6
10	SCE/SoCalGas	31.2	61.3	11	1.4	15.1	29.3	59.5	1.8	8.7%	1.3	15.1	1.2	2.0	29.3	59.5	1.8	8.6%	1.3	15.1	1.7	2.0
10	SDG&E	31.2	61.3	11	1.4	15.1	29.3	59.5	1.8	8.7%	1.3	15.1	1.5	2.0	29.3	59.5	1.8	8.6%	1.3	15.1	2.0	2.0
11	PG&E	31.9	60.6	12	1.4	16.6	28.5	57.1	3.5	13.1%	1.3	16.6	1.4	1.6	28.1	56.7	3.9	14.4%	1.3	16.6	2.0	2.3
12	PG&E	32.0	59.9	13	1.3	14.9	29.4	57.3	2.6	11.4%	1.2	14.9	0.9	1.1	29.0	57.0	2.9	13.0%	1.2	14.9	1.6	1.6
13	PG&E	32.1	60.5	13	1.4	17.5	28.8	57.2	3.3	12.6%	1.2	17.5	1.3	1.6	28.3	56.7	3.8	14.3%	1.2	17.5	2.0	2.3
14	SCE/SoCalGas	32.5	61.6	16	1.7	14.6	28.9	57.9	3.7	13.8%	1.6	14.6	1.2	1.6	28.7	57.8	3.8	14.3%	1.6	14.6	1.6	2.2
14	SDG&E	32.5	61.6	16	1.7	14.6	28.9	57.9	3.7	13.8%	1.6	14.6	1.5	1.6	28.7	57.8	3.8	14.3%	1.6	14.6	2.0	2.2
15	SCE/SoCalGas	28.2	61.0	8	1.8	21.6	23.9	56.6	4.4	14.2%	1.6	21.6	1.5	2.3	21.9	54.6	6.4	20.6%	1.5	21.6	1.2	1.7
16	PG&E	40.2	66.6	39	1.9	13.4	36.2	62.5	4.1	15.0%	1.7	13.4	2.1	2.1	37.1	63.4	3.2	11.4%	1.7	13.4	1.6	1.7

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



**Table 39: Multifamily All-Electric Efficiency & PV-PV/Battery Package Cost-Effectiveness Results**

Climate Zone	Utility	BASECASE				Efficiency & PV							Efficiency & PV/Battery						
		Total EDR	CALGreen Tier 1 EDR Target	lbs CO2 per sqft	PV kW per Building	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio	Total EDR	Total EDR Margin	% Comp Margin	lbs CO2 per sqft	PV kW per Building	On-Bill B/C Ratio	TDV B/C Ratio
01	PG&E	41.1	36	1.6	15.9	18.6	22.5	14.6%	0.8	26.9	2.0	1.5	6.6	34.5	24.6%	0.4	30.3	1.3	1.4
02	PG&E	34.3	16	1.4	13.9	16.8	17.5	9.1%	0.7	21.9	2.4	1.8	3.4	30.9	16.1%	0.3	24.8	1.4	1.7
03	PG&E	33.5	14	1.3	13.5	17.4	16.1	2.6%	0.7	20.8	2.4	1.7	4.0	29.5	8.6%	0.3	23.6	1.3	1.6
04	PG&E	32.0	12	1.3	13.6	17.0	15.0	8.0%	0.7	20.2	2.4	1.8	3.1	28.9	16.0%	0.3	22.9	1.30	1.77
05	PG&E	34.7	16	1.3	12.6	17.6	17.1	3.4%	0.7	19.9	2.5	1.8	4.4	30.3	8.4%	0.3	22.5	1.4	1.7
05	PG&E/SoCalGas	34.7	16	1.3	12.6	17.6	17.1	3.4%	0.7	19.9	2.5	1.8	4.4	30.3	8.4%	0.3	22.5	1.4	1.7
06	SCE/SoCalGas	31.9	12	1.3	13.9	18.1	13.8	5.9%	1.0	19.5	1.2	1.7	4.4	27.5	8.9%	0.5	22.1	1.2	1.6
07	SDG&E	31.7	7	1.2	13.2	18.9	12.8	4.6%	0.9	18.1	2.1	1.8	4.6	27.1	6.6%	0.5	20.5	1.2	1.6
08	SCE/SoCalGas	29.8	10	1.3	14.6	18.2	11.6	6.5%	1.0	19.4	1.3	1.8	5.6	24.2	12.5%	0.5	22.0	1.2	1.6
09	SCE/SoCalGas	30.4	13	1.3	14.7	19.1	11.3	8.1%	1.0	19.4	1.3	1.9	7.1	23.3	15.1%	0.6	22.0	1.3	1.7
10	SCE/SoCalGas	31.2	11	1.4	15.1	20.4	10.8	8.7%	1.1	19.9	1.3	1.8	7.9	23.3	14.7%	0.6	22.5	1.3	1.7
10	SDG&E	31.2	11	1.4	15.1	20.4	10.8	8.7%	1.1	19.9	2.1	1.8	7.9	23.3	14.7%	0.6	22.5	1.4	1.7
11	PG&E	31.9	12	1.4	16.6	18.5	13.4	13.1%	0.8	22.8	2.2	1.8	6.6	25.3	21.1%	0.4	25.8	1.4	1.8
12	PG&E	32.0	13	1.3	14.9	17.6	14.4	11.4%	0.7	21.7	2.1	1.6	5.4	26.6	20.4%	0.4	24.5	1.3	1.7
13	PG&E	32.1	13	1.4	17.5	19.9	12.2	12.6%	0.8	23.3	2.1	1.7	8.2	23.9	20.6%	0.4	26.4	1.4	1.7
14	SCE/SoCalGas	32.5	16	1.7	14.6	18.5	14.0	13.8%	1.3	20.2	1.4	1.9	7.7	24.8	21.8%	0.8	22.8	1.4	1.8
14	SDG&E	32.5	16	1.7	14.6	18.5	14.0	13.8%	1.3	20.2	2.2	1.9	7.7	24.8	21.8%	0.8	22.8	1.7	1.8
15	SCE/SoCalGas	28.2	8	1.8	21.6	21.1	7.1	14.2%	1.5	23.6	1.4	2.1	11.3	16.9	20.2%	1.1	26.6	1.3	1.8
16	PG&E	40.2	39	1.9	13.4	20.6	19.6	15.0%	1.2	22.0	2.6	1.9	10.3	29.9	23.0%	0.8	24.8	1.6	1.7

">1" = indicates cases where there is both first cost savings and annual utility bill savings.



## Appendix F – Multifamily Measure Summary

**Table 40: Multifamily Mixed Fuel Efficiency – Non-Preempted Package Measure Summary**

CZ	Duct	Infiltration	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
2	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
4	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
5	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
6	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
7	Code Min	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
8	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Enh CHW credit (0.6)	0.35 W/cfm	1.0 PV scaling
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
11	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
13	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
14	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
15	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 41: Multifamily Mixed Fuel Efficiency – Equipment, Preempted Package Measure Summary**

CZ	Duct	Infiltratio	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
2	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	92 AFUE, 0.35W/cfm	1.0 PV scaling
4	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 0.35 W/cfm	1.0 PV scaling
5	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	92 AFUE, 0.45W/cfm	1.0 PV scaling
6	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	Code Min	1.0 PV scaling
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 0.35 W/cfm	1.0 PV scaling
8	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	Code Min	1.0 PV scaling
9	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 0.35 W/cfm	1.0 PV scaling
10	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 0.35 W/cfm	1.0 PV scaling
11	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
12	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
13	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
14	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling
15	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 0.35 W/cfm	1.0 PV scaling
16	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	95 EF, basic compact dist.	16 SEER, 92 AFUE, 0.35W/cfm	1.0 PV scaling

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 42: Multifamily Mixed Fuel Efficiency & PV/Battery Package Measure Summary**

CZ	Duct	Infiltration	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
2	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
4	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
5	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
6	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
7	Code Min	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
8	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Enh CHW credit (0.6)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
11	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
13	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
14	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
15	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Basic CHW credit (0.7)	0.35 W/cfm	1.0 PV scaling + 22kWh batt

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 43: Multifamily All-Electric Efficiency – Non-Preempted Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltration</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
2	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Std Design PV
4	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	Code Min	Std Design PV
6	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
7	Code Min	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
8	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	Std Design PV
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
11	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
13	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
14	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
15	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	Std Design PV

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 44: Multifamily All-Electric Efficiency – Equipment, Preempted Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltratio</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
2	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
4	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
5	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
6	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
7	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
8	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
9	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
10	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	0.45 W/cfm	Std Design PV
11	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
12	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
13	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
14	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV
15	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	18 SEER, 10 HSPF, 0.45W/cfm	Std Design PV
16	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	NEEA Tier 3 HPWH	16 SEER, 9 HSPF, 0.45W/cfm	Std Design PV

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 45: Multifamily All-Electric Efficiency & PV Package Measure Summary**

<b>CZ</b>	<b>Duct</b>	<b>Infiltration</b>	<b>Wall</b>	<b>Attic</b>	<b>Roof</b>	<b>Glazing</b>	<b>Slab</b>	<b>DHW</b>	<b>HVAC</b>	<b>PV</b>
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
2	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
4	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	Code Min	0.9 PV scaling
6	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
7	Code Min	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
8	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	0.9 PV scaling
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
11	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
13	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
14	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
15	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	0.9 PV scaling

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



**Table 46: Multifamily All-Electric Efficiency & PV/Battery Package Measure Summary**

CZ	Duct	Infiltration	Wall	Attic	Roof	Glazing	Slab	DHW	HVAC	PV
1	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
2	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
3	Code Min	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
4	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
5	VLLDCS	Code Min	Code Min	Code Min	Code Min	Code Min	R-10 slab insulation	Code Min	Code Min	1.0 PV scaling + 22kWh batt
6	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
7	Code Min	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
8	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
9	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	Code Min	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
10	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	Code Min	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
11	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
12	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
13	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
14	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
15	VLLDCS	Code Min	Code Min	Code Min	0.25 solar reflectance	0.24/0.23 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt
16	VLLDCS	Code Min	Code Min	Code Min	Code Min	0.24/0.50 windows	R-10 slab insulation	Code Min	0.45 W/cfm	1.0 PV scaling + 22kWh batt

VLLDCS – Verified Low-Leakage Ducts in Conditioned Space



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**Climate Zone 1**

**Table 47: Single Family Climate Zone 1 Results Summary**

Climate Zone 1 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
						Mixed Fuel <sup>1</sup>	Code Compliant		(0)	581
Efficiency-Non-Preempted	(0)	480	5.0	(0.08)	2.51		0.49	\$1,355	3.38	2.82
Efficiency-Equipment	0	440	6.5	(0.07)	2.32		0.68	\$1,280	4.92	4.10
Efficiency & PV/Battery	(28)	480	10.5	0.04	2.40		0.60	\$5,311	<b>0.87</b>	1.61
All-Electric <sup>2</sup>	Code Compliant	7,079	0	n/a	n/a	1.51	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	4,461	0	15.0	0.00	1.01	0.50	\$7,642	1.79	1.66
	Efficiency-Equipment	5,933	0	6.5	0.00	1.29	0.22	\$2,108	2.94	2.74
	Efficiency & PV	889	0	31.0	2.67	0.52	1.00	\$18,192	1.81	1.45
	Efficiency & PV/Battery	(14)	0	41.0	3.45	0.28	1.23	\$24,770	1.45	1.40
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	7,079	0	0.0	0.00	1.51	1.49	(\$5,349)	<b>0.37</b>	<b>0.91</b>
	Efficiency & PV	889	0	31.0	2.67	0.52	2.48	\$12,844	1.43	2.11
	Neutral Cost	5,270	0	8.0	1.35	1.26	1.74	\$0	<b>0.00</b>	1.09
	Min Cost Effectiveness	3,106	0	18.0	2.97	0.95	2.04	(\$6,372)	1.08	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, Neutral Cost, and Min Cost Effectiveness packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 48: Multifamily Climate Zone 1 Results Summary (Per Dwelling Unit)

Climate Zone 1 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	180	n/a	n/a	2.75	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	147	3.0	0.00	2.31	0.44	\$960	1.10	1.18
	Efficiency-Equipment	(0)	159	2.0	(0.01)	2.48	0.27	\$507	1.29	1.41
	Efficiency & PV/Battery	(14)	147	11.5	0.07	2.13	0.61	\$3,094	0.35	1.21
All-Electric <sup>2</sup>	Code Compliant	2,624	0	n/a	n/a	1.62	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,328	0	3.5	0.00	1.46	0.15	\$949	1.55	1.40
	Efficiency-Equipment	2,278	0	3.0	0.00	1.41	0.20	\$795	2.39	2.26
	Efficiency & PV	499	0	22.5	1.37	0.75	0.86	\$5,538	2.04	1.50
	Efficiency & PV/Battery	(7)	0	34.5	1.80	0.38	1.24	\$8,919	1.33	1.43
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,624	0	0.0	0.00	1.62	1.13	(\$2,337)	0.38	1.01
	Efficiency & PV	62	0	22.5	1.37	0.75	2.00	\$3,202	1.63	>1
	Neutral Cost	1,693	0	9.5	0.70	1.25	1.50	\$0	0.00	1.57
	Min Cost Effectiveness	1,273	0	14.0	1.01	1.09	1.66	(\$1,052)	1.14	3.76

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, Neutral Cost, and Min Cost Effectiveness packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 2****Table 49: Single Family Climate Zone 2 Results Summary**

Climate Zone 2 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	421	n/a	n/a	2.23	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	360	3.0	(0.04)	1.94	0.30	\$1,504	1.63	1.66
	Efficiency-Equipment	(0)	352	3.0	(0.03)	1.90	0.33	\$724	3.77	3.63
	Efficiency & PV/Battery	(22)	360	10.0	0.06	1.82	0.41	\$5,393	0.47	1.56
All-Electric <sup>2</sup>	Code Compliant	5,014	0	n/a	n/a	1.11	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	4,079	0	4.5	0.00	0.94	0.18	\$3,943	1.21	1.07
	Efficiency-Equipment	4,122	0	5.0	0.00	0.94	0.17	\$2,108	2.25	2.10
	Efficiency & PV	847	0	19.0	2.07	0.49	0.63	\$12,106	1.83	1.38
	Efficiency & PV/Battery	(15)	0	30.0	2.71	0.26	0.86	\$18,132	1.37	1.43
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	5,014	0	0.0	0.00	1.11	1.12	(\$5,349)	0.52	1.59
	Efficiency & PV	847	0	19.0	2.07	0.49	1.75	\$6,758	1.76	39.70
	Neutral Cost	2,891	0	9.5	1.36	0.82	1.41	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 50: Multifamily Climate Zone 2 Results Summary (Per Dwelling Unit)

Climate Zone 2 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	150	n/a	n/a	2.37	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	142	1.5	(0.02)	2.25	0.12	\$309	0.97	1.75
	Efficiency-Equipment	(0)	134	2.0	(0.01)	2.15	0.22	\$497	1.08	1.49
	Efficiency & PV/Battery	(11)	142	10.5	0.04	2.07	0.30	\$2,413	0.17	1.60
All-Electric <sup>2</sup>	Code Compliant	2,151	0	n/a	n/a	1.38	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,038	0	1.5	0.00	1.32	0.06	\$361	1.73	2.05
	Efficiency-Equipment	1,928	0	3.0	0.00	1.25	0.13	\$795	1.56	1.56
	Efficiency & PV	476	0	17.5	1.00	0.72	0.67	\$3,711	2.42	1.82
	Efficiency & PV/Battery	(7)	0	30.5	1.36	0.35	1.04	\$6,833	1.38	1.74
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,151	0	0.0	0.00	1.38	0.99	(\$2,337)	0.53	1.42
	Efficiency & PV	60	0	17.5	1.00	0.72	1.65	\$1,375	3.31	>1
	Neutral Cost	1,063	0	10.5	0.70	0.96	1.41	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 3****Table 51: Single Family Climate Zone 3 Results Summary**

Climate Zone 3 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	348	n/a	n/a	1.88	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	296	2.5	(0.03)	1.63	0.26	\$1,552	1.28	1.31
	Efficiency-Equipment	(0)	273	4.0	(0.03)	1.52	0.37	\$1,448	1.91	1.97
	Efficiency & PV/Battery	(20)	296	10.0	0.07	1.50	0.38	\$5,438	0.38	1.38
All-Electric <sup>2</sup>	Code Compliant	4,355	0	n/a	n/a	1.00	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,584	0	4.5	0.00	0.85	0.15	\$1,519	2.60	2.36
	Efficiency-Equipment	3,670	0	4.0	0.00	0.86	0.14	\$2,108	1.76	1.62
	Efficiency & PV	790	0	18.0	1.77	0.46	0.54	\$8,517	2.22	1.68
	Efficiency & PV/Battery	(12)	0	29.0	2.37	0.23	0.76	\$14,380	1.50	1.58
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,355	0	0.0	0.00	1.00	0.89	(\$5,349)	0.55	1.53
	Efficiency & PV	790	0	18.0	1.77	0.46	1.43	\$3,169	2.88	>1
	Neutral Cost	2,217	0	10.5	1.35	0.70	1.18	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Table 52: Multifamily Climate Zone 3 Results Summary (Per Dwelling Unit)**

Climate Zone 3 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	133	n/a	n/a	2.13	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	127	0.5	(0.00)	2.06	0.07	\$175	1.00	1.11
	Efficiency-Equipment	(0)	119	1.5	(0.00)	1.94	0.19	\$403	1.11	1.23
	Efficiency & PV/Battery	(10)	127	10.0	0.05	1.86	0.27	\$2,279	0.11	1.41
All-Electric <sup>2</sup>	Code Compliant	1,944	0	n/a	n/a	1.27	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,944	0	0.0	0.00	1.27	0.00	\$0	-	-
	Efficiency-Equipment	1,698	0	2.5	0.00	1.13	0.14	\$795	1.73	1.58
	Efficiency & PV	457	0	16.0	0.92	0.69	0.58	\$3,272	2.43	1.73
	Efficiency & PV/Battery	(7)	0	29.5	1.26	0.33	0.94	\$6,344	1.32	1.64
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,944	0	0.0	0.00	1.27	0.86	(\$2,337)	0.58	1.46
	Efficiency & PV	57	0	16.0	0.92	0.69	1.43	\$936	4.18	>1
	Neutral Cost	845	0	11.5	0.70	0.85	1.28	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 4**

**Table 53: Single Family Climate Zone 4 Results Summary**

Climate Zone 4 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
						Mixed Fuel <sup>1</sup>	Code Compliant		0	347
Efficiency-Non-Preempted	0	306	2.5	(0.03)	1.68		0.20	\$1,556	0.93	1.15
Efficiency-Equipment	(0)	294	2.5	(0.02)	1.62		0.26	\$758	2.39	2.67
Efficiency & PV/Battery	(18)	306	10.0	0.07	1.55		0.33	\$5,434	0.30	1.48
All-Electric <sup>2</sup>	Code Compliant	4,342	0	n/a	n/a	1.00	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,775	0	3.0	0.00	0.89	0.11	\$1,519	1.92	1.84
	Efficiency-Equipment	3,747	0	3.5	0.00	0.88	0.12	\$2,108	1.52	1.52
	Efficiency & PV	814	0	17.0	1.84	0.48	0.52	\$8,786	2.13	1.62
	Efficiency & PV/Battery	(11)	0	28.5	2.44	0.25	0.75	\$14,664	1.46	1.61
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,342	0	0.0	0.00	1.00	0.88	(\$5,349)	0.55	1.59
	Efficiency & PV	814	0	17.0	1.84	0.48	1.40	\$3,438	2.64	>1
	Neutral Cost	2,166	0	10.0	1.35	0.70	1.18	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 54: Multifamily Climate Zone 4 Results Summary (Per Dwelling Unit)

Climate Zone 4 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
						Mixed Fuel <sup>1</sup>	Code Compliant		(0)	134
Efficiency-Non-Preempted	(0)	127	1.0	(0.01)	2.06		0.10	\$329	0.75	1.24
Efficiency-Equipment	(0)	123	1.5	(0.01)	2.01		0.15	\$351	1.06	1.74
Efficiency & PV/Battery	(9)	127	11.0	0.04	1.87		0.29	\$2,429	0.17	1.60
All-Electric <sup>2</sup>	Code Compliant	1,887	0	n/a	n/a	1.25	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,794	0	1.0	0.00	1.21	0.05	\$361	1.38	1.54
	Efficiency-Equipment	1,712	0	2.0	0.00	1.15	0.10	\$795	1.23	1.09
	Efficiency & PV	453	0	15.0	0.83	0.69	0.57	\$3,158	2.43	1.81
	Efficiency & PV/Battery	(7)	0	28.5	1.17	0.32	0.93	\$6,201	1.30	1.77
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,887	0	0.0	0.00	1.25	0.90	(\$2,337)	0.65	1.77
	Efficiency & PV	57	0	15.0	0.83	0.69	1.47	\$822	4.96	>1
	Neutral Cost	767	0	11.0	0.70	0.82	1.33	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design..



**Climate Zone 5 PG&E****Table 55: Single Family Climate Zone 5 PG&E Results Summary**

Climate Zone 5 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	331	n/a	n/a	1.79	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	281	2.5	(0.03)	1.55	0.24	\$1,571	1.10	1.22
	Efficiency-Equipment	(0)	279	2.5	(0.02)	1.54	0.25	\$772	2.29	2.48
	Efficiency & PV/Battery	(14)	281	9.0	0.07	1.43	0.36	\$5,433	0.37	1.32
All-Electric <sup>2</sup>	Code Compliant	4,452	0	n/a	n/a	1.01	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,687	0	4.0	0.00	0.86	0.15	\$1,519	2.58	2.31
	Efficiency-Equipment	3,737	0	4.0	0.00	0.87	0.14	\$2,108	1.85	1.70
	Efficiency & PV	798	0	18.0	1.72	0.46	0.55	\$8,307	2.31	1.76
	Efficiency & PV/Battery	(8)	0	28.5	2.29	0.24	0.78	\$14,047	1.59	1.63
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,452	0	0.0	0.00	1.01	0.78	(\$5,349)	0.48	1.32
	Efficiency & PV	798	0	18.0	1.72	0.46	1.33	\$2,959	2.72	>1
	Neutral Cost	2,172	0	11.0	1.35	0.70	1.10	\$0	>1	40.07

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Table 56: Multifamily Climate Zone 5 PG&E Results Summary (Per Dwelling Unit)**

Climate Zone 5 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	131	n/a	n/a	2.10	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	126	0.5	(0.00)	2.03	0.07	\$180	0.99	1.03
	Efficiency-Equipment	(0)	117	1.5	(0.00)	1.92	0.19	\$358	1.24	1.34
	Efficiency & PV/Battery	(7)	126	9.5	0.05	1.84	0.26	\$2,273	0.15	1.38
All-Electric <sup>2</sup>	Code Compliant	2,044	0	n/a	n/a	1.32	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,990	0	0.5	0.00	1.30	0.03	\$247	1.09	0.86
	Efficiency-Equipment	1,738	0	3.5	0.00	1.15	0.17	\$795	2.15	2.03
	Efficiency & PV	465	0	17.0	0.91	0.70	0.62	\$3,293	2.53	1.82
	Efficiency & PV/Battery	(6)	0	30.0	1.24	0.34	0.98	\$6,314	1.44	1.69
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,044	0	0.0	0.00	1.32	0.78	(\$2,337)	0.50	1.28
	Efficiency & PV	58	0	17.0	0.91	0.70	1.40	\$956	3.80	>1
	Neutral Cost	874	0	12.5	0.70	0.87	1.23	\$0	>1	23.44

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



## Climate Zone 5 PG&amp;E/SoCalGas

Table 57: Single Family Climate Zone 5 PG&amp;E/SoCalGas Results Summary

Climate Zone 5 PG&E/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On- Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	331	n/a	n/a	1.79	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	281	2.5	(0.03)	1.55	0.24	\$1,571	0.92	1.22
	Efficiency-Equipment	(0)	279	2.5	(0.02)	1.54	0.25	\$772	1.98	2.48
	Efficiency & PV/Battery	(14)	281	9.0	0.07	1.43	0.36	\$5,433	0.31	1.32
All-Electric <sup>2</sup>	Code Compliant	4,452	0	n/a	n/a	1.01	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,687	0	4.0	0.00	0.86	0.15	\$1,519	2.58	2.31
	Efficiency-Equipment	3,737	0	4.0	0.00	0.87	0.14	\$2,108	1.85	1.70
	Efficiency & PV	798	0	18.0	1.72	0.46	0.55	\$8,307	2.31	1.76
	Efficiency & PV/Battery	(8)	0	28.5	2.29	0.24	0.78	\$14,047	1.59	1.63
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,452	0	0.0	0.00	1.01	0.78	(\$5,349)	0.48	1.32
	Efficiency & PV	798	0	18.0	1.72	0.46	1.33	\$2,959	2.75	>1
	Neutral Cost	2,172	0	11.0	1.35	0.70	1.10	\$0	>1	40.07

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 58: Multifamily Climate Zone 5 PG&amp;E/SoCalGas Results Summary (Per Dwelling Unit)

Climate Zone 5 PG&E/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	131	n/a	n/a	2.10	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	126	0.5	(0.00)	2.03	0.07	\$180	0.85	1.03
	Efficiency-Equipment	(0)	117	1.5	(0.00)	1.92	0.19	\$358	1.09	1.34
	Efficiency & PV/Battery	(7)	126	9.5	0.05	1.84	0.26	\$2,273	0.14	1.38
All-Electric <sup>2</sup>	Code Compliant	2,044	0	n/a	n/a	1.32	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,990	0	0.5	0.00	1.30	0.03	\$247	1.09	0.86
	Efficiency-Equipment	1,738	0	3.5	0.00	1.15	0.17	\$795	2.15	2.03
	Efficiency & PV	465	0	17.0	0.91	0.70	0.62	\$3,293	2.53	1.82
	Efficiency & PV/Battery	(6)	0	30.0	1.24	0.34	0.98	\$6,314	1.44	1.69
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,044	0	0.0	0.00	1.32	0.78	(\$2,337)	0.65	1.28
	Efficiency & PV	58	0	17.0	0.91	0.70	1.40	\$956	4.98	>1
	Neutral Cost	874	0	12.5	0.70	0.87	1.23	\$0	>1	23.44

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



## Climate Zone 6

Table 59: Single Family Climate Zone 6 Results Summary

Climate Zone 6 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	249	n/a	n/a	1.57	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	229	2.0	(0.02)	1.47	0.10	\$1,003	0.66	1.15
	Efficiency-Equipment	(0)	218	1.5	(0.01)	1.41	0.15	\$581	1.58	2.04
	Efficiency & PV/Battery	(13)	229	9.5	0.08	1.22	0.34	\$4,889	0.84	1.27
All-Electric <sup>2</sup>	Code Compliant	3,099	0	n/a	n/a	0.87	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,885	0	2.0	0.00	0.83	0.05	\$926	1.31	1.41
	Efficiency-Equipment	2,746	0	2.5	0.00	0.80	0.08	\$846	2.20	2.29
	Efficiency & PV	722	0	14.0	1.37	0.63	0.24	\$6,341	1.19	1.48
	Efficiency & PV/Battery	(6)	0	26.0	1.93	0.33	0.55	\$12,036	1.15	1.43
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	3,099	0	0.0	0.00	0.87	0.69	(\$5,349)	1.19	2.46
	Efficiency & PV	722	0	14.0	1.37	0.63	0.93	\$992	3.07	>1
	Neutral Cost	959	0	12.0	1.36	0.67	0.89	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Table 60: Multifamily Climate Zone 6 Results Summary (Per Dwelling Unit)**

Climate Zone 6 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
<b>Mixed Fuel<sup>1</sup></b>	Code Compliant	(0)	114	n/a	n/a	2.17	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	112	1.0	(0.01)	2.14	0.03	\$190	0.65	1.49
	Efficiency-Equipment	(0)	103	1.0	(0.00)	2.03	0.15	\$213	1.43	1.74
	Efficiency & PV/Battery	(6)	112	10.5	0.04	1.76	0.41	\$2,294	0.56	1.35
<b>All-Electric<sup>2</sup></b>	Code Compliant	1,558	0	n/a	n/a	1.28	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,531	0	1.0	0.00	1.26	0.02	\$231	0.65	1.34
	Efficiency-Equipment	1,430	0	2.0	0.00	1.20	0.08	\$361	1.62	1.91
	Efficiency & PV	427	0	13.5	0.70	0.97	0.31	\$2,580	1.24	1.71
	Efficiency & PV/Battery	(5)	0	27.5	1.02	0.49	0.79	\$5,590	1.22	1.58
<b>Mixed Fuel to All-Electric<sup>3</sup></b>	Code Compliant	1,558	0	0.0	0.00	1.28	0.90	(\$2,337)	2.59	2.38
	Efficiency & PV	53	0	13.5	0.70	0.97	1.20	\$243	9.50	>1
	Neutral Cost	459	0	12.5	0.70	0.99	1.18	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 7**

**Table 61: Single Family Climate Zone 7 Results Summary**

Climate Zone 7 SDG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	196	n/a	n/a	1.30	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	196	0.0	0.00	1.30	0.00	\$0	-	-
	Efficiency-Equipment	0	171	1.5	(0.00)	1.18	0.12	\$606	1.50	1.40
	Efficiency & PV/Battery	(12)	189	9.0	0.10	1.04	0.26	\$4,028	0.06	1.32
All-Electric <sup>2</sup>	Code Compliant	2,479	0	n/a	n/a	0.75	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,479	0	0.0	0.00	0.75	0.00	\$0	-	-
	Efficiency-Equipment	2,222	0	2.0	0.00	0.69	0.06	\$846	1.60	1.65
	Efficiency & PV	674	0	11.0	1.10	0.58	0.17	\$4,436	1.87	1.55
	Efficiency & PV/Battery	(6)	0	24.0	1.61	0.29	0.46	\$9,936	1.25	1.47
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,479	0	0.0	0.00	0.75	0.55	(\$5,349)	1.04	2.54
	Efficiency & PV	674	0	11.0	1.10	0.58	0.72	(\$912)	>1	>1
	Neutral Cost	267	0	13.5	1.35	0.55	0.75	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 62: Multifamily Climate Zone 7 Results Summary (Per Dwelling Unit)

Climate Zone 7 SDG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	110	n/a	n/a	2.11	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	108	0.5	(0.01)	2.08	0.03	\$90	0.73	2.24
	Efficiency-Equipment	(0)	99	2.0	(0.00)	1.96	0.15	\$366	1.07	1.41
	Efficiency & PV/Battery	(6)	108	11.0	0.05	1.71	0.40	\$2,188	0.03	1.40
All-Electric <sup>2</sup>	Code Compliant	1,434	0	n/a	n/a	1.21	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,416	0	0.5	0.00	1.20	0.01	\$202	0.60	1.02
	Efficiency-Equipment	1,319	0	1.5	0.00	1.14	0.07	\$361	1.59	1.71
	Efficiency & PV	412	0	12.5	0.61	0.94	0.27	\$2,261	2.08	1.76
	Efficiency & PV/Battery	(5)	0	27.0	0.92	0.47	0.74	\$5,203	1.19	1.62
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,434	0	0.0	0.00	1.21	0.90	(\$2,337)	1.12	2.47
	Efficiency & PV	51	0	12.5	0.61	0.94	1.17	(\$75)	>1	>1
	Neutral Cost	294	0	13.5	0.70	0.91	1.20	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



## Climate Zone 8

Table 63: Single Family Climate Zone 8 Results Summary

Climate Zone 8 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	206	n/a	n/a	1.38	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	198	1.0	(0.02)	1.34	0.05	\$581	0.57	1.41
	Efficiency-Equipment	0	181	1.5	(0.01)	1.27	0.12	\$586	1.30	1.82
	Efficiency & PV/Battery	(13)	198	8.0	0.08	1.11	0.27	\$4,466	0.90	1.31
All-Electric <sup>2</sup>	Code Compliant	2,576	0	n/a	n/a	0.80	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,483	0	1.5	0.00	0.78	0.02	\$926	0.57	1.22
	Efficiency-Equipment	2,352	0	1.5	0.00	0.75	0.05	\$412	2.82	3.03
	Efficiency & PV	703	0	10.5	1.13	0.62	0.18	\$5,373	1.00	1.48
	Efficiency & PV/Battery	(7)	0	21.5	1.67	0.32	0.48	\$11,016	1.09	1.42
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,576	0	0.0	0.00	0.80	0.58	(\$5,349)	1.83	2.99
	Efficiency & PV	703	0	10.5	1.13	0.62	0.77	\$25	107.93	>1
	Neutral Cost	439	0	11.0	1.36	0.60	0.78	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 64: Multifamily Climate Zone 8 Results Summary (Per Dwelling Unit)

Climate Zone 8 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	109	n/a	n/a	2.18	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	106	1.5	(0.02)	2.13	0.05	\$250	0.70	1.36
	Efficiency-Equipment	(0)	99	1.0	(0.00)	2.04	0.14	\$213	1.37	1.67
	Efficiency & PV/Battery	(6)	106	9.5	0.03	1.77	0.41	\$2,353	0.74	1.32
All-Electric <sup>2</sup>	Code Compliant	1,409	0	n/a	n/a	1.26	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,373	0	1.0	0.00	1.24	0.02	\$231	0.87	1.72
	Efficiency-Equipment	1,276	0	1.5	0.00	1.18	0.08	\$361	1.63	1.75
	Efficiency & PV	426	0	11.5	0.60	0.99	0.27	\$2,240	1.26	1.78
	Efficiency & PV/Battery	(5)	0	24.0	0.92	0.53	0.73	\$5,249	1.24	1.59
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,409	0	0.0	0.00	1.26	0.91	(\$2,337)	6.69	2.67
	Efficiency & PV	53	0	11.5	0.60	0.99	1.18	(\$96)	>1	>1
	Neutral Cost	309	0	12.0	0.70	0.98	1.20	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 9**

**Table 65: Single Family Climate Zone 9 Results Summary**

Climate Zone 9 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	229	n/a	n/a	1.53	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	216	2.5	(0.04)	1.46	0.07	\$912	0.69	1.97
	Efficiency-Equipment	0	201	2.5	(0.04)	1.38	0.15	\$574	1.80	3.66
	Efficiency & PV/Battery	(14)	216	8.5	0.05	1.23	0.30	\$4,785	0.99	1.48
All-Electric <sup>2</sup>	Code Compliant	2,801	0	n/a	n/a	0.87	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,645	0	2.5	0.00	0.84	0.04	\$1,180	0.78	1.96
	Efficiency-Equipment	2,460	0	3.0	0.00	0.80	0.07	\$846	2.11	3.22
	Efficiency & PV	745	0	11.5	1.16	0.66	0.21	\$5,778	1.08	1.64
	Efficiency & PV/Battery	(9)	0	21.0	1.72	0.37	0.50	\$11,454	1.11	1.53
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,801	0	0.0	0.00	0.87	0.66	(\$5,349)	1.67	2.90
	Efficiency & PV	745	0	11.5	1.16	0.66	0.87	\$429	7.15	>1
	Neutral Cost	594	0	10.0	1.36	0.67	0.86	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 66: Multifamily Climate Zone 9 Results Summary (Per Dwelling Unit)

Climate Zone 9 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
						Mixed Fuel <sup>1</sup>	Code Compliant		0	111
Efficiency-Non-Preempted	(0)	109	1.5	(0.03)	2.19		0.05	\$136	1.46	3.35
Efficiency-Equipment	(0)	101	2.5	(0.03)	2.08		0.16	\$274	1.66	2.87
Efficiency & PV/Battery	(7)	109	9.5	0.03	1.84		0.40	\$2,234	0.90	1.49
All-Electric <sup>2</sup>	Code Compliant	1,468	0	n/a	n/a	1.33	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,414	0	1.5	0.00	1.30	0.03	\$231	1.29	2.70
	Efficiency-Equipment	1,334	0	1.5	0.00	1.25	0.08	\$361	1.63	1.58
	Efficiency & PV	441	0	11.0	0.60	1.04	0.29	\$2,232	1.34	1.91
	Efficiency & PV/Battery	(7)	0	23.0	0.92	0.58	0.75	\$5,236	1.28	1.67
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,468	0	0.0	0.00	1.33	0.91	(\$2,337)	4.38	2.55
	Efficiency & PV	55	0	11.0	0.60	1.04	1.20	(\$104)	>1	>1
	Neutral Cost	331	0	11.0	0.70	1.03	1.21	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 10 SCE/SoCalGas****Table 67: Single Family Climate Zone 10 SCE/SoCalGas Results Summary**

Climate Zone 10 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	239	n/a	n/a	1.61	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	217	3.0	(0.07)	1.48	0.13	\$1,648	0.63	1.33
	Efficiency-Equipment	(0)	209	3.0	(0.06)	1.45	0.16	\$593	2.05	3.84
	Efficiency & PV/Battery	(12)	217	9.5	0.03	1.25	0.36	\$5,522	1.00	1.48
All-Electric <sup>2</sup>	Code Compliant	2,981	0	n/a	n/a	0.94	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,673	0	3.0	0.00	0.88	0.07	\$1,773	0.92	1.52
	Efficiency-Equipment	2,563	0	3.0	0.00	0.85	0.10	\$949	2.27	3.19
	Efficiency & PV	762	0	11.0	1.17	0.70	0.24	\$6,405	1.08	1.50
	Efficiency & PV/Battery	(6)	0	21.0	1.74	0.41	0.53	\$12,129	1.11	1.51
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,981	0	0.0	0.00	0.94	0.67	(\$5,349)	1.45	2.66
	Efficiency & PV	762	0	11.0	1.17	0.70	0.91	\$1,057	3.04	>1
	Neutral Cost	770	0	9.0	1.36	0.74	0.87	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 68: Multifamily Climate Zone 10 SCE/SoCalGas Results Summary (Per Dwelling Unit)

Climate Zone 10 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	112	n/a	n/a	2.29	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	108	1.5	(0.02)	2.23	0.06	\$278	0.81	1.69
	Efficiency-Equipment	(0)	102	2.5	(0.04)	2.13	0.16	\$250	1.96	3.27
	Efficiency & PV/Battery	(6)	108	10.0	0.03	1.88	0.41	\$2,376	0.98	1.57
All-Electric <sup>2</sup>	Code Compliant	1,507	0	n/a	n/a	1.39	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,425	0	1.5	0.00	1.34	0.05	\$361	1.16	2.00
	Efficiency-Equipment	1,369	0	1.5	0.00	1.31	0.08	\$361	1.71	1.98
	Efficiency & PV	450	0	10.5	0.60	1.09	0.30	\$2,371	1.31	1.79
	Efficiency & PV/Battery	(4)	0	23.0	0.93	0.63	0.76	\$5,395	1.27	1.69
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,507	0	0.0	0.00	1.39	0.90	(\$2,337)	3.35	2.36
	Efficiency & PV	56	0	10.5	0.60	1.09	1.20	\$34	70.89	>1
	Neutral Cost	372	0	10.5	0.70	1.10	1.19	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 10 SDGE****Table 69: Single Family Climate Zone 10 SDGE Results Summary**

Climate Zone 10 SDG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	239	n/a	n/a	1.61	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	217	3.0	(0.07)	1.48	0.13	\$1,648	0.80	1.33
	Efficiency-Equipment	(0)	209	3.0	(0.06)	1.45	0.16	\$593	2.64	3.84
	Efficiency & PV/Battery	(12)	217	9.5	0.03	1.25	0.36	\$5,522	0.58	1.48
All-Electric <sup>2</sup>	Code Compliant	2,981	0	n/a	n/a	0.94	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,673	0	3.0	0.00	0.88	0.07	\$1,773	1.08	1.52
	Efficiency-Equipment	2,563	0	3.0	0.00	0.85	0.10	\$949	2.62	3.19
	Efficiency & PV	762	0	11.0	1.17	0.70	0.24	\$6,405	1.68	1.50
	Efficiency & PV/Battery	(6)	0	21.0	1.74	0.41	0.53	\$12,129	1.42	1.51
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,981	0	0.0	0.00	0.94	0.67	(\$5,349)	0.90	2.66
	Efficiency & PV	762	0	11.0	1.17	0.70	0.91	\$1,057	4.55	>1
	Neutral Cost	770	0	9.0	1.36	0.74	0.87	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 70: Multifamily Climate Zone 10 SDGE Results Summary (Per Dwelling Unit)

Climate Zone 10 SDG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	112	n/a	n/a	2.29	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	108	1.5	(0.02)	2.23	0.06	\$278	1.09	1.69
	Efficiency-Equipment	(0)	102	2.5	(0.04)	2.13	0.16	\$250	2.60	3.27
	Efficiency & PV/Battery	(6)	108	10.0	0.03	1.88	0.41	\$2,376	0.23	1.57
All-Electric <sup>2</sup>	Code Compliant	1,507	0	n/a	n/a	1.39	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,425	0	1.5	0.00	1.34	0.05	\$361	1.53	2.00
	Efficiency-Equipment	1,369	0	1.5	0.00	1.31	0.08	\$361	2.05	1.98
	Efficiency & PV	450	0	10.5	0.60	1.09	0.30	\$2,371	2.12	1.79
	Efficiency & PV/Battery	(4)	0	23.0	0.93	0.63	0.76	\$5,395	1.44	1.69
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,507	0	0.0	0.00	1.39	0.90	(\$2,337)	0.73	2.36
	Efficiency & PV	56	0	10.5	0.60	1.09	1.20	\$34	54.15	>1
	Neutral Cost	372	0	10.5	0.70	1.10	1.19	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 11**

**Table 71: Single Family Climate Zone 11 Results Summary**

Climate Zone 11 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	378	n/a	n/a	2.14	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	333	4.0	(0.19)	1.90	0.24	\$3,143	0.78	1.20
	Efficiency-Equipment	0	320	5.0	(0.21)	1.83	0.31	\$1,222	2.50	3.68
	Efficiency & PV/Battery	(18)	333	9.0	(0.09)	1.78	0.36	\$7,026	0.36	1.51
All-Electric <sup>2</sup>	Code Compliant	4,585	0	n/a	n/a	1.15	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,815	0	4.5	0.00	0.99	0.16	\$3,735	1.24	1.47
	Efficiency-Equipment	3,533	0	5.5	0.00	0.93	0.22	\$2,108	2.97	3.33
	Efficiency & PV	957	0	14.0	1.79	0.60	0.55	\$10,827	1.84	1.55
	Efficiency & PV/Battery	(13)	0	23.0	2.49	0.36	0.79	\$17,077	1.49	1.61
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,585	0	0.0	0.00	1.15	0.99	(\$5,349)	0.49	1.69
	Efficiency & PV	957	0	14.0	1.79	0.60	1.54	\$5,478	1.64	>1
	Neutral Cost	2,429	0	7.0	1.36	0.85	1.29	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 72: Multifamily Climate Zone 11 Results Summary (Per Dwelling Unit)

Climate Zone 11 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	141	n/a	n/a	2.38	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	127	2.5	(0.05)	2.18	0.20	\$850	0.65	1.17
	Efficiency-Equipment	(0)	126	3.0	(0.06)	2.16	0.22	\$317	1.84	3.29
	Efficiency & PV/Battery	(9)	127	10.5	0.01	2.00	0.38	\$2,950	0.39	1.60
All-Electric <sup>2</sup>	Code Compliant	1,974	0	n/a	n/a	1.42	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,732	0	3.5	0.00	1.29	0.13	\$1,011	1.40	1.64
	Efficiency-Equipment	1,707	0	3.5	0.00	1.26	0.16	\$795	2.02	2.33
	Efficiency & PV	504	0	13.0	0.77	0.81	0.61	\$3,601	2.22	1.81
	Efficiency & PV/Battery	(6)	0	25.0	1.14	0.45	0.98	\$6,759	1.42	1.81
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,974	0	0.0	0.00	1.42	0.96	(\$2,337)	0.56	1.33
	Efficiency & PV	63	0	13.0	0.77	0.81	1.56	\$1,264	3.03	>1
	Neutral Cost	866	0	9.0	0.70	0.99	1.38	\$0	>1	73.96

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 12**

**Table 73: Single Family Climate Zone 12 Results Summary**

Climate Zone 12 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	390	n/a	n/a	2.11	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	344	3.5	(0.06)	1.88	0.23	\$1,679	1.18	1.83
	Efficiency-Equipment	0	338	3.0	(0.05)	1.85	0.26	\$654	3.31	4.65
	Efficiency & PV/Battery	(23)	344	9.5	0.04	1.76	0.35	\$5,568	0.43	1.72
All-Electric <sup>2</sup>	Code Compliant	4,492	0	n/a	n/a	1.05	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,958	0	3.5	0.00	0.94	0.10	\$3,735	0.78	1.06
	Efficiency-Equipment	3,721	0	5.0	0.00	0.90	0.15	\$2,108	2.00	2.51
	Efficiency & PV	867	0	15.5	1.97	0.51	0.53	\$11,520	1.69	1.41
	Efficiency & PV/Battery	(15)	0	25.0	2.62	0.29	0.76	\$17,586	1.29	1.48
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,492	0	0.0	0.00	1.05	1.07	(\$5,349)	0.63	1.89
	Efficiency & PV	867	0	15.5	1.97	0.51	1.60	\$6,172	1.77	>1
	Neutral Cost	2,374	0	8.0	1.35	0.76	1.36	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 74: Multifamily Climate Zone 12 Results Summary (Per Dwelling Unit)

Climate Zone 12 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	143	n/a	n/a	2.33	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	135	1.5	(0.02)	2.21	0.12	\$291	1.10	2.22
	Efficiency-Equipment	0	128	2.5	(0.03)	2.12	0.21	\$434	1.25	2.22
	Efficiency & PV/Battery	(11)	135	10.0	0.03	2.03	0.30	\$2,394	0.30	1.75
All-Electric <sup>2</sup>	Code Compliant	1,963	0	n/a	n/a	1.34	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,792	0	2.5	0.00	1.24	0.09	\$1,011	0.91	1.12
	Efficiency-Equipment	1,744	0	2.5	0.00	1.21	0.13	\$795	1.56	1.63
	Efficiency & PV	472	0	14.0	0.84	0.73	0.60	\$3,835	2.08	1.65
	Efficiency & PV/Battery	(8)	0	26.5	1.20	0.38	0.96	\$6,943	1.26	1.68
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,963	0	0.0	0.00	1.34	1.00	(\$2,337)	0.64	1.66
	Efficiency & PV	59	0	14.0	0.84	0.73	1.60	\$1,498	2.88	>1
	Neutral Cost	872	0	9.5	0.70	0.92	1.42	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 13****Table 75: Single Family Climate Zone 13 Results Summary**

Climate Zone 13 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	352	n/a	n/a	2.02	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	311	4.5	(0.21)	1.80	0.22	\$3,060	0.76	1.28
	Efficiency-Equipment	(0)	292	5.5	(0.24)	1.70	0.32	\$611	5.26	8.40
	Efficiency & PV/Battery	(19)	311	9.5	(0.11)	1.69	0.33	\$6,954	0.36	1.56
All-Electric <sup>2</sup>	Code Compliant	4,180	0	n/a	n/a	1.08	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,428	0	5.0	0.00	0.92	0.15	\$4,154	1.12	1.40
	Efficiency-Equipment	3,177	0	6.0	0.00	0.87	0.21	\$2,108	2.88	3.30
	Efficiency & PV	934	0	13.0	1.61	0.57	0.50	\$10,532	1.70	1.47
	Efficiency & PV/Battery	(11)	0	22.0	2.32	0.35	0.73	\$16,806	1.40	1.54
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,180	0	0.0	0.00	1.08	0.94	(\$5,349)	0.54	1.83
	Efficiency & PV	934	0	13.0	1.61	0.57	1.44	\$5,184	1.56	>1
	Neutral Cost	2,092	0	7.0	1.36	0.79	1.23	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 76: Multifamily Climate Zone 13 Results Summary (Per Dwelling Unit)

Climate Zone 13 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	135	n/a	n/a	2.30	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	123	3.0	(0.05)	2.12	0.18	\$831	0.63	1.27
	Efficiency-Equipment	(0)	121	3.0	(0.07)	2.10	0.21	\$290	1.95	3.75
	Efficiency & PV/Battery	(9)	123	10.5	0.00	1.95	0.35	\$2,936	0.38	1.64
All-Electric <sup>2</sup>	Code Compliant	1,849	0	n/a	n/a	1.36	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,629	0	3.0	0.00	1.24	0.12	\$1,011	1.31	1.56
	Efficiency-Equipment	1,590	0	3.5	0.00	1.21	0.16	\$795	1.98	2.28
	Efficiency & PV	501	0	12.0	0.73	0.80	0.56	\$3,462	2.12	1.71
	Efficiency & PV/Battery	(5)	0	23.5	1.11	0.44	0.92	\$6,650	1.35	1.74
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,849	0	0.0	0.00	1.36	0.94	(\$2,337)	0.63	1.54
	Efficiency & PV	63	0	12.0	0.73	0.80	1.50	\$1,125	3.22	>1
	Neutral Cost	773	0	8.5	0.70	0.94	1.36	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 14 SCE/SoCalGas****Table 77: Single Family Climate Zone 14 SCE/SoCalGas Results Summary**

Climate Zone 14 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	371	n/a	n/a	2.35	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	319	4.5	(0.17)	2.06	0.29	\$1,662	1.57	2.46
	Efficiency-Equipment	(0)	305	5.5	(0.19)	1.98	0.36	\$799	3.95	6.14
	Efficiency & PV/Battery	(5)	319	9.0	(0.08)	1.83	0.52	\$5,526	1.31	1.74
All-Electric <sup>2</sup>	Code Compliant	4,725	0	n/a	n/a	1.38	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,819	0	5.5	0.00	1.19	0.19	\$4,154	0.95	1.46
	Efficiency-Equipment	3,676	0	6.0	0.00	1.16	0.22	\$2,108	2.29	3.13
	Efficiency & PV	953	0	15.5	1.60	0.93	0.45	\$10,459	1.21	1.62
	Efficiency & PV/Battery	(2)	0	23.5	2.21	0.63	0.75	\$16,394	1.35	1.59
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,725	0	0.0	0.00	1.38	0.97	(\$5,349)	0.72	1.67
	Efficiency & PV	953	0	15.5	1.60	0.93	1.42	\$5,111	1.01	>1
	Neutral Cost	2,299	0	8.5	1.35	1.15	1.19	\$0	0.00	>1
	Min Cost Effectiveness	1,853	0	10.0	1.61	1.12	1.23	(\$1,000)	1.24	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, Neutral Cost, and Min Cost Effectiveness packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 78: Multifamily Climate Zone 14 SCE/SoCalGas Results Summary (Per Dwelling Unit)

Climate Zone 14 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	141	n/a	n/a	2.76	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	126	3.0	(0.04)	2.53	0.23	\$874	0.73	1.21
	Efficiency-Equipment	(0)	126	3.0	(0.05)	2.52	0.23	\$347	1.96	2.99
	Efficiency & PV/Battery	(3)	126	9.5	0.01	2.18	0.58	\$2,957	1.09	1.39
All-Electric <sup>2</sup>	Code Compliant	2,022	0	n/a	n/a	1.73	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,759	0	3.5	0.00	1.58	0.15	\$1,011	1.24	1.65
	Efficiency-Equipment	1,748	0	3.5	0.00	1.56	0.16	\$795	1.59	2.20
	Efficiency & PV	504	0	14.0	0.70	1.26	0.47	\$3,356	1.39	1.91
	Efficiency & PV/Battery	(2)	0	24.5	1.03	0.79	0.94	\$6,380	1.36	1.77
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,022	0	0.0	0.00	1.73	1.03	(\$2,337)	1.13	1.48
	Efficiency & PV	63	0	14.0	0.70	1.26	1.50	\$1,019	2.57	>1
	Neutral Cost	772	0	10.0	0.70	1.41	1.35	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 14 SDGE****Table 79: Single Family Climate Zone 14 SDGE Results Summary**

Climate Zone 14 SDG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	371	n/a	n/a	2.35	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	319	4.5	(0.17)	2.06	0.29	\$1,662	1.92	2.46
	Efficiency-Equipment	(0)	305	5.5	(0.19)	1.98	0.36	\$799	4.88	6.14
	Efficiency & PV/Battery	(5)	319	9.0	(0.08)	1.83	0.52	\$5,526	1.23	1.74
All-Electric <sup>2</sup>	Code Compliant	4,725	0	n/a	n/a	1.38	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,819	0	5.5	0.00	1.19	0.19	\$4,154	1.30	1.46
	Efficiency-Equipment	3,676	0	6.0	0.00	1.16	0.22	\$2,108	2.92	3.13
	Efficiency & PV	953	0	15.5	1.60	0.93	0.45	\$10,459	1.80	1.62
	Efficiency & PV/Battery	(2)	0	23.5	2.21	0.63	0.75	\$16,394	1.67	1.59
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	4,725	0	0.0	0.00	1.38	0.97	(\$5,349)	0.60	1.67
	Efficiency & PV	953	0	15.5	1.60	0.93	1.42	\$5,111	1.94	>1
	Neutral Cost	2,299	0	8.5	1.35	1.15	1.19	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 80: Multifamily Climate Zone 14 SDGE Results Summary (Per Dwelling Unit)

Climate Zone 14 SDG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	141	n/a	n/a	2.76	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	126	3.0	(0.04)	2.53	0.23	\$874	0.93	1.21
	Efficiency-Equipment	(0)	126	3.0	(0.05)	2.52	0.23	\$347	2.48	2.99
	Efficiency & PV/Battery	(3)	126	9.5	0.01	2.18	0.58	\$2,957	0.51	1.39
All-Electric <sup>2</sup>	Code Compliant	2,022	0	n/a	n/a	1.73	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,759	0	3.5	0.00	1.58	0.15	\$1,011	1.47	1.65
	Efficiency-Equipment	1,748	0	3.5	0.00	1.56	0.16	\$795	2.00	2.20
	Efficiency & PV	504	0	14.0	0.70	1.26	0.47	\$3,356	2.16	1.91
	Efficiency & PV/Battery	(2)	0	24.5	1.03	0.79	0.94	\$6,380	1.69	1.77
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,022	0	0.0	0.00	1.73	1.03	(\$2,337)	0.51	1.48
	Efficiency & PV	63	0	14.0	0.70	1.26	1.50	\$1,019	2.60	>1
	Neutral Cost	772	0	10.0	0.70	1.41	1.35	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 15****Table 81: Single Family Climate Zone 15 Results Summary**

Climate Zone 15 SCE/SoCalGas Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO <sub>2</sub> -Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	149	n/a	n/a	1.69	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	141	4.5	(0.43)	1.56	0.13	\$2,179	1.00	1.58
	Efficiency-Equipment	(0)	132	4.5	(0.45)	1.51	0.18	(\$936)	>1	>1
	Efficiency & PV/Battery	(3)	141	7.0	(0.34)	1.38	0.32	\$6,043	1.15	1.51
All-Electric <sup>2</sup>	Code Compliant	2,149	0	n/a	n/a	1.32	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	1,230	0	5.5	0.00	1.12	0.20	\$4,612	1.12	1.58
	Efficiency-Equipment	866	0	7.0	0.00	1.04	0.28	\$2,108	3.30	4.47
	Efficiency & PV	1,030	0	6.0	0.12	1.10	0.22	\$5,085	1.12	1.57
	Efficiency & PV/Battery	(2)	0	13.0	0.83	0.84	0.48	\$11,382	1.16	1.54
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,149	0	0.0	0.00	1.32	0.37	(\$5,349)	1.73	2.21
	Efficiency & PV	1,030	0	6.0	0.12	1.10	0.59	(\$264)	>1	>1
	Neutral Cost	23	0	6.0	1.36	1.13	0.57	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 82: Multifamily Climate Zone 15 Results Summary (Per Dwelling Unit)

Climate Zone 15 SCE/SoCalGas Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	93	n/a	n/a	2.53	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	92	4.0	(0.15)	2.42	0.11	\$510	1.35	2.28
	Efficiency-Equipment	0	86	4.0	(0.16)	2.33	0.20	(\$157)	>1	>1
	Efficiency & PV/Battery	(3)	92	8.5	(0.10)	2.13	0.40	\$2,604	1.29	1.70
All-Electric <sup>2</sup>	Code Compliant	1,243	0	n/a	n/a	1.78	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	954	0	4.0	0.00	1.61	0.17	\$1,011	1.50	2.28
	Efficiency-Equipment	764	0	6.0	0.00	1.50	0.29	\$1,954	1.24	1.72
	Efficiency & PV	548	0	7.0	0.24	1.50	0.28	\$1,826	1.43	2.07
	Efficiency & PV/Battery	(3)	0	16.5	0.62	1.08	0.70	\$5,020	1.34	1.80
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	1,243	0	0.0	0.00	1.78	0.75	(\$2,337)	6.36	2.35
	Efficiency & PV	68	0	7.0	0.24	1.50	1.03	(\$511)	>1	>1
	Neutral Cost	78	0	7.5	0.70	1.48	1.05	\$0	>1	>1

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



**Climate Zone 16****Table 83: Single Family Climate Zone 16 Results Summary**

Climate Zone 16 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	(0)	605	n/a	n/a	3.31	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	454	5.0	0.01	2.59	0.72	\$3,542	1.62	1.46
	Efficiency-Equipment	0	474	6.0	(0.08)	2.66	0.65	\$2,441	2.19	2.20
	Efficiency & PV/Battery	(18)	454	10.5	0.10	2.36	0.95	\$7,399	<b>0.87</b>	1.37
All-Electric <sup>2</sup>	Code Compliant	7,694	0	n/a	n/a	1.73	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	5,696	0	9.5	0.00	1.38	0.35	\$5,731	1.72	1.69
	Efficiency-Equipment	6,760	0	4.5	0.00	1.55	0.18	\$2,108	2.36	2.32
	Efficiency & PV	1,032	0	26.5	2.75	0.94	0.79	\$16,582	2.09	1.62
	Efficiency & PV/Battery	(11)	0	35.0	3.45	0.64	1.09	\$22,838	1.71	1.55
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	7,694	0	0.0	0.00	1.73	1.58	(\$5,349)	<b>0.31</b>	<b>0.68</b>
	Efficiency & PV	1,032	0	26.5	2.75	0.94	2.37	\$11,234	1.55	2.02
	Neutral Cost	5,398	0	8.5	1.35	1.51	1.80	\$0	<b>0.00</b>	<b>0.74</b>
	Min Cost Effectiveness	3,358	0	16.0	2.56	1.32	1.99	(\$4,753)	1.24	1.40

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, Neutral Cost, and Min Cost Effectiveness packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.



Table 84: Multifamily Climate Zone 16 Results Summary (Per Dwelling Unit)

Climate Zone 16 PG&E Multifamily		Annual Net kWh	Annual therms	EDR Margin <sup>4</sup>	PV Size Change (kW) <sup>5</sup>	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost (\$)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel <sup>1</sup>	Code Compliant	0	206	n/a	n/a	3.45	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	(0)	172	2.0	0.03	3.02	0.44	\$937	1.11	1.19
	Efficiency-Equipment	(0)	183	2.5	(0.02)	3.12	0.33	\$453	1.76	2.15
	Efficiency & PV/Battery	(9)	172	9.5	0.08	2.65	0.80	\$3,028	0.47	1.28
All-Electric <sup>2</sup>	Code Compliant	2,699	0	n/a	n/a	1.86	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	2,329	0	4.0	0.00	1.70	0.16	\$843	2.08	2.05
	Efficiency-Equipment	2,470	0	3.0	0.00	1.74	0.13	\$795	1.59	1.70
	Efficiency & PV	518	0	19.5	1.07	1.23	0.63	\$4,423	2.58	1.89
	Efficiency & PV/Battery	(6)	0	29.5	1.42	0.75	1.11	\$7,533	1.65	1.69
Mixed Fuel to All-Electric <sup>3</sup>	Code Compliant	2,699	0	0.0	0.00	1.86	1.59	(\$2,337)	0.43	1.03
	Efficiency & PV	65	0	19.5	1.07	1.23	2.22	\$2,087	2.87	>1
	Neutral Cost	1,518	0	10.0	0.70	1.56	1.90	\$0	>1	2.58

<sup>1</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home.

<sup>2</sup>All reductions and incremental costs relative to the **all-electric** code compliant home.

<sup>3</sup>All reductions and incremental costs relative to the **mixed fuel** code compliant home except the EDR Margins are relative to the Standard Design for each case which is the **all-electric** code compliant home. Incremental costs for these packages reflect the costs used in the On-Bill cost effectiveness methodology. Costs differ for the TDV methodology due to differences in the site gas infrastructure costs (see Section 2.6).

<sup>4</sup>This represents the Efficiency EDR Margin for the Efficiency-Non-Preempted and Efficiency-Equipment packages and Total EDR Margin for the Efficiency & PV, Efficiency & PV/Battery, and Neutral Cost packages.

<sup>5</sup>Positive values indicate an increase in PV capacity relative to the Standard Design.





A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11  
Local Energy Efficiency Ordinances

## 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study

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## **LEGAL NOTICE**

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# 1 Introduction

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (CEC, 2019) is maintained and updated every three years by two state agencies: the California Energy Commission (the Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances—or reach codes—that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable. This report was developed in coordination with the California Statewide Investor Owned Utilities (IOUs) Codes and Standards Program, key consultants, and engaged cities—collectively known as the Reach Code Team.

This report documents cost-effective combinations of measures that exceed the minimum state requirements for design in newly-constructed nonresidential buildings. Buildings specifically examined include medium office, medium retail, and small hotels. Measures include energy efficiency, solar photovoltaics (PV), and battery storage. In addition, the report includes a comparison between a baseline mixed-fuel design and all-electric design for each occupancy type.

The Reach Code team analyzed the following seven packages as compared to 2019 code compliant mixed-fuel design baseline:

- ◆ **Package 1A – Mixed-Fuel + Energy Efficiency (EE):** Mixed-fuel design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 1B – Mixed-Fuel + EE + PV + Battery (B):** Same as Package 1A, plus solar PV and batteries.
- ◆ **Package 1C – Mixed-fuel + High Efficiency (HE):** Baseline code-minimum building with high efficiency appliances, triggering federal preemption. The intent of this package is to assess the standalone contribution that high efficiency appliances would make toward achieving high performance thresholds.
- ◆ **Package 2 – All-Electric Federal Code-Minimum Reference:** All-electric design with federal code minimum appliance efficiency. No solar PV or battery.
- ◆ **Package 3A – All-Electric + EE:** Package 2 all-electric design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 3B – All-Electric + EE + PV + B:** Same as Package 3A, plus solar PV and batteries.
- ◆ **Package 3C – All-Electric + HE:** All-electric design with high efficiency appliances, triggering federal preemption.

Figure 1 summarizes the baseline and measure packages. Please refer to *Section 3* for more details on the measure descriptions.

**Figure 1. Measure Category and Package Overview**

Measure Category	Report Section	Mixed Fuel				All-Electric			
		Baseline	1A	1B	1C	2	3A	3B	3C
		Fed Code Minimum Efficiency	EE	EE+ PV + B	HE	Fed Code Minimum Efficiency	EE	EE+ PV + B	HE
Energy Efficiency Measures	3.1		X	X			X	X	
Solar PV + Battery	3.2			X				X	
All-Electric Measures	3.3					X	X	X	X
Preemptive Appliance Measures	3.4				X				X

The team separately developed cost effectiveness results for PV-only and PV+Battery packages, excluding any efficiency measures. For these packages, the PV is modeled as a “minimal” size of 3 kW and a larger size based on the available roof area and electric load of the building. PV sizes are combined with two sizes of battery storage for both mixed fuel and all electric buildings to form eight different package combinations as outlined below:

- ◆ **Mixed-Fuel + 3 kW PV Only**
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery**
- ◆ **Mixed-Fuel + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery
- ◆ **All-Electric + 3 kW PV Only**
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery**
- ◆ **All-Electric + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **All-Electric + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery.

Each of the eight packages are evaluated against a baseline model designed as per 2019 Title 24 Part 6 requirements. The Standards baseline for all occupancies in this report is a mixed-fuel design.

The Department of Energy (DOE) sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act (NAECA), including heating, cooling, and water heating equipment.<sup>1</sup> Since state and local governments are prohibited from adopting

<sup>1</sup> [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431\\_197](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197)



higher minimum efficiencies than the federal standards require, the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency equipment. However, because high efficiency appliances are often the easiest and most affordable measures to increase energy performance, this study provides an analysis of high efficiency appliances for informational purposes. While federal preemption would limit a reach code, in practice, builders may install any package of compliant measures to achieve the performance requirements, including higher efficiency appliances that are federally regulated.

## 2 Methodology and Assumptions

With input from several stakeholders, the Reach Codes team selected three building types—medium office, medium retail, and small hotel—to represent a predominant segment of nonresidential new construction in the state.

This analysis used both on-bill and time dependent valuation of energy (TDV) based approaches to evaluate cost-effectiveness. Both methodologies require estimating and quantifying the energy savings associated with energy efficiency measures, as well as quantifying the costs associated with the measures. The main difference between the methodologies is the valuation of energy and thus the cost savings of reduced or avoided energy use. TDV was developed by the Energy Commission to reflect the time dependent value of energy including long-term projected costs of energy such as the cost of providing energy during peak periods of demand and other societal costs including projected costs for carbon emissions. With the TDV approach, electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods.<sup>2</sup>

The Reach Code Team performed energy simulations using EnergyPro 8.0 software for 2019 Title 24 code compliance analysis, which uses CBECC-Com 2019.1.0 for the calculation engine. The baseline prototype models in all climate zones have been designed to have compliance margins as close as possible to 0 to reflect a prescriptively-built building.<sup>3</sup>

### 2.1 Building Prototypes

The DOE provides building prototype models which, when modified to comply with 2019 Title 24 requirements, can be used to evaluate the cost effectiveness of efficiency measures. These prototypes have historically been used by the California Energy Commission to assess potential code enhancements. The Reach Code Team performed analysis on a medium office, a medium retail, and a small hotel prototype.

Water heating includes both service water heating (SWH) for office and retail buildings and domestic hot water for hotels. In this report, water heating or SWH is used to refer to both. The Standard Design HVAC and SWH systems are based on the system maps included in the 2019 Nonresidential Alternate

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<sup>2</sup> Horii, B., E. Cutter, N. Kapur, J. Arent, and D. Conotyannis. 2014. "Time Dependent Valuation of Energy for Developing Building Energy Efficiency Standards." Available at: [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09\\_workshop/2017\\_TDV\\_Documents](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents)

<sup>3</sup> EnergySoft and TRC were able to develop most baseline prototypes to achieve a compliance margin of less than +/-1 percent except for few models that were at +/- 6 percent. This indicates these prototypes are not exactly prescriptive according to compliance software calculations. To calculate incremental impacts, TRC conservatively compared the package results to that of the proposed design of baseline prototypes (not the standard design).

Calculation Method Reference Manual.<sup>4</sup> The Standard Design is the baseline for all nonresidential projects and assumes a mixed-fuel design using natural gas as the space heating source in all cases. Baseline HVAC and SWH system characteristics are described below and in Figure 2:

- ◆ The baseline medium office HVAC design package includes two gas hot water boilers, three packaged rooftop units (one for each floor), and variable air volume (VAV) terminal boxes with hot water reheat coils. The SWH design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.
- ◆ The baseline medium retail HVAC design includes five single zone packaged rooftop units (variable flow and constant flow depending on the zone) with gas furnaces for heating. The SWH design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.
- ◆ The small hotel has two baseline equipment systems, one for the nonresidential spaces and one for the guest rooms.
  - ◆ The nonresidential HVAC design includes two gas hot water boilers, four packaged rooftop units and twelve VAV terminal boxes with hot water reheat coils. The SWH design include a small electric resistance water heater with 30-gallon storage tank.
  - ◆ The residential HVAC design includes one single zone air conditioner (AC) unit with gas furnace for each guest room and the water heating design includes one central gas water heater with a recirculation pump for all guest rooms.

**Figure 2. Prototype Characteristics Summary**

	Medium Office	Medium Retail	Small Hotel
<b>Conditioned Floor Area</b>	53,628	24,691	42,552
<b>Number of Stories</b>	3	1	4
<b>Number of Guest Rooms</b>	0	0	78
<b>Window-to-Wall Area Ratio</b>	0.33	0.07	0.11
<b>Baseline HVAC System</b>	Packaged DX VAV with gas furnaces + VAV terminal units with hot water reheat. Central gas hot water boilers	Single zone packaged DX units with gas furnaces	<u>Nonresidential:</u> Packaged DX VAV with hot water coil + VAV terminal units with hot water reheat. Central gas hot water boilers. <u>Residential:</u> Single zone DX AC unit with gas furnaces
<b>Baseline Water Heating System</b>	30-gallon electric resistance water heater	30-gallon electric resistance water heater	<u>Nonresidential:</u> 30-gallon electric resistance water heater <u>Residential:</u> Central gas water heater with recirculation loop

<sup>4</sup> Nonresidential Alternative Calculation Method Reference Manual For the 2019 Building Energy Efficiency Standards. Available at: <https://www.energy.ca.gov/2019publications/CEC-400-2019-006/CEC-400-2019-006-CMF.pdf>



## 2.2 Cost Effectiveness

The Reach Code Team analyzed the cost effectiveness of the packages by applying them to building prototypes (as applicable) using the life cycle cost methodology, which is approved and used by the Energy Commission to establish cost effective building energy standards (Title 24, Part 6).<sup>5</sup>

Per Energy Commission's methodology, the Reach Code Team assessed the incremental costs of the energy efficiency measure packages and compared them to the energy cost savings over the measure life of 15 years. Incremental costs represent the equipment, installation, replacements, and maintenance costs of the proposed measure relative to the 2019 Title 24 Standards minimum requirements. The energy savings benefits are estimated using both TDV of energy and typical utility rates for each building type:

- ◆ **Time Dependent Valuation:** TDV is a normalized monetary format developed and used by the Energy Commission for comparing electricity and natural gas savings, and it considers the cost of electricity and natural gas consumed during different times of the day and year. Simulation outputs are translated to TDV savings benefits using 2019 TDV multipliers and 15-year discounted costs for the nonresidential measure packages.
- ◆ **Utility bill impacts (On-bill):** Utility energy costs are estimated by applying appropriate IOU rates to estimated annual electricity and natural gas consumption. The energy bill savings are calculated as the difference in utility costs between the baseline and proposed package over a 15-year duration accounting for discount rate and energy cost escalation.

In coordination with the IOU rate team, and rate experts at a few electric publicly owned utilities (POUs), the Reach Code Team used the current nonresidential utility rates publicly available at the time of analysis to analyze the cost effectiveness for each proposed package. The utility tariffs, summarized in Figure 3, were determined based on the annual load profile of each prototype, and the most prevalent rate in each territory. For some prototypes there are multiple options for rates because of the varying load profiles of mixed-fuel buildings versus all-electric buildings. Tariffs were integrated in EnergyPro software to be applied to the hourly electricity and gas outputs. The Reach Code Team did not attempt to compare or test a variety of tariffs to determine their impact on cost effectiveness.

The currently available and applicable time-of-use (TOU) nonresidential rates are applied to both the base and proposed cases with PV systems.<sup>6</sup> Any annual electricity production in excess of annual electricity consumption is credited at the applicable wholesale rate based on the approved NEM tariffs for that utility. For a more detailed breakdown of the rates selected refer to *Appendix 6.4 Utility Rate Schedules*. Note that most utility time-of-use rates will be updated in the near future, which can affect cost effectiveness results. For example, Pacific Gas and Electric Company (PG&E) will introduce new rates for new service connections in late 2019, and existing accounts will be automatically rolled over to new rates in November 2020.

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<sup>5</sup> Architectural Energy Corporation (January 2011) Life-Cycle Cost Methodology. California Energy Commission. Available at: [http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/general\\_cec\\_documents/2011-01-14\\_LCC\\_Methodology\\_2013.pdf](http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/general_cec_documents/2011-01-14_LCC_Methodology_2013.pdf)

<sup>6</sup> Under NEM rulings by the CPUC (D-16-01-144, 1/28/16), all new PV customers shall be in an approved TOU rate structure. As of March 2016, all new PG&E net energy metering (NEM) customers are enrolled in a time-of-use rate. (<http://www.pge.com/en/myhome/saveenergymoney/plans/tou/index.page?>).

**Figure 3. Utility Tariffs used based on Climate Zone**

Climate Zones	Electric / Gas Utility	Electricity (Time-of-use)	Natural Gas
<b>IOUs</b>			
1-5,11-13,16	PG&E	A-1/A-10	G-NR1
5	PG&E / Southern California Gas Company	A-1/A-10	G-10 (GN-10)
6,8-10,14,15	SCE / Southern California Gas Company	TOU-GS-1/TOU-GS-2/TOU-GS-3	G-10 (GN-10)
7,10,14	San Diego Gas and Electric Company (SDG&E)	A-1/A-10	GN-3
<b>Electric POUs</b>			
4	City of Palo Alto (CPAU)	E-2	n/a
12	Sacramento Municipal Utility District (SMUD)	GS	n/a
6,7,8,16	Los Angeles Department of Water and Power (LADWP)	A-2 (B)	n/a

The Reach Code Team obtained measure costs through interviews with contractors and California distributors and review of online sources, such as Home Depot and RS Means. Taxes and contractor markups were added as appropriate. Maintenance costs were not included because there is no assumed maintenance on the envelope measures. For HVAC and SWH measures the study assumes there are no additional maintenance cost for a more efficient version of the same system type as the baseline. Replacement costs for inverters were included for PV systems, but the useful life all other equipment exceeds the study period.

The Reach Code Team compared the energy benefits with incremental measure cost data to determine cost effectiveness for each measure package. The calculation is performed for a duration of 15 years for all nonresidential prototypes with a 3 percent discount rate and fuel escalation rates based on the most recent General Rate Case filings and historical escalation rates.<sup>7</sup> Cost effectiveness is presented using net present value and benefit-to-cost ratio metrics.

- ◆ **Net Present Value (NPV):** The Reach Code Team uses net savings (NPV benefits *minus* NPV costs) as the cost effectiveness metric. If the net savings of a measure or package is positive, it is considered cost effective. Negative savings represent net costs. A measure that has negative energy cost benefits (energy cost increase) can still be cost effective if the costs to implement the measure are more negative (i.e., material and maintenance cost savings).
- ◆ **Benefit-to-Cost Ratio (B/C):** Ratio of the present value of all benefits to the present value of all costs over 15 years (NPV benefits *divided by* NPV costs). The criteria for cost effectiveness is a B/C greater than 1.0. A value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure.

<sup>7</sup> 2019 TDV Methodology Report, California Energy Commission, Docket number: 16-BSTD-06  
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=216062>

There are several special circumstances to consider when reviewing these results:

- ◆ Improving the efficiency of a project often requires an initial incremental investment. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). Typically, utility bill savings are categorized as a ‘benefit’ while incremental construction costs are treated as ‘costs.’ In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the ‘benefit’ while the utility bill negative savings are the ‘cost.’
- ◆ In cases where a measure package is cost effective immediately (i.e., there are upfront cost savings and lifetime energy cost savings), cost effectiveness is represented by “>1”.
- ◆ The B/C ratios sometimes appear very high even though the cost numbers are not very high (for example, an upfront cost of \$1 but on-bill savings of \$200 over 30 years would equate to a B/C ratio of 200). NPV is also displayed to clarify these potentially confusing conclusions – in the example, the NPV would be equal to a modest \$199.

### 3 Measure Description and Cost

Using the 2019 Title 24 code baseline as the starting point, The Reach Code Team identified potential measure packages to determine the projected energy (therm and kWh) and compliance impacts. The Reach Code Team developed an initial measure list based on experience with designers and contractors along with general knowledge of the relative acceptance and preferences of many measures, as well as their incremental costs.

The measures are categorized into energy efficiency, solar PV and battery, all-electric, and preempted high efficiency measures in subsections below.

#### 3.1 Energy Efficiency Measures

This section describes all the energy efficiency measures considered for this analysis to develop a non-preempted, cost-effective efficiency measure package. The Reach Code Team assessed the cost-effectiveness of measures for all climate zones individually and found that the packages did not need to vary by climate zone, with the exception of a solar heat gain coefficient measure in hotels, as described in more detail below. The measures were developed based on reviews of proposed 2022 Title 24 codes and standards enhancement measures, as well as ASHRAE 90.1 and ASHRAE 189.1 Standards. Please refer to *Appendix Section 6.86.7* for a list of efficiency measures that were considered but not implemented.

Figure 4 provides a summary of the cost of each measure and the applicability of each measure to the prototype buildings.

### 3.1.1 Envelope

- ◆ **Modify Solar Heat Gain Coefficient (SHGC) fenestration**
  - ◆ Office and Retail - All Climate Zones: reduce window SHGC from the prescriptive value of 0.25 to 0.22
  - ◆ Hotel
    - ◆ Climate zones 1, 2, 3, 5, and 16: Increase the SHGC for all nonresidential spaces from the prescriptive value of 0.25 to 0.45 in both common and guest room spaces.
    - ◆ Climate zones 4, and 6-15: Reduce window SHGC from the prescriptive value of 0.25 to 0.22, only for common spaces.

In all cases, the fenestration visible transmittance and U-factor remain at prescriptive values.

- ◆ **Fenestration as a function of orientation:** Limit the amount of fenestration area as a function of orientation. East-facing and west-facing windows are each limited to one-half of the average amount of north-facing and south-facing windows.

### 3.1.2 HVAC and SWH

- ◆ **Drain water heat recovery (DWHR):** Add shower drain heat recovery in hotel guest rooms. DWHR captures waste heat from a shower drain line and uses it to preheat hot water. Note that this measure cannot currently be modeled on hotel/motel spaces, and the Reach Code Team integrated estimated savings outside of modeling software based on SWH savings in residential scenarios. Please see *Appendix Section 6.3* for details on energy savings analysis.
- ◆ **VAV box minimum flow:** Reduce VAV box minimum airflows from the current T24 prescriptive requirement of 20 percent of maximum (design) airflow to the T24 zone ventilation minimums.
- ◆ **Economizers on small capacity systems:** Require economizers and staged fan control in units with cooling capacity  $\geq 33,000$  Btu/hr and  $\leq 54,000$  Btu/hr, which matches the requirement in the 2018 International Green Construction Code and adopts ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1. This measure reduces the T24 prescriptive threshold on air handling units that are required to have economizers, which is  $> 54,000$  Btu/hr.
- ◆ **Solar thermal hot water:** For all-electric hotel only, add solar thermal water heating to supply the following portions of the water heating load, measured in solar savings fraction (SSF):
  - ◆ 20 percent SSF in CZs 2, 3, and 5-9
  - ◆ 25 percent in CZ4
  - ◆ 35 percent SSF in CZs 1 and 10-16.



### 3.1.3 Lighting

- ◆ **Interior lighting reduced lighting power density (LPD):** Reduce LPD by 15 percent for Medium Office, 10 percent for Medium Retail and by 10 percent for the nonresidential areas of the Small Hotel.
- ◆ **Institutional tuning:** Limit the maximum output or maximum power draw of lighting to 85 percent of full light output or full power draw.
- ◆ **Daylight dimming plus off:** Turn daylight-controlled lights completely off when the daylight available in the daylit zone is greater than 150 percent of the illuminance received from the general lighting system at full power. There is no associated cost with this measure, as the 2019 T24 Standards already require multilevel lighting and daylight sensors in primary and secondary daylit spaces. This measure is simply a revised control strategy and does not increase the number of sensors required or labor to install and program a sensor.
- ◆ **Occupant sensing in open plan offices:** In an open plan office area greater than 250 ft<sup>2</sup>, control lighting based on occupant sensing controls. Two workstations per occupancy sensor.

Details on the applicability and impact of each measure by building type and by space function can be found in *Appendices 6.2*. The appendix also includes the resulting LPD that is modeled as the proposed by building type and by space function.



**Figure 4. Energy Efficiency Measures - Specification and Cost**

Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
Envelope							
Modify SHGC Fenestration	SHGC of 0.25	•	•	•	•	\$1.60 /ft <sup>2</sup> window for SHGC decreases, \$0/ft <sup>2</sup> for SHGC increases	Costs from one manufacturer.
Fenestration as a Function of Orientation	Limit on total window area and west-facing window area as a function of wall area.	•	–	–	–	\$0	No additional cost associated with the measure which is a design consideration not an equipment cost.
HVAC and SHW							
Drain Water Heat Recovery	No heat recovery required	–	–	•	–	\$841 /unit	Assume 1 heat recovery unit for every 3 guestrooms. Costs from three manufacturers.
VAV Box Minimum Flow	20 percent of maximum (design) airflow	•	–	–	•	\$0	No additional cost associated with the measure which is a design consideration not an equipment cost.
Economizers on Small Capacity Systems	Economizers required for units > 54,000 Btu/hr	–	•	–	–	\$2,857 /unit	Costs from one manufacturer's representative and one mechanical contractor.



Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
Solar Thermal Hot Water	For central heat pump water heaters, there is no prescriptive baseline requirement.	–	–	• (electric only)	–	\$33/therm-yr	Installed costs reported in the California Solar Initiative Thermal Program Database, 2015-present. <sup>8</sup> Costs include tank and were only available for gas backup systems. Costs are reduced by 19 percent per federal income tax credit average through 2022.
<b>Lighting</b>							
Interior Lighting Reduced LPD	Per Area Category Method, varies by Primary Function Area. Office area 0.60 – 0.70 W/ft <sup>2</sup> depending on area of space. Hotel function area 0.85 W/ft <sup>2</sup> . Retail Merchandise Sales 1.00 W/ft <sup>2</sup>	•	•	–	•	\$0	Industry report on LED pricing analysis shows that costs are not correlated with efficacy. <sup>9</sup>

<sup>8</sup> <http://www.csithermalstats.org/download.html>

<sup>9</sup> [http://calmac.org/publications/LED\\_Pricing\\_Analysis\\_Report\\_-\\_Revised\\_1.19.2018\\_Final.pdf](http://calmac.org/publications/LED_Pricing_Analysis_Report_-_Revised_1.19.2018_Final.pdf)



Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
Institutional Tuning	No requirement, but Power Adjustment Factor (PAF) credit of 0.10 available for luminaires in non-daylit areas and 0.05 for luminaires in daylit areas <sup>10</sup>	•	•	–	•	\$0.06/ft <sup>2</sup>	Industry report on institutional tuning <sup>11</sup>
Daylight Dimming Plus Off	No requirement, but PAF credit of 0.10 available.	•	–	–	–	\$0	Given the amount of lighting controls already required, this measure is no additional cost.
Occupant Sensing in Open Plan Offices	No requirement, but PAF credit of 0.30 available.	•	–	–	–	\$189 /sensor; \$74 /powered relay; \$108 /secondary relay	2 workstations per sensor; 1 fixture per workstation; 4 workstations per master relay; 120 ft <sup>2</sup> /workstation in open office area, which is 53% of total floor area of the medium office

<sup>10</sup> Power Adjustment Factors allow designers to tradeoff increased lighting power densities for more efficient designs. In this study, PAF-related measures assume that the more efficient design is incorporated without a tradeoff for increased lighting power density.

<sup>11</sup> <https://slipstreaminc.org/sites/default/files/2018-12/task-tuning-report-mndoc-2015.pdf>



### 3.2 Solar Photovoltaics and Battery Measures

This section describes the PV and battery measures considered for this analysis. The Reach Code Team estimated the required PV sizes for each building prototype for the efficiency measure packages and the stand alone PV and battery options.

#### 3.2.1 Solar Photovoltaics

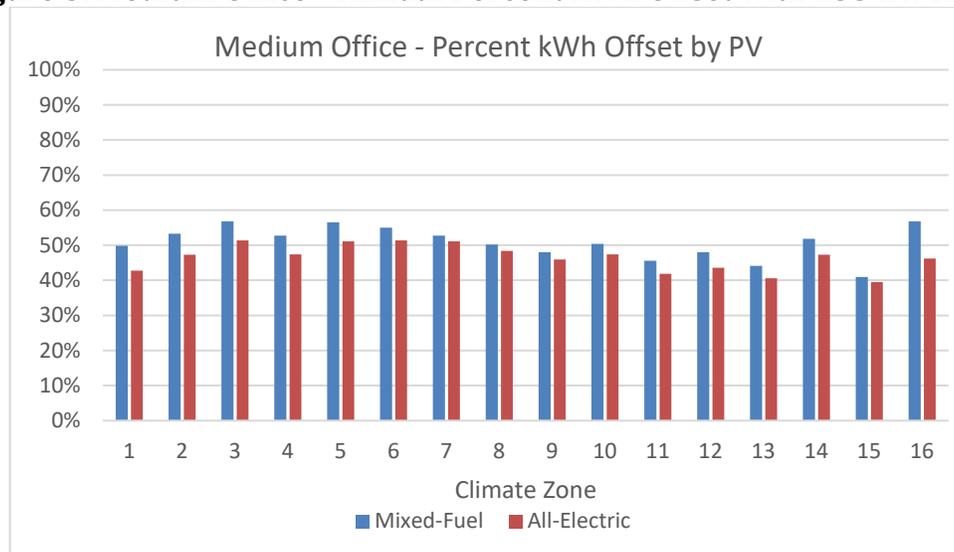
2019 Title 24 requires nonresidential buildings to reserve at least 15 percent of the roof area as a “solar zone,” but does not include any requirements or compliance credits for the installation of photovoltaic systems. The Reach Code Team analyzed a range of PV system sizes to determine cost effectiveness. To determine upper end of potential PV system size, the Reach Code Team assumed a PV generation capacity of either

- ◆ 15 W/ft<sup>2</sup> covering 50 percent of the roof area, or
- ◆ Enough to nearly offset the annual energy consumption.

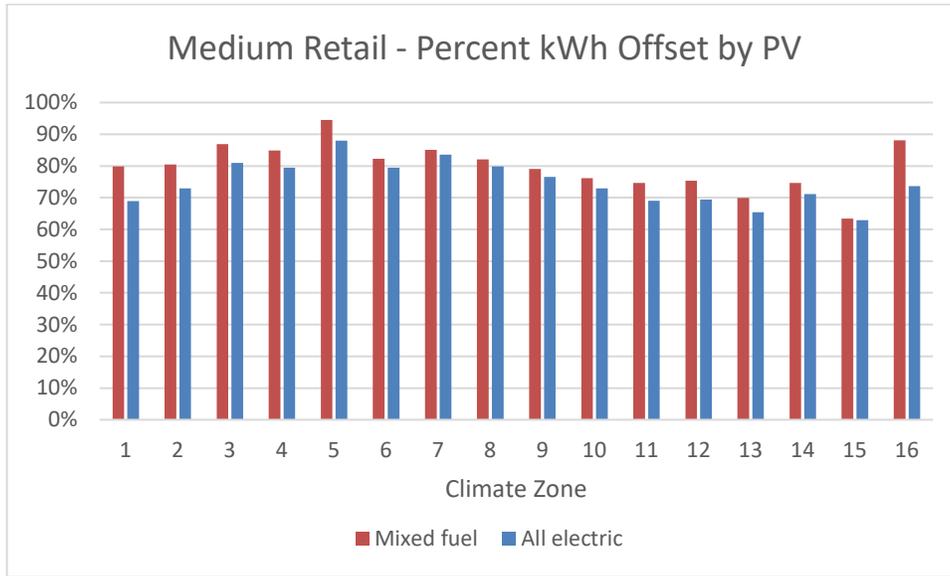
The medium office and small hotel prototypes had small roof areas compared to their annual electricity demand, thus the PV system capacity at 50 percent of the roof area was less than the estimated annual usage. The medium office and small hotel had a 135 kW and 80 kW array, respectively. The medium retail building has a substantially large roof area that would accommodate a PV array that generates more than the annual electricity load of the building. The PV array for the medium retail building was sized at 110 kW to not exceed the annual electricity consumption of the building when accounting for the minimum annual energy demand across climate zones with efficiency packages.

The modeling software for nonresidential buildings does not allow auto-sizing of PV based on a desired percent offset of electricity use. Moreover, the PV size is also constrained by the availability of roof area. Hence, a common size of PV is modeled for all the packages including all electric design. Figure 5 through Figure 7 below demonstrate the percent of electricity offset by PV for both mixed fuel and all electric buildings over their respective federal minimum design package.

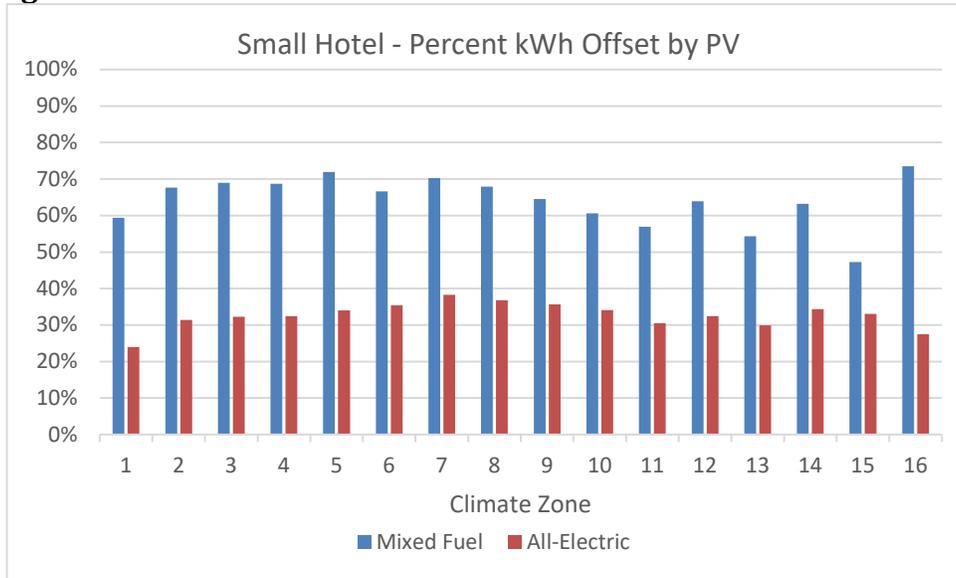
**Figure 5. Medium Office – Annual Percent kWh Offset with 135 kW Array**



**Figure 6. Medium Retail – Annual Percent kWh Offset with 110 kW Array**



**Figure 7. Small Hotel – Annual Percent kWh Offset with 80 kW Array**



The costs for PV include first cost to purchase and install the system, inverter replacement costs, and annual maintenance costs. A summary of the medium office costs and sources is given in Figure 8. Upfront solar PV system costs are reduced by the federal income tax credit (ITC), approximately 19 percent due to a phased reduction in the credit through the year 2022.<sup>12</sup>

<sup>12</sup> The federal credit drops to 26% in 2020, and 22% in 2021 before dropping permanently to 10% for commercial projects and 0% for residential projects in 2022. More information on federal Investment Tax Credits available at: <https://www.seia.org/initiatives/solar-investment-tax-credit-itc>



**Figure 8. Medium Office Upfront PV Costs**

	Unit Cost	Cost	Useful Life (yrs.)	Source
Solar PV System	\$2.30 / Wdc	\$310,500	30	National Renewable Energy Laboratory (NREL) Q1 2016 <sup>13</sup>
Inverter Replacement	\$0.15 / Wdc	\$20,250	10	E3 Rooftop Solar PV System Report <sup>14</sup>
Maintenance Costs	\$0.02 / Wdc	\$2,700	1	

PV energy output is built into CBECC-Com and is based on NREL's PVWatts calculator, which includes long term performance degradation estimates.<sup>15</sup>

### 3.2.2 Battery Storage

This measure includes installation of batteries to allow energy generated through PV to be stored and used later, providing additional energy cost benefits. This report does not focus on optimizing battery sizes or controls for each prototype and climate zone, though the Reach Code Team ran test simulations to assess the impact of battery sizes on TDV savings and found diminishing returns as the battery size increased.

The team set battery control to the Time of Use Control (TOU) method, which assumes batteries are charged anytime PV generation is greater than the building load but discharges to the electric grid beginning during the highest priced hours of the day (the "First Hour of the Summer Peak"). Because there is no default hour available in CBECC-Com, the team applied the default hour available in CBECC-Res to start discharging (hour 19 in CZs 2, 4, and 8-15, and hour 20 in other CZs). This control option is most reflective of the current products on the market. While this control strategy is being used in the analysis, there would be no mandate on the control strategy used in practice.

The current simulation software has approximations of how performance characteristics change with environmental conditions, charge/discharge rates, and degradation with age and use. More information is on the software battery control capabilities and associated qualification requirements are available in the Residential Alternative Calculation Method Reference Manual and the 2019 Reference Appendices for the 2019 Title 24 Standards.<sup>16,17</sup>

The Reach Code Team used costs of \$558 kWh based on a 2018 IOU Codes and Standards Program report, assuming a replacement is necessary in year 15.<sup>18</sup> Batteries are also eligible for the ITC if they are installed at the same time as the renewable generation source and at least 75 percent of the energy used to charge

<sup>13</sup> Available at: <https://www.nrel.gov/docs/fy16osti/66532.pdf>

<sup>14</sup> Available at: <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>

<sup>15</sup> More information available at: <https://pvwatts.nrel.gov/downloads/pvwattsv5.pdf>

<sup>16</sup> Battery controls are discussed in Sections 2.1.5.4 and Appendix D of the Residential Alternative Calculation Method Reference Manual, available here: <https://ww2.energy.ca.gov/2019publications/CEC-400-2019-005/CEC-400-2019-005-CMF.pdf>

<sup>17</sup> Qualification Requirements for Battery Storage Systems are available in JA12 of the 2019 Reference Appendices: <https://ww2.energy.ca.gov/2018publications/CEC-400-2018-021/CEC-400-2018-021-CMF.pdf>

<sup>18</sup> Available at: [http://localenergycodes.com/download/430/file\\_path/fieldList/PV%20Plus%20Battery%20Storage%20Report](http://localenergycodes.com/download/430/file_path/fieldList/PV%20Plus%20Battery%20Storage%20Report)



the battery comes from a renewable source. Thus, the Reach Code Team also applied a 19 percent cost reduction to battery costs.

### **3.2.3 PV-only and PV+Battery Packages**

The Reach Code Team analyzed solar PV and battery storage only, without other efficiency measures in both mixed-fuel and all-electric building designs. Two different sizes of solar PV and battery storage were analyzed.

- ◆ **Small PV Size:** 3 kW, assumed to be the minimal PV system considered for installation in a nonresidential building.
- ◆ **Large PV Size:** PV capacity equal to 15 W/ft<sup>2</sup> over 50 percent of the roof area, or sized to nearly offset annual electricity consumption, as described in Section 3.2.1.
- ◆ **Small Battery Size:** 5 kWh, assumed to be the minimal battery system considered for installation in a nonresidential building, and representative of smaller products currently available on the market.
- ◆ **Large Battery Size:** 50 kWh, assumed to be a substantially large size for a nonresidential setting. Generally, the reach code team found diminishing on-bill and TDV benefits as the battery size increased.

As described in Section 1 and Section 4.4, each PV size was run as a standalone measure. When packaged with a battery measure, the small PV size was paired with the small battery size, and the large PV size was paired with the large battery size.

## ***3.3 All Electric Measures***

The Reach Code Team investigated the cost and performance impacts and associated infrastructure costs associated with changing the baseline HVAC and water heating systems to all-electric equipment. This includes heat pump space heating, electric resistance reheat coils, electric water heater with storage tank, heat pump water heating, increasing electrical capacity, and eliminating natural gas connections that would have been present in mixed-fuel new construction. The Reach Code Team selected electric systems that would be installed instead of gas-fueled systems in each prototype.

### **3.3.1 HVAC and Water Heating**

The nonresidential standards use a mixed-fuel baseline for the Standard Design systems. In most nonresidential occupancies, the baseline is natural gas space heating. Hotel/motels and high-rise residential occupancies also assume natural gas baseline water heating systems for the guest rooms and dwelling units. In the all-electric scenario, gas equipment serving these end-uses is replaced with electric equipment, as described in Figure 9.



**Figure 9. All-Electric HVAC and Water Heating Characteristics Summary.**

		Medium Office	Medium Retail	Small Hotel
<b>HVAC System</b>	Baseline	Packaged DX + VAV with HW reheat. Central <b>gas</b> boilers.	Single zone packaged DX with <b>gas</b> furnaces	<u>NonRes</u> : Packaged DX + VAV with HW reheat. Central <b>gas</b> boilers. <u>Res</u> : Single zone DX AC unit with <b>gas</b> furnaces
	Proposed All-Electric	Packaged DX + VAV with electric <b>resistance</b> reheat.	Single zone packaged <b>heat pumps</b>	<u>NonRes</u> : Packaged DX + VAV with electric <b>resistance</b> reheat <u>Res</u> : Single zone <b>heat pumps</b>
<b>Water Heating System</b>	Baseline	Electric <b>resistance</b> with storage	Electric <b>resistance</b> with storage	<u>NonRes</u> : <b>Electric</b> resistance storage <u>Res</u> : Central <b>gas</b> storage with recirculation
	Proposed All-Electric	Electric <b>resistance</b> with storage	Electric <b>resistance</b> with storage	<u>NonRes</u> : Electric <b>resistance</b> storage <u>Res</u> : Individual <b>heat pumps</b>

The Reach Code Team received cost data for baseline mixed-fuel equipment as well as electric equipment from an experienced mechanical contractor in the San Francisco Bay Area. The total construction cost includes equipment and material, labor, subcontractors (for example, HVAC and SHW control systems), and contractor overhead.

### 3.3.1.1 Medium Office

The baseline HVAC system includes two gas hot water boilers, three packaged rooftop units, and VAV hot water reheat boxes. The SHW design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.

For the medium office all-electric HVAC design, the Reach Code Team investigated several potential all-electric design options, including variable refrigerant flow, packaged heat pumps, and variable volume and temperature systems. After seeking feedback from the design community, the Reach Code Team determined that the most feasible all-electric HVAC system, given the software modeling constraints is a VAV system with an electric resistance reheat instead of hot water reheat coil. A parallel fan-powered box (PFPB) implementation of electric resistance reheat would further improve efficiency due to reducing ventilation requirements, but an accurate implementation of PFPBs is not currently available in compliance software.

Note that the actual natural gas consumption for the VAV hot water reheat baseline may be higher than the current simulation results due to a combination of boiler and hot water distribution losses. A recent research study shows that the total losses can account for as high as 80 percent of the boiler energy use.<sup>19</sup>

<sup>19</sup> Raftery, P., A. Geronazzo, H. Cheng, and G. Paliaga. 2018. Quantifying energy losses in hot water reheat systems. *Energy and Buildings*, 179: 183-199. November. <https://doi.org/10.1016/j.enbuild.2018.09.020>. Retrieved from <https://escholarship.org/uc/item/3qs8f8qx>



If these losses are considered savings for the electric resistance reheat (which has zero associated distribution loss) may be higher.

The all-electric SHW system remains the same electric resistance water heater as the baseline and has no associated incremental costs.

Cost data for medium office designs are presented in Figure 10. The all-electric HVAC system presents cost savings compared to the hot water reheat system from elimination of the hot water boiler and associated hot water piping distribution. CZ10 and CZ15 all-electric design costs are slightly higher because they require larger size rooftop heat pumps than the other climate zones.

**Figure 10. Medium Office HVAC System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
<b>CZ01</b>	\$1,202,538	\$1,106,432	\$(96,106)
<b>CZ02</b>	\$1,261,531	\$1,178,983	\$(82,548)
<b>CZ03</b>	\$1,205,172	\$1,113,989	\$(91,183)
<b>CZ04</b>	\$1,283,300	\$1,205,434	\$(77,865)
<b>CZ05</b>	\$1,207,345	\$1,113,989	\$(93,356)
<b>CZ06</b>	\$1,216,377	\$1,131,371	\$(85,006)
<b>CZ07</b>	\$1,227,932	\$1,148,754	\$(79,178)
<b>CZ08</b>	\$1,250,564	\$1,172,937	\$(77,626)
<b>CZ09</b>	\$1,268,320	\$1,196,365	\$(71,955)
<b>CZ10</b>	\$1,313,580	\$1,256,825	\$(56,755)
<b>CZ11</b>	\$1,294,145	\$1,221,305	\$(72,840)
<b>CZ12</b>	\$1,274,317	\$1,197,121	\$(77,196)
<b>CZ13</b>	\$1,292,884	\$1,221,305	\$(71,579)
<b>CZ14</b>	\$1,286,245	\$1,212,236	\$(74,009)
<b>CZ15</b>	\$1,357,023	\$1,311,994	\$(45,029)
<b>CZ16</b>	\$1,295,766	\$1,222,817	\$(72,949)

### 3.3.1.2 Medium Retail

The baseline HVAC system includes five packaged single zone rooftop ACs with gas furnaces. Based on fan control requirements in section 140.4(m), units with cooling capacity  $\geq 65,000$  Btu/h have variable air volume fans, while smaller units have constant volume fans. The SHW design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.

For the medium retail all-electric HVAC design, the Reach Code Team assumed packaged heat pumps instead of the packaged ACs. The all-electric SHW system remains the same electric resistance water heater as the baseline and has no associated incremental costs.

Cost data for medium retail designs are presented in Figure 11. Costs for rooftop air-conditioning systems are very similar to rooftop heat pump systems.

**Figure 11. Medium Retail HVAC System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
CZ01	\$328,312	\$333,291	\$4,978
CZ02	\$373,139	\$373,702	\$563
CZ03	\$322,849	\$326,764	\$3,915
CZ04	\$329,900	\$335,031	\$5,131
CZ05	\$359,888	\$362,408	\$2,520
CZ06	\$335,728	\$341,992	\$6,265
CZ07	\$345,544	\$349,808	\$4,265
CZ08	\$368,687	\$369,792	\$1,104
CZ09	\$415,155	\$411,069	\$(4,087)
CZ10	\$345,993	\$346,748	\$755
CZ11	\$418,721	\$414,546	\$(4,175)
CZ12	\$405,110	\$400,632	\$(4,477)
CZ13	\$376,003	\$375,872	\$(131)
CZ14	\$405,381	\$406,752	\$1,371
CZ15	\$429,123	\$427,606	\$(1,517)
CZ16	\$401,892	\$404,147	\$2,256

### 3.3.1.3 Small Hotel

The small hotel has two different baseline equipment systems, one for the nonresidential spaces and one for the guest rooms. The nonresidential HVAC system includes two gas hot water boilers, four packaged rooftop units and twelve VAV terminal boxes with hot water reheat coil. The SHW design includes a small electric water heater with storage tank. The residential HVAC design includes one single zone AC unit with gas furnace for each guest room and the water heating design includes one central gas storage water heater with a recirculation pump for all guest rooms.

For the small hotel all-electric design, the Reach Code Team assumed the nonresidential HVAC system to be packaged heat pumps with electric resistance VAV terminal units, and the SHW system to remain a small electric resistance water heater.

For the guest room all-electric HVAC system, the analysis used a single zone (packaged terminal) heat pump and a central heat pump water heater serving all guest rooms. Central heat pump water heating with recirculation serving guest rooms cannot yet be modeled in CBECC-Com, and energy impacts were modeled by simulating individual heat pump water heaters in each guest room. The reach code team believes this is a conservative assumption, since individual heat pump water heaters will have much higher tank standby losses. The Reach Code Team attained costs for central heat pump water heating installation including storage tanks and controls and used these costs in the study.

Cost data for small hotel designs are presented in Figure 12. The all-electric design presents substantial cost savings because there is no hot water plant or piping distribution system serving the nonresidential spaces, as well as the lower cost of packaged terminal heat pumps serving the residential spaces compared to split DX/furnace systems with individual flues.

**Figure 12. Small Hotel HVAC and Water Heating System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
CZ01	\$2,337,531	\$1,057,178	\$(1,280,353)
CZ02	\$2,328,121	\$1,046,795	\$(1,281,326)
CZ03	\$2,294,053	\$1,010,455	\$(1,283,598)
CZ04	\$2,302,108	\$1,018,675	\$(1,283,433)
CZ05	\$2,298,700	\$1,015,214	\$(1,283,486)
CZ06	\$2,295,380	\$1,011,753	\$(1,283,627)
CZ07	\$2,308,004	\$1,026,029	\$(1,281,975)
CZ08	\$2,333,662	\$1,053,717	\$(1,279,946)
CZ09	\$2,312,099	\$1,030,355	\$(1,281,744)
CZ10	\$2,354,093	\$1,075,348	\$(1,278,745)
CZ11	\$2,347,980	\$1,068,426	\$(1,279,554)
CZ12	\$2,328,654	\$1,047,660	\$(1,280,994)
CZ13	\$2,348,225	\$1,068,858	\$(1,279,367)
CZ14	\$2,345,988	\$1,066,263	\$(1,279,725)
CZ15	\$2,357,086	\$1,079,241	\$(1,277,845)
CZ16	\$2,304,094	\$1,019,973	\$(1,284,121)

### 3.3.2 *Infrastructure Impacts*

Electric heating appliances and equipment often require a larger electrical connection than an equivalent natural gas appliance because of the higher voltage and amperage necessary to electrically generate heat. Thus, many buildings may require larger electrical capacity than a comparable building with natural gas appliances. This includes:

- ◆ Electric resistance VAV space heating in the medium office and common area spaces of the small hotel.
- ◆ Heat pump water heating for the guest room spaces of the small hotel.

#### 3.3.2.1 *Electrical Panel Sizing and Wiring*

This section details the additional electrical panel sizing and wiring required for all-electric measures. In an all-electric new construction scenario, heat pumps replace packaged DX units which are paired with either a gas furnace or a hot water coil (supplied by a gas boiler). The electrical requirements of the replacement heat pump would be the same as the packaged DX unit it replaces, as the electrical requirements would be driven by the cooling capacity, which would remain the same between the two units.

VAV terminal units with hot water reheat coils that are replaced with electric resistance reheat coils require additional electrical infrastructure. In the case of electric resistance coils, the Reach Code Team assumed that on average, a VAV terminal unit serves around 900 ft<sup>2</sup> of conditioned space and has a heating capacity of 5 kW (15 kBtu/hr/ft<sup>2</sup>). The incremental electrical infrastructure costs were determined based on RS Means. Calculations for the medium office shown in Figure 13 include the cost to add electrical panels as well as the cost to add electrical lines to each VAV terminal unit electric resistance coil in the medium office prototype. Additionally, the Reach Code Team subtracted the electrical infrastructure costs associated with hot water pumps required in the mixed fuel baseline, which are not required in the all-electric measures.

The Reach Code Team calculated costs to increase electrical capacity for heat pump water heaters in the small hotel similarly.

**Figure 13. Medium Office Electrical Infrastructure Costs for All-Electric Design**

A	-	No. VAV Boxes	60
B	-	VAV box heating capacity (watts)	4,748
C	-	No. hot water pumps	2
D	-	Hot water pump power (watts)	398
E	-	Voltage	208
F	$(A \times B - C \times D) / E$	Panel ampacity required	1,366
G	$F / 400$	Number of 400-amp panels required	4
H	-	Cost per 400-amp panel	\$3,100
I	$G \times H$	Total panel cost	\$12,400
J	-	Total electrical line length required (ft)	4,320
K	-	Cost per linear foot of electrical line	\$3.62
L	$J \times K$	Total electrical line cost	\$15,402
	<b>I + L</b>	<b>Total electrical infrastructure incremental cost</b>	<b>\$27,802</b>

### 3.3.2.2 Natural Gas

This analysis assumes that in an all-electric new construction scenario natural gas would not be supplied to the site. Eliminating natural gas in new construction would save costs associated with connecting a service line from the street main to the building, piping distribution within the building, and monthly connection charges by the utility.

The Reach Code Team determined that for a new construction building with natural gas piping, there is a service line (branch connection) from the natural gas main to the building meter. In the medium office prototype, natural gas piping is routed to the boiler. The Reach Code Team assumed that the boiler is on the first floor, and that 30 feet of piping is required from the connection to the main to the boiler. The Reach Code Team assumed 1" corrugated stainless steel tubing (CSST) material is used for the plumbing distribution. The Reach Code Team included costs for a natural gas plan review, service extension, and a gas meter, as shown in Figure 14 below. The natural gas plan review cost is based on information received from the City of Palo Alto Utilities. The meter costs are from PG&E and include both material and labor. The service extension costs are based on guidance from PG&E, who noted that the cost range is highly varied and that there is no "typical" cost, with costs being highly dependent on length of extension, terrain, whether the building is in a developed or undeveloped area, and number of buildings to be served. While an actual service extension cost is highly uncertain, the team believes the costs assumed in this analysis are within a reasonable range based on a sample range of costs provided by PG&E. These costs assume development in a previously developed area.

**Figure 14. Natural Gas Infrastructure Cost Savings for All-Electric Prototypes**

Cost Type	Medium Office	Medium Retail	Small Hotel
Natural Gas Plan Review	\$2,316	\$2,316	\$2,316
Service Extension	\$13,000	\$13,000	\$13,000
Meter	\$3,000	\$3,000	\$3,000
Plumbing Distribution	\$633	\$9,711	\$37,704
<b>Total Cost</b>	<b>\$18,949</b>	<b>\$28,027</b>	<b>\$56,020</b>

### 3.4 Preempted High Efficiency Appliances

The Reach Code Team developed a package of high efficiency (HE) space and water heating appliances based on commonly available products for both the mixed-fuel and all-electric scenarios. This package assesses the standalone contribution that high efficiency measures would make toward achieving high performance thresholds. The Reach Code Team reviewed the Air Conditioning, Heating, and Refrigeration Institute (AHRI) certified product database to estimate appropriate efficiencies.<sup>20</sup>

The Reach Code Team determined the efficiency increases to be appropriate based on equipment type, summarized in Figure 15, with cost premiums attained from a Bay Area mechanical contractor. The ranges in efficiency are indicative of varying federal standard requirements based on equipment size.

**Figure 15. High Efficiency Appliance Assumptions**

	Federal Minimum Efficiency	Preempted Efficiency	Cost Premium for HE Appliance
Gas space heating and water heating	80-82%	90-95%	10-15%
Large packaged rooftop cooling	9.8-12 EER 11.4-12.9 IEER	10.5-13 EER 15-15.5 IEER	10-15%
Single zone heat pump space heating	7.7 HSPF 3.2 COP	10 HSPF 3.5 COP	6-15%
Heat pump water heating	2.0 UEF	3.3 UEF	None (market does not carry 2.0 UEF)

### 3.5 Greenhouse Gas Emissions

The analysis uses the greenhouse gas (GHG) emissions estimates from Zero Code reports available in CBECC-Com.<sup>21</sup> Zero Code uses 8760 hourly multipliers accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard projections. Fugitive

<sup>20</sup> Available at: <https://www.ahridirectory.org/Search/SearchHome?ReturnUrl=%2f>

<sup>21</sup> More information available at: <https://zero-code.org/wp-content/uploads/2018/11/ZERO-Code-TSD-California.pdf>



emissions are not included. There are two strings of multipliers – one for Northern California climate zones, and another for Southern California climate zones.<sup>22</sup>

## 4 Results

The Reach Code Team evaluated cost effectiveness of the following measure packages over a 2019 mixed-fuel code compliant baseline for all climate zones, as detailed in Sections 4.1 -- 4.3 and reiterated in Figure 16:

- ◆ **Package 1A – Mixed-Fuel + EE:** Mixed-fuel design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 1B – Mixed-Fuel + EE + PV + B:** Same as Package 1A, plus solar PV and batteries.
- ◆ **Package 1C – Mixed-fuel + HE:** Alternative design with high efficiency appliances, triggering federal preemption.
- ◆ **Package 2 – All-Electric Federal Code-Minimum Reference:** All-electric design with federal code minimum appliance efficiency. No solar PV or battery.
- ◆ **Package 3A – All-Electric + EE:** All-electric design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 3B – All-Electric + EE + PV + B:** Same as Package 3A, plus solar PV and batteries.
- ◆ **Package 3C – All-Electric + HE:** All-electric design with high efficiency appliances, triggering federal preemption.

**Figure 16. Package Summary**

Package	Fuel Type		Energy Efficiency Measures	PV & Battery (PV + B)	High Efficiency Appliances (HE)
	Mixed Fuel	All-Electric			
Mixed-Fuel Code Minimum Baseline	X				
1A – Mixed-Fuel + EE	X		X		
1B – Mixed-Fuel + EE + PV + B	X		X	X	
1C – Mixed-fuel + HE	X				X
2 – All-Electric Federal Code-Minimum Reference		X			
3A – All-Electric + EE		X	X		
3B – All-Electric + EE + PV + B		X	X	X	
3C – All-Electric + HE		X			X

<sup>22</sup> CBECC-Com documentation does not state which climate zones fall under which region. CBECC-Res multipliers are the same for CZs 1-5 and 11-13 (presumed to be Northern California), while there is another set of multipliers for CZs 6-10 and 14-16 (assumed to be Southern California).



Section 4.4 presents the results of the PV-only and PV+Battery analysis.

The TDV and on-bill based cost effectiveness results are presented in terms of B/C ratio and NPV in this section. What constitutes a ‘benefit’ or a ‘cost’ varies with the scenarios because both energy savings and incremental construction costs may be negative depending on the package. Typically, utility bill savings are categorized as a ‘benefit’ while incremental construction costs are treated as ‘costs.’ In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the ‘benefit’ while the utility bill negative savings are as the ‘cost.’

Overarching factors to keep in mind when reviewing the results include:

- ◆ To pass the Energy Commission’s application process, local reach codes must both be cost effective and exceed the energy performance budget using TDV (i.e., have a positive compliance margin). To emphasize these two important factors, the figures in this Section highlight in green the modeling results that have **either** a positive compliance margin or are cost effective. This will allow readers to identify whether a scenario is fully or partially supportive of a reach code, and the opportunities/challenges that the scenario presents. Conversely, Section 4.4 only highlights results that **both** have a positive compliance margin and are cost effective, to allow readers to identify reach code-ready scenarios.
- ◆ **Note:** Compliance margin represents the proportion of energy usage that is saved compared to the baseline, measured on a TDV basis.
- ◆ The Energy Commission does not currently allow compliance credit for either solar PV or battery storage. Thus, the compliance margins in Packages 1A are the same as 1B, and Package 3A is the same as 3B. However, The Reach Code Team did include the impact of solar PV and battery when calculating TDV cost-effectiveness.
- ◆ When performance modeling residential buildings, the Energy Commission allows the Standard Design to be electric if the Proposed Design is electric, which removes TDV-related penalties and associated negative compliance margins. This essentially allows for a compliance pathway for all-electric residential buildings. Nonresidential buildings are not treated in the same way and are compared to a mixed-fuel standard design.
- ◆ Results do not include an analysis and comparison of utility rates. As mentioned in *Section 2.2*, The Reach Code Team coordinated with utilities to select tariffs for each prototype given the annual energy demand profile and the most prevalent rates in each utility territory. The Reach Code Team did not compare a variety of tariffs to determine their impact on cost effectiveness. Note that most utility time-of-use rates are continuously updated, which can affect cost effectiveness results.
- ◆ As a point of comparison, mixed-fuel baseline energy figures are provided in *Appendix 6.5*.

#### **4.1 Cost Effectiveness Results – Medium Office**

Figure 17 through Figure 23 contain the cost-effectiveness findings for the Medium Office packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:** Packages achieve +12 to +20 percent compliance margins depending on climate zone. All packages are cost effective in all climate zones using the TDV approach. All packages are cost effective using the On-Bill approach except for LADWP territory.



- ◆ **1B – Mixed-Fuel + EE + PV + B:** All packages are cost effective using the On-Bill and TDV approaches, except On-Bill in LADWP territory. When compared to 1A, the B/C ratio changes depending on the utility and climate zone (some increase while others decrease). However, NPV savings are increased across the board, suggesting that larger investments yield larger returns.
- ◆ **1C – Mixed-Fuel + HE:** Packages achieve +3 to +5 percent compliance margins depending on climate zone, but no packages were cost effective. The incremental costs of a high efficiency condensing boiler compared to a non-condensing boiler contributes to 26-47% of total incremental cost depending on boiler size. Benefits of condensing boiler efficiency come from resetting hot water return temperature as boiler efficiency increases at lower hot water temperature. However, hot water temperature reset control cannot currently be implemented in the software. In addition, the natural gas energy cost constitutes no more than 5% of total cost for 15 climate zones, so improving boiler efficiency has limited contribution to reduction of total energy cost.
- ◆ **2 – All-Electric Federal Code-Minimum Reference:**
  - ◆ Packages achieve between -27 percent and +1 percent compliance margins depending on climate zone. This is likely because the modeled system is electric resistance, and TDV values electricity consumption more heavily than natural gas. This all-electric design without other efficiency measures does not comply with the Energy Commission’s TDV performance budget.
  - ◆ All incremental costs are negative due to the elimination of natural gas infrastructure.
  - ◆ Packages achieve utility cost savings and are cost effective using the On-Bill approach in CZs 6-10 and 14-15. Packages do not achieve savings and are not cost effective using the On-Bill approach in most of PG&E territory (CZs 1,2,4, 11-13, and 16). Packages achieve savings and are cost effective using TDV in all climate zones except CZ16.
- ◆ **3A – All-Electric + EE:** Packages achieve positive compliance margins except -15 percent in CZ16, which has a higher space heating load than other climate zones. All packages are cost effective in all climate zones except CZ16.
- ◆ **3B – All-Electric + EE + PV + B:** Packages achieve positive compliance margins except -15 percent in CZ16. All packages are cost-effective from a TDV perspective in all climate zones. All packages are cost effective from an On-Bill perspective in all climate zones except in CZ 2 and CZ 16 in LADWP territory.
- ◆ **3C – All-Electric + HE:** Packages achieve between -26 percent and +2 percent compliance margins depending on climate zone. The only packages that are cost effective and with a positive compliance margin are in CZs 7-9 and 15. As described in Package 1C results, space heating is a relatively low proportion of energy costs in most climate zones, limiting the costs gains for higher efficiency equipment.



**Figure 17. Cost Effectiveness for Medium Office Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reduc-tions (mtons)	Comp-liance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	34,421	-808	4.5	18%	\$66,649	\$125,902	\$71,307	1.9	1.1	\$59,253	\$4,658
CZ02	PG&E	40,985	-505	8.1	17%	\$66,649	\$163,655	\$99,181	2.5	1.5	\$97,005	\$32,532
CZ03	PG&E	36,266	-463	7.0	20%	\$66,649	\$141,897	\$84,051	2.1	1.3	\$75,248	\$17,401
CZ04	PG&E	40,590	-547	7.7	14%	\$66,649	\$162,139	\$95,410	2.4	1.4	\$95,489	\$28,761
CZ04-2	CPAU	40,590	-547	7.7	14%	\$66,649	\$85,537	\$95,410	1.3	1.4	\$18,887	\$28,761
CZ05	PG&E	38,888	-499	7.4	18%	\$66,649	\$154,044	\$91,115	2.3	1.4	\$87,395	\$24,465
CZ05-2	SCG	38,888	-499	7.4	18%	\$66,649	\$156,315	\$91,115	2.3	1.4	\$89,665	\$24,465
CZ06	SCE	39,579	-305	8.7	20%	\$66,649	\$86,390	\$100,469	1.3	1.5	\$19,741	\$33,820
CZ06-2	LADWP	39,579	-305	8.7	20%	\$66,649	\$51,828	\$100,469	0.8	1.5	(\$14,821)	\$33,820
CZ07	SDG&E	41,817	-6	11.3	20%	\$66,649	\$204,394	\$112,497	3.1	1.7	\$137,745	\$45,848
CZ08	SCE	41,637	-60	10.8	18%	\$66,649	\$89,783	\$113,786	1.3	1.7	\$23,134	\$47,137
CZ08-2	LADWP	41,637	-60	10.8	18%	\$66,649	\$54,876	\$113,786	0.8	1.7	(\$11,773)	\$47,137
CZ09	SCE	42,539	-210	10.1	16%	\$66,649	\$95,636	\$115,647	1.4	1.7	\$28,987	\$48,998
CZ09-2	LADWP	42,539	-210	10.1	16%	\$66,649	\$58,168	\$115,647	0.9	1.7	(\$8,481)	\$48,998
CZ10	SDG&E	41,857	-216	9.8	17%	\$66,649	\$210,303	\$108,726	3.2	1.6	\$143,654	\$42,077
CZ10-2	SCE	41,857	-216	9.8	17%	\$66,649	\$92,736	\$108,726	1.4	1.6	\$26,087	\$42,077
CZ11	PG&E	42,523	-390	9.1	13%	\$66,649	\$166,951	\$104,001	2.5	1.6	\$100,301	\$37,352
CZ12	PG&E	41,521	-466	8.4	14%	\$66,649	\$161,594	\$100,135	2.4	1.5	\$94,945	\$33,486
CZ12-2	SMUD	41,521	-466	8.4	14%	\$66,649	\$71,734	\$100,135	1.1	1.5	\$5,085	\$33,486
CZ13	PG&E	42,898	-434	9.0	13%	\$66,649	\$169,107	\$99,992	2.5	1.5	\$102,457	\$33,343
CZ14	SDG&E	42,224	-441	8.6	14%	\$66,649	\$211,529	\$106,913	3.2	1.6	\$144,880	\$40,264
CZ14-2	SCE	42,224	-441	8.6	14%	\$66,649	\$95,809	\$106,913	1.4	1.6	\$29,160	\$40,264
CZ15	SCE	45,723	-147	11.2	12%	\$66,649	\$102,714	\$118,034	1.5	1.8	\$36,065	\$51,384
CZ16	PG&E	37,758	-736	5.8	14%	\$66,649	\$145,947	\$79,755	2.2	1.2	\$79,297	\$13,106
CZ16-2	LADWP	37,758	-736	5.8	14%	\$66,649	\$40,115	\$79,755	0.6	1.2	(\$26,534)	\$13,106



**Figure 18. Cost Effectiveness for Medium Office Package 1B – Mixed-Fuel + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (mtons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + PV + Battery</b>												
CZ01	PG&E	211,225	-808	39.9	18%	\$397,405	\$645,010	\$454,284	1.6	1.1	\$247,605	\$56,879
CZ02	PG&E	255,787	-505	50.6	17%	\$397,405	\$819,307	\$573,033	2.1	1.4	\$421,902	\$175,628
CZ03	PG&E	245,421	-463	48.8	20%	\$397,405	\$777,156	\$536,330	2.0	1.3	\$379,751	\$138,925
CZ04	PG&E	267,612	-547	52.7	14%	\$397,405	\$836,221	\$597,471	2.1	1.5	\$438,816	\$200,066
CZ04-2	CPAU	267,612	-547	52.7	14%	\$397,405	\$621,879	\$597,471	1.6	1.5	\$224,474	\$200,066
CZ05	PG&E	264,581	-499	52.5	18%	\$397,405	\$897,216	\$578,856	2.3	1.5	\$499,811	\$181,451
CZ05-2	SCG	264,581	-499	52.5	18%	\$397,405	\$899,487	\$578,856	2.3	1.5	\$502,082	\$181,451
CZ06	SCE	257,474	-305	52.1	20%	\$397,405	\$484,229	\$594,416	1.2	1.5	\$86,824	\$197,011
CZ06-2	LA	257,474	-305	52.1	20%	\$397,405	\$282,360	\$594,416	0.7	1.5	(\$115,045)	\$197,011
CZ07	SDG&E	264,530	-6	55.7	20%	\$397,405	\$817,528	\$610,548	2.1	1.5	\$420,123	\$213,143
CZ08	SCE	258,348	-60	54.0	18%	\$397,405	\$479,073	\$625,249	1.2	1.6	\$81,668	\$227,844
CZ08-2	LA	258,348	-60	54.0	18%	\$397,405	\$275,704	\$625,249	0.7	1.6	(\$121,701)	\$227,844
CZ09	SCE	262,085	-210	54.3	16%	\$397,405	\$480,241	\$622,528	1.2	1.6	\$82,836	\$225,123
CZ09-2	LA	262,085	-210	54.3	16%	\$397,405	\$282,209	\$622,528	0.7	1.6	(\$115,196)	\$225,123
CZ10	SDG&E	258,548	-216	53.4	17%	\$397,405	\$839,931	\$595,323	2.1	1.5	\$442,526	\$197,918
CZ10-2	SCE	258,548	-216	53.4	17%	\$397,405	\$485,523	\$595,323	1.2	1.5	\$88,118	\$197,918
CZ11	PG&E	253,623	-390	50.9	13%	\$397,405	\$826,076	\$585,682	2.1	1.5	\$428,671	\$188,277
CZ12	PG&E	252,868	-466	50.3	14%	\$397,405	\$802,715	\$582,866	2.0	1.5	\$405,310	\$185,461
CZ12-2	SMUD	252,868	-466	50.3	14%	\$397,405	\$415,597	\$582,866	1.0	1.5	\$18,192	\$185,461
CZ13	PG&E	250,915	-434	50.4	13%	\$397,405	\$806,401	\$573,606	2.0	1.4	\$408,996	\$176,201
CZ14	SDG&E	283,684	-441	56.4	14%	\$397,405	\$874,753	\$676,271	2.2	1.7	\$477,348	\$278,866
CZ14-2	SCE	283,684	-441	56.4	14%	\$397,405	\$493,888	\$676,271	1.2	1.7	\$96,483	\$278,866
CZ15	SCE	274,771	-147	56.0	12%	\$397,405	\$476,327	\$640,379	1.2	1.6	\$78,922	\$242,974
CZ16	PG&E	266,490	-736	51.8	14%	\$397,405	\$842,205	\$575,563	2.1	1.4	\$444,800	\$178,158
CZ16-2	LA	266,490	-736	51.8	14%	\$397,405	\$260,372	\$575,563	0.7	1.4	(\$137,033)	\$178,158



**Figure 19. Cost Effectiveness for Medium Office Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	288	688	4.1	3%	\$61,253	\$18,656	\$12,314	0.3	0.2	(\$42,597)	(\$48,939)
CZ02	PG&E	3,795	550	4.3	4%	\$68,937	\$36,683	\$24,676	0.5	0.4	(\$32,254)	(\$44,261)
CZ03	PG&E	1,241	439	2.9	3%	\$57,529	\$20,150	\$11,885	0.4	0.2	(\$37,379)	(\$45,644)
CZ04	PG&E	5,599	529	4.7	5%	\$72,074	\$44,915	\$30,928	0.6	0.4	(\$27,158)	(\$41,145)
CZ04-2	CPAU	5,599	529	4.7	5%	\$72,074	\$24,175	\$30,928	0.3	0.4	(\$47,898)	(\$41,145)
CZ05	PG&E	3,470	453	3.6	4%	\$60,330	\$35,072	\$18,232	0.6	0.3	(\$25,258)	(\$42,097)
CZ05-2	SCG	3,470	453	3.6	4%	\$60,330	\$32,777	\$18,232	0.5	0.3	(\$27,553)	(\$42,097)
CZ06	SCE	3,374	298	2.6	3%	\$55,594	\$19,446	\$16,132	0.3	0.3	(\$36,148)	(\$39,462)
CZ06-2	LADWP	3,374	298	2.6	3%	\$55,594	\$13,450	\$16,132	0.2	0.3	(\$42,145)	(\$39,462)
CZ07	SDG&E	5,257	140	2.3	4%	\$54,111	\$41,086	\$19,903	0.8	0.4	(\$13,025)	(\$34,208)
CZ08	SCE	5,921	176	2.7	4%	\$60,497	\$22,210	\$24,055	0.4	0.4	(\$38,287)	(\$36,442)
CZ08-2	LADWP	5,921	176	2.7	4%	\$60,497	\$14,064	\$24,055	0.2	0.4	(\$46,434)	(\$36,442)
CZ09	SCE	7,560	224	3.5	4%	\$61,311	\$28,576	\$31,835	0.5	0.5	(\$32,735)	(\$29,476)
CZ09-2	LADWP	7,560	224	3.5	4%	\$61,311	\$18,262	\$31,835	0.3	0.5	(\$43,049)	(\$29,476)
CZ10	SDG&E	5,786	288	3.2	4%	\$62,685	\$50,717	\$24,628	0.8	0.4	(\$11,968)	(\$38,057)
CZ10-2	SCE	5,786	288	3.2	4%	\$62,685	\$24,575	\$24,628	0.4	0.4	(\$38,110)	(\$38,057)
CZ11	PG&E	8,128	441	4.9	5%	\$71,101	\$54,188	\$37,849	0.8	0.5	(\$16,912)	(\$33,252)
CZ12	PG&E	6,503	478	4.7	5%	\$68,329	\$47,329	\$34,556	0.7	0.5	(\$20,999)	(\$33,773)
CZ12-2	SMUD	6,503	478	4.7	5%	\$68,329	\$24,003	\$34,556	0.4	0.5	(\$44,325)	(\$33,773)
CZ13	PG&E	8,398	432	5.0	5%	\$69,474	\$51,347	\$37,229	0.7	0.5	(\$18,128)	(\$32,246)
CZ14	SDG&E	7,927	470	5.0	5%	\$69,463	\$62,744	\$37,133	0.9	0.5	(\$6,718)	(\$32,329)
CZ14-2	SCE	7,927	470	5.0	5%	\$69,463	\$32,517	\$37,133	0.5	0.5	(\$36,946)	(\$32,329)
CZ15	SCE	15,140	219	5.5	5%	\$66,702	\$43,773	\$52,359	0.7	0.8	(\$22,929)	(\$14,344)
CZ16	PG&E	3,111	912	6.3	5%	\$71,765	\$36,002	\$24,914	0.5	0.3	(\$35,763)	(\$46,851)
CZ16-2	LADWP	3,111	912	6.3	5%	\$71,765	\$23,057	\$24,914	0.3	0.3	(\$48,708)	(\$46,851)



**Figure 20. Cost Effectiveness for Medium Office Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-53,657	4967	10.1	-15%	(\$87,253)	(\$98,237)	(\$58,420)	0.9	1.5	(\$10,984)	\$28,833
CZ02	PG&E	-49,684	3868	5.0	-7%	(\$73,695)	(\$101,605)	(\$41,429)	0.7	1.8	(\$27,910)	\$32,266
CZ03	PG&E	-35,886	3142	5.6	-7%	(\$82,330)	(\$57,345)	(\$29,592)	1.4	2.8	\$24,986	\$52,738
CZ04	PG&E	-48,829	3759	4.7	-6%	(\$69,012)	(\$90,527)	(\$40,570)	0.8	1.7	(\$21,515)	\$28,443
CZ04-2	CPAU	-48,829	3759	4.7	-6%	(\$69,012)	(\$19,995)	(\$40,570)	3.5	1.7	\$49,018	\$28,443
CZ05	PG&E	-40,531	3240	4.5	-8%	(\$84,503)	(\$63,663)	(\$39,997)	1.3	2.1	\$20,840	\$44,506
CZ06	SCE	-26,174	2117	3.1	-4%	(\$76,153)	\$24,908	(\$20,571)	>1	3.7	\$101,061	\$55,581
CZ06-2	LADWP	-26,174	2117	3.1	-4%	(\$76,153)	\$26,366	(\$20,571)	>1	3.7	\$102,518	\$55,581
CZ07	SDG&E	-12,902	950	0.9	-2%	(\$70,325)	\$46,879	(\$11,407)	>1	6.2	\$117,204	\$58,918
CZ08	SCE	-15,680	1219	1.5	-2%	(\$68,774)	\$17,859	(\$12,648)	>1	5.4	\$86,633	\$56,125
CZ08-2	LADWP	-15,680	1219	1.5	-2%	(\$68,774)	\$18,603	(\$12,648)	>1	5.4	\$87,376	\$56,125
CZ09	SCE	-19,767	1605	2.4	-2%	(\$63,102)	\$20,920	(\$14,462)	>1	4.4	\$84,022	\$48,640
CZ09-2	LADWP	-19,767	1605	2.4	-2%	(\$63,102)	\$21,929	(\$14,462)	>1	4.4	\$85,030	\$48,640
CZ10	SDG&E	-27,414	2053	2.2	-4%	(\$47,902)	\$38,918	(\$23,339)	>1	2.1	\$86,820	\$24,562
CZ10-2	SCE	-27,414	2053	2.2	-4%	(\$47,902)	\$20,765	(\$23,339)	>1	2.1	\$68,666	\$24,562
CZ11	PG&E	-40,156	3062	3.6	-4%	(\$63,987)	(\$72,791)	(\$32,837)	0.9	1.9	(\$8,804)	\$31,150
CZ12	PG&E	-43,411	3327	4.1	-5%	(\$68,343)	(\$85,856)	(\$35,463)	0.8	1.9	(\$17,512)	\$32,880
CZ12-2	SMUD	-43,411	3327	4.1	-5%	(\$68,343)	(\$5,109)	(\$35,463)	13.4	1.9	\$63,234	\$32,880
CZ13	PG&E	-39,649	3063	3.8	-4%	(\$62,726)	(\$70,705)	(\$32,408)	0.9	1.9	(\$7,980)	\$30,318
CZ14	SDG&E	-44,322	3266	3.4	-5%	(\$65,156)	\$6,043	(\$38,422)	>1	1.7	\$71,199	\$26,735
CZ14-2	SCE	-44,322	3266	3.4	-5%	(\$65,156)	\$4,798	(\$38,422)	>1	1.7	\$69,954	\$26,735
CZ15	SCE	-19,917	1537	1.8	-2%	(\$36,176)	\$12,822	(\$15,464)	>1	2.3	\$48,998	\$20,711
CZ16	PG&E	-94,062	6185	5.6	-27%	(\$64,096)	(\$212,158)	(\$150,871)	0.3	0.4	(\$148,062)	(\$86,775)
CZ16-2	LADWP	-94,062	6185	5.6	-27%	(\$64,096)	\$1,493	(\$150,871)	>1	0.4	\$65,589	(\$86,775)

\*The Incremental Package Cost is equal to the sum of the incremental HVAC and water heating equipment costs from

Figure 10, the electrical infrastructure incremental cost of \$27,802 (see section 3.3.2.1), and the natural gas infrastructure incremental costs of \$(18,949) (see section 3.3.2.2).



**Figure 21. Cost Effectiveness for Medium Office Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-19,115	4967	19.4	7%	(\$20,604)	\$20,630	\$28,112	>1	>1	\$41,234	\$48,716
CZ02	PG&E	-11,811	3868	15.2	10%	(\$7,046)	\$39,260	\$58,563	>1	>1	\$46,306	\$65,609
CZ03	PG&E	2,530	3142	16.2	16%	(\$15,681)	\$85,241	\$68,682	>1	>1	\$100,922	\$84,363
CZ04	PG&E	-10,839	3759	14.8	9%	(\$2,363)	\$59,432	\$58,420	>1	>1	\$61,795	\$60,783
CZ04-2	CPAU	-10,839	3759	14.8	9%	(\$2,363)	\$70,680	\$58,420	>1	>1	\$73,043	\$60,783
CZ05	PG&E	-2,316	3240	14.6	12%	(\$17,854)	\$85,380	\$58,802	>1	>1	\$103,234	\$76,656
CZ06	SCE	15,399	2117	14.3	18%	(\$9,503)	\$114,962	\$89,921	>1	>1	\$124,466	\$99,425
CZ06-2	LADWP	15,399	2117	14.3	18%	(\$9,503)	\$82,389	\$89,921	>1	>1	\$91,893	\$99,425
CZ07	SDG&E	33,318	950	13.8	20%	(\$3,676)	\$256,704	\$111,399	>1	>1	\$260,380	\$115,076
CZ08	SCE	30,231	1219	14.2	18%	(\$2,124)	\$110,144	\$111,781	>1	>1	\$112,268	\$113,906
CZ08-2	LADWP	30,231	1219	14.2	18%	(\$2,124)	\$76,069	\$111,781	>1	>1	\$78,194	\$113,906
CZ09	SCE	24,283	1605	14.3	15%	\$3,547	\$119,824	\$108,249	33.8	30.5	\$116,277	\$104,702
CZ09-2	LADWP	24,283	1605	14.3	15%	\$3,547	\$83,549	\$108,249	23.6	30.5	\$80,001	\$104,702
CZ10	SDG&E	12,344	2053	12.6	13%	\$18,748	\$230,553	\$82,905	12.3	4.4	\$211,806	\$64,158
CZ10-2	SCE	12,344	2053	12.6	13%	\$18,748	\$105,898	\$82,905	5.6	4.4	\$87,150	\$64,158
CZ11	PG&E	929	3062	14.5	10%	\$2,662	\$85,988	\$75,030	32.3	28.2	\$83,326	\$72,368
CZ12	PG&E	-3,419	3327	14.8	10%	(\$1,694)	\$68,866	\$69,589	>1	>1	\$70,560	\$71,283
CZ12-2	SMUD	-3,419	3327	14.8	10%	(\$1,694)	\$71,761	\$69,589	>1	>1	\$73,455	\$71,283
CZ13	PG&E	1,398	3063	14.8	9%	\$3,923	\$89,799	\$71,307	22.9	18.2	\$85,875	\$67,384
CZ14	SDG&E	-5,469	3266	13.5	9%	\$1,493	\$206,840	\$69,016	138.6	46.2	\$205,347	\$67,523
CZ14-2	SCE	-5,469	3266	13.5	9%	\$1,493	\$94,143	\$69,016	63.1	46.2	\$92,650	\$67,523
CZ15	SCE	25,375	1537	13.7	10%	\$30,474	\$114,909	\$104,335	3.8	3.4	\$84,435	\$73,862
CZ16	PG&E	-65,877	6185	12.7	-15%	\$2,553	(\$91,477)	(\$85,673)	-35.8	-33.6	(\$94,030)	(\$88,226)
CZ16-2	LADWP	-65,877	6185	12.7	-15%	\$2,553	\$72,780	(\$85,673)	28.5	-33.6	\$70,227	(\$88,226)



**Figure 22. Cost Effectiveness for Medium Office Package 3B – All-Electric + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (mtons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + PV + B</b>												
CZ01	PG&E	157,733	4967	54.9	7%	\$310,152	\$518,421	\$410,946	1.7	1.3	\$208,269	\$100,794
CZ02	PG&E	203,026	3868	57.8	10%	\$323,710	\$692,336	\$532,273	2.1	1.6	\$368,626	\$208,563
CZ03	PG&E	211,706	3142	58.0	16%	\$315,075	\$708,235	\$520,866	2.2	1.7	\$393,160	\$205,791
CZ04	PG&E	216,204	3759	59.9	9%	\$328,393	\$741,382	\$560,576	2.3	1.7	\$412,989	\$232,183
CZ04-2	CPAU	216,204	3759	59.9	9%	\$328,393	\$607,074	\$560,576	1.8	1.7	\$278,681	\$232,183
CZ05	PG&E	223,399	3240	59.8	12%	\$312,902	\$799,992	\$546,592	2.6	1.7	\$487,090	\$233,690
CZ06	SCE	233,299	2117	57.7	18%	\$321,252	\$509,969	\$583,963	1.6	1.8	\$188,716	\$262,711
CZ06-2	LA	233,299	2117	57.7	18%	\$321,252	\$311,931	\$583,963	1.0	1.8	(\$9,322)	\$262,711
CZ07	SDG&E	256,034	950	58.3	20%	\$327,079	\$870,156	\$609,498	2.7	1.9	\$543,076	\$282,419
CZ08	SCE	246,944	1219	57.4	18%	\$328,631	\$499,506	\$623,292	1.5	1.9	\$170,874	\$294,661
CZ08-2	LA	246,944	1219	57.4	18%	\$328,631	\$296,991	\$623,292	0.9	1.9	(\$31,640)	\$294,661
CZ09	SCE	243,838	1605	58.5	15%	\$334,303	\$504,498	\$615,178	1.5	1.8	\$170,195	\$280,875
CZ09-2	LA	243,838	1605	58.5	15%	\$334,303	\$307,626	\$615,178	0.9	1.8	(\$26,677)	\$280,875
CZ10	SDG&E	229,044	2053	56.2	13%	\$349,503	\$851,810	\$569,549	2.4	1.6	\$502,306	\$220,046
CZ10-2	SCE	229,044	2053	56.2	13%	\$349,503	\$491,383	\$569,549	1.4	1.6	\$141,880	\$220,046
CZ11	PG&E	212,047	3062	56.4	10%	\$333,418	\$743,403	\$556,758	2.2	1.7	\$409,985	\$223,340
CZ12	PG&E	207,955	3327	56.7	10%	\$329,062	\$713,054	\$552,415	2.2	1.7	\$383,993	\$223,353
CZ12-2	SMUD	207,955	3327	56.7	10%	\$329,062	\$414,371	\$552,415	1.3	1.7	\$85,310	\$223,353
CZ13	PG&E	209,431	3063	56.3	9%	\$334,679	\$728,822	\$544,969	2.2	1.6	\$394,143	\$210,289
CZ14	SDG&E	236,002	3266	61.3	9%	\$332,249	\$865,181	\$638,517	2.6	1.9	\$532,933	\$306,269
CZ14-2	SCE	236,002	3266	61.3	9%	\$332,249	\$488,163	\$638,517	1.5	1.9	\$155,914	\$306,269
CZ15	SCE	254,426	1537	58.5	10%	\$361,229	\$487,715	\$626,728	1.4	1.7	\$126,486	\$265,499
CZ16	PG&E	162,915	6185	58.6	-15%	\$333,309	\$580,353	\$406,746	1.7	1.2	\$247,044	\$73,437
CZ16-2	LA	162,915	6185	58.6	-15%	\$333,309	\$290,566	\$406,746	0.9	1.2	(\$42,742)	\$73,437



**Figure 23. Cost Effectiveness for Medium Office Package 3C – All-Electric + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-53,390	4967	10.2	-14%	(\$43,987)	(\$93,740)	(\$57,752)	0.5	0.8	(\$49,753)	(\$13,765)
CZ02	PG&E	-45,916	3868	6.1	-5%	(\$22,722)	(\$77,212)	(\$26,394)	0.3	0.9	(\$54,490)	(\$3,672)
CZ03	PG&E	-34,656	3142	6.0	-6%	(\$38,261)	(\$45,796)	(\$25,153)	0.8	1.5	(\$7,535)	\$13,108
CZ04	PG&E	-43,248	3759	6.3	-3%	(\$15,229)	(\$56,932)	(\$18,996)	0.3	0.8	(\$41,703)	(\$3,767)
CZ04-2	CPAU	-43,248	3759	6.3	-3%	(\$15,229)	(\$5,298)	(\$18,996)	2.9	0.8	\$9,932	(\$3,767)
CZ05	PG&E	-37,068	3240	5.4	-6%	(\$40,434)	(\$38,330)	(\$29,544)	1.1	1.4	\$2,104	\$10,890
CZ06	SCE	-22,805	2117	4.0	-2%	(\$30,237)	\$39,812	(\$9,594)	>1	3.2	\$70,050	\$20,644
CZ06-2	LADWP	-22,805	2117	4.0	-2%	(\$30,237)	\$35,414	(\$9,594)	>1	3.2	\$65,651	\$20,644
CZ07	SDG&E	-7,646	950	2.5	1%	(\$22,564)	\$86,159	\$6,062	>1	>1	\$108,722	\$28,625
CZ08	SCE	-9,761	1219	3.2	1%	(\$18,443)	\$37,375	\$8,305	>1	>1	\$55,818	\$26,748
CZ08-2	LADWP	-9,761	1219	3.2	1%	(\$18,443)	\$29,973	\$8,305	>1	>1	\$48,416	\$26,748
CZ09	SCE	-12,211	1605	4.5	2%	(\$10,282)	\$46,335	\$13,364	>1	>1	\$56,617	\$23,646
CZ09-2	LADWP	-12,211	1605	4.5	2%	(\$10,282)	\$37,030	\$13,364	>1	>1	\$47,313	\$23,646
CZ10	SDG&E	-21,642	2053	3.7	-1%	\$11,340	\$84,901	(\$3,818)	7.5	-0.3	\$73,561	(\$15,158)
CZ10-2	SCE	-21,642	2053	3.7	-1%	\$11,340	\$40,659	(\$3,818)	3.6	-0.3	\$29,319	(\$15,158)
CZ11	PG&E	-32,052	3062	5.9	0%	(\$8,519)	(\$29,013)	(\$3,007)	0.3	2.8	(\$20,495)	\$5,512
CZ12	PG&E	-36,926	3327	6.0	-1%	(\$15,443)	(\$48,955)	(\$9,546)	0.3	1.6	(\$33,511)	\$5,898
CZ12-2	SMUD	-36,926	3327	6.0	-1%	(\$15,443)	\$9,916	(\$9,546)	>1	1.6	\$25,359	\$5,898
CZ13	PG&E	-31,253	3063	6.3	0%	(\$7,257)	(\$27,782)	(\$3,055)	0.3	2.4	(\$20,525)	\$4,202
CZ14	SDG&E	-36,402	3266	5.7	-1%	(\$10,651)	\$61,605	(\$9,832)	>1	1.1	\$72,256	\$819
CZ14-2	SCE	-36,402	3266	5.7	-1%	(\$10,651)	\$30,625	(\$9,832)	>1	1.1	\$41,276	\$819
CZ15	SCE	-4,775	1537	6.0	3%	\$28,927	\$52,955	\$32,790	1.8	1.1	\$24,028	\$3,863
CZ16	PG&E	-90,949	6185	6.5	-26%	(\$8,467)	(\$194,115)	(\$142,041)	0.0	0.1	(\$185,648)	(\$133,574)
CZ16-2	LADWP	-90,949	6185	6.5	-26%	(\$8,467)	\$37,127	(\$142,041)	>1	0.1	\$45,594	(\$133,574)



## 4.2 Cost Effectiveness Results – Medium Retail

Figure 24 through Figure 30 contain the cost-effectiveness findings for the Medium Retail packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:**
  - ◆ Packages achieve +9% to +18% compliance margins depending on climate zone, and all packages are cost effective in all climate zones.
  - ◆ Incremental package costs vary across climate zones because of the HVAC system size in some climate zones are small enough (<54 kBtu/h) to have the economizers measure applied.
  - ◆ B/C ratios are high compared to other prototypes because the measures applied are primarily low-cost lighting measures. This suggests room for the inclusion of other energy efficiency measures with lower cost-effectiveness to achieve even higher compliance margins for a cost effective package.
- ◆ **1B – Mixed-Fuel + EE + PV + B:** All packages are cost effective using both the On-Bill and TDV approach, except On-Bill in LADWP territory. Adding PV and battery to the efficiency packages reduces the B/C ratio but increases overall NPV savings.
- ◆ **1C – Mixed-fuel + HE:** Packages achieve +1 to +4% compliance margins depending on climate zone, and packages are cost effective in all climate zones except CZs 1, 3 and 5 using the TDV approach.
- ◆ **2 – All-Electric Federal Code-Minimum Reference:**
  - ◆ Packages achieve between -12% and +1% compliance margins depending on climate zone.
  - ◆ Packages achieve positive savings using both the On-Bill and TDV approaches in CZs 6-10 and 14-15. Packages do not achieve On-Bill or TDV savings in most of PG&E territory (CZs 1, 2, 4, 5, 12-13, and 16).
  - ◆ Packages are cost effective in all climate zones except CZ16.
  - ◆ All incremental costs are negative primarily due to elimination of natural gas infrastructure.
- ◆ **3A – All-Electric + EE:** Packages achieve between +3% and +16% compliance margins depending on climate zone. All packages are cost effective in all climate zones.
- ◆ **3B – All-Electric + EE + PV + B:** All packages are cost effective using both the On-Bill and TDV approaches, except On-Bill in LADWP territory. Adding PV and Battery to the efficiency package reduces the B/C ratio but increases overall NPV savings.
- ◆ **3C – All-Electric + HE:** Packages achieve between -8% and +5% compliance margins depending on climate zone, and packages are cost effective using both On-Bill and TDV approaches in all CZs except CZs 1 and 16.

**Figure 24. Cost Effectiveness for Medium Retail Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	15,210	1209	11.10	18%	\$2,712	\$68,358	\$60,189	25.2	22.2	\$65,646	\$57,478
CZ02	PG&E	18,885	613	8.73	13%	\$5,569	\$76,260	\$59,135	13.7	10.6	\$70,691	\$53,566
CZ03	PG&E	18,772	462	7.87	16%	\$5,569	\$66,813	\$57,135	12.0	10.3	\$61,244	\$51,566
CZ04	PG&E	19,100	439	7.84	14%	\$5,569	\$75,989	\$58,036	13.6	10.4	\$70,420	\$52,467
CZ04-2	CPAU	19,100	439	7.84	14%	\$5,569	\$51,556	\$58,036	9.3	10.4	\$45,987	\$52,467
CZ05	PG&E	17,955	415	7.41	16%	\$5,569	\$63,182	\$55,003	11.3	9.9	\$57,613	\$49,435
CZ05-2	SCG	17,955	415	7.41	16%	\$5,569	\$61,810	\$55,003	11.1	9.9	\$56,241	\$49,435
CZ06	SCE	12,375	347	5.54	10%	\$2,712	\$31,990	\$41,401	11.8	15.3	\$29,278	\$38,689
CZ06-2	LADWP	12,375	347	5.54	10%	\$2,712	\$21,667	\$41,401	8.0	15.3	\$18,956	\$38,689
CZ07	SDG&E	17,170	136	5.65	13%	\$5,569	\$73,479	\$49,883	13.2	9.0	\$67,910	\$44,314
CZ08	SCE	12,284	283	5.15	10%	\$2,712	\$30,130	\$41,115	11.1	15.2	\$27,419	\$38,403
CZ08-2	LADWP	12,284	283	5.15	10%	\$2,712	\$20,243	\$41,115	7.5	15.2	\$17,531	\$38,403
CZ09	SCE	13,473	302	5.51	10%	\$5,569	\$32,663	\$46,126	5.9	8.3	\$27,094	\$40,557
CZ09-2	LADWP	13,473	302	5.51	10%	\$5,569	\$22,435	\$46,126	4.0	8.3	\$16,866	\$40,557
CZ10	SDG&E	19,873	267	6.99	12%	\$5,569	\$83,319	\$58,322	15.0	10.5	\$77,751	\$52,753
CZ10-2	SCE	19,873	267	6.99	12%	\$5,569	\$39,917	\$58,322	7.2	10.5	\$34,348	\$52,753
CZ11	PG&E	21,120	578	9.14	13%	\$5,569	\$86,663	\$67,485	15.6	12.1	\$81,095	\$61,916
CZ12	PG&E	20,370	562	8.85	13%	\$5,569	\$81,028	\$64,409	14.6	11.6	\$75,459	\$58,840
CZ12-2	SMUD	20,370	562	8.85	13%	\$5,569	\$44,991	\$64,409	8.1	11.6	\$39,422	\$58,840
CZ13	PG&E	22,115	620	9.98	15%	\$2,712	\$109,484	\$83,109	40.4	30.6	\$106,772	\$80,398
CZ14	SDG&E	25,579	406	9.38	13%	\$2,712	\$116,354	\$80,055	42.9	29.5	\$113,643	\$77,343
CZ14-2	SCE	26,327	383	9.42	13%	\$2,712	\$57,290	\$83,065	21.1	30.6	\$54,578	\$80,354
CZ15	SCE	26,433	169	8.35	12%	\$2,712	\$57,152	\$79,506	21.1	29.3	\$54,440	\$76,794
CZ16	PG&E	15,975	752	8.72	13%	\$2,712	\$72,427	\$55,025	26.7	20.3	\$69,715	\$52,314
CZ16-2	LADWP	15,975	752	8.72	13%	\$2,712	\$31,906	\$55,025	11.8	20.3	\$29,194	\$52,314



**Figure 25. Cost Effectiveness for Medium Retail Package 1B – Mixed-Fuel + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + PV + Battery</b>												
CZ01	PG&E	158,584	1209	40.79	18%	\$277,383	\$509,092	\$383,683	1.8	1.4	\$231,709	\$106,300
CZ02	PG&E	189,400	613	43.75	13%	\$280,240	\$590,043	\$465,474	2.1	1.7	\$309,803	\$185,234
CZ03	PG&E	191,016	462	43.52	16%	\$280,240	\$578,465	\$452,795	2.1	1.6	\$298,224	\$172,554
CZ04	PG&E	195,014	439	44.14	14%	\$280,240	\$605,369	\$480,989	2.2	1.7	\$325,129	\$200,748
CZ04-2	CPAU	195,014	439	44.14	14%	\$280,240	\$451,933	\$480,989	1.6	1.7	\$171,693	\$200,748
CZ05	PG&E	196,654	415	44.30	16%	\$280,240	\$589,771	\$464,749	2.1	1.7	\$309,530	\$184,509
CZ05-2	SCG	196,654	415	44.30	16%	\$280,240	\$588,407	\$464,749	2.1	1.7	\$308,167	\$184,509
CZ06	SCE	185,903	347	41.61	10%	\$277,383	\$322,495	\$456,596	1.2	1.6	\$45,111	\$179,213
CZ06-2	LA	185,903	347	41.61	10%	\$277,383	\$191,428	\$456,596	0.7	1.6	(\$85,955)	\$179,213
CZ07	SDG&E	197,650	136	43.24	13%	\$280,240	\$496,786	\$477,582	1.8	1.7	\$216,545	\$197,342
CZ08	SCE	187,869	283	41.48	10%	\$277,383	\$326,810	\$478,132	1.2	1.7	\$49,427	\$200,749
CZ08-2	LA	187,869	283	41.48	10%	\$277,383	\$190,379	\$478,132	0.7	1.7	(\$87,004)	\$200,749
CZ09	SCE	191,399	302	42.32	10%	\$280,240	\$334,869	\$472,770	1.2	1.7	\$54,629	\$192,530
CZ09-2	LA	191,399	302	42.32	10%	\$280,240	\$201,759	\$472,770	0.7	1.7	(\$78,481)	\$192,530
CZ10	SDG&E	200,033	267	44.01	12%	\$280,240	\$547,741	\$472,880	2.0	1.7	\$267,501	\$192,640
CZ10-2	SCE	200,033	267	44.01	12%	\$280,240	\$340,822	\$472,880	1.2	1.7	\$60,582	\$192,640
CZ11	PG&E	192,846	578	44.07	13%	\$280,240	\$582,969	\$490,855	2.1	1.8	\$302,728	\$210,615
CZ12	PG&E	191,720	562	43.70	13%	\$280,240	\$586,836	\$485,076	2.1	1.7	\$306,596	\$204,836
CZ12-2	SMUD	191,720	562	43.70	13%	\$280,240	\$319,513	\$485,076	1.1	1.7	\$39,273	\$204,836
CZ13	PG&E	195,031	620	45.19	15%	\$277,383	\$605,608	\$486,285	2.2	1.8	\$328,225	\$208,901
CZ14	SDG&E	217,183	406	47.86	13%	\$277,383	\$559,148	\$534,915	2.0	1.9	\$281,765	\$257,532
CZ14-2	SCE	217,927	383	47.91	14%	\$277,383	\$354,757	\$538,058	1.3	1.9	\$77,373	\$260,674
CZ15	SCE	208,662	169	44.51	12%	\$277,383	\$338,772	\$496,107	1.2	1.8	\$61,389	\$218,724
CZ16	PG&E	210,242	752	48.76	13%	\$277,383	\$608,779	\$490,262	2.2	1.8	\$331,395	\$212,879
CZ16-2	LA	210,242	752	48.76	13%	\$277,383	\$207,160	\$490,262	0.7	1.8	(\$70,223)	\$212,879



**Figure 26. Cost Effectiveness for Medium Retail Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	57	346	2.04	2%	\$9,006	\$6,301	\$6,065	0.7	0.7	(\$2,705)	(\$2,941)
CZ02	PG&E	2,288	229	2.01	3%	\$9,726	\$23,016	\$13,998	2.4	1.4	\$13,291	\$4,273
CZ03	PG&E	1,087	171	1.31	2%	\$9,063	\$6,782	\$7,186	0.7	0.8	(\$2,282)	(\$1,877)
CZ04	PG&E	1,862	159	1.46	3%	\$9,004	\$17,891	\$10,878	2.0	1.2	\$8,887	\$1,874
CZ04-2	CPAU	1,862	159	1.46	3%	\$9,004	\$7,821	\$10,878	0.9	1.2	(\$1,182)	\$1,874
CZ05	PG&E	664	162	1.11	1%	\$9,454	\$5,119	\$4,725	0.5	0.5	(\$4,335)	(\$4,729)
CZ05-2	SCG	664	162	1.11	1%	\$9,454	\$4,558	\$4,725	0.5	0.5	(\$4,896)	(\$4,729)
CZ06	SCE	2,648	90	1.24	3%	\$8,943	\$11,646	\$11,427	1.3	1.3	\$2,703	\$2,484
CZ06-2	LADWP	2,648	90	1.24	3%	\$8,943	\$7,329	\$11,427	0.8	1.3	(\$1,614)	\$2,484
CZ07	SDG&E	2,376	49	0.95	2%	\$9,194	\$20,103	\$9,779	2.2	1.1	\$10,909	\$585
CZ08	SCE	2,822	72	1.20	3%	\$9,645	\$11,989	\$12,877	1.2	1.3	\$2,344	\$3,233
CZ08-2	LADWP	2,822	72	1.20	3%	\$9,645	\$7,427	\$12,877	0.8	1.3	(\$2,218)	\$3,233
CZ09	SCE	4,206	88	1.73	4%	\$10,446	\$16,856	\$18,745	1.6	1.8	\$6,410	\$8,299
CZ09-2	LADWP	4,206	88	1.73	4%	\$10,446	\$10,604	\$18,745	1.0	1.8	\$158	\$8,299
CZ10	SDG&E	4,226	119	1.88	4%	\$9,514	\$36,412	\$19,008	3.8	2.0	\$26,898	\$9,494
CZ10-2	SCE	4,226	119	1.88	4%	\$9,514	\$17,094	\$19,008	1.8	2.0	\$7,580	\$9,494
CZ11	PG&E	4,188	225	2.56	4%	\$10,479	\$31,872	\$22,393	3.0	2.1	\$21,392	\$11,913
CZ12	PG&E	3,675	214	2.34	4%	\$10,409	\$29,653	\$20,525	2.8	2.0	\$19,243	\$10,115
CZ12-2	SMUD	3,675	214	2.34	4%	\$10,409	\$12,823	\$20,525	1.2	2.0	\$2,414	\$10,115
CZ13	PG&E	4,818	180	2.46	4%	\$9,809	\$34,149	\$23,623	3.5	2.4	\$24,340	\$13,814
CZ14	SDG&E	6,439	153	2.71	4%	\$12,103	\$44,705	\$26,348	3.7	2.2	\$32,601	\$14,245
CZ14-2	SCE	6,439	153	2.71	4%	\$12,103	\$22,032	\$26,348	1.8	2.2	\$9,929	\$14,245
CZ15	SCE	8,802	48	2.76	5%	\$12,534	\$25,706	\$31,402	2.1	2.5	\$13,171	\$18,868
CZ16	PG&E	2,316	390	2.97	3%	\$11,999	\$22,663	\$13,888	1.9	1.2	\$10,665	\$1,890
CZ16-2	LADWP	2,316	390	2.97	3%	\$11,999	\$11,921	\$13,888	1.0	1.2	(\$78)	\$1,890



**Figure 27. Cost Effectiveness for Medium Retail Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-29,155	3893	13.85	-4.1%	(\$23,048)	(\$8,333)	(\$13,910)	2.8	1.7	\$14,715	\$9,138
CZ02	PG&E	-21,786	2448	7.49	-1.0%	(\$27,464)	(\$16,476)	(\$4,483)	1.7	6.1	\$10,987	\$22,981
CZ03	PG&E	-14,583	1868	6.26	-0.4%	(\$24,111)	\$263	(\$1,450)	>1	16.6	\$24,374	\$22,661
CZ04	PG&E	-14,186	1706	5.30	-0.1%	(\$22,896)	(\$8,753)	(\$220)	2.6	104.2	\$14,143	\$22,676
CZ04-2	CPAU	-14,186	1706	5.30	-0.1%	(\$22,896)	\$12,493	(\$220)	>1	104.2	\$35,389	\$22,676
CZ05	PG&E	-14,334	1746	5.47	-1.2%	(\$25,507)	(\$1,567)	(\$4,197)	16.3	6.1	\$23,940	\$21,309
CZ06	SCE	-7,527	1002	3.32	0.5%	(\$21,762)	\$18,590	\$1,868	>1	>1	\$40,351	\$23,630
CZ06-2	LADWP	-7,527	1002	3.32	0.5%	(\$21,762)	\$19,309	\$1,868	>1	>1	\$41,071	\$23,630
CZ07	SDG&E	-3,812	522	1.76	0.3%	(\$23,762)	\$54,345	\$1,318	>1	>1	\$78,107	\$25,080
CZ08	SCE	-5,805	793	2.70	0.4%	(\$26,922)	\$16,735	\$1,846	>1	>1	\$43,658	\$28,768
CZ08-2	LADWP	-5,805	793	2.70	0.4%	(\$26,922)	\$17,130	\$1,846	>1	>1	\$44,052	\$28,768
CZ09	SCE	-7,241	970	3.32	0.4%	(\$32,113)	\$18,582	\$1,978	>1	>1	\$50,695	\$34,091
CZ09-2	LADWP	-7,241	970	3.32	0.4%	(\$32,113)	\$19,089	\$1,978	>1	>1	\$51,202	\$34,091
CZ10	SDG&E	-10,336	1262	3.99	0.1%	(\$27,272)	\$54,453	\$505	>1	>1	\$81,724	\$27,777
CZ10-2	SCE	-10,336	1262	3.99	0.1%	(\$27,272)	\$20,996	\$505	>1	>1	\$48,268	\$27,777
CZ11	PG&E	-19,251	2415	7.95	0.5%	(\$32,202)	(\$7,951)	\$2,615	4.1	>1	\$24,251	\$34,817
CZ12	PG&E	-19,471	2309	7.28	-0.1%	(\$32,504)	(\$14,153)	(\$461)	2.3	70.4	\$18,351	\$32,042
CZ12-2	SMUD	-19,471	2309	7.28	-0.1%	(\$32,504)	\$12,939	(\$461)	>1	70.4	\$45,443	\$32,042
CZ13	PG&E	-16,819	1983	6.15	-0.4%	(\$28,158)	(\$10,575)	(\$2,022)	2.7	13.9	\$17,582	\$26,136
CZ14	SDG&E	-13,208	1672	5.44	0.7%	(\$26,656)	\$41,117	\$4,461	>1	>1	\$67,772	\$31,117
CZ14-2	SCE	-13,208	1672	5.44	0.7%	(\$26,656)	\$18,467	\$4,461	>1	>1	\$45,123	\$31,117
CZ15	SCE	-2,463	518	2.14	0.9%	(\$29,544)	\$16,796	\$5,823	>1	>1	\$46,339	\$35,367
CZ16	PG&E	-41,418	4304	13.23	-12.2%	(\$25,771)	(\$49,862)	(\$52,542)	0.5	0.5	(\$24,091)	(\$26,771)
CZ16-2	LADWP	-41,418	4304	13.23	-12.2%	(\$25,771)	\$39,319	(\$52,542)	>1	0.5	\$65,090	(\$26,771)

\*The Incremental Package Cost is the addition of the incremental HVAC and water heating equipment costs from Figure 11 and the natural gas infrastructure incremental cost savings of \$28,027 (see section 3.3.2.2).



**Figure 28. Cost Effectiveness for Medium Retail Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-5,478	3893	20.64	15%	(\$20,336)	\$63,593	\$51,224	>1	>1	\$83,929	\$71,560
CZ02	PG&E	2,843	2448	14.58	13%	(\$21,895)	\$74,997	\$56,893	>1	>1	\$96,892	\$78,788
CZ03	PG&E	7,791	1868	12.73	16%	(\$18,542)	\$68,968	\$56,586	>1	>1	\$87,511	\$75,128
CZ04	PG&E	8,572	1706	11.89	14%	(\$17,327)	\$81,957	\$57,904	>1	>1	\$99,284	\$75,231
CZ04-2	CPAU	8,572	1706	11.89	14%	(\$17,327)	\$63,082	\$57,904	>1	>1	\$80,408	\$75,231
CZ05	PG&E	6,973	1746	11.68	15%	(\$19,938)	\$63,677	\$51,949	>1	>1	\$83,615	\$71,887
CZ06	SCE	7,431	1002	7.72	11%	(\$19,050)	\$47,072	\$42,610	>1	>1	\$66,122	\$61,660
CZ06-2	LADWP	7,431	1002	7.72	11%	(\$19,050)	\$37,078	\$42,610	>1	>1	\$56,128	\$61,660
CZ07	SDG&E	14,350	522	6.98	13%	(\$18,193)	\$127,461	\$50,828	>1	>1	\$145,654	\$69,021
CZ08	SCE	8,524	793	6.90	10%	(\$24,210)	\$43,679	\$42,258	>1	>1	\$67,890	\$66,468
CZ08-2	LADWP	8,524	793	6.90	10%	(\$24,210)	\$34,038	\$42,258	>1	>1	\$58,248	\$66,468
CZ09	SCE	8,403	970	7.81	10%	(\$26,545)	\$47,819	\$47,356	>1	>1	\$74,364	\$73,901
CZ09-2	LADWP	8,403	970	7.81	10%	(\$26,545)	\$37,934	\$47,356	>1	>1	\$64,478	\$73,901
CZ10	SDG&E	11,737	1262	10.23	12%	(\$21,703)	\$137,436	\$58,761	>1	>1	\$159,139	\$80,464
CZ10-2	SCE	11,737	1262	10.23	12%	(\$21,703)	\$58,257	\$58,761	>1	>1	\$79,959	\$80,464
CZ11	PG&E	5,892	2415	15.13	12%	(\$26,633)	\$85,256	\$65,859	>1	>1	\$111,889	\$92,492
CZ12	PG&E	5,548	2309	14.46	12%	(\$26,935)	\$80,631	\$63,903	>1	>1	\$107,566	\$90,838
CZ12-2	SMUD	5,548	2309	14.46	12%	(\$26,935)	\$59,311	\$63,903	>1	>1	\$86,246	\$90,838
CZ13	PG&E	10,184	1983	14.15	14%	(\$25,446)	\$110,105	\$80,604	>1	>1	\$135,551	\$106,050
CZ14	SDG&E	16,583	1672	13.83	15%	(\$23,944)	\$171,200	\$88,471	>1	>1	\$195,145	\$112,415
CZ14-2	SCE	16,583	1672	13.83	15%	(\$23,944)	\$656,178	\$159,604	>1	>1	\$680,122	\$183,548
CZ15	SCE	23,642	518	9.44	12%	(\$26,832)	\$65,573	\$76,781	>1	>1	\$92,404	\$103,612
CZ16	PG&E	-18,232	4304	19.80	3%	(\$23,059)	\$38,796	\$14,152	>1	>1	\$61,855	\$37,211
CZ16-2	LADWP	-18,232	4304	19.80	3%	(\$23,059)	\$67,793	\$14,152	>1	>1	\$90,852	\$37,211



**Figure 29. Cost Effectiveness for Medium Retail Package 3B – All-Electric + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + PV + B</b>												
CZ01	PG&E	137,956	3893	50.51	15%	\$254,335	\$510,831	\$374,432	2.0	1.5	\$256,496	\$120,097
CZ02	PG&E	173,387	2448	49.87	13%	\$252,777	\$590,112	\$463,431	2.3	1.8	\$337,336	\$210,654
CZ03	PG&E	180,055	1868	48.55	16%	\$256,129	\$585,861	\$452,399	2.3	1.8	\$329,732	\$196,270
CZ04	PG&E	184,499	1706	48.38	14%	\$257,345	\$608,814	\$481,011	2.4	1.9	\$351,470	\$223,666
CZ04-2	CPAU	184,499	1706	48.38	14%	\$257,345	\$465,690	\$481,011	1.8	1.9	\$208,345	\$223,666
CZ05	PG&E	185,690	1746	48.84	15%	\$254,734	\$600,933	\$461,804	2.4	1.8	\$346,199	\$207,071
CZ06	SCE	180,968	1002	43.91	11%	\$255,621	\$335,909	\$457,959	1.3	1.8	\$80,288	\$202,337
CZ06-2	LADWP	180,968	1002	43.91	11%	\$255,621	\$206,021	\$457,959	0.8	1.8	(\$49,601)	\$202,337
CZ07	SDG&E	194,837	522	44.67	13%	\$256,478	\$550,714	\$478,637	2.1	1.9	\$294,236	\$222,159
CZ08	SCE	184,120	793	43.32	10%	\$250,461	\$340,301	\$479,406	1.4	1.9	\$89,840	\$228,945
CZ08-2	LADWP	184,120	793	43.32	10%	\$250,461	\$203,813	\$479,406	0.8	1.9	(\$46,648)	\$228,945
CZ09	SCE	186,346	970	44.77	10%	\$248,127	\$349,524	\$474,176	1.4	1.9	\$101,397	\$226,049
CZ09-2	LADWP	186,346	970	44.77	10%	\$248,127	\$216,654	\$474,176	0.9	1.9	(\$31,473)	\$226,049
CZ10	SDG&E	191,923	1262	47.46	12%	\$252,969	\$593,514	\$473,605	2.3	1.9	\$340,545	\$220,636
CZ10-2	SCE	191,923	1262	47.46	12%	\$252,969	\$356,958	\$473,605	1.4	1.9	\$103,989	\$220,636
CZ11	PG&E	177,639	2415	50.26	12%	\$248,039	\$585,689	\$489,317	2.4	2.0	\$337,650	\$241,278
CZ12	PG&E	176,919	2309	49.46	12%	\$247,736	\$591,104	\$484,702	2.4	2.0	\$343,368	\$236,966
CZ12-2	SMUD	176,919	2309	49.46	12%	\$247,736	\$335,286	\$484,702	1.4	2.0	\$87,550	\$236,966
CZ13	PG&E	183,129	1983	49.48	14%	\$249,226	\$608,560	\$483,670	2.4	1.9	\$359,334	\$234,444
CZ14	SDG&E	208,183	1672	52.54	15%	\$250,727	\$593,232	\$544,079	2.4	2.2	\$342,505	\$293,351
CZ14-2	SCE	264,589	1672	80.97	15%	\$250,727	\$656,178	\$580,403	2.6	2.3	\$405,450	\$329,676
CZ15	SCE	205,869	518	45.67	12%	\$247,840	\$347,125	\$493,339	1.4	2.0	\$99,285	\$245,499
CZ16	PG&E	176,114	4304	60.13	3%	\$251,612	\$567,822	\$446,795	2.3	1.8	\$316,210	\$195,183
CZ16-2	LADWP	176,114	4304	60.13	3%	\$251,612	\$241,757	\$446,795	1.0	1.8	(\$9,856)	\$195,183



**Figure 30. Cost Effectiveness for Medium Retail Package 3C – All-Electric + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-26,199	3893	14.76	-2%	(\$587)	\$369	(\$5,757)	>1	0.1	\$956	(\$5,170)
CZ02	PG&E	-16,989	2448	8.95	3%	(\$4,211)	\$12,323	\$11,251	>1	>1	\$16,534	\$15,463
CZ03	PG&E	-11,703	1868	7.15	2%	(\$2,213)	\$9,159	\$6,944	>1	>1	\$11,372	\$9,157
CZ04	PG&E	-10,675	1706	6.37	3%	(\$316)	\$14,317	\$11,383	>1	>1	\$14,633	\$11,700
CZ04-2	CPAU	-10,675	1706	6.37	3%	(\$316)	\$20,599	\$11,383	>1	>1	\$20,915	\$11,700
CZ05	PG&E	-11,969	1746	6.19	1%	(\$2,298)	\$5,592	\$1,824	>1	>1	\$7,890	\$4,122
CZ06	SCE	-3,919	1002	4.35	3%	\$1,418	\$29,751	\$13,734	21.0	9.7	\$28,333	\$12,316
CZ06-2	LADWP	-3,919	1002	4.35	3%	\$1,418	\$25,891	\$13,734	18.3	9.7	\$24,473	\$12,316
CZ07	SDG&E	-955	522	2.59	3%	(\$710)	\$74,518	\$11,229	>1	>1	\$75,227	\$11,939
CZ08	SCE	-2,224	793	3.74	4%	(\$3,719)	\$28,067	\$15,075	>1	>1	\$31,785	\$18,793
CZ08-2	LADWP	-2,224	793	3.74	4%	(\$3,719)	\$23,848	\$15,075	>1	>1	\$27,566	\$18,793
CZ09	SCE	-2,089	970	4.84	4%	(\$8,268)	\$34,648	\$21,162	>1	>1	\$42,916	\$29,430
CZ09-2	LADWP	-2,089	970	4.84	4%	(\$8,268)	\$28,837	\$21,162	>1	>1	\$37,105	\$29,430
CZ10	SDG&E	-4,868	1262	5.58	4%	(\$5,222)	\$91,136	\$20,041	>1	>1	\$96,358	\$25,263
CZ10-2	SCE	-4,868	1262	5.58	4%	(\$5,222)	\$37,200	\$20,041	>1	>1	\$42,422	\$25,263
CZ11	PG&E	-12,651	2415	9.95	5%	(\$8,217)	\$29,015	\$26,172	>1	>1	\$37,232	\$34,389
CZ12	PG&E	-13,479	2309	9.10	4%	(\$9,239)	\$20,839	\$21,228	>1	>1	\$30,078	\$30,466
CZ12-2	SMUD	-13,479	2309	9.10	4%	(\$9,239)	\$26,507	\$21,228	>1	>1	\$35,746	\$30,466
CZ13	PG&E	-9,935	1983	8.23	4%	(\$4,975)	\$30,123	\$24,063	>1	>1	\$35,097	\$29,037
CZ14	SDG&E	-5,407	1672	7.71	5%	\$121	\$88,669	\$31,029	732.5	256.3	\$88,547	\$30,908
CZ14-2	SCE	-5,407	1672	7.71	5%	\$121	\$40,709	\$31,029	336.3	256.3	\$40,588	\$30,908
CZ15	SCE	6,782	518	4.77	6%	(\$2,508)	\$42,238	\$37,379	>1	>1	\$44,745	\$39,887
CZ16	PG&E	-35,297	4304	15.03	-8%	\$1,102	(\$21,384)	(\$33,754)	-19.4	-30.6	(\$22,486)	(\$34,856)
CZ16-2	LADWP	-35,297	4304	15.03	-8%	\$1,102	\$48,625	(\$33,754)	44.1	-30.6	\$47,523	(\$34,856)



### 4.3 Cost Effectiveness Results – Small Hotel

The following issues must be considered when reviewing the Small Hotel results:

- ◆ The Small Hotel is a mix of residential and nonresidential space types, which results in different occupancy and load profiles than the office and retail prototypes.
- ◆ A potential laundry load has not been examined for the Small Hotel. The Reach Code Team attempted to characterize and apply the energy use intensity of laundry loads in hotels but did not find readily available data for use. Thus, cost effectiveness including laundry systems has not been examined.
- ◆ Contrary to the office and retail prototypes, the Small Hotel baseline water heater is a central gas storage type. Current compliance software cannot model central heat pump water heater systems with recirculation serving guest rooms.<sup>23</sup> The only modeling option for heat pump water heating is individual water heaters at each guest room even though this is a very uncommon configuration. TRC modeled individual heat pump water heaters but as a proxy for central heat pump water heating performance, but integrated costs associated with tank and controls for central heat pump water heating into cost effectiveness calculations.
- ◆ Assuming central heat pump water heating also enabled the inclusion of a solar hot water thermal collection system, which was a key efficiency measure to achieving compliance in nearly all climate zones.

Figure 31 through Figure 37 contain the cost-effectiveness findings for the Small Hotel packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:**
  - ◆ Packages achieve +3 to +10% compliance margins depending on climate zone.
  - ◆ Packages are cost effective using either the On-Bill or TDV approach in all CZs except 12 (using SMUD rates), 14 (using SCE rates), and 15 (with SCE rates).
  - ◆ The hotel is primarily guest rooms with a smaller proportion of nonresidential space. Thus, the inexpensive VAV minimum flow measure and lighting measures that have been applied to the entirety of the Medium Office and Medium Retail prototypes have a relatively small impact in the Small Hotel.<sup>24</sup>
- ◆ **1B – Mixed-Fuel + EE + PV + B:** Packages are cost effective using either the On-Bill or TDV approach in all CZs. Solar PV generally increases cost effectiveness compared to efficiency-only, particularly when using an NPV metric.
- ◆ **1C – Mixed-Fuel + HE:** Packages achieve +2 to +5% compliance margins depending on climate zone. The package is cost effective using the On-Bill approach in a minority of climate zones, and cost effective using TDV approach only in CZ15.

<sup>23</sup> The IOUs and CEC are actively working on including central heat pump water heater modeling with recirculation systems in early 2020.

<sup>24</sup> Title 24 requires that hotel/motel guest room lighting design comply with the residential lighting standards, which are all mandatory and are not awarded compliance credit for improved efficacy.



◆ **2 – All-Electric Federal Code-Minimum Reference:**

◆ This all-electric design does not comply with the Energy Commission’s TDV performance budget. Packages achieve between -50% and -4% compliance margins depending on climate zone. This may be because the modeled HW system is constrained to having an artificially low efficiency to avoid triggering federal pre-emption, and the heat pump space heating systems must operate overnight when operation is less efficient.

◆ All packages are cost effective in all climate zones.

◆ **3A – All-Electric + EE:** Packages achieve positive compliance margins in all CZs ranging from 0% to +17%, except CZ16 which had a -18% compliance margin. All packages are cost effective in all climate zones. The improved degree of cost effectiveness outcomes in Package 3A compared to Package 1A appear to be due to the significant incremental package cost savings.

◆ **3B – All-Electric + EE + PV + B:** All packages are cost effective. Packages improve in B/C ratio when compared to 3A and increase in magnitude of overall NPV savings. PV appears to be more cost-effective with higher building electricity loads.

◆ **3C – All-Electric + HE:**

◆ Packages do not comply with Title 24 in all CZs except CZ15 which resulted in a +0.04% compliance margin.

◆ All packages are cost effective.



**Figure 31. Cost Effectiveness for Small Hotel Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	3,855	1288	5.65	9%	\$20,971	\$34,339	\$36,874	1.6	1.8	\$13,368	\$15,903
CZ02	PG&E	3,802	976	3.91	7%	\$20,971	\$26,312	\$29,353	1.3	1.4	\$5,341	\$8,381
CZ03	PG&E	4,153	1046	4.48	10%	\$20,971	\$31,172	\$35,915	1.5	1.7	\$10,201	\$14,944
CZ04	PG&E	5,007	395	0.85	6%	\$21,824	\$24,449	\$24,270	1.1	1.1	\$2,625	\$2,446
CZ04-2	CPAU	4,916	422	0.98	6%	\$21,824	\$18,713	\$24,306	0.9	1.1	(\$3,111)	\$2,483
CZ05	PG&E	3,530	1018	4.13	9%	\$20,971	\$28,782	\$34,448	1.4	1.6	\$7,810	\$13,477
CZ05-2	SCG	3,530	1018	4.13	9%	\$20,971	\$23,028	\$34,448	1.1	1.6	\$2,057	\$13,477
CZ06	SCE	5,137	418	1.16	8%	\$21,824	\$16,001	\$26,934	0.7	1.2	(\$5,823)	\$5,110
CZ06-2	LADWP	5,137	418	1.16	8%	\$21,824	\$11,706	\$26,934	0.5	1.2	(\$10,118)	\$5,110
CZ07	SDG&E	5,352	424	1.31	8%	\$21,824	\$26,699	\$27,975	1.2	1.3	\$4,876	\$6,152
CZ08	SCE	5,151	419	1.21	7%	\$21,824	\$15,931	\$23,576	0.7	1.1	(\$5,893)	\$1,752
CZ08-2	LADWP	5,151	419	1.21	7%	\$21,824	\$11,643	\$23,576	0.5	1.1	(\$10,180)	\$1,752
CZ09	SCE	5,229	406	1.16	6%	\$21,824	\$15,837	\$22,365	0.7	1.0	(\$5,987)	\$541
CZ09-2	LADWP	5,229	406	1.16	6%	\$21,824	\$11,632	\$22,365	0.5	1.0	(\$10,192)	\$541
CZ10	SDG&E	4,607	342	0.92	5%	\$21,824	\$25,506	\$22,219	1.2	1.0	\$3,683	\$396
CZ10-2	SCE	4,607	342	0.92	5%	\$21,824	\$13,868	\$22,219	0.6	1.0	(\$7,956)	\$396
CZ11	PG&E	4,801	325	0.87	4%	\$21,824	\$22,936	\$19,503	1.1	0.9	\$1,112	(\$2,321)
CZ12	PG&E	5,276	327	0.90	5%	\$21,824	\$22,356	\$21,305	1.0	0.98	\$532	(\$519)
CZ12-2	SMUD	5,276	327	0.90	5%	\$21,824	\$15,106	\$21,305	0.7	0.98	(\$6,717)	(\$519)
CZ13	PG&E	4,975	310	0.87	4%	\$21,824	\$23,594	\$19,378	1.1	0.9	\$1,770	(\$2,445)
CZ14	SDG&E	4,884	370	0.82	4%	\$21,824	\$24,894	\$21,035	1.1	0.96	\$3,070	(\$789)
CZ14-2	SCE	4,884	370	0.82	4%	\$21,824	\$14,351	\$21,035	0.7	0.96	(\$7,473)	(\$789)
CZ15	SCE	5,187	278	1.23	3%	\$21,824	\$13,645	\$18,089	0.6	0.8	(\$8,178)	(\$3,735)
CZ16	PG&E	2,992	1197	4.95	6%	\$20,971	\$27,813	\$30,869	1.3	1.5	\$6,842	\$9,898
CZ16-2	LADWP	2,992	1197	4.95	6%	\$20,971	\$19,782	\$30,869	0.9	1.5	(\$1,190)	\$9,898



**Figure 32. Cost Effectiveness for Small Hotel Package 1B – Mixed-Fuel + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1B: Mixed Fuel + EE + PV + B</b>												
CZ01	PG&E	107,694	1288	28.73	9%	\$228,341	\$366,509	\$295,731	1.6	1.3	\$138,168	\$67,390
CZ02	PG&E	130,144	976	31.14	7%	\$228,341	\$359,248	\$336,575	1.6	1.5	\$130,907	\$108,233
CZ03	PG&E	129,107	1046	31.57	10%	\$228,341	\$430,737	\$335,758	1.9	1.5	\$202,396	\$107,416
CZ04	PG&E	132,648	395	28.46	6%	\$229,194	\$355,406	\$338,455	1.6	1.5	\$126,212	\$109,262
CZ04-2	CPAU	132,556	422	28.59	6%	\$229,194	\$322,698	\$338,492	1.4	1.5	\$93,504	\$109,298
CZ05	PG&E	136,318	1018	32.73	9%	\$228,341	\$452,611	\$352,342	2.0	1.5	\$224,269	\$124,001
CZ05-2	SCG	136,318	1018	32.73	9%	\$228,341	\$446,858	\$352,342	2.0	1.5	\$218,516	\$124,001
CZ06	SCE	131,051	418	28.47	8%	\$229,194	\$217,728	\$336,843	0.9	1.5	(\$11,466)	\$107,649
CZ06-2	LADWP	131,051	418	28.47	8%	\$229,194	\$131,052	\$336,843	0.6	1.5	(\$98,142)	\$107,649
CZ07	SDG&E	136,359	424	29.63	8%	\$229,194	\$306,088	\$345,378	1.3	1.5	\$76,894	\$116,184
CZ08	SCE	132,539	419	28.85	7%	\$229,194	\$227,297	\$353,013	1.0	1.5	(\$1,897)	\$123,819
CZ08-2	LADWP	132,539	419	28.85	7%	\$229,194	\$134,739	\$353,013	0.6	1.5	(\$94,455)	\$123,819
CZ09	SCE	131,422	406	28.82	6%	\$229,194	\$230,791	\$343,665	1.0	1.5	\$1,597	\$114,471
CZ09-2	LADWP	131,422	406	28.82	6%	\$229,194	\$136,024	\$343,665	0.6	1.5	(\$93,170)	\$114,471
CZ10	SDG&E	134,146	342	29.05	5%	\$229,194	\$339,612	\$342,574	1.5	1.5	\$110,418	\$113,380
CZ10-2	SCE	134,146	342	29.05	5%	\$229,194	\$226,244	\$342,574	1.0	1.5	(\$2,949)	\$113,380
CZ11	PG&E	128,916	325	27.62	4%	\$229,194	\$352,831	\$337,208	1.5	1.5	\$123,637	\$108,014
CZ12	PG&E	131,226	327	28.04	5%	\$229,194	\$425,029	\$338,026	1.9	1.5	\$195,835	\$108,832
CZ12-2	SMUD	131,226	327	28.04	5%	\$229,194	\$213,176	\$338,026	0.9	1.5	(\$16,018)	\$108,832
CZ13	PG&E	127,258	310	27.33	4%	\$229,194	\$351,244	\$324,217	1.5	1.4	\$122,050	\$95,023
CZ14	SDG&E	147,017	370	30.96	4%	\$229,194	\$861,445	\$217,675	3.8	0.9	\$632,251	(\$11,518)
CZ14-2	SCE	147,017	370	30.96	4%	\$229,194	\$244,100	\$381,164	1.1	1.7	\$14,906	\$151,970
CZ15	SCE	137,180	278	29.12	3%	\$229,194	\$225,054	\$348,320	1.0	1.5	(\$4,140)	\$119,127
CZ16	PG&E	141,478	1197	34.60	6%	\$228,341	\$377,465	\$357,241	1.7	1.6	\$149,124	\$128,899
CZ16-2	LADWP	141,478	1197	34.60	6%	\$228,341	\$136,563	\$357,241	0.6	1.6	(\$91,778)	\$128,899



**Figure 33. Cost Effectiveness for Small Hotel Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	10	632	3.76	2%	\$22,839	\$11,015	\$10,218	0.5	0.4	(\$11,823)	(\$12,621)
CZ02	PG&E	981	402	2.69	3%	\$23,092	\$16,255	\$11,808	0.7	0.5	(\$6,837)	(\$11,284)
CZ03	PG&E	81	383	2.30	2%	\$20,510	\$7,066	\$6,850	0.3	0.3	(\$13,444)	(\$13,660)
CZ04	PG&E	161	373	2.26	2%	\$22,164	\$8,593	\$7,645	0.4	0.3	(\$13,571)	(\$14,519)
CZ04-2	CPAU	161	373	2.26	2%	\$22,164	\$7,097	\$7,645	0.3	0.3	(\$15,067)	(\$14,519)
CZ05	PG&E	154	361	2.19	2%	\$21,418	\$6,897	\$6,585	0.3	0.3	(\$14,521)	(\$14,833)
CZ05-2	SCG	154	361	2.19	2%	\$21,418	\$4,786	\$6,585	0.2	0.3	(\$16,632)	(\$14,833)
CZ06	SCE	237	201	1.27	2%	\$20,941	\$3,789	\$4,882	0.2	0.2	(\$17,152)	(\$16,059)
CZ06-2	LADWP	237	201	1.27	2%	\$20,941	\$3,219	\$4,882	0.2	0.2	(\$17,722)	(\$16,059)
CZ07	SDG&E	1,117	158	1.28	2%	\$19,625	\$13,771	\$7,342	0.7	0.4	(\$5,854)	(\$12,283)
CZ08	SCE	1,302	169	1.39	2%	\$20,678	\$8,378	\$8,591	0.4	0.4	(\$12,300)	(\$12,088)
CZ08-2	LADWP	1,302	169	1.39	2%	\$20,678	\$5,802	\$8,591	0.3	0.4	(\$14,877)	(\$12,088)
CZ09	SCE	1,733	178	1.56	3%	\$20,052	\$10,489	\$11,164	0.5	0.6	(\$9,563)	(\$8,888)
CZ09-2	LADWP	1,733	178	1.56	3%	\$20,052	\$7,307	\$11,164	0.4	0.6	(\$12,745)	(\$8,888)
CZ10	SDG&E	3,170	220	2.29	4%	\$22,682	\$35,195	\$19,149	1.6	0.8	\$12,513	(\$3,533)
CZ10-2	SCE	3,170	220	2.29	4%	\$22,682	\$16,701	\$19,149	0.7	0.8	(\$5,981)	(\$3,533)
CZ11	PG&E	3,343	323	2.96	4%	\$23,344	\$27,633	\$20,966	1.2	0.9	\$4,288	(\$2,379)
CZ12	PG&E	1,724	320	2.44	4%	\$22,302	\$11,597	\$15,592	0.5	0.7	(\$10,705)	(\$6,710)
CZ12-2	SMUD	1,724	320	2.44	4%	\$22,302	\$11,156	\$15,592	0.5	0.7	(\$11,146)	(\$6,710)
CZ13	PG&E	3,083	316	2.81	3%	\$22,882	\$23,950	\$17,068	1.0	0.7	\$1,068	(\$5,814)
CZ14	SDG&E	3,714	312	2.99	4%	\$23,299	\$35,301	\$21,155	1.5	0.9	\$12,002	(\$2,144)
CZ14-2	SCE	3,714	312	2.99	4%	\$23,299	\$18,460	\$21,155	0.8	0.9	(\$4,839)	(\$2,144)
CZ15	SCE	8,684	97	3.21	5%	\$20,945	\$26,738	\$31,600	1.3	1.5	\$5,792	\$10,655
CZ16	PG&E	836	700	4.42	3%	\$24,616	\$18,608	\$14,494	0.8	0.6	(\$6,007)	(\$10,121)
CZ16-2	LADWP	836	700	4.42	3%	\$24,616	\$15,237	\$14,494	0.6	0.6	(\$9,378)	(\$10,121)



**Figure 34. Cost Effectiveness for Small Hotel Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-159,802	16917	53.92	-28%	(\$1,296,784)	(\$582,762)	(\$115,161)	2.2	11.3	\$714,022	\$1,181,623
CZ02	PG&E	-118,739	12677	40.00	-12%	(\$1,297,757)	(\$245,434)	(\$51,620)	5.3	25.1	\$1,052,322	\$1,246,137
CZ03	PG&E	-110,595	12322	40.48	-14%	(\$1,300,029)	(\$326,633)	(\$51,166)	4.0	25.4	\$973,396	\$1,248,863
CZ04	PG&E	-113,404	11927	36.59	-13%	(\$1,299,864)	(\$225,307)	(\$53,134)	5.8	24.5	\$1,074,556	\$1,246,730
CZ04-2	CPAU	-113,404	11927	36.59	-13%	(\$1,299,864)	(\$17,768)	(\$53,134)	73.2	24.5	\$1,282,096	\$1,246,730
CZ05	PG&E	-108,605	11960	38.34	-15%	(\$1,299,917)	(\$350,585)	(\$54,685)	3.7	23.8	\$949,332	\$1,245,232
CZ06	SCE	-78,293	8912	29.36	-5%	(\$1,300,058)	(\$61,534)	(\$28,043)	21.1	46.4	\$1,238,524	\$1,272,015
CZ06-2	LA	-78,293	8912	29.36	-5%	(\$1,300,058)	\$43,200	(\$28,043)	>1	46.4	\$1,343,258	\$1,272,015
CZ07	SDG&E	-69,819	8188	28.04	-7%	(\$1,298,406)	(\$137,638)	(\$23,199)	9.4	56.0	\$1,160,768	\$1,275,207
CZ08	SCE	-71,914	8353	28.21	-6%	(\$1,296,376)	(\$53,524)	(\$22,820)	24.2	56.8	\$1,242,852	\$1,273,556
CZ08-2	LA	-71,914	8353	28.21	-6%	(\$1,296,376)	\$42,841	(\$22,820)	>1	56.8	\$1,339,217	\$1,273,556
CZ09	SCE	-72,262	8402	28.38	-6%	(\$1,298,174)	(\$44,979)	(\$21,950)	28.9	59.1	\$1,253,196	\$1,276,224
CZ09-2	LA	-72,262	8402	28.38	-6%	(\$1,298,174)	\$46,679	(\$21,950)	>1	59.1	\$1,344,853	\$1,276,224
CZ10	SDG&E	-80,062	8418	26.22	-8%	(\$1,295,176)	(\$172,513)	(\$36,179)	7.5	35.8	\$1,122,663	\$1,258,997
CZ10-2	SCE	-80,062	8418	26.22	-8%	(\$1,295,176)	(\$63,974)	(\$36,179)	20.2	35.8	\$1,231,202	\$1,258,997
CZ11	PG&E	-99,484	10252	30.99	-10%	(\$1,295,985)	(\$186,037)	(\$49,387)	7.0	26.2	\$1,109,948	\$1,246,598
CZ12	PG&E	-99,472	10403	32.08	-10%	(\$1,297,425)	(\$340,801)	(\$45,565)	3.8	28.5	\$956,624	\$1,251,860
CZ12-2	SMUD	-99,067	10403	32.21	-10%	(\$1,297,425)	\$5,794	(\$44,354)	>1	29.3	\$1,303,219	\$1,253,071
CZ13	PG&E	-96,829	10029	30.60	-10%	(\$1,295,797)	(\$184,332)	(\$50,333)	7.0	25.7	\$1,111,465	\$1,245,464
CZ14	SDG&E	-101,398	10056	29.68	-11%	(\$1,296,156)	(\$325,928)	(\$56,578)	4.0	22.9	\$970,228	\$1,239,578
CZ14-2	SCE	-101,398	10056	29.68	-11%	(\$1,296,156)	(\$121,662)	(\$56,578)	10.7	22.9	\$1,174,494	\$1,239,578
CZ15	SCE	-49,853	5579	18.07	-4%	(\$1,294,276)	\$209	(\$21,420)	>1	60.4	\$1,294,485	\$1,272,856
CZ16	PG&E	-216,708	17599	41.89	-50%	(\$1,300,552)	(\$645,705)	(\$239,178)	2.0	5.4	\$654,847	\$1,061,374
CZ16-2	LA	-216,708	17599	41.89	-50%	(\$1,300,552)	\$30,974	(\$239,178)	>1	5.4	\$1,331,526	\$1,061,374

\*The Incremental Package Cost is the addition of the incremental HVAC and water heating equipment costs from Figure 12, the electrical infrastructure incremental cost of \$26,800 (see section 3.3.2.1), and the natural gas infrastructure incremental cost savings of \$56,020 (see section 3.3.2.2).



**Figure 35. Cost Effectiveness for Small Hotel Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-113,259	16917	62.38	1.3%	(\$1,251,544)	(\$200,367)	\$5,460	6.2	>1	\$1,051,177	\$1,257,005
CZ02	PG&E	-90,033	12677	45.46	4%	(\$1,265,064)	(\$108,075)	\$15,685	11.7	>1	\$1,156,989	\$1,280,749
CZ03	PG&E	-83,892	12322	45.93	6%	(\$1,267,509)	(\$198,234)	\$20,729	6.4	>1	\$1,069,274	\$1,288,237
CZ04	PG&E	-91,197	11927	40.36	0.2%	(\$1,263,932)	(\$112,892)	\$703	11.2	>1	\$1,151,041	\$1,264,635
CZ04-2	CPAU	-90,981	11927	40.42	0.2%	(\$1,263,932)	\$32,557	\$918	>1	>1	\$1,296,489	\$1,264,850
CZ05	PG&E	-82,491	11960	43.62	5%	(\$1,267,355)	(\$221,492)	\$18,488	5.7	>1	\$1,045,863	\$1,285,843
CZ06	SCE	-61,523	8912	32.45	7%	(\$1,267,916)	(\$33,475)	\$15,142	37.9	>1	\$1,234,441	\$1,283,057
CZ06-2	LADWP	-61,523	8912	32.45	7%	(\$1,267,916)	\$57,215	\$15,142	>1	>1	\$1,325,130	\$1,283,057
CZ07	SDG&E	-53,308	8188	31.22	7%	(\$1,266,354)	(\$81,338)	\$22,516	15.6	>1	\$1,185,015	\$1,288,870
CZ08	SCE	-55,452	8353	31.33	3%	(\$1,264,408)	(\$23,893)	\$9,391	52.9	>1	\$1,240,515	\$1,273,800
CZ08-2	LADWP	-55,452	8353	31.33	3%	(\$1,264,408)	\$57,058	\$9,391	>1	>1	\$1,321,466	\$1,273,800
CZ09	SCE	-55,887	8402	31.40	2%	(\$1,266,302)	(\$19,887)	\$9,110	63.7	>1	\$1,246,415	\$1,275,412
CZ09-2	LADWP	-55,887	8402	31.40	2%	(\$1,266,302)	\$60,441	\$9,110	>1	>1	\$1,326,743	\$1,275,412
CZ10	SDG&E	-60,239	8418	29.96	2%	(\$1,256,002)	(\$126,072)	\$7,365	10.0	>1	\$1,129,930	\$1,263,367
CZ10-2	SCE	-60,239	8418	29.96	2%	(\$1,256,002)	(\$33,061)	\$7,365	38.0	>1	\$1,222,940	\$1,263,367
CZ11	PG&E	-77,307	10252	35.12	1%	(\$1,256,149)	(\$80,187)	\$3,114	15.7	>1	\$1,175,962	\$1,259,263
CZ12	PG&E	-75,098	10403	36.73	2%	(\$1,256,824)	(\$234,275)	\$9,048	5.4	>1	\$1,022,550	\$1,265,872
CZ12-2	SMUD	-75,098	10403	36.73	2%	(\$1,256,824)	\$54,941	\$9,048	>1	>1	\$1,311,765	\$1,265,872
CZ13	PG&E	-75,052	10029	34.72	0.3%	(\$1,256,109)	(\$79,378)	\$1,260	15.8	>1	\$1,176,731	\$1,257,369
CZ14	SDG&E	-76,375	10056	34.28	0.1%	(\$1,255,704)	(\$170,975)	\$543	7.3	>1	\$1,084,729	\$1,256,247
CZ14-2	SCE	-76,375	10056	34.28	0.1%	(\$1,255,704)	(\$34,418)	\$543	36.5	>1	\$1,221,286	\$1,256,247
CZ15	SCE	-33,722	5579	21.43	2%	(\$1,257,835)	\$26,030	\$12,262	>1	>1	\$1,283,864	\$1,270,097
CZ16	PG&E	-139,676	17599	55.25	-14%	(\$1,255,364)	(\$197,174)	(\$66,650)	6.4	18.8	\$1,058,190	\$1,188,714
CZ16-2	LADWP	-139,676	17599	55.25	-14%	(\$1,255,364)	\$165,789	(\$66,650)	>1	18.8	\$1,421,153	\$1,188,714



**Figure 36. Cost Effectiveness for Small Hotel Package 3B – All-Electric + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3B: All-Electric + EE + PV + B</b>												
CZ01	PG&E	-8,900	16917	87.15	1%	(\$1,044,174)	\$90,964	\$324,376	>1	>1	\$1,135,139	\$1,368,551
CZ02	PG&E	36,491	12677	73.03	4%	(\$1,057,694)	\$242,514	\$313,711	>1	>1	\$1,300,208	\$1,371,405
CZ03	PG&E	41,239	12322	73.43	6%	(\$1,060,139)	\$155,868	\$308,385	>1	>1	\$1,216,007	\$1,368,524
CZ04	PG&E	36,628	11927	69.70	0.2%	(\$1,056,562)	\$240,799	\$308,682	>1	>1	\$1,297,361	\$1,365,244
CZ04-2	CPAU	36,844	11927	69.76	0.2%	(\$1,056,562)	\$336,813	\$418,836	>1	>1	\$1,393,375	\$1,475,398
CZ05	PG&E	36,365	11960	73.11	5%	(\$1,059,985)	\$119,173	\$317,952	>1	>1	\$1,179,158	\$1,377,937
CZ06	SCE	64,476	8912	60.47	7%	(\$1,060,545)	\$156,327	\$311,730	>1	>1	\$1,216,872	\$1,372,275
CZ06-2	LADWP	64,476	8912	60.47	7%	(\$1,060,545)	\$180,648	\$311,730	>1	>1	\$1,241,193	\$1,372,275
CZ07	SDG&E	77,715	8188	60.45	7%	(\$1,058,983)	\$197,711	\$330,458	>1	>1	\$1,256,694	\$1,389,441
CZ08	SCE	71,990	8353	59.49	3%	(\$1,057,038)	\$165,393	\$320,814	>1	>1	\$1,222,432	\$1,377,852
CZ08-2	LADWP	71,990	8353	60.24	3%	(\$1,057,038)	\$180,367	\$443,809	>1	>1	\$1,237,405	\$1,500,847
CZ09	SCE	70,465	8402	59.29	2%	(\$1,058,932)	\$175,602	\$301,459	>1	>1	\$1,234,534	\$1,360,391
CZ09-2	LADWP	70,465	8402	59.29	2%	(\$1,058,932)	\$183,220	\$301,459	>1	>1	\$1,242,152	\$1,360,391
CZ10	SDG&E	69,581	8418	58.04	2%	(\$1,048,632)	\$161,513	\$294,530	>1	>1	\$1,210,145	\$1,343,162
CZ10-2	SCE	69,581	8418	58.04	2%	(\$1,048,632)	\$164,837	\$294,530	>1	>1	\$1,213,469	\$1,343,162
CZ11	PG&E	47,260	10252	61.57	1%	(\$1,048,779)	\$253,717	\$286,797	>1	>1	\$1,302,496	\$1,335,576
CZ12	PG&E	51,115	10403	64.07	2%	(\$1,049,454)	\$104,523	\$305,446	>1	>1	\$1,153,977	\$1,354,900
CZ12-2	SMUD	51,115	10403	64.99	2%	(\$1,049,454)	\$253,197	\$430,977	>1	>1	\$1,302,651	\$1,480,431
CZ13	PG&E	47,757	10029	60.77	0.3%	(\$1,048,739)	\$251,663	\$281,877	>1	>1	\$1,300,402	\$1,330,616
CZ14	SDG&E	66,084	10056	64.54	0.1%	(\$1,048,334)	\$148,510	\$334,938	>1	>1	\$1,196,844	\$1,383,272
CZ14-2	SCE	66,084	10056	64.54	0.1%	(\$1,048,334)	\$185,018	\$334,938	>1	>1	\$1,233,352	\$1,383,272
CZ15	SCE	98,755	5579	49.04	2.1%	(\$1,050,465)	\$233,308	\$311,121	>1	>1	\$1,283,772	\$1,361,585
CZ16	PG&E	-873	17599	84.99	-14%	(\$1,047,994)	\$191,994	\$240,724	>1	>1	\$1,239,987	\$1,288,718
CZ16-2	LADWP	-873	17599	84.99	-14%	(\$1,047,994)	\$291,279	\$240,724	>1	>1	\$1,339,273	\$1,288,718



**Figure 37. Cost Effectiveness for Small Hotel Package 3C – All-Electric + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-154,840	16917	56.24	-24%	(\$1,281,338)	(\$606,619)	(\$101,272)	2.1	12.7	\$674,719	\$1,180,066
CZ02	PG&E	-118,284	12677	41.18	-11%	(\$1,283,243)	(\$395,641)	(\$44,505)	3.2	28.8	\$887,602	\$1,238,738
CZ03	PG&E	-113,413	12322	40.80	-14%	(\$1,288,782)	(\$522,458)	(\$51,582)	2.5	25.0	\$766,324	\$1,237,200
CZ04	PG&E	-115,928	11927	37.09	-13%	(\$1,287,878)	(\$383,177)	(\$53,285)	3.4	24.2	\$904,701	\$1,234,593
CZ04-2	CPAU	-115,928	11927	37.09	-13%	(\$1,287,878)	(\$24,170)	(\$53,285)	53.3	24.2	\$1,263,708	\$1,234,593
CZ05	PG&E	-111,075	11960	38.75	-15%	(\$1,288,242)	(\$530,740)	(\$56,124)	2.4	23.0	\$757,502	\$1,232,119
CZ06	SCE	-83,000	8912	29.41	-15%	(\$1,288,695)	(\$154,625)	(\$32,244)	8.3	40.0	\$1,134,069	\$1,256,451
CZ06-2	LADWP	-83,000	8912	29.41	-15%	(\$1,288,695)	(\$17,626)	(\$32,244)	73.1	40.0	\$1,271,068	\$1,256,451
CZ07	SDG&E	-73,823	8188	28.32	-7%	(\$1,285,759)	(\$268,207)	(\$24,069)	4.8	53.4	\$1,017,552	\$1,261,690
CZ08	SCE	-75,573	8353	28.56	-6%	(\$1,281,241)	(\$157,393)	(\$21,912)	8.1	58.5	\$1,123,848	\$1,259,329
CZ08-2	LADWP	-75,573	8353	28.56	-6%	(\$1,281,241)	(\$18,502)	(\$21,912)	69.2	58.5	\$1,262,739	\$1,259,329
CZ09	SCE	-74,790	8402	29.04	-4%	(\$1,285,139)	(\$138,746)	(\$16,992)	9.3	75.6	\$1,146,393	\$1,268,147
CZ09-2	LADWP	-74,790	8402	29.04	-4%	(\$1,285,139)	(\$6,344)	(\$16,992)	202.6	75.6	\$1,278,794	\$1,268,147
CZ10	SDG&E	-80,248	8418	27.57	-5%	(\$1,278,097)	(\$235,479)	(\$24,107)	5.4	53.0	\$1,042,617	\$1,253,990
CZ10-2	SCE	-80,248	8418	27.57	-5%	(\$1,278,097)	(\$123,371)	(\$24,107)	10.4	53.0	\$1,154,726	\$1,253,990
CZ11	PG&E	-98,041	10252	32.73	-7%	(\$1,279,528)	(\$278,242)	(\$35,158)	4.6	36.4	\$1,001,286	\$1,244,370
CZ12	PG&E	-100,080	10403	33.24	-9%	(\$1,282,834)	(\$480,347)	(\$38,715)	2.7	33.1	\$802,487	\$1,244,119
CZ12-2	SMUD	-100,080	10403	33.24	-9%	(\$1,282,834)	(\$23,362)	(\$38,715)	54.9	33.1	\$1,259,472	\$1,244,119
CZ13	PG&E	-94,607	10029	32.47	-7%	(\$1,279,301)	(\$276,944)	\$244,552	4.6	>1	\$1,002,357	\$1,523,853
CZ14	SDG&E	-97,959	10056	31.91	-7%	(\$1,279,893)	(\$302,123)	(\$37,769)	4.2	33.9	\$977,770	\$1,242,124
CZ14-2	SCE	-97,959	10056	31.91	-7%	(\$1,279,893)	(\$129,082)	(\$37,769)	9.9	33.9	\$1,150,811	\$1,242,124
CZ15	SCE	-45,226	5579	20.17	0.04%	(\$1,276,847)	(\$6,533)	\$227	195.4	>1	\$1,270,314	\$1,277,074
CZ16	PG&E	-198,840	17599	47.73	-39%	(\$1,288,450)	(\$605,601)	(\$185,438)	2.1	6.9	\$682,848	\$1,103,011
CZ16-2	LADWP	-198,840	17599	47.73	-39%	(\$1,288,450)	\$40,268	(\$185,438)	>1	6.9	\$1,328,718	\$1,103,011



#### 4.4 Cost Effectiveness Results – PV-only and PV+Battery

The Reach Code Team ran packages of PV-only and PV+Battery measures, without any additional efficiency measures, to assess cost effectiveness on top of the mixed-fuel baseline building and the all-electric federal code minimum reference (Package 2 in Sections 4.1 – 4.3).

Jurisdictions interested in adopting PV-only reach codes should reference the mixed-fuel cost effectiveness results because a mixed-fuel building is the baseline for the nonresidential prototypes analyzed in this study. PV or PV+Battery packages are added to all-electric federal code minimum reference which (in many scenarios) do not have a positive compliance margin compared to the mixed-fuel baseline model, and are solely provided for informational purposes. Jurisdictions interested in reach codes requiring all-electric+PV or all-electric+PV+battery should reference package 3B results in Sections 4.1 – 4.3.<sup>25</sup>

Each of the following eight packages were evaluated against a mixed fuel baseline designed as per 2019 Title 24 Part 6 requirements.

- ◆ **Mixed-Fuel + 3 kW PV Only:**
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh battery**
- ◆ **Mixed-Fuel + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery
- ◆ **All-Electric + 3 kW PV Only**
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery**
- ◆ **All-Electric + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **All-Electric + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery

Figure 38 through Figure 40 summarize the on-bill and TDV B/C ratios for each prototype for the two PV only packages and the two PV plus battery packages. Compliance margins are 0 percent for all mixed-fuel packages. For all-electric packages, compliance margins are equal to those found in Package 2 for each prototype in Sections 4.1 – 4.3. The compliance margins are not impacted by renewables and battery storage measures and hence not shown in the tables. These figures are formatted in the following way:

- ◆ Cells highlighted in green have a B/C ratio greater than 1 and are cost-effective. The shade of green gets darker as cost effectiveness increases.
- ◆ Cells not highlighted have a B/C ratio less than one and are not cost effective.

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<sup>25</sup> Because this study shows that the addition of battery generally reduces cost effectiveness, removing a battery measure would only increase cost effectiveness. Thus, a jurisdiction can apply the EE+PV+Battery cost effectiveness findings to support EE+PV reach codes, because EE+PV would still remain cost effective without a battery.

Please see Appendix 6.7 for results in full detail. Generally, for mixed-fuel packages across all prototypes, all climate zones were proven to have cost effective outcomes using TDV except in CZ1 with a 3 kW PV + 5 kWh Battery scenario. Most climate zones also had On-Bill cost effectiveness. The addition of a battery slightly reduces cost effectiveness.

In all-electric packages, the results for most climate zones were found cost effective using both TDV and On-Bill approaches with larger PV systems or PV+Battery systems. Most 3 kW PV systems were also found to be cost effective except in some scenarios analyzing the Medium Office using the On-Bill method. CZ16 results continue to show challenges being cost effective with all electric buildings, likely due to the high heating loads in this climate. The addition of a battery slightly reduces the cost effectiveness for all-electric buildings with PV.



Figure 38. Cost Effectiveness for Medium Office - PV and Battery

CZ	PV Battery Utility	Mixed Fuel								All-Electric							
		3kW		3kW		135kW		135kW		3kW		3kW		135kW		135kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.8	1.5	1.7	0.9	1.7	1.3	1.6	1.2	0.9	1.6	0.9	1.6	2.5	2.0	2.1	1.7
CZ02	PG&E	3.7	1.9	2.1	1.1	2.2	1.6	2.0	1.4	0.8	2.2	0.9	2.6	3.2	2.4	2.7	2.1
CZ03	PG&E	3.7	1.8	2.2	1.0	2.1	1.5	1.9	1.4	1.9	3.9	2.0	4.0	3.4	2.5	2.9	2.2
CZ04	PG&E	3.6	2.0	2.1	1.2	2.3	1.6	2.1	1.5	0.9	2.1	1.1	2.7	3.3	2.5	2.9	2.2
CZ04-2	CPAU	2.1	2.0	1.3	1.2	1.8	1.6	1.6	1.5	7.7	2.1	9.8	2.7	2.9	2.5	2.5	2.2
CZ05	PG&E	4.2	1.9	2.4	1.1	2.5	1.6	2.3	1.5	1.8	2.7	1.9	2.7	4.0	2.7	3.4	2.3
CZ05-2	SCG	4.2	1.9	2.4	1.1	2.5	1.6	2.3	1.5	>1	>1	>1	>1	>1	3.0	9.4	2.6
CZ06	SCE	2.0	2.0	1.2	1.1	1.3	1.6	1.2	1.5	>1	7.2	>1	8.2	2.4	2.7	2.1	2.3
CZ06-2	LA	1.2	2.0	0.7	1.1	0.8	1.6	0.7	1.5	>1	7.2	>1	8.2	1.5	2.7	1.3	2.3
CZ07	SDG&E	3.2	2.0	1.9	1.2	2.1	1.6	1.9	1.5	>1	>1	>1	>1	3.7	2.7	3.2	2.3
CZ08	SCE	1.9	2.0	1.1	1.2	1.3	1.7	1.2	1.5	>1	>1	>1	>1	2.2	2.7	1.9	2.4
CZ08-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.3	2.7	1.1	2.4
CZ09	SCE	1.9	2.0	1.1	1.2	1.3	1.7	1.2	1.5	>1	>1	>1	>1	2.2	2.6	1.9	2.3
CZ09-2	LA	1.1	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.3	2.6	1.2	2.3
CZ10	SDG&E	3.8	1.9	2.2	1.1	2.1	1.6	1.9	1.5	>1	3.3	>1	6.3	3.3	2.3	2.9	2.0
CZ10-2	SCE	2.1	1.9	1.2	1.1	1.3	1.6	1.2	1.5	>1	3.3	>1	6.3	2.0	2.3	1.8	2.0
CZ11	PG&E	3.6	1.9	2.1	1.1	2.2	1.6	2.0	1.5	1.1	2.6	1.5	3.6	3.2	2.4	2.8	2.1
CZ12	PG&E	3.5	1.9	2.1	1.1	2.2	1.6	2.0	1.5	0.9	2.5	1.2	3.2	3.1	2.4	2.7	2.1
CZ12-2	SMUD	1.4	1.9	0.8	1.1	1.1	1.6	1.04	1.5	>1	2.5	>1	3.2	1.9	2.4	1.6	2.1
CZ13	PG&E	3.5	1.8	2.0	1.1	2.2	1.5	2.0	1.4	1.1	2.5	1.5	3.6	3.1	2.3	2.7	2.0
CZ14	SDG&E	3.4	2.3	2.0	1.3	2.2	1.9	2.0	1.7	>1	2.3	>1	3.1	3.6	2.8	3.2	2.5
CZ14-2	SCE	1.9	2.3	1.1	1.3	1.3	1.9	1.2	1.7	>1	2.3	>1	3.1	2.2	2.8	1.9	2.5
CZ15	SCE	1.8	2.1	1.1	1.2	1.2	1.7	1.1	1.6	>1	7.5	>1	>1	1.8	2.4	1.6	2.1
CZ16	PG&E	3.9	2.0	2.3	1.1	2.3	1.6	2.1	1.5	0.3	0.4	0.4	0.6	2.5	1.8	2.2	1.6
CZ16-2	LA	1.2	2.0	0.7	1.1	0.7	1.6	0.7	1.5	>1	0.4	>1	0.6	1.3	1.8	1.2	1.6



Figure 39. Cost Effectiveness for Medium Retail - PV and Battery

CZ	Utility	Mixed Fuel								All-Electric							
		3kW		3kW		90 kW		90 kW		3kW		3kW		90 kW		90 kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.3	1.5	1.3	0.9	1.8	1.3	1.6	1.2	>1	3.0	>1	2.7	2.5	1.6	2.2	1.5
CZ02	PG&E	3.2	1.8	1.9	1.1	1.9	1.5	1.8	1.5	>1	>1	>1	>1	2.7	2.1	2.3	1.9
CZ03	PG&E	2.7	1.8	1.6	1.1	2.2	1.5	2.0	1.4	>1	>1	>1	>1	3.0	2.1	2.6	1.9
CZ04	PG&E	3.3	1.9	1.9	1.1	2.0	1.6	1.9	1.5	>1	>1	>1	>1	2.7	2.1	2.5	2.0
CZ04-2	CPAU	2.1	1.9	1.2	1.1	1.7	1.6	1.5	1.5	>1	>1	>1	>1	2.4	2.1	2.1	2.0
CZ05	PG&E	2.8	1.9	1.6	1.1	2.3	1.6	2.0	1.5	>1	>1	>1	>1	3.2	2.1	2.7	2.0
CZ05-2	SCG	2.8	1.9	1.6	1.1	2.3	1.6	2.0	1.5	>1	>1	>1	>1	3.7	1.9	3.2	1.6
CZ06	SCE	2.0	1.9	1.2	1.1	1.2	1.6	1.1	1.5	>1	>1	>1	>1	1.7	2.2	1.5	2.0
CZ06-2	LA	1.3	1.9	0.7	1.1	0.7	1.6	0.6	1.5	>1	>1	>1	>1	1.01	2.2	0.9	2.0
CZ07	SDG&E	4.0	2.0	2.4	1.2	1.5	1.6	1.6	1.6	>1	>1	>1	>1	2.4	2.3	2.3	2.1
CZ08	SCE	2.1	2.0	1.2	1.2	1.2	1.7	1.1	1.6	>1	>1	>1	>1	1.7	2.4	1.5	2.1
CZ08-2	LA	1.3	2.0	0.8	1.2	0.7	1.7	0.6	1.6	>1	>1	>1	>1	1.01	2.4	0.9	2.1
CZ09	SCE	2.0	2.0	1.2	1.2	1.2	1.7	1.1	1.5	>1	>1	>1	>1	1.8	2.4	1.6	2.1
CZ09-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.1	2.4	0.99	2.1
CZ10	SDG&E	3.8	2.0	2.2	1.2	1.7	1.6	1.7	1.5	>1	>1	>1	>1	2.6	2.3	2.5	2.0
CZ10-2	SCE	2.0	2.0	1.2	1.2	1.2	1.6	1.1	1.5	>1	>1	>1	>1	1.8	2.3	1.6	2.0
CZ11	PG&E	2.8	1.9	1.6	1.1	1.9	1.6	1.8	1.5	>1	>1	>1	>1	2.7	2.3	2.5	2.1
CZ12	PG&E	3.0	1.9	1.7	1.1	1.9	1.6	1.8	1.5	>1	>1	>1	>1	2.7	2.3	2.5	2.1
CZ12-2	SMUD	1.5	1.9	0.9	1.1	1.1	1.6	0.997	1.5	>1	>1	>1	>1	1.7	2.3	1.4	2.1
CZ13	PG&E	3.0	1.9	1.7	1.1	1.9	1.6	1.8	1.4	>1	>1	>1	>1	2.7	2.2	2.4	1.9
CZ14	SDG&E	3.5	2.2	2.1	1.3	1.6	1.8	1.5	1.6	>1	>1	>1	>1	2.5	2.6	2.2	2.2
CZ14-2	SCE	1.8	2.2	1.1	1.3	1.2	1.8	1.1	1.6	>1	>1	>1	>1	1.7	2.6	1.5	2.2
CZ15	SCE	1.9	2.0	1.1	1.2	1.1	1.7	1.02	1.5	>1	>1	>1	>1	1.7	2.4	1.5	2.1
CZ16	PG&E	3.7	2.0	2.1	1.2	2.1	1.7	1.9	1.6	0.6	0.5	0.5	0.4	2.7	2.0	2.3	1.8
CZ16-2	LA	1.3	2.0	0.7	1.2	0.7	1.7	0.6	1.6	>1	0.5	>1	0.4	1.2	2.0	1.0	1.8



Figure 40. Cost Effectiveness for Small Hotel - PV and Battery

CZ	Utility	Mixed Fuel								All-Electric							
		3kW		3kW		80kW		80kW		3kW		3kW		80kW		80kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.3	1.5	1.3	0.9	1.9	1.2	1.6	1.1	2.3	>1	2.3	>1	4.8	>1	4.7	>1
CZ02	PG&E	2.3	1.9	1.3	1.1	1.8	1.5	1.6	1.4	5.6	>1	5.6	>1	>1	>1	>1	>1
CZ03	PG&E	2.7	1.8	1.6	1.05	2.3	1.5	1.9	1.4	4.2	>1	4.2	>1	>1	>1	>1	>1
CZ04	PG&E	2.4	1.9	1.4	1.1	1.8	1.6	1.6	1.5	6.2	>1	6.2	>1	>1	>1	>1	>1
CZ04-2	CPAU	2.1	1.9	1.2	1.1	1.7	1.6	1.5	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ05	PG&E	2.9	1.9	1.7	1.1	2.4	1.6	2.0	1.5	3.9	>1	3.9	>1	>1	>1	>1	>1
CZ05-2	SCG	2.9	1.9	1.7	1.1	2.4	1.6	2.0	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ06	SCE	1.8	1.9	1.1	1.1	1.1	1.6	0.9	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ06-2	LA	1.1	1.9	0.7	1.1	0.7	1.6	0.6	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ07	SDG&E	2.6	2.0	1.5	1.1	1.4	1.6	1.3	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ08	SCE	1.9	2.0	1.1	1.2	1.2	1.7	1.0	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ08-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.6	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ09	SCE	1.9	1.9	1.1	1.1	1.2	1.6	0.997	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ09-2	LA	1.1	1.9	0.7	1.1	0.7	1.6	0.6	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ10	SDG&E	2.9	1.9	1.7	1.1	1.5	1.6	1.4	1.4	8.2	>1	8.2	>1	>1	>1	>1	>1
CZ10-2	SCE	1.7	1.9	0.99	1.1	1.2	1.6	0.99	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ11	PG&E	2.6	1.9	1.5	1.1	1.8	1.6	1.5	1.4	7.6	>1	7.6	>1	>1	>1	>1	>1
CZ12	PG&E	2.7	1.9	1.6	1.1	2.3	1.6	1.9	1.4	4.0	>1	4.0	>1	>1	>1	>1	>1
CZ12-2	SMUD	1.4	1.9	0.8	1.1	1.1	1.6	0.95	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ13	PG&E	2.6	1.8	1.5	1.1	1.8	1.5	1.5	1.4	7.7	>1	7.7	>1	>1	>1	>1	>1
CZ14	SDG&E	3.0	2.2	1.7	1.3	1.7	1.8	1.5	1.6	4.2	>1	4.2	>1	>1	>1	>1	>1
CZ14-2	SCE	1.8	2.2	1.1	1.3	1.3	1.8	1.1	1.6	>1	>1	>1	>1	>1	>1	>1	>1
CZ15	SCE	1.7	2.0	1.002	1.2	1.2	1.7	1.003	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ16	PG&E	2.7	2.0	1.6	1.2	1.9	1.6	1.7	1.5	2.1	5.7	2.1	5.6	5.8	>1	5.8	>1
CZ16-2	LA	1.02	2.0	0.6	1.2	0.6	1.6	0.6	1.5	>1	5.7	>1	5.6	>1	>1	>1	>1



## 5 Summary, Conclusions, and Further Considerations

The Reach Codes Team developed packages of energy efficiency measures as well as packages combining energy efficiency with PV generation and battery storage systems, simulated them in building modeling software, and gathered costs to determine the cost effectiveness of multiple scenarios. The Reach Codes team coordinated assumptions with multiple utilities, cities, and building community experts to develop a set of assumptions considered reasonable in the current market. Changing assumptions, such as the period of analysis, measure selection, cost assumptions, energy escalation rates, or utility tariffs are likely to change results.

### 5.1 Summary

Figure 41 through Figure 43 summarize results for each prototype and depict the compliance margins achieved for each climate zone and package. Because local reach codes must both exceed the Energy Commission performance budget (i.e., have a positive compliance margin) and be cost-effective, the Reach Code Team highlighted cells meeting these two requirements to help clarify the upper boundary for potential reach code policies:

- ◆ Cells highlighted in green depict a positive compliance margin and cost-effective results using both On-Bill and TDV approaches.
- ◆ Cells highlighted in yellow depict a positive compliance and cost-effective results using either the On-Bill or TDV approach.
- ◆ Cells not highlighted either depict a negative compliance margin or a package that was not cost effective using either the On-Bill or TDV approach.

For more detail on the results in the Figures, please refer to *Section 4 Results*. As described in Section 4.4, PV-only and PV+Battery packages in the mixed-fuel building were found to be cost effective across all prototypes, climate zones, and packages using the TDV approach, and results are not reiterated in the following figures.



**Figure 41. Medium Office Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	18%	18%	3%	-15%	7%	7%	-14%
CZ02	PG&E	17%	17%	4%	-7%	10%	10%	-5%
CZ03	PG&E	20%	20%	3%	-7%	16%	16%	-6%
CZ04	PG&E	14%	14%	5%	-6%	9%	9%	-3%
CZ04-2	CPAU	14%	14%	5%	-6%	9%	9%	-3%
CZ05	PG&E	18%	18%	4%	-8%	12%	12%	-6%
CZ05-2	SCG	18%	18%	4%	NA	NA	NA	NA
CZ06	SCE	20%	20%	3%	-4%	18%	18%	-2%
CZ06-2	LADWP	20%	20%	3%	-4%	18%	18%	-2%
CZ07	SDG&E	20%	20%	4%	-2%	20%	20%	1%
CZ08	SCE	18%	18%	4%	-2%	18%	18%	1%
CZ08-2	LADWP	18%	18%	4%	-2%	18%	18%	1%
CZ09	SCE	16%	16%	4%	-2%	15%	15%	2%
CZ09-2	LADWP	16%	16%	4%	-2%	15%	15%	2%
CZ10	SDG&E	17%	17%	4%	-4%	13%	13%	-1%
CZ10-2	SCE	17%	17%	4%	-4%	13%	13%	-1%
CZ11	PG&E	13%	13%	5%	-4%	10%	10%	0%
CZ12	PG&E	14%	14%	5%	-5%	10%	10%	-1%
CZ12-2	SMUD	14%	14%	5%	-5%	10%	10%	-1%
CZ13	PG&E	13%	13%	5%	-4%	9%	9%	0%
CZ14	SDG&E	14%	14%	5%	-5%	9%	9%	-1%
CZ14-2	SCE	14%	14%	5%	-5%	9%	9%	-1%
CZ15	SCE	12%	12%	5%	-2%	10%	10%	3%
CZ16	PG&E	14%	14%	5%	-27%	-15%	-15%	-26%
CZ16-2	LADWP	14%	14%	5%	-27%	-15%	-15%	-26%



**Figure 42. Medium Retail Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	18%	18%	2%	-4.1%	15%	15%	-2%
CZ02	PG&E	13%	13%	3%	-1.0%	13%	13%	3%
CZ03	PG&E	16%	16%	2%	-0.4%	16%	16%	2%
CZ04	PG&E	14%	14%	3%	-0.1%	14%	14%	3%
CZ04-2	CPAU	14%	14%	3%	-0.1%	14%	14%	3%
CZ05	PG&E	16%	16%	1%	-1.2%	15%	15%	1%
CZ05-2	SCG	16%	16%	1%	NA	NA	NA	NA
CZ06	SCE	10%	10%	3%	0.5%	11%	11%	3%
CZ06-2	LADWP	10%	10%	3%	0.5%	11%	11%	3%
CZ07	SDG&E	13%	13%	2%	0.3%	13%	13%	3%
CZ08	SCE	10%	10%	3%	0.4%	10%	10%	4%
CZ08-2	LADWP	10%	10%	3%	0.4%	10%	10%	4%
CZ09	SCE	10%	10%	4%	0.4%	10%	10%	4%
CZ09-2	LADWP	10%	10%	4%	0.4%	10%	10%	4%
CZ10	SDG&E	12%	12%	4%	0.1%	12%	12%	4%
CZ10-2	SCE	12%	12%	4%	0.1%	12%	12%	4%
CZ11	PG&E	13%	13%	4%	0.5%	12%	12%	5%
CZ12	PG&E	13%	13%	4%	-0.1%	12%	12%	4%
CZ12-2	SMUD	13%	13%	4%	-0.1%	12%	12%	4%
CZ13	PG&E	15%	15%	4%	-0.4%	14%	14%	4%
CZ14	SDG&E	13%	13%	4%	0.7%	15%	15%	5%
CZ14-2	SCE	13%	13%	4%	0.7%	15%	15%	5%
CZ15	SCE	12%	12%	5%	0.9%	12%	12%	6%
CZ16	PG&E	13%	13%	3%	-12.2%	3%	3%	-8%
CZ16-2	LADWP	13%	13%	3%	-12.2%	3%	3%	-8%



**Figure 43. Small Hotel Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	9%	9%	2%	-28%	1%	1%	-24%
CZ02	PG&E	7%	7%	3%	-12%	4%	4%	-11%
CZ03	PG&E	10%	10%	2%	-14%	6%	6%	-14%
CZ04	PG&E	6%	6%	2%	-13%	0.2%	0.2%	-13%
CZ04-2	CPAU	6%	6%	2%	-13%	0.2%	0.2%	-13%
CZ05	PG&E	9%	9%	2%	-15%	5%	5%	-15%
CZ05-2	SCG	9%	9%	2%	NA	NA	NA	NA
CZ06	SCE	8%	8%	2%	-5%	7%	7%	-15%
CZ06-2	LADWP	8%	8%	2%	-5%	7%	7%	-15%
CZ07	SDG&E	8%	8%	2%	-7%	7%	7%	-7%
CZ08	SCE	7%	7%	2%	-6%	3%	3%	-6%
CZ08-2	LADWP	7%	7%	2%	-6%	3%	3%	-6%
CZ09	SCE	6%	6%	3%	-6%	2%	2%	-4%
CZ09-2	LADWP	6%	6%	3%	-6%	2%	2%	-4%
CZ10	SDG&E	5%	5%	4%	-8%	2%	2%	-5%
CZ10-2	SCE	5%	5%	4%	-8%	2%	2%	-5%
CZ11	PG&E	4%	4%	4%	-10%	1%	1%	-7%
CZ12	PG&E	5%	5%	4%	-10%	2%	2%	-9%
CZ12-2	SMUD	5%	5%	4%	-10%	2%	2%	-9%
CZ13	PG&E	4%	4%	3%	-10%	0.3%	0.3%	-7%
CZ14	SDG&E	4%	4%	4%	-11%	0.1%	0.1%	-7%
CZ14-2	SCE	4%	4%	4%	-11%	0.1%	0.1%	-7%
CZ15	SCE	3%	3%	5%	-4%	2%	2%	0.04%
CZ16	PG&E	6%	6%	3%	-50%	-14%	-14%	-39%
CZ16-2	LADWP	6%	6%	3%	-50%	-14%	-14%	-39%

## 5.2 Conclusions and Further Considerations

Findings are specific to the scenarios analyzed under this specific methodology, and largely pertain to office, retail, and hotel-type occupancies. Nonresidential buildings constitute a wide variety of occupancy profiles and process loads, making findings challenging to generalize across multiple building types.

Findings indicate the following overall conclusions:

1. This study assumed that electrifying space heating and service water heating could eliminate natural gas infrastructure alone, because these were the only gas end-uses included the prototypes. Avoiding the installation of natural gas infrastructure results in significant cost savings and is a primary factor toward cost-effective outcomes in all-electric designs, even with necessary increases in electrical capacity.
2. There is ample opportunity for cost effective energy efficiency improvements, as demonstrated by the compliance margins achieved in many of the efficiency-only and efficiency + PV packages. Though much of the energy savings are attributable to lighting measures, efficiency measures selected for these prototypes are confined to the building systems that can be modeled. There is



likely further opportunity for energy savings through measures that cannot be currently demonstrated in compliance software, such as high-performance control sequences or variable speed parallel fan powered boxes.

3. High efficiency appliances triggering federal preemption do not achieve as high compliance margins as the other efficiency measures analyzed in this study. Cost effectiveness appears to be dependent on the system type and building type. Nonetheless, specifying high efficiency equipment will always be a key feature in integrated design.
4. Regarding the Small Hotel prototype:
  - a. The Small Hotel presents a challenging prototype to cost-effectively exceed the state's energy performance budget without efficiency measures. The Reach Code Team is uncertain of the precision of the results due to the inability to directly model either drain water heat recovery or a central heat pump water heater with a recirculation loop.
  - b. Hotel results may be applicable to high-rise (4 or more stories) multifamily buildings. Both hotel and multifamily buildings have the same or similar mandatory and prescriptive compliance options for hot water systems, lighting, and envelope. Furthermore, the Alternate Calculation Method Reference Manual specifies the same baseline HVAC system for both building types.
  - c. Hotel compliance margins were the lowest among the three building types analyzed, and thus the most conservative performance thresholds applicable to other nonresidential buildings not analyzed in this study. As stated previously, the varying occupancy and energy profiles of nonresidential buildings makes challenging to directly apply these results across all buildings.
5. Many all-electric and solar PV packages demonstrated greater GHG reductions than their mixed-fuel counterparts, contrary to TDV-based performance, suggesting a misalignment among the TDV metric and California's long-term GHG-reduction goals. The Energy Commission has indicated that they are aware of this issue and are seeking to address it.
6. Changes to the Nonresidential Alternative Calculation Method (ACM) Reference Manual can drastically impact results. Two examples include:
  - a. When performance modeling residential buildings, the Standard Design is electric if the Proposed Design is electric, which removes TDV-related penalties and associated negative compliance margins. This essentially allows for a compliance pathway for all-electric residential buildings. If nonresidential buildings were treated in the same way, all-electric cost effectiveness using the TDV approach would improve.
  - b. The baseline mixed-fuel system for a hotel includes a furnace in each guest room, which carries substantial plumbing costs and labor costs for assembly. A change in the baseline system would lead to different base case costs and different cost effectiveness outcomes.
7. All-electric federal code-minimum packages appear to be cost effective, largely due to avoided natural gas infrastructure, but in most cases do not comply with the Energy Commission's minimum performance budget (as described in item 7a above). For most cases it appears that adding cost-effective efficiency measures achieves compliance. All-electric nonresidential projects can leverage the initial cost savings of avoiding natural gas infrastructure by adding energy efficiency measures that would not be cost effective independently.

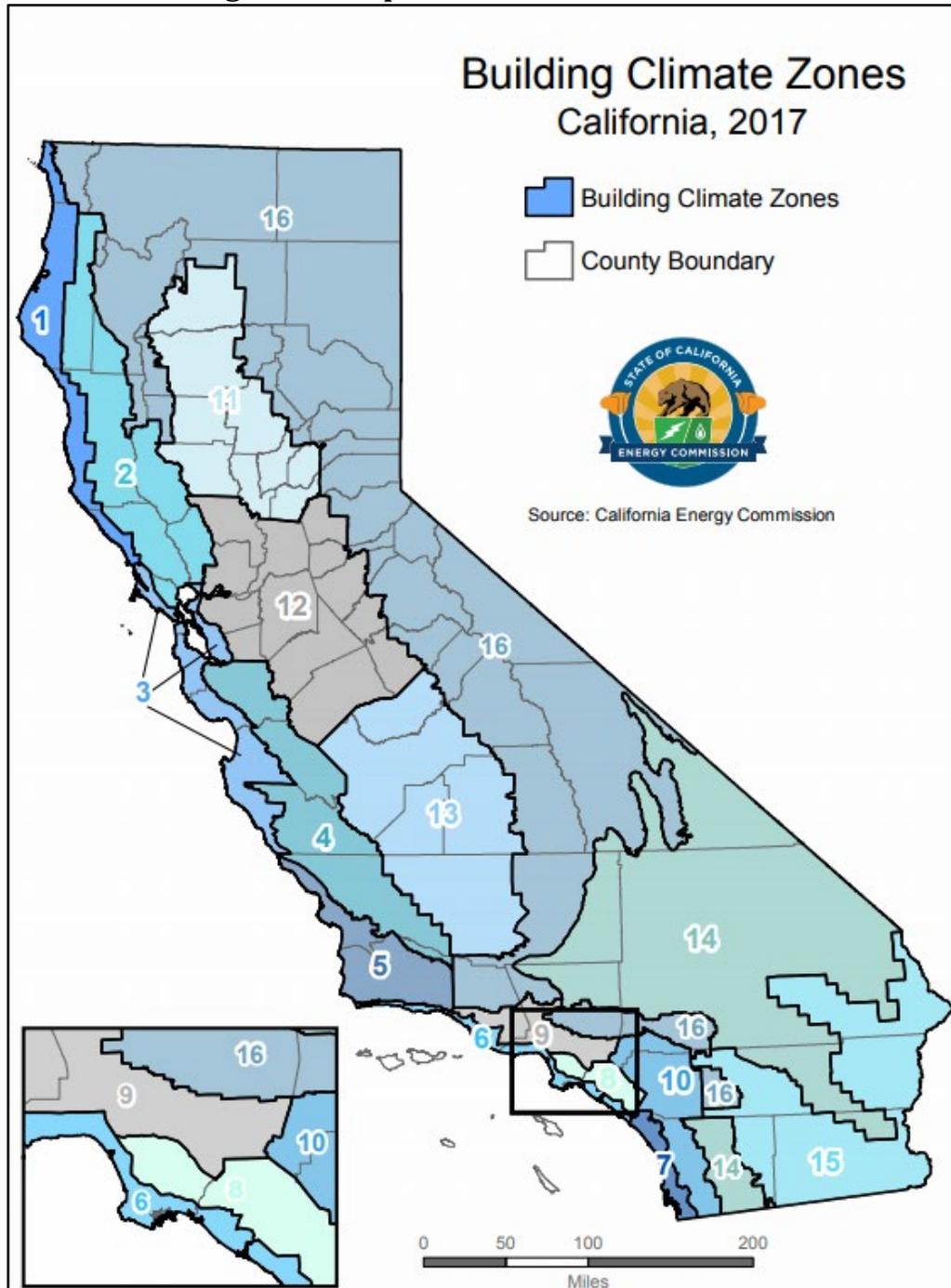
## 6 Appendices

### 6.1 Map of California Climate Zones

Climate zone geographical boundaries are depicted in Figure 44. The map in Figure 44 along with a zip-code search directory is available at:

[https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)

Figure 44. Map of California Climate Zones



## 6.2 Lighting Efficiency Measures

Figure 45 details the applicability and impact of each lighting efficiency measure by prototype and space function and includes the resulting LPD that is modeled as the proposed by building type and by space function.

**Figure 45. Impact of Lighting Measures on Proposed LPDs by Space Function**

Space Function	Baseline	Impact				Modeled Proposed
	LPD (W/ft <sup>2</sup> )	Interior Lighting Reduced LPD	Institutional Tuning	Daylight Dimming Plus OFF	Occupant Sensing in Open Office Plan	LPD (W/ft <sup>2</sup> )
Medium Office						
Office Area (Open plan office) - Interior	0.65	15%	10%	-	17%	0.429
Office Area (Open plan office) - Perimeter	0.65	15%	5%	10%	30%	0.368
Medium Retail						
Commercial/Industrial Storage (Warehouse)	0.45	10%	5%	-	-	0.386
Main Entry Lobby	0.85	10%	5%	-	-	0.729
Retail Sales Area (Retail Merchandise Sales)	0.95	5%	5%	-	-	0.857
Small Hotel						
Commercial/Industrial Storage (Warehouse)	0.45	10%	5%	-	-	0.386
Convention, Conference, Multipurpose, and Meeting	0.85	10%	5%	-	-	0.729
Corridor Area	0.60	10%	5%	-	-	0.514
Exercise/Fitness Center and Gymnasium Areas	0.50	10%	-	-	-	0.450
Laundry Area	0.45	10%	-	-	-	0.405
Lounge, Breakroom, or Waiting Area	0.65	10%	5%	-	-	0.557
Mechanical	0.40	10%	-	-	-	0.360
Office Area (>250 ft <sup>2</sup> )	0.65	10%	5%	-	-	0.557

## 6.3 Drain Water Heat Recovery Measure Analysis

To support potential DWHR savings in the Small Hotel prototype, the Reach Code Team modeled the drain water heat recovery measure in CBECC-Res 2019 in the all-electric and mixed fuel 6,960 ft<sup>2</sup> prototype residential buildings. The Reach Code Team assumed one heat recovery device for every three showers assuming unequal flow to the shower. Based on specifications from three different drain water heat recovery device manufacturers for device effectiveness in hotel applications, the team assumed a heat recovery efficiency of 50 percent.

The Reach Code Team modeled mixed fuel and all-electric residential prototype buildings both with and without heat recovery in each climate zone. Based on these model results, the Reach Code Team determined the percentage savings of domestic water heating energy in terms of gas, electricity, and TDV for mixed fuel and all-electric, in each climate zone. The Reach Code Team then applied the savings



percentages to the Small Hotel prototype domestic water heating energy in both the mixed-fuel and all-electric to determine energy savings for the drain water heat recovery measure in the Small Hotel. The Reach Code Team applied volumetric energy rates to estimate on-bill cost impacts from this measure.

### 6.4 Utility Rate Schedules

The Reach Codes Team used the IOU and POU rates depicted in Figure 46 to determine the On-Bill savings for each prototype.

**Figure 46. Utility Tariffs Analyzed Based on Climate Zone – Detailed View**

Climate Zones	Electric / Gas Utility	Electricity (Time-of-use)			Natural Gas
		Medium Office	Medium Retail	Small Hotel	All Prototypes
CZ01	PG&E	A-10	A-1	A-1 or A-10	G-NR1
CZ02	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ03	PG&E	A-10	A-1 or A-10	A-1 or A-10	G-NR1
CZ04	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ04-2	CPAU/PG&E	E-2	E-2	E-2	G-NR1
CZ05	PG&E	A-10	A-1	A-1 or A-10	G-NR1
CZ05-2	PG&E/SCG	A-10	A-1	A-1 or A-10	G-10 (GN-10)
CZ06	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ06	LADWP/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ07	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ08	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ08-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)
CZ09	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ09-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)
CZ10	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2	G-10 (GN-10)
CZ10-2	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ11	PG&E	A-10	A-10	A-10	G-NR1
CZ12	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ12-2	SMUD/PG&E	GS	GS	GS	G-NR1
CZ13	PG&E	A-10	A-10	A-10	G-NR1
CZ14	SCE/SCG	TOU-GS-3	TOU-GS-3	TOU-GS-3	G-10 (GN-10)
CZ14-2	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ15	SCE/SCG	TOU-GS-3	TOU-GS-2	TOU-GS-2	G-10 (GN-10)
CZ16	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ16-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)



## 6.5 Mixed Fuel Baseline Energy Figures

Figures 47 to 49 show the annual electricity and natural gas consumption and cost, compliance TDV, and GHG emissions for each prototype under the mixed fuel design baseline.

**Figure 47. Medium Office – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Medium Office Mixed Fuel Baseline</b>							
CZ01	PG&E	358,455	4,967	\$109,507	\$6,506	84	266,893
CZ02	PG&E	404,865	3,868	\$130,575	\$5,256	122	282,762
CZ03	PG&E	370,147	3,142	\$116,478	\$4,349	88	251,759
CZ04	PG&E	431,722	3,759	\$140,916	\$5,144	141	299,993
CZ04-2	CPAU	431,722	3,759	\$75,363	\$5,144	141	299,993
CZ05	PG&E	400,750	3,240	\$131,277	\$4,481	106	269,768
CZ05-2	SCG	400,750	3,240	\$131,277	\$3,683	106	269,768
CZ06	SCE	397,441	2,117	\$74,516	\$2,718	105	253,571
CZ06-2	LA	397,441	2,117	\$44,311	\$2,718	105	253,571
CZ07	SDG&E	422,130	950	\$164,991	\$4,429	118	257,324
CZ08	SCE	431,207	1,219	\$79,181	\$1,820	132	265,179
CZ08-2	LA	431,207	1,219	\$46,750	\$1,820	132	265,179
CZ09	SCE	456,487	1,605	\$86,190	\$2,196	155	287,269
CZ09-2	LA	456,487	1,605	\$51,111	\$2,196	155	287,269
CZ10	SDG&E	431,337	2,053	\$173,713	\$5,390	130	272,289
CZ10-2	SCE	431,337	2,053	\$80,636	\$2,603	130	272,289
CZ11	PG&E	464,676	3,062	\$150,520	\$4,333	163	310,307
CZ12	PG&E	441,720	3,327	\$142,902	\$4,647	152	299,824
CZ12-2	SMUD	441,720	3,327	\$65,707	\$4,647	152	299,824
CZ13	PG&E	471,540	3,063	\$150,919	\$4,345	161	316,228
CZ14	SDG&E	467,320	3,266	\$185,812	\$6,448	165	314,258
CZ14-2	SCE	467,320	3,266	\$92,071	\$3,579	165	314,258
CZ15	SCE	559,655	1,537	\$105,388	\$2,058	211	347,545
CZ16	PG&E	405,269	6,185	\$127,201	\$8,056	116	312,684
CZ16-2	LA	405,269	6,185	\$43,115	\$8,056	116	312,684



**Figure 48. Medium Retail – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Medium Retail Mixed Fuel Baseline</b>							
CZ01	PG&E	184,234	3,893	\$43,188	\$5,247	155	156,972
CZ02	PG&E	214,022	2,448	\$70,420	\$3,572	202	157,236
CZ03	PG&E	199,827	1,868	\$47,032	\$2,871	165	140,558
CZ04	PG&E	208,704	1,706	\$66,980	\$2,681	187	143,966
CZ04-2	CPAU	208,704	1,706	\$36,037	\$2,681	187	143,966
CZ05	PG&E	195,864	1,746	\$45,983	\$2,697	155	135,849
CZ05-2	SCG	195,864	1,746	\$45,983	\$2,342	155	135,849
CZ06	SCE	211,123	1,002	\$36,585	\$1,591	183	135,557
CZ06-2	LA	211,123	1,002	\$21,341	\$1,591	183	135,557
CZ07	SDG&E	211,808	522	\$75,486	\$4,055	178	130,436
CZ08	SCE	212,141	793	\$36,758	\$1,373	190	133,999
CZ08-2	LA	212,141	793	\$21,436	\$1,373	190	133,999
CZ09	SCE	227,340	970	\$40,083	\$1,560	218	146,680
CZ09-2	LA	227,340	970	\$23,487	\$1,560	218	146,680
CZ10	SDG&E	235,465	1,262	\$87,730	\$4,700	228	154,572
CZ10-2	SCE	235,465	1,262	\$41,000	\$1,853	228	154,572
CZ11	PG&E	234,560	2,415	\$76,670	\$3,547	244	170,232
CZ12	PG&E	228,958	2,309	\$75,084	\$3,426	234	165,133
CZ12-2	SMUD	228,958	2,309	\$32,300	\$3,426	234	165,133
CZ13	PG&E	242,927	1,983	\$81,995	\$3,034	258	170,345
CZ14	SDG&E	264,589	1,672	\$97,581	\$5,059	277	178,507
CZ14-2	SCE	264,589	1,672	\$46,217	\$2,172	277	178,507
CZ15	SCE	290,060	518	\$50,299	\$1,083	300	179,423
CZ16	PG&E	212,204	4,304	\$67,684	\$5,815	197	180,630
CZ16-2	LA	212,204	4,304	\$20,783	\$5,815	197	180,630



**Figure 49. Small Hotel – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Small Hotel Mixed Fuel Baseline</b>							
CZ01	PG&E	177,734	16,936	40,778	20,465	110	340,491
CZ02	PG&E	189,319	12,696	53,396	15,664	110	293,056
CZ03	PG&E	183,772	12,341	42,325	15,210	98	284,217
CZ04	PG&E	187,482	11,945	52,118	14,806	106	281,851
CZ04-2	CPAU	187,482	11,945	32,176	14,806	106	281,851
CZ05	PG&E	187,150	11,979	43,182	14,733	98	281,183
CZ05-2	SCG	187,150	11,979	43,182	10,869	98	281,183
CZ06	SCE	191,764	8,931	28,036	8,437	98	244,664
CZ06-2	LA	191,764	8,931	16,636	8,437	98	244,664
CZ07	SDG&E	189,174	8,207	58,203	10,752	90	233,884
CZ08	SCE	190,503	8,372	27,823	7,991	94	236,544
CZ08-2	LA	190,503	8,372	16,555	7,991	94	236,544
CZ09	SCE	198,204	8,421	30,262	8,030	103	242,296
CZ09-2	LA	198,204	8,421	17,951	8,030	103	242,296
CZ10	SDG&E	215,364	8,437	71,713	10,926	122	255,622
CZ10-2	SCE	215,364	8,437	33,736	8,043	122	255,622
CZ11	PG&E	219,852	10,271	63,724	12,882	131	282,232
CZ12	PG&E	199,499	10,422	46,245	13,022	115	270,262
CZ12-2	SMUD	199,499	10,422	26,872	13,022	115	270,262
CZ13	PG&E	226,925	10,048	65,559	12,629	132	284,007
CZ14	SDG&E	226,104	10,075	73,621	12,167	134	283,287
CZ14-2	SCE	226,104	10,075	35,187	9,350	134	283,287
CZ15	SCE	280,595	5,598	42,852	5,777	152	260,378
CZ16	PG&E	191,231	17,618	51,644	21,581	127	358,590
CZ16-2	LA	191,231	17,618	16,029	21,581	127	358,590

### 6.6 Hotel TDV Cost Effectiveness with Propane Baseline

The Reach Codes Team further analyzed TDV cost effectiveness of the all-electric packages with a mixed-fuel design baseline using propane instead of natural gas. Results for each package are shown in Figure 50. through Figure 53. below.

All electric models compared to a propane baseline have positive compliance margins in all climate zones when compared to results using a natural gas baseline. Compliance margin improvement is roughly 30 percent, which also leads to improved cost effectiveness for the all-electric packages. These outcomes are likely due to the TDV penalty associated with propane when compared to natural gas.



Across packages, TDV cost effectiveness with a propane baseline follows similar trends as the natural gas baseline. Adding efficiency measures increased compliance margins by 3 to 10 percent depending on climate zone, while adding high efficiency HVAC and SHW equipment alone increased compliance margins by smaller margins of about 2 to 4 percent compared to the All-Electric package.

**Figure 50. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 2 All-Electric Federal Code Minimum**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	\$-TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	-4%	(\$1,271,869)	(\$28,346)	44.9	\$1,243,523
CZ02	27%	(\$1,272,841)	\$170,263	>1	\$1,443,104
CZ03	-3%	(\$1,275,114)	(\$16,425)	77.6	\$1,258,689
CZ04	26%	(\$1,274,949)	\$155,466	>1	\$1,430,414
CZ05	27%	(\$1,275,002)	\$154,709	>1	\$1,429,710
CZ06	17%	(\$1,275,143)	\$126,212	>1	\$1,401,355
CZ07	25%	(\$1,273,490)	\$117,621	>1	\$1,391,111
CZ08	24%	(\$1,271,461)	\$122,087	>1	\$1,393,548
CZ09	23%	(\$1,273,259)	\$123,525	>1	\$1,396,784
CZ10	18%	(\$1,270,261)	\$109,522	>1	\$1,379,783
CZ11	19%	(\$1,271,070)	\$129,428	>1	\$1,400,498
CZ12	-4%	(\$1,272,510)	(\$26,302)	48.4	\$1,246,208
CZ13	18%	(\$1,270,882)	\$124,357	>1	\$1,395,239
CZ14	17%	(\$1,271,241)	\$117,621	>1	\$1,388,861
CZ15	-7%	(\$1,269,361)	(\$45,338)	28.0	\$1,224,023
CZ16	9%	(\$1,275,637)	\$68,272	>1	\$1,343,908



**Figure 51. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3A (All-Electric + EE)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$-TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	35%	(\$1,250,898)	\$252,831	>1	\$1,503,729
CZ02	34%	(\$1,251,870)	\$217,238	>1	\$1,469,108
CZ03	37%	(\$1,254,142)	\$218,642	>1	\$1,472,784
CZ04	31%	(\$1,250,769)	\$191,393	>1	\$1,442,162
CZ05	36%	(\$1,254,031)	\$208,773	>1	\$1,462,804
CZ06	25%	(\$1,250,964)	\$159,714	>1	\$1,410,677
CZ07	32%	(\$1,249,311)	\$154,111	>1	\$1,403,422
CZ08	29%	(\$1,247,282)	\$146,536	>1	\$1,393,818
CZ09	27%	(\$1,249,080)	\$146,671	>1	\$1,395,751
CZ10	22%	(\$1,246,081)	\$134,477	>1	\$1,380,559
CZ11	23%	(\$1,246,891)	\$157,138	>1	\$1,404,029
CZ12	27%	(\$1,248,330)	\$167,945	>1	\$1,416,276
CZ13	22%	(\$1,246,703)	\$149,270	>1	\$1,395,973
CZ14	21%	(\$1,247,061)	\$145,269	>1	\$1,392,331
CZ15	14%	(\$1,245,182)	\$93,647	>1	\$1,338,829
CZ16	20%	(\$1,254,665)	\$154,035	>1	\$1,408,701

**Figure 52. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3B (All-Electric + EE + PV)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$-TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	35%	(\$1,043,528)	\$511,688	>1	\$1,555,215
CZ02	34%	(\$1,044,500)	\$524,460	>1	\$1,568,960
CZ03	37%	(\$1,046,772)	\$518,485	>1	\$1,565,257
CZ04	31%	(\$1,043,399)	\$505,579	>1	\$1,548,978
CZ05	36%	(\$1,046,660)	\$526,668	>1	\$1,573,328
CZ06	25%	(\$1,043,594)	\$469,623	>1	\$1,513,216
CZ07	32%	(\$1,041,941)	\$471,513	>1	\$1,513,454
CZ08	29%	(\$1,039,912)	\$475,973	>1	\$1,515,885
CZ09	27%	(\$1,041,710)	\$467,971	>1	\$1,509,681
CZ10	22%	(\$1,038,711)	\$454,832	>1	\$1,493,543
CZ11	23%	(\$1,039,521)	\$474,844	>1	\$1,514,364
CZ12	27%	(\$1,040,960)	\$484,667	>1	\$1,525,627
CZ13	22%	(\$1,039,333)	\$454,108	>1	\$1,493,441
CZ14	21%	(\$1,039,691)	\$505,398	>1	\$1,545,090
CZ15	14%	(\$1,037,811)	\$423,879	>1	\$1,461,691
CZ16	20%	(\$1,047,295)	\$480,407	>1	\$1,527,702



**Figure 53. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3C (All Electric + HE)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	27%	(\$1,256,423)	\$194,975	>1	\$1,451,398
CZ02	28%	(\$1,258,328)	\$177,378	>1	\$1,435,706
CZ03	28%	(\$1,263,867)	\$164,094	>1	\$1,427,961
CZ04	26%	(\$1,262,963)	\$155,314	>1	\$1,418,277
CZ05	26%	(\$1,263,327)	\$153,271	>1	\$1,416,598
CZ06	17%	(\$1,263,779)	\$122,011	>1	\$1,385,790
CZ07	24%	(\$1,260,844)	\$116,751	>1	\$1,377,594
CZ08	25%	(\$1,256,326)	\$122,995	>1	\$1,379,321
CZ09	24%	(\$1,260,223)	\$128,482	>1	\$1,388,706
CZ10	20%	(\$1,253,181)	\$121,595	>1	\$1,374,776
CZ11	21%	(\$1,254,613)	\$143,658	>1	\$1,398,271
CZ12	23%	(\$1,257,919)	\$142,901	>1	\$1,400,820
CZ13	21%	(\$1,254,386)	\$138,625	>1	\$1,393,011
CZ14	20%	(\$1,254,978)	\$136,430	>1	\$1,391,407
CZ15	14%	(\$1,251,932)	\$96,087	>1	\$1,348,019
CZ16	15%	(\$1,263,534)	\$122,011	>1	\$1,385,545



## 6.7 PV-only and PV+Battery-only Cost Effectiveness Results Details

The Reach Code Tea evaluated cost effectiveness of installing a PV system and battery storage in six different measure combinations over a 2019 code-compliant baseline for all climate zones. The baseline for all nonresidential buildings is a mixed-fuel design.

All mixed fuel models are compliant with 2019 Title24, whereas all electric models can show negative compliance. The compliance margin is the same as that of their respective federal minimum design and is not affected by addition of solar PV or battery. These scenarios evaluate the cost effectiveness of PV and/or battery measure individually. The climate zones where all-electric design is not compliant will have the flexibility to ramp up the efficiency of appliance or add another measure to be code compliant, as per package 1B and 3B in main body of the report. The large negative lifecycle costs in all electric packages are due to lower all-electric HVAC system costs and avoided natural gas infrastructure costs. This is commonly applied across all climate zones and packages over any additional costs for PV and battery.

### 6.7.1 Cost Effectiveness Results – Medium Office

Figure 54 through Figure 61 contain the cost-effectiveness findings for the Medium Office packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV Only:** All packages are cost effective using the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are mostly cost effective on a TDV basis except in CZ1. As compared to the 3 kW PV only package, battery reduces cost effectiveness. This package is not cost effective for LADWP and SMUD territories using an On-Bill approach.
- ◆ **Mixed-Fuel + PV only:** The packages are less cost effective as compared to 3 kW PV packages in most climate zones. In areas served by LADWP, the B/C ratio is narrowly less than 1 and not cost effective.
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** The packages are cost effective in all climate zones except for in the areas served by LADWP. On-Bill and TDV B/C ratios are slightly lower compared to the PV only package.
- ◆ **All-Electric + 3 kW PV:** Packages are on-bill cost effective in ten of sixteen climate zones. Climate zones 1,2,4,12, and 16 were not found to be cost-effective from an on-bill perspective. These zones are within PG&E’s service area. Packages are cost effective using TDV in all climate zones except CZ16.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Packages are slightly more cost effective than the previous minimal PV only package. Packages are on-bill cost effective in most climate zones except for 1,2 and 16 from an on-bill perspective. These zones are within PG&E’s service area. Packages are cost effective using TDV in all climate zones except CZ16.
- ◆ **All-Electric + PV only:** All packages are cost effective and achieve savings using the On-Bill and TDV approaches.



- ◆ **All-Electric + PV + 50 kWh Battery:** All packages are cost effective and achieve savings using the On-Bill and TDV approaches. On-Bill and TDV B/C ratios are slightly lower compared to the PV only package.



Figure 54. Cost Effectiveness for Medium Office - Mixed Fuel + 3kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle \$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.8	\$5,566	\$15,743	\$8,448	2.8	1.5	\$10,177	\$2,882
CZ02	PG&E	4,785	0	0.9	\$5,566	\$20,372	\$10,500	3.7	1.9	\$14,806	\$4,934
CZ03	PG&E	4,660	0	0.9	\$5,566	\$20,603	\$9,975	3.7	1.8	\$15,037	\$4,409
CZ04	PG&E	5,056	0	1.0	\$5,566	\$20,235	\$11,073	3.6	2.0	\$14,669	\$5,507
CZ04-2	CPAU	5,056	0	1.0	\$5,566	\$11,945	\$11,073	2.1	2.0	\$6,379	\$5,507
CZ05	PG&E	5,027	0	1.0	\$5,566	\$23,159	\$10,834	4.2	1.9	\$17,593	\$5,268
CZ06	SCE	4,853	0	0.9	\$5,566	\$10,968	\$10,930	2.0	2.0	\$5,402	\$5,364
CZ06-2	LADWP	4,853	0	0.9	\$5,566	\$6,575	\$10,930	1.2	2.0	\$1,009	\$5,364
CZ07	SDG&E	4,960	0	1.0	\$5,566	\$17,904	\$11,025	3.2	2.0	\$12,338	\$5,459
CZ08	SCE	4,826	0	0.9	\$5,566	\$10,768	\$11,359	1.9	2.0	\$5,202	\$5,793
CZ08-2	LADWP	4,826	0	0.9	\$5,566	\$6,503	\$11,359	1.2	2.0	\$937	\$5,793
CZ09	SCE	4,889	0	1.0	\$5,566	\$10,622	\$11,216	1.9	2.0	\$5,056	\$5,650
CZ09-2	LADWP	4,889	0	1.0	\$5,566	\$6,217	\$11,216	1.1	2.0	\$651	\$5,650
CZ10	SDG&E	4,826	0	0.9	\$5,566	\$21,280	\$10,787	3.8	1.9	\$15,714	\$5,221
CZ10-2	SCE	4,826	0	0.9	\$5,566	\$11,598	\$10,787	2.1	1.9	\$6,032	\$5,221
CZ11	PG&E	4,701	0	0.9	\$5,566	\$19,869	\$10,644	3.6	1.9	\$14,303	\$5,078
CZ12	PG&E	4,707	0	0.9	\$5,566	\$19,643	\$10,644	3.5	1.9	\$14,077	\$5,078
CZ12-2	SMUD	4,707	0	0.9	\$5,566	\$8,005	\$10,644	1.4	1.9	\$2,439	\$5,078
CZ13	PG&E	4,633	0	0.9	\$5,566	\$19,231	\$10,262	3.5	1.8	\$13,665	\$4,696
CZ14	SDG&E	5,377	0	1.0	\$5,566	\$18,789	\$12,600	3.4	2.3	\$13,223	\$7,034
CZ14-2	SCE	5,377	0	1.0	\$5,566	\$10,512	\$12,600	1.9	2.3	\$4,946	\$7,034
CZ15	SCE	5,099	0	1.0	\$5,566	\$10,109	\$11,550	1.8	2.1	\$4,543	\$5,984
CZ16	PG&E	5,096	0	1.0	\$5,566	\$21,836	\$10,882	3.9	2.0	\$16,270	\$5,316
CZ16-2	LADWP	5,096	0	1.0	\$5,566	\$6,501	\$10,882	1.2	2.0	\$935	\$5,316



Figure 55. Cost Effectiveness for Medium Office – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	3,941	0	0.8	\$9,520	\$15,743	\$8,448	1.7	0.9	\$6,223	(\$1,072)
CZ02	PG&E	4,785	0	0.9	\$9,520	\$20,372	\$10,500	2.1	1.1	\$10,852	\$980
CZ03	PG&E	4,660	0	0.9	\$9,520	\$20,603	\$9,975	2.2	1.0	\$11,083	\$455
CZ04	PG&E	5,056	0	1.0	\$9,520	\$20,235	\$11,073	2.1	1.2	\$10,714	\$1,553
CZ04-2	CPAU	5,056	0	1.0	\$9,520	\$11,945	\$11,073	1.3	1.2	\$2,425	\$1,553
CZ05	PG&E	5,027	0	1.0	\$9,520	\$23,159	\$10,834	2.4	1.1	\$13,639	\$1,314
CZ06	SCE	4,853	0	0.9	\$9,520	\$10,968	\$10,930	1.2	1.1	\$1,448	\$1,410
CZ06-2	LADWP	4,853	0	0.9	\$9,520	\$6,575	\$10,930	0.7	1.1	(\$2,945)	\$1,410
CZ07	SDG&E	4,960	0	1.0	\$9,520	\$17,904	\$11,025	1.9	1.2	\$8,384	\$1,505
CZ08	SCE	4,826	0	0.9	\$9,520	\$10,768	\$11,359	1.1	1.2	\$1,248	\$1,839
CZ08-2	LADWP	4,826	0	0.9	\$9,520	\$6,503	\$11,359	0.7	1.2	(\$3,017)	\$1,839
CZ09	SCE	4,889	0	1.0	\$9,520	\$10,622	\$11,216	1.1	1.2	\$1,102	\$1,696
CZ09-2	LADWP	4,889	0	1.0	\$9,520	\$6,217	\$11,216	0.7	1.2	(\$3,303)	\$1,696
CZ10	SDG&E	4,826	0	0.9	\$9,520	\$21,280	\$10,787	2.2	1.1	\$11,760	\$1,267
CZ10-2	SCE	4,826	0	0.9	\$9,520	\$11,598	\$10,787	1.2	1.1	\$2,078	\$1,267
CZ11	PG&E	4,701	0	0.9	\$9,520	\$19,869	\$10,644	2.1	1.1	\$10,349	\$1,123
CZ12	PG&E	4,707	0	0.9	\$9,520	\$19,643	\$10,644	2.1	1.1	\$10,123	\$1,123
CZ12-2	SMUD	4,707	0	0.9	\$9,520	\$8,005	\$10,644	0.8	1.1	(\$1,515)	\$1,123
CZ13	PG&E	4,633	0	0.9	\$9,520	\$19,231	\$10,262	2.0	1.1	\$9,711	\$742
CZ14	SDG&E	5,377	0	1.0	\$9,520	\$18,789	\$12,600	2.0	1.3	\$9,269	\$3,080
CZ14-2	SCE	5,377	0	1.0	\$9,520	\$10,512	\$12,600	1.1	1.3	\$992	\$3,080
CZ15	SCE	5,099	0	1.0	\$9,520	\$10,109	\$11,550	1.1	1.2	\$589	\$2,030
CZ16	PG&E	5,096	0	1.0	\$9,520	\$21,836	\$10,882	2.3	1.1	\$12,316	\$1,362
CZ16-2	LADWP	5,096	0	1.0	\$9,520	\$6,501	\$10,882	0.7	1.1	(\$3,019)	\$1,362



**Figure 56. Cost Effectiveness for Medium Office – Mixed Fuel + 135kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel +135kW PV</b>											
CZ01	PG&E	177,340	0	34.3	\$302,856	\$526,352	\$380,399	1.7	1.3	\$223,497	\$77,544
CZ02	PG&E	215,311	0	41.5	\$302,856	\$666,050	\$471,705	2.2	1.6	\$363,194	\$168,849
CZ03	PG&E	209,717	0	40.7	\$302,856	\$645,010	\$449,797	2.1	1.5	\$342,154	\$146,942
CZ04	PG&E	227,535	0	44.0	\$302,856	\$686,434	\$497,431	2.3	1.6	\$383,578	\$194,575
CZ04-2	CPAU	227,535	0	44.0	\$302,856	\$537,521	\$497,431	1.8	1.6	\$234,665	\$194,575
CZ05	PG&E	226,195	0	44.1	\$302,856	\$753,230	\$486,596	2.5	1.6	\$450,374	\$183,741
CZ06	SCE	218,387	0	42.3	\$302,856	\$401,645	\$492,515	1.3	1.6	\$98,789	\$189,659
CZ06-2	LADWP	218,387	0	42.3	\$302,856	\$233,909	\$492,515	0.8	1.6	(\$68,947)	\$189,659
CZ07	SDG&E	223,185	0	43.3	\$302,856	\$623,078	\$496,667	2.1	1.6	\$320,223	\$193,811
CZ08	SCE	217,171	0	42.0	\$302,856	\$389,435	\$510,270	1.3	1.7	\$86,579	\$207,414
CZ08-2	LADWP	217,171	0	42.0	\$302,856	\$222,066	\$510,270	0.7	1.7	(\$80,790)	\$207,414
CZ09	SCE	220,010	0	43.2	\$302,856	\$387,977	\$505,783	1.3	1.7	\$85,122	\$202,928
CZ09-2	LADWP	220,010	0	43.2	\$302,856	\$226,516	\$505,783	0.7	1.7	(\$76,340)	\$202,928
CZ10	SDG&E	217,148	0	42.5	\$302,856	\$632,726	\$485,451	2.1	1.6	\$329,870	\$182,595
CZ10-2	SCE	217,148	0	42.5	\$302,856	\$394,884	\$485,451	1.3	1.6	\$92,028	\$182,595
CZ11	PG&E	211,556	0	40.9	\$302,856	\$671,691	\$478,912	2.2	1.6	\$368,835	\$176,056
CZ12	PG&E	211,824	0	40.9	\$302,856	\$653,242	\$478,101	2.2	1.6	\$350,386	\$175,245
CZ12-2	SMUD	211,824	0	40.9	\$302,856	\$345,255	\$478,101	1.1	1.6	\$42,399	\$175,245
CZ13	PG&E	208,465	0	40.5	\$302,856	\$651,952	\$462,732	2.2	1.5	\$349,096	\$159,876
CZ14	SDG&E	241,965	0	46.7	\$302,856	\$659,487	\$566,351	2.2	1.9	\$356,632	\$263,496
CZ14-2	SCE	241,965	0	46.7	\$302,856	\$401,712	\$566,351	1.3	1.9	\$98,856	\$263,496
CZ15	SCE	229,456	0	43.9	\$302,856	\$378,095	\$520,102	1.2	1.7	\$75,239	\$217,246
CZ16	PG&E	229,317	0	44.8	\$302,856	\$707,095	\$489,508	2.3	1.6	\$404,239	\$186,652
CZ16-2	LADWP	229,317	0	44.8	\$302,856	\$223,057	\$489,508	0.7	1.6	(\$79,799)	\$186,652



**Figure 57. Cost Effectiveness for Medium Office – Mixed Fuel + 135kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 135kW PV + 50 kWh Battery</b>											
CZ01	PG&E	176,903	0	35.3	\$330,756	\$525,948	\$381,450	1.6	1.2	\$195,192	\$50,694
CZ02	PG&E	214,861	0	42.6	\$330,756	\$665,864	\$472,898	2.0	1.4	\$335,108	\$142,142
CZ03	PG&E	209,255	0	41.8	\$330,756	\$644,170	\$451,611	1.9	1.4	\$313,414	\$120,855
CZ04	PG&E	227,076	0	45.0	\$330,756	\$685,605	\$502,108	2.1	1.5	\$354,849	\$171,352
CZ04-2	CPAU	227,076	0	45.0	\$330,756	\$536,463	\$502,108	1.6	1.5	\$205,707	\$171,352
CZ05	PG&E	225,752	0	45.1	\$330,756	\$753,558	\$487,742	2.3	1.5	\$422,803	\$156,986
CZ06	SCE	217,939	0	43.4	\$330,756	\$401,356	\$494,042	1.2	1.5	\$70,601	\$163,286
CZ06-2	LADWP	217,939	0	43.4	\$330,756	\$233,673	\$494,042	0.7	1.5	(\$97,083)	\$163,286
CZ07	SDG&E	222,746	0	44.4	\$330,756	\$628,383	\$498,147	1.9	1.5	\$297,627	\$167,391
CZ08	SCE	216,724	0	43.1	\$330,756	\$389,184	\$511,511	1.2	1.5	\$58,428	\$180,755
CZ08-2	LADWP	216,724	0	43.1	\$330,756	\$221,839	\$511,511	0.7	1.5	(\$108,917)	\$180,755
CZ09	SCE	219,563	0	44.2	\$330,756	\$387,728	\$506,929	1.2	1.5	\$56,972	\$176,173
CZ09-2	LADWP	219,563	0	44.2	\$330,756	\$226,303	\$506,929	0.7	1.5	(\$104,453)	\$176,173
CZ10	SDG&E	216,700	0	43.5	\$330,756	\$638,040	\$486,644	1.9	1.5	\$307,284	\$155,888
CZ10-2	SCE	216,700	0	43.5	\$330,756	\$394,633	\$486,644	1.2	1.5	\$63,877	\$155,888
CZ11	PG&E	211,129	0	41.9	\$330,756	\$670,932	\$481,298	2.0	1.5	\$340,177	\$150,543
CZ12	PG&E	211,386	0	41.9	\$330,756	\$652,465	\$482,826	2.0	1.5	\$321,709	\$152,070
CZ12-2	SMUD	211,386	0	41.9	\$330,756	\$344,668	\$482,826	1.0	1.5	\$13,913	\$152,070
CZ13	PG&E	208,045	0	41.5	\$330,756	\$651,191	\$473,280	2.0	1.4	\$320,435	\$142,524
CZ14	SDG&E	241,502	0	47.7	\$330,756	\$672,601	\$569,454	2.0	1.7	\$341,846	\$238,698
CZ14-2	SCE	241,502	0	47.7	\$330,756	\$401,450	\$569,454	1.2	1.7	\$70,694	\$238,698
CZ15	SCE	229,062	0	44.8	\$330,756	\$377,827	\$521,963	1.1	1.6	\$47,071	\$191,208
CZ16	PG&E	228,825	0	45.9	\$330,756	\$706,201	\$496,190	2.1	1.5	\$375,445	\$165,434
CZ16-2	LADWP	228,825	0	45.9	\$330,756	\$222,802	\$496,190	0.7	1.5	(\$107,953)	\$165,434



Figure 58. Cost Effectiveness for Medium Office– All-Electric + 3kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-49,716	4967	10.9	(\$80,523)	(\$84,765)	(\$49,972)	0.9	1.6	(\$4,242)	\$30,551
CZ02	PG&E	-44,899	3868	6.0	(\$66,965)	(\$83,115)	(\$30,928)	0.8	2.2	(\$16,150)	\$36,037
CZ03	PG&E	-31,226	3142	6.5	(\$75,600)	(\$39,441)	(\$19,617)	1.9	3.9	\$36,159	\$55,983
CZ04	PG&E	-43,772	3759	5.7	(\$62,282)	(\$70,999)	(\$29,496)	0.9	2.1	(\$8,717)	\$32,786
CZ04-2	CPAU	-43,772	3759	5.7	(\$62,282)	(\$8,050)	(\$29,496)	7.7	2.1	\$54,232	\$32,786
CZ05	PG&E	-35,504	3240	5.5	(\$77,773)	(\$42,559)	(\$29,162)	1.8	2.7	\$35,214	\$48,611
CZ06	SCE	-21,321	2117	4.0	(\$69,422)	\$35,862	(\$9,641)	>1	7.2	\$105,284	\$59,781
CZ06-2	LADWP	-21,321	2117	4.0	(\$69,422)	\$32,936	(\$9,641)	>1	7.2	\$102,358	\$59,781
CZ07	SDG&E	-7,943	950	1.9	(\$63,595)	\$64,781	(\$382)	>1	166.6	\$128,376	\$63,214
CZ08	SCE	-10,854	1219	2.5	(\$62,043)	\$28,651	(\$1,289)	>1	48.1	\$90,694	\$60,755
CZ08-2	LADWP	-10,854	1219	2.5	(\$62,043)	\$25,122	(\$1,289)	>1	48.1	\$87,165	\$60,755
CZ09	SCE	-14,878	1605	3.3	(\$56,372)	\$31,542	(\$3,246)	>1	17.4	\$87,913	\$53,126
CZ09-2	LADWP	-14,878	1605	3.3	(\$56,372)	\$28,145	(\$3,246)	>1	17.4	\$84,517	\$53,126
CZ10	SDG&E	-22,588	2053	3.1	(\$41,171)	\$59,752	(\$12,553)	>1	3.3	\$100,924	\$28,619
CZ10-2	SCE	-22,588	2053	3.1	(\$41,171)	\$32,039	(\$12,553)	>1	3.3	\$73,211	\$28,619
CZ11	PG&E	-35,455	3062	4.5	(\$57,257)	(\$53,776)	(\$22,194)	1.1	2.6	\$3,481	\$35,063
CZ12	PG&E	-38,704	3327	5.0	(\$61,613)	(\$66,808)	(\$24,819)	0.9	2.5	(\$5,195)	\$36,794
CZ12-2	SMUD	-38,704	3327	5.0	(\$61,613)	\$2,897	(\$24,819)	>1	2.5	\$64,510	\$36,794
CZ13	PG&E	-35,016	3063	4.7	(\$55,996)	(\$52,159)	(\$22,146)	1.1	2.5	\$3,836	\$33,849
CZ14	SDG&E	-38,945	3266	4.5	(\$58,426)	\$24,867	(\$25,821)	>1	2.3	\$83,293	\$32,605
CZ14-2	SCE	-38,945	3266	4.5	(\$58,426)	\$15,338	(\$25,821)	>1	2.3	\$73,764	\$32,605
CZ15	SCE	-14,818	1537	2.8	(\$29,445)	\$22,852	(\$3,914)	>1	7.5	\$52,298	\$25,532
CZ16	PG&E	-88,966	6185	6.6	(\$57,366)	(\$193,368)	(\$139,989)	0.3	0.4	(\$136,002)	(\$82,623)
CZ16-2	LADWP	-88,966	6185	6.6	(\$57,366)	\$36,354	(\$139,989)	>1	0.4	\$93,720	(\$82,623)



Figure 59. Cost Effectiveness for Medium Office – All-Electric + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	-49,716	4967	10.9	(\$78,897)	(\$84,765)	(\$49,972)	0.9	1.6	(\$5,868)	\$28,925
CZ02	PG&E	-44,899	3868	6.0	(\$78,897)	(\$83,115)	(\$30,928)	0.9	2.6	(\$4,218)	\$47,969
CZ03	PG&E	-31,226	3142	6.5	(\$78,897)	(\$39,441)	(\$19,617)	2.0	4.0	\$39,456	\$59,280
CZ04	PG&E	-43,772	3759	5.7	(\$78,897)	(\$70,999)	(\$29,496)	1.1	2.7	\$7,898	\$49,400
CZ04-2	CPAU	-43,772	3759	5.7	(\$78,897)	(\$8,050)	(\$29,496)	9.8	2.7	\$70,847	\$49,400
CZ05	PG&E	-35,504	3240	5.5	(\$78,897)	(\$42,559)	(\$29,162)	1.9	2.7	\$36,338	\$49,735
CZ06	SCE	-21,321	2117	4.0	(\$78,897)	\$35,862	(\$9,641)	>1	8.2	\$114,759	\$69,256
CZ06-2	LADWP	-21,321	2117	4.0	(\$78,897)	\$32,936	(\$9,641)	>1	8.2	\$111,833	\$69,256
CZ07	SDG&E	-7,943	950	1.9	(\$78,897)	\$64,781	(\$382)	>1	206.6	\$143,678	\$78,515
CZ08	SCE	-10,854	1219	2.5	(\$78,897)	\$28,651	(\$1,289)	>1	61.2	\$107,548	\$77,608
CZ08-2	LADWP	-10,854	1219	2.5	(\$78,897)	\$25,122	(\$1,289)	>1	61.2	\$104,019	\$77,608
CZ09	SCE	-14,878	1605	3.3	(\$78,897)	\$31,542	(\$3,246)	>1	24.3	\$110,439	\$75,651
CZ09-2	LADWP	-14,878	1605	3.3	(\$78,897)	\$28,145	(\$3,246)	>1	24.3	\$107,042	\$75,651
CZ10	SDG&E	-22,588	2053	3.1	(\$78,897)	\$59,752	(\$12,553)	>1	6.3	\$138,649	\$66,344
CZ10-2	SCE	-22,588	2053	3.1	(\$78,897)	\$32,039	(\$12,553)	>1	6.3	\$110,936	\$66,344
CZ11	PG&E	-35,455	3062	4.5	(\$78,897)	(\$53,776)	(\$22,194)	1.5	3.6	\$25,121	\$56,703
CZ12	PG&E	-38,704	3327	5.0	(\$78,897)	(\$66,808)	(\$24,819)	1.2	3.2	\$12,089	\$54,078
CZ12-2	SMUD	-38,704	3327	5.0	(\$78,897)	\$2,897	(\$24,819)	>1	3.2	\$81,794	\$54,078
CZ13	PG&E	-35,016	3063	4.7	(\$78,897)	(\$52,159)	(\$22,146)	1.5	3.6	\$26,738	\$56,751
CZ14	SDG&E	-38,945	3266	4.5	(\$78,897)	\$24,867	(\$25,821)	>1	3.1	\$103,764	\$53,076
CZ14-2	SCE	-38,945	3266	4.5	(\$78,897)	\$15,338	(\$25,821)	>1	3.1	\$94,235	\$53,076
CZ15	SCE	-14,818	1537	2.8	(\$78,897)	\$22,852	(\$3,914)	>1	20.2	\$101,749	\$74,983
CZ16	PG&E	-88,966	6185	6.6	(\$78,897)	(\$193,368)	(\$139,989)	0.4	0.6	(\$114,472)	(\$61,092)
CZ16-2	LADWP	-88,966	6185	6.6	(\$78,897)	\$36,354	(\$139,989)	>1	0.6	\$115,250	(\$61,092)



Figure 60. Cost Effectiveness for Medium Office – All-Electric + 135kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 135kW PV</b>											
CZ01	PG&E	123,683	4967	44.5	\$163,217	\$405,731	\$321,979	2.5	2.0	\$242,514	\$158,762
CZ02	PG&E	165,627	3868	46.6	\$176,775	\$562,528	\$430,276	3.2	2.4	\$385,753	\$253,501
CZ03	PG&E	173,831	3142	46.3	\$168,140	\$575,864	\$420,205	3.4	2.5	\$407,725	\$252,066
CZ04	PG&E	178,706	3759	48.7	\$181,458	\$601,431	\$456,861	3.3	2.5	\$419,973	\$275,403
CZ04-2	CPAU	178,706	3759	48.7	\$181,458	\$517,526	\$456,861	2.9	2.5	\$336,069	\$275,403
CZ05	PG&E	185,664	3240	48.6	\$165,967	\$664,842	\$446,600	4.0	2.7	\$498,875	\$280,633
CZ06	SCE	192,214	2117	45.3	\$174,317	\$423,657	\$471,944	2.4	2.7	\$249,340	\$297,626
CZ06-2	LADWP	192,214	2117	45.3	\$174,317	\$259,270	\$471,944	1.5	2.7	\$84,953	\$297,626
CZ07	SDG&E	210,282	950	44.3	\$180,145	\$669,979	\$485,260	3.7	2.7	\$489,834	\$305,115
CZ08	SCE	201,491	1219	43.5	\$181,696	\$407,277	\$497,622	2.2	2.7	\$225,580	\$315,925
CZ08-2	LADWP	201,491	1219	43.5	\$181,696	\$240,657	\$497,622	1.3	2.7	\$58,960	\$315,925
CZ09	SCE	200,242	1605	45.6	\$187,368	\$408,922	\$491,322	2.2	2.6	\$221,554	\$303,953
CZ09-2	LADWP	200,242	1605	45.6	\$187,368	\$248,452	\$491,322	1.3	2.6	\$61,084	\$303,953
CZ10	SDG&E	189,734	2053	44.7	\$202,568	\$667,551	\$462,111	3.3	2.3	\$464,982	\$259,543
CZ10-2	SCE	189,734	2053	44.7	\$202,568	\$412,659	\$462,111	2.0	2.3	\$210,091	\$259,543
CZ11	PG&E	171,399	3062	44.5	\$186,483	\$597,807	\$446,074	3.2	2.4	\$411,324	\$259,592
CZ12	PG&E	168,413	3327	45.0	\$182,127	\$571,758	\$442,638	3.1	2.4	\$389,632	\$260,511
CZ12-2	SMUD	168,413	3327	45.0	\$182,127	\$343,602	\$442,638	1.9	2.4	\$161,475	\$260,511
CZ13	PG&E	168,817	3063	44.3	\$187,744	\$581,964	\$430,324	3.1	2.3	\$394,220	\$242,580
CZ14	SDG&E	197,643	3266	50.1	\$185,314	\$667,762	\$527,930	3.6	2.8	\$482,449	\$342,616
CZ14-2	SCE	197,643	3266	50.1	\$185,314	\$408,424	\$527,930	2.2	2.8	\$223,110	\$342,616
CZ15	SCE	209,539	1537	45.7	\$214,294	\$390,267	\$504,638	1.8	2.4	\$175,972	\$290,343
CZ16	PG&E	135,255	6185	50.4	\$186,374	\$470,199	\$338,637	2.5	1.8	\$283,825	\$152,263
CZ16-2	LADWP	135,255	6185	50.4	\$186,374	\$250,807	\$338,637	1.3	1.8	\$64,433	\$152,263



**Figure 61. Cost Effectiveness for Medium Office – All-Electric + 135kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 135kW PV + 50 kWh Battery</b>											
CZ01	PG&E	123,280	4967	45.4	\$191,117	\$404,994	\$323,077	2.1	1.7	\$213,877	\$131,960
CZ02	PG&E	165,200	3868	47.7	\$204,675	\$561,747	\$431,469	2.7	2.1	\$357,072	\$226,795
CZ03	PG&E	173,384	3142	47.4	\$196,040	\$575,043	\$422,019	2.9	2.2	\$379,003	\$225,979
CZ04	PG&E	178,259	3759	49.8	\$209,358	\$600,621	\$461,634	2.9	2.2	\$391,263	\$252,276
CZ04-2	CPAU	178,259	3759	49.8	\$209,358	\$516,495	\$461,634	2.5	2.2	\$307,137	\$252,276
CZ05	PG&E	185,229	3240	49.7	\$193,867	\$664,046	\$447,793	3.4	2.3	\$470,179	\$253,926
CZ06	SCE	191,767	2117	46.5	\$202,217	\$423,369	\$473,519	2.1	2.3	\$221,152	\$271,301
CZ06-2	LADWP	191,767	2117	46.5	\$202,217	\$259,033	\$473,519	1.3	2.3	\$56,816	\$271,301
CZ07	SDG&E	209,848	950	45.4	\$208,045	\$675,307	\$486,787	3.2	2.3	\$467,262	\$278,743
CZ08	SCE	201,047	1219	44.7	\$209,596	\$407,027	\$498,910	1.9	2.4	\$197,430	\$289,314
CZ08-2	LADWP	201,047	1219	44.7	\$209,596	\$240,432	\$498,910	1.1	2.4	\$30,835	\$289,314
CZ09	SCE	199,802	1605	46.6	\$215,268	\$408,676	\$492,515	1.9	2.3	\$193,408	\$277,246
CZ09-2	LADWP	199,802	1605	46.6	\$215,268	\$248,242	\$492,515	1.2	2.3	\$32,974	\$277,246
CZ10	SDG&E	189,293	2053	45.7	\$230,468	\$672,867	\$463,352	2.9	2.0	\$442,399	\$232,884
CZ10-2	SCE	189,293	2053	45.7	\$230,468	\$412,412	\$463,352	1.8	2.0	\$181,944	\$232,884
CZ11	PG&E	170,987	3062	45.5	\$214,383	\$597,062	\$448,509	2.8	2.1	\$382,680	\$234,126
CZ12	PG&E	167,995	3327	46.0	\$210,027	\$571,002	\$447,411	2.7	2.1	\$360,975	\$237,384
CZ12-2	SMUD	167,995	3327	46.0	\$210,027	\$343,043	\$447,411	1.6	2.1	\$133,017	\$237,384
CZ13	PG&E	168,408	3063	45.3	\$215,644	\$581,225	\$440,920	2.7	2.0	\$365,580	\$225,275
CZ14	SDG&E	197,188	3266	51.2	\$213,214	\$680,893	\$531,080	3.2	2.5	\$467,679	\$317,866
CZ14-2	SCE	197,188	3266	51.2	\$213,214	\$408,166	\$531,080	1.9	2.5	\$194,952	\$317,866
CZ15	SCE	209,148	1537	46.6	\$242,194	\$390,000	\$506,499	1.6	2.1	\$147,806	\$264,305
CZ16	PG&E	134,809	6185	51.4	\$214,274	\$469,378	\$341,978	2.2	1.6	\$255,105	\$127,704
CZ16-2	LADWP	134,809	6185	51.4	\$214,274	\$250,580	\$341,978	1.2	1.6	\$36,306	\$127,704



### 6.7.2 **Cost Effectiveness Results – Medium Retail**

Figure 62 through Figure 69 contain the cost-effectiveness findings for the Medium Retail packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV:** Packages are cost effective and achieve savings for all climate zones using the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are less cost effective as compared to the 3 kW PV only package and not cost effective for LADWP and SMUD service area.
- ◆ **Mixed-Fuel + PV only:** Packages achieve positive energy cost savings and are cost effective using the On-Bill approach for all climate zones except for LADWP territory (CZs 6, 8, 9 and 16). Packages achieve positive savings and are cost effective using the TDV approach for all climate zones.
- ◆ **Mixed Fuel + PV + 5 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios but is still cost effective for all climate zones except for LADWP territory. Packages achieve savings and cost effective using the TDV approach for all climate zones.
- ◆ **All-Electric + 3 kW PV:** Packages are cost effective using the On-Bill and TDV approach for all climate zones except for CZ16 under PG&E service.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Similar to minimal PV only package, adding battery is cost effective as well using the On-Bill and TDV approach for all climate zones except for CZ16 under PG&E service.
- ◆ **All-Electric + PV only:** Packages are cost effective and achieve savings in all climate zones for both the On-Bill and TDV approaches
- ◆ **All-Electric + PV + 50 kWh Battery:** Adding battery slightly reduces B/C ratios for both the On-Bill and TDV approaches. Packages are not cost effective for all climate zones except CZ6, CZ8 and CZ9 under LADWP service area.



**Figure 62. Cost Effectiveness for Medium Retail – Mixed-Fuel + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.76	\$5,566	\$12,616	\$8,460	2.3	1.5	\$7,050	\$2,894
CZ02	PG&E	4,685	0	0.91	\$5,566	\$17,635	\$10,262	3.2	1.8	\$12,069	\$4,696
CZ03	PG&E	4,733	0	0.92	\$5,566	\$15,146	\$10,152	2.7	1.8	\$9,580	\$4,586
CZ04	PG&E	4,834	0	0.94	\$5,566	\$18,519	\$10,614	3.3	1.9	\$12,953	\$5,048
CZ04-2	CPAU	4,834	0	0.94	\$5,566	\$11,507	\$10,614	2.1	1.9	\$5,941	\$5,048
CZ05	PG&E	4,910	0	0.95	\$5,566	\$15,641	\$10,548	2.8	1.9	\$10,075	\$4,982
CZ06	SCE	4,769	0	0.93	\$5,566	\$11,374	\$10,724	2.0	1.9	\$5,808	\$5,158
CZ06-2	LA	4,769	0	0.93	\$5,566	\$7,069	\$10,724	1.3	1.9	\$1,503	\$5,158
CZ07	SDG&E	4,960	0	0.96	\$5,566	\$22,452	\$11,031	4.0	2.0	\$16,886	\$5,465
CZ08	SCE	4,826	0	0.93	\$5,566	\$11,838	\$11,339	2.1	2.0	\$6,272	\$5,773
CZ08-2	LA	4,826	0	0.93	\$5,566	\$7,342	\$11,339	1.3	2.0	\$1,776	\$5,773
CZ09	SCE	4,889	0	0.96	\$5,566	\$11,187	\$11,229	2.0	2.0	\$5,621	\$5,663
CZ09-2	LA	4,889	0	0.96	\$5,566	\$6,728	\$11,229	1.2	2.0	\$1,162	\$5,663
CZ10	SDG&E	4,948	0	0.97	\$5,566	\$20,999	\$10,987	3.8	2.0	\$15,433	\$5,421
CZ10-2	SCE	4,948	0	0.97	\$5,566	\$11,384	\$10,987	2.0	2.0	\$5,818	\$5,421
CZ11	PG&E	4,718	0	0.91	\$5,566	\$15,381	\$10,680	2.8	1.9	\$9,815	\$5,114
CZ12	PG&E	4,707	0	0.91	\$5,566	\$16,442	\$10,614	3.0	1.9	\$10,876	\$5,048
CZ12-2	SMUD	4,707	0	0.91	\$5,566	\$8,247	\$10,614	1.5	1.9	\$2,681	\$5,048
CZ13	PG&E	4,750	0	0.92	\$5,566	\$16,638	\$10,592	3.0	1.9	\$11,072	\$5,026
CZ14	SDG&E	5,258	0	1.01	\$5,566	\$19,576	\$12,218	3.5	2.2	\$14,010	\$6,652
CZ14-2	SCE	5,258	0	1.01	\$5,566	\$10,227	\$12,218	1.8	2.2	\$4,661	\$6,652
CZ15	SCE	4,997	0	0.96	\$5,566	\$10,476	\$11,339	1.9	2.0	\$4,910	\$5,773
CZ16	PG&E	5,336	0	1.04	\$5,566	\$20,418	\$11,361	3.7	2.0	\$14,852	\$5,795
CZ16-2	LA	5,336	0	1.04	\$5,566	\$6,987	\$11,361	1.3	2.0	\$1,421	\$5,795



Figure 63. Cost Effectiveness for Medium Retail – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	3,941	0	0.76	\$9,520	\$12,616	\$8,460	1.3	0.9	\$3,096	(\$1,060)
CZ02	PG&E	4,685	0	0.91	\$9,520	\$17,635	\$10,262	1.9	1.1	\$8,115	\$742
CZ03	PG&E	4,733	0	0.92	\$9,520	\$15,146	\$10,152	1.6	1.1	\$5,626	\$632
CZ04	PG&E	4,834	0	0.94	\$9,520	\$18,519	\$10,614	1.9	1.1	\$8,999	\$1,094
CZ04-2	CPAU	4,834	0	0.94	\$9,520	\$11,507	\$10,614	1.2	1.1	\$1,987	\$1,094
CZ05	PG&E	4,910	0	0.95	\$9,520	\$15,641	\$10,548	1.6	1.1	\$6,120	\$1,028
CZ05-2	SCG	4,910	0	0.95	\$9,520	\$15,641	\$10,548	1.6	1.1	\$6,120	\$1,028
CZ06	SCE	4,769	0	0.93	\$9,520	\$11,374	\$10,724	1.2	1.1	\$1,854	\$1,204
CZ06-2	LA	4,769	0	0.93	\$9,520	\$7,069	\$10,724	0.7	1.1	(\$2,452)	\$1,204
CZ07	SDG&E	4,960	0	0.96	\$9,520	\$22,452	\$11,031	2.4	1.2	\$12,932	\$1,511
CZ08	SCE	4,826	0	0.93	\$9,520	\$11,838	\$11,339	1.2	1.2	\$2,317	\$1,819
CZ08-2	LA	4,826	0	0.93	\$9,520	\$7,342	\$11,339	0.8	1.2	(\$2,178)	\$1,819
CZ09	SCE	4,889	0	0.96	\$9,520	\$11,187	\$11,229	1.2	1.2	\$1,667	\$1,709
CZ09-2	LA	4,889	0	0.96	\$9,520	\$6,728	\$11,229	0.7	1.2	(\$2,792)	\$1,709
CZ10	SDG&E	4,948	0	0.97	\$9,520	\$20,999	\$10,987	2.2	1.2	\$11,479	\$1,467
CZ10-2	SCE	4,948	0	0.97	\$9,520	\$11,384	\$10,987	1.2	1.2	\$1,863	\$1,467
CZ11	PG&E	4,718	0	0.91	\$9,520	\$15,381	\$10,680	1.6	1.1	\$5,861	\$1,160
CZ12	PG&E	4,707	0	0.91	\$9,520	\$16,442	\$10,614	1.7	1.1	\$6,922	\$1,094
CZ12-2	SMUD	4,707	0	0.91	\$9,520	\$8,247	\$10,614	0.9	1.1	(\$1,273)	\$1,094
CZ13	PG&E	4,750	0	0.92	\$9,520	\$16,638	\$10,592	1.7	1.1	\$7,117	\$1,072
CZ14	SDG&E	5,258	0	1.01	\$9,520	\$19,576	\$12,218	2.1	1.3	\$10,056	\$2,698
CZ14-2	SCE	5,258	0	1.01	\$9,520	\$10,227	\$12,218	1.1	1.3	\$707	\$2,698
CZ15	SCE	4,997	0	0.96	\$9,520	\$10,476	\$11,339	1.1	1.2	\$956	\$1,819
CZ16	PG&E	5,336	0	1.04	\$9,520	\$20,418	\$11,361	2.1	1.2	\$10,898	\$1,841
CZ16-2	LA	5,336	0	1.04	\$9,520	\$6,987	\$11,361	0.7	1.2	(\$2,533)	\$1,841



Figure 64. Cost Effectiveness for Medium Retail – Mixed-Fuel + 110kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 110kW PV</b>											
CZ01	PG&E	144,499	0	27.97	\$201,904	\$454,462	\$309,935	2.3	1.5	\$252,558	\$108,031
CZ02	PG&E	171,790	0	33.31	\$201,904	\$477,584	\$376,300	2.4	1.9	\$275,681	\$174,396
CZ03	PG&E	173,534	0	33.55	\$201,904	\$538,530	\$372,146	2.7	1.8	\$336,626	\$170,243
CZ04	PG&E	177,229	0	34.42	\$201,904	\$489,934	\$389,067	2.4	1.9	\$288,030	\$187,163
CZ04-2	CPAU	177,229	0	34.42	\$201,904	\$418,173	\$389,067	2.1	1.9	\$216,269	\$187,163
CZ05	PG&E	180,044	0	34.84	\$201,904	\$556,787	\$386,958	2.8	1.9	\$354,883	\$185,054
CZ06	SCE	174,855	0	33.92	\$201,904	\$288,188	\$393,198	1.4	1.9	\$86,284	\$191,295
CZ06-2	LA	174,855	0	33.92	\$201,904	\$165,538	\$393,198	0.8	1.9	(\$36,366)	\$191,295
CZ07	SDG&E	181,854	0	35.32	\$201,904	\$373,974	\$404,713	1.9	2.0	\$172,070	\$202,809
CZ08	SCE	176,954	0	34.23	\$201,904	\$284,481	\$415,789	1.4	2.1	\$82,577	\$213,885
CZ08-2	LA	176,954	0	34.23	\$201,904	\$161,366	\$415,789	0.8	2.1	(\$40,538)	\$213,885
CZ09	SCE	179,267	0	35.18	\$201,904	\$289,050	\$412,097	1.4	2.0	\$87,146	\$210,193
CZ09-2	LA	179,267	0	35.18	\$201,904	\$168,822	\$412,097	0.8	2.0	(\$33,082)	\$210,193
CZ10	SDG&E	181,443	0	35.41	\$201,904	\$410,310	\$402,999	2.0	2.0	\$208,406	\$201,095
CZ10-2	SCE	181,443	0	35.41	\$201,904	\$291,236	\$402,999	1.4	2.0	\$89,332	\$201,095
CZ11	PG&E	172,983	0	33.46	\$201,904	\$464,776	\$391,550	2.3	1.9	\$262,872	\$189,646
CZ12	PG&E	172,597	0	33.33	\$201,904	\$467,870	\$389,573	2.3	1.9	\$265,966	\$187,669
CZ12-2	SMUD	172,597	0	33.33	\$201,904	\$267,086	\$389,573	1.3	1.9	\$65,182	\$187,669
CZ13	PG&E	174,151	0	33.81	\$201,904	\$478,857	\$387,968	2.4	1.9	\$276,953	\$186,065
CZ14	SDG&E	192,789	0	36.97	\$201,904	\$396,181	\$448,268	2.0	2.2	\$194,277	\$246,364
CZ14-2	SCE	192,789	0	36.97	\$201,904	\$288,782	\$448,268	1.4	2.2	\$86,878	\$246,364
CZ15	SCE	183,214	0	35.12	\$201,904	\$277,867	\$415,789	1.4	2.1	\$75,963	\$213,885
CZ16	PG&E	195,665	0	37.97	\$201,904	\$522,352	\$416,558	2.6	2.1	\$320,448	\$214,654
CZ16-2	LA	195,665	0	37.97	\$201,904	\$171,802	\$416,558	0.9	2.1	(\$30,101)	\$214,654



**Figure 65. Cost Effectiveness for Medium Retail – Mixed-Fuel + 110 kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 110kW PV + 50 kWh Battery</b>											
CZ01	PG&E	143,423	0	29.48	\$229,804	\$452,119	\$324,373	2.0	1.4	\$222,315	\$94,569
CZ02	PG&E	170,542	0	35.14	\$229,804	\$486,704	\$398,363	2.1	1.7	\$256,900	\$168,559
CZ03	PG&E	172,266	0	35.66	\$229,804	\$535,974	\$395,374	2.3	1.7	\$306,170	\$165,570
CZ04	PG&E	175,940	0	36.32	\$229,804	\$525,788	\$422,579	2.3	1.8	\$295,984	\$192,775
CZ04-2	CPAU	175,940	0	36.32	\$229,804	\$416,019	\$422,579	1.8	1.8	\$186,216	\$192,775
CZ05	PG&E	178,728	0	36.91	\$229,804	\$554,968	\$409,086	2.4	1.8	\$325,164	\$179,283
CZ06	SCE	173,567	0	35.99	\$229,804	\$290,599	\$412,690	1.3	1.8	\$60,795	\$182,886
CZ06-2	LA	173,567	0	35.99	\$229,804	\$169,786	\$412,690	0.7	1.8	(\$60,018)	\$182,886
CZ07	SDG&E	180,508	0	37.61	\$229,804	\$425,793	\$427,040	1.9	1.9	\$195,989	\$197,236
CZ08	SCE	175,616	0	36.29	\$229,804	\$296,318	\$434,687	1.3	1.9	\$66,514	\$204,883
CZ08-2	LA	175,616	0	36.29	\$229,804	\$170,489	\$434,687	0.7	1.9	(\$59,315)	\$204,883
CZ09	SCE	177,966	0	36.74	\$229,804	\$300,540	\$421,195	1.3	1.8	\$70,736	\$191,391
CZ09-2	LA	177,966	0	36.74	\$229,804	\$178,852	\$421,195	0.8	1.8	(\$50,952)	\$191,391
CZ10	SDG&E	180,248	0	36.91	\$229,804	\$459,486	\$410,537	2.0	1.8	\$229,683	\$180,733
CZ10-2	SCE	180,248	0	36.91	\$229,804	\$301,219	\$410,537	1.3	1.8	\$71,415	\$180,733
CZ11	PG&E	171,779	0	34.85	\$229,804	\$490,245	\$417,679	2.1	1.8	\$260,442	\$187,875
CZ12	PG&E	171,392	0	34.77	\$229,804	\$497,363	\$417,371	2.2	1.8	\$267,559	\$187,567
CZ12-2	SMUD	171,392	0	34.77	\$229,804	\$273,783	\$417,371	1.2	1.8	\$43,979	\$187,567
CZ13	PG&E	173,052	0	34.97	\$229,804	\$488,196	\$397,791	2.1	1.7	\$258,392	\$167,987
CZ14	SDG&E	191,703	0	38.31	\$229,804	\$420,241	\$452,641	1.8	2.0	\$190,437	\$222,837
CZ14-2	SCE	191,703	0	38.31	\$229,804	\$294,010	\$452,641	1.3	2.0	\$64,206	\$222,837
CZ15	SCE	182,299	0	36.01	\$229,804	\$279,036	\$416,382	1.2	1.8	\$49,232	\$186,578
CZ16	PG&E	194,293	0	40.00	\$229,804	\$535,137	\$432,951	2.3	1.9	\$305,333	\$203,147
CZ16-2	LA	194,293	0	40.00	\$229,804	\$175,573	\$432,951	0.8	1.9	(\$54,231)	\$203,147



**Figure 66. Cost Effectiveness for Medium Retail – All-Electric + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-25,214	3893	14.61	(\$16,318)	\$4,288	(\$5,450)	>1	3.0	\$20,606	\$10,868
CZ02	PG&E	-17,101	2448	8.40	(\$20,734)	\$859	\$5,779	>1	>1	\$21,593	\$26,513
CZ03	PG&E	-9,851	1868	7.18	(\$17,381)	\$15,418	\$8,702	>1	>1	\$32,799	\$26,083
CZ04	PG&E	-9,353	1706	6.24	(\$16,166)	\$9,110	\$10,394	>1	>1	\$25,276	\$26,560
CZ04-2	CPAU	-9,353	1706	6.24	(\$16,166)	\$24,000	\$10,394	>1	>1	\$40,166	\$26,560
CZ05	PG&E	-9,423	1746	6.42	(\$18,776)	\$14,076	\$6,351	>1	>1	\$32,852	\$25,127
CZ06	SCE	-2,759	1002	4.24	(\$15,032)	\$29,710	\$12,592	>1	>1	\$44,741	\$27,623
CZ06-2	LA	-2,759	1002	4.24	(\$15,032)	\$26,292	\$12,592	>1	>1	\$41,324	\$27,623
CZ07	SDG&E	1,148	522	2.72	(\$17,032)	\$76,810	\$12,350	>1	>1	\$93,842	\$29,382
CZ08	SCE	-979	793	3.64	(\$20,192)	\$28,576	\$13,185	>1	>1	\$48,768	\$33,377
CZ08-2	LA	-979	793	3.64	(\$20,192)	\$24,475	\$13,185	>1	>1	\$44,667	\$33,377
CZ09	SCE	-2,352	970	4.28	(\$25,383)	\$29,776	\$13,207	>1	>1	\$55,159	\$38,590
CZ09-2	LA	-2,352	970	4.28	(\$25,383)	\$25,823	\$13,207	>1	>1	\$51,207	\$38,590
CZ10	SDG&E	-5,388	1262	4.95	(\$20,541)	\$75,458	\$11,493	>1	>1	\$95,999	\$32,034
CZ10-2	SCE	-5,388	1262	4.95	(\$20,541)	\$32,394	\$11,493	>1	>1	\$52,936	\$32,034
CZ11	PG&E	-14,533	2415	8.86	(\$25,471)	\$7,618	\$13,295	>1	>1	\$33,090	\$38,766
CZ12	PG&E	-14,764	2309	8.19	(\$25,774)	\$2,210	\$10,152	>1	>1	\$27,984	\$35,926
CZ12-2	SMUD	-14,764	2309	8.19	(\$25,774)	\$21,215	\$10,152	>1	>1	\$46,988	\$35,926
CZ13	PG&E	-12,069	1983	7.08	(\$21,428)	\$5,647	\$8,570	>1	>1	\$27,075	\$29,998
CZ14	SDG&E	-7,950	1672	6.45	(\$19,926)	\$60,412	\$16,679	>1	>1	\$80,338	\$36,605
CZ14-2	SCE	-7,950	1672	6.45	(\$19,926)	\$28,631	\$16,679	>1	>1	\$48,557	\$36,605
CZ15	SCE	2,534	518	3.10	(\$22,813)	\$27,271	\$17,162	>1	>1	\$50,084	\$39,976
CZ16	PG&E	-36,081	4304	14.26	(\$19,041)	(\$30,111)	(\$41,181)	0.6	0.5	(\$11,070)	(\$22,140)
CZ16-2	LA	-36,081	4304	14.26	(\$19,041)	\$45,706	(\$41,181)	>1	0.5	\$64,747	(\$22,140)



Figure 67. Cost Effectiveness for Medium Retail – All-Electric + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	-25,214	3893	14.61	(\$14,692)	\$4,288	(\$5,450)	>1	2.7	\$18,980	\$9,242
CZ02	PG&E	-17,101	2448	8.40	(\$14,692)	\$859	\$5,779	>1	>1	\$15,551	\$20,472
CZ03	PG&E	-9,851	1868	7.18	(\$14,692)	\$15,418	\$8,702	>1	>1	\$30,110	\$23,394
CZ04	PG&E	-9,353	1706	6.24	(\$14,692)	\$9,110	\$10,394	>1	>1	\$23,802	\$25,086
CZ04-2	CPAU	-9,353	1706	6.24	(\$14,692)	\$24,000	\$10,394	>1	>1	\$38,693	\$25,086
CZ05	PG&E	-9,423	1746	6.42	(\$14,692)	\$14,076	\$6,351	>1	>1	\$28,768	\$21,043
CZ06	SCE	-2,759	1002	4.24	(\$14,692)	\$29,710	\$12,592	>1	>1	\$44,402	\$27,284
CZ06-2	LA	-2,759	1002	4.24	(\$14,692)	\$26,292	\$12,592	>1	>1	\$40,984	\$27,284
CZ07	SDG&E	1,148	522	2.72	(\$14,692)	\$76,810	\$12,350	>1	>1	\$91,502	\$27,042
CZ08	SCE	-979	793	3.64	(\$14,692)	\$28,576	\$13,185	>1	>1	\$43,268	\$27,877
CZ08-2	LA	-979	793	3.64	(\$14,692)	\$24,475	\$13,185	>1	>1	\$39,167	\$27,877
CZ09	SCE	-2,352	970	4.28	(\$14,692)	\$29,776	\$13,207	>1	>1	\$44,468	\$27,899
CZ09-2	LA	-2,352	970	4.28	(\$14,692)	\$25,823	\$13,207	>1	>1	\$40,516	\$27,899
CZ10	SDG&E	-5,388	1262	4.95	(\$14,692)	\$75,458	\$11,493	>1	>1	\$90,150	\$26,185
CZ10-2	SCE	-5,388	1262	4.95	(\$14,692)	\$32,394	\$11,493	>1	>1	\$47,086	\$26,185
CZ11	PG&E	-14,533	2415	8.86	(\$14,692)	\$7,618	\$13,295	>1	>1	\$22,310	\$27,987
CZ12	PG&E	-14,764	2309	8.19	(\$14,692)	\$2,210	\$10,152	>1	>1	\$16,902	\$24,845
CZ12-2	SMUD	-14,764	2309	8.19	(\$14,692)	\$21,215	\$10,152	>1	>1	\$35,907	\$24,845
CZ13	PG&E	-12,069	1983	7.08	(\$14,692)	\$5,647	\$8,570	>1	>1	\$20,339	\$23,262
CZ14	SDG&E	-7,950	1672	6.45	(\$14,692)	\$60,412	\$16,679	>1	>1	\$75,104	\$31,371
CZ14-2	SCE	-7,950	1672	6.45	(\$14,692)	\$28,631	\$16,679	>1	>1	\$43,323	\$31,371
CZ15	SCE	2,534	518	3.10	(\$14,692)	\$27,271	\$17,162	>1	>1	\$41,963	\$31,855
CZ16	PG&E	-36,081	4304	14.26	(\$14,692)	(\$30,111)	(\$41,181)	0.5	0.4	(\$15,419)	(\$26,489)
CZ16-2	LA	-36,081	4304	14.26	(\$14,692)	\$45,706	(\$41,181)	>1	0.4	\$60,398	(\$26,489)



**Figure 68. Cost Effectiveness for Medium Retail – All-Electric + 110kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 110kW PV</b>											
CZ01	PG&E	115,344	3893	41.82	\$143,932	\$454,277	\$296,025	3.2	2.1	\$310,345	\$152,093
CZ02	PG&E	150,004	2448	40.80	\$139,516	\$470,236	\$371,817	3.4	2.7	\$330,720	\$232,301
CZ03	PG&E	158,951	1868	39.82	\$142,869	\$544,095	\$370,696	3.8	2.6	\$401,226	\$227,827
CZ04	PG&E	163,043	1706	39.73	\$144,084	\$488,619	\$388,847	3.4	2.7	\$344,534	\$244,763
CZ04-2	CPAU	163,043	1706	39.73	\$144,084	\$432,905	\$388,847	3.0	2.7	\$288,821	\$244,763
CZ05	PG&E	165,711	1746	40.30	\$141,473	\$565,525	\$382,760	4.0	2.7	\$424,051	\$241,287
CZ06	SCE	167,328	1002	37.24	\$145,218	\$306,670	\$395,066	2.1	2.7	\$161,452	\$249,848
CZ06-2	LA	167,328	1002	37.24	\$145,218	\$184,797	\$395,066	1.3	2.7	\$39,579	\$249,848
CZ07	SDG&E	178,042	522	37.07	\$143,218	\$428,332	\$406,032	3.0	2.8	\$285,114	\$262,814
CZ08	SCE	171,149	793	36.94	\$140,058	\$301,219	\$417,635	2.2	3.0	\$161,161	\$277,577
CZ08-2	LA	171,149	793	36.94	\$140,058	\$178,419	\$417,635	1.3	3.0	\$38,361	\$277,577
CZ09	SCE	172,027	970	38.50	\$134,867	\$307,640	\$414,075	2.3	3.1	\$172,773	\$279,208
CZ09-2	LA	172,027	970	38.50	\$134,867	\$187,813	\$414,075	1.4	3.1	\$52,946	\$279,208
CZ10	SDG&E	171,107	1262	39.40	\$139,708	\$463,692	\$403,505	3.3	2.9	\$323,984	\$263,796
CZ10-2	SCE	171,107	1262	39.40	\$139,708	\$311,464	\$403,505	2.2	2.9	\$171,755	\$263,796
CZ11	PG&E	153,732	2415	41.41	\$134,778	\$467,356	\$394,165	3.5	2.9	\$332,578	\$259,387
CZ12	PG&E	153,126	2309	40.61	\$134,476	\$467,106	\$389,111	3.5	2.9	\$332,630	\$254,635
CZ12-2	SMUD	153,126	2309	40.61	\$134,476	\$283,343	\$389,111	2.1	2.9	\$148,867	\$254,635
CZ13	PG&E	157,332	1983	39.97	\$138,822	\$477,831	\$385,947	3.4	2.8	\$339,008	\$247,124
CZ14	SDG&E	179,582	1672	42.42	\$140,324	\$437,575	\$452,729	3.1	3.2	\$297,251	\$312,405
CZ14-2	SCE	179,582	1672	42.42	\$140,324	\$309,064	\$452,729	2.2	3.2	\$168,740	\$312,405
CZ15	SCE	180,751	518	37.26	\$137,436	\$294,877	\$421,612	2.1	3.1	\$157,440	\$284,176
CZ16	PG&E	154,248	4304	51.20	\$141,209	\$473,892	\$364,016	3.4	2.6	\$332,682	\$222,807
CZ16-2	LA	154,248	4304	51.20	\$141,209	\$211,677	\$364,016	1.5	2.6	\$70,467	\$222,807



**Figure 69. Cost Effectiveness for Medium Retail – All-Electric + 110kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 90kW PV + 50 kWh Battery</b>											
CZ01	PG&E	114,356	3893	43.52	\$171,832	\$451,043	\$310,265	2.6	1.8	\$279,211	\$138,433
CZ02	PG&E	148,793	2448	42.89	\$167,416	\$475,081	\$394,099	2.8	2.4	\$307,664	\$226,683
CZ03	PG&E	157,707	1868	42.12	\$170,769	\$541,418	\$394,034	3.2	2.3	\$370,649	\$223,265
CZ04	PG&E	161,769	1706	41.82	\$171,984	\$523,603	\$422,535	3.0	2.5	\$351,618	\$250,551
CZ04-2	CPAU	161,769	1706	41.82	\$171,984	\$430,567	\$422,535	2.5	2.5	\$258,582	\$250,551
CZ05	PG&E	164,408	1746	42.68	\$169,373	\$561,966	\$405,087	3.3	2.4	\$392,592	\$235,714
CZ06	SCE	166,052	1002	39.48	\$173,118	\$306,697	\$414,756	1.8	2.4	\$133,579	\$241,638
CZ06-2	LA	166,052	1002	39.48	\$173,118	\$187,941	\$414,756	1.1	2.4	\$14,823	\$241,638
CZ07	SDG&E	176,705	522	39.47	\$171,118	\$479,038	\$428,490	2.8	2.5	\$307,920	\$257,372
CZ08	SCE	169,825	793	39.14	\$167,958	\$312,602	\$436,709	1.9	2.6	\$144,645	\$268,751
CZ08-2	LA	169,825	793	39.14	\$167,958	\$187,142	\$436,709	1.1	2.6	\$19,185	\$268,751
CZ09	SCE	170,747	970	40.23	\$162,767	\$318,113	\$423,370	2.0	2.6	\$155,346	\$260,604
CZ09-2	LA	170,747	970	40.23	\$162,767	\$197,006	\$423,370	1.2	2.6	\$34,240	\$260,604
CZ10	SDG&E	169,935	1262	41.08	\$167,608	\$503,504	\$411,284	3.0	2.5	\$335,896	\$243,675
CZ10-2	SCE	169,935	1262	41.08	\$167,608	\$317,927	\$411,284	1.9	2.5	\$150,319	\$243,675
CZ11	PG&E	152,559	2415	42.99	\$162,678	\$491,775	\$420,667	3.0	2.6	\$329,096	\$257,989
CZ12	PG&E	151,956	2309	42.21	\$162,376	\$494,703	\$417,063	3.0	2.6	\$332,327	\$254,687
CZ12-2	SMUD	151,956	2309	42.21	\$162,376	\$288,950	\$417,063	1.8	2.6	\$126,573	\$254,687
CZ13	PG&E	156,271	1983	41.25	\$166,722	\$485,422	\$395,770	2.9	2.4	\$318,699	\$229,047
CZ14	SDG&E	178,505	1672	43.94	\$168,224	\$452,456	\$457,387	2.7	2.7	\$284,232	\$289,163
CZ14-2	SCE	178,505	1672	43.94	\$168,224	\$311,520	\$457,387	1.9	2.7	\$143,296	\$289,163
CZ15	SCE	179,840	518	38.23	\$165,336	\$296,004	\$422,293	1.8	2.6	\$130,668	\$256,957
CZ16	PG&E	152,965	4304	53.53	\$169,109	\$483,205	\$378,299	2.9	2.2	\$314,096	\$209,190
CZ16-2	LA	152,965	4304	53.53	\$169,109	\$215,341	\$378,299	1.3	2.2	\$46,231	\$209,190



### 6.7.3 Cost Effectiveness Results – Small Hotel

Figure 70 through Figure 77 contain the cost-effectiveness findings for the Small Hotel packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV:** Packages are cost effective and achieve savings for all climate zones for both the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are less cost effective as compared to the previous minimal PV only package and not cost effective for LADWP and SMUD service area. The addition of battery reduces the cost effectiveness of packages.
- ◆ **Mixed-Fuel + PV only:** Packages are cost effective and achieve savings for the On-Bill approach for all climate zones except for LADWP territory. Packages are cost effective and achieve savings for the TDV approach for all climate zones.
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios. Packages are not cost effective for LADWP territory, SMUD territory as well as for climate zones 6,8,9 under PG&E service area.
- ◆ **All-Electric + 3 kW PV:** All packages are cost effective using the On-Bill approach. All packages are cost effective using the TDV approach but do not achieve positive energy cost savings.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Similar to minimal PV only package, all packages are cost effective using the On-Bill approach. All packages are cost effective using the TDV approach but do not achieve positive energy cost savings.
- ◆ **All-Electric + PV only:** All packages are cost effective for both On-Bill and TDV approaches. Packages achieve on-bill savings for all climate zones.
- ◆ **All-Electric + PV + 50 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios but is still cost effective for all climate zones.



Figure 70. Cost Effectiveness for Small Hotel – Mixed Fuel + 3kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle \$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.8	\$5,566	\$12,616	\$8,326	2.3	1.5	\$7,050	\$2,760
CZ02	PG&E	4,785	0	0.9	\$5,566	\$12,639	\$10,332	2.3	1.9	\$7,073	\$4,766
CZ03	PG&E	4,733	0	0.9	\$5,566	\$15,146	\$9,991	2.7	1.8	\$9,580	\$4,425
CZ04	PG&E	4,834	0	1.0	\$5,566	\$13,266	\$10,445	2.4	1.9	\$7,700	\$4,879
CZ04-2	CPAU	4,834	0	1.0	\$5,566	\$11,507	\$10,445	2.1	1.9	\$5,941	\$4,879
CZ05	PG&E	5,027	0	1.0	\$5,566	\$16,048	\$10,634	2.9	1.9	\$10,482	\$5,068
CZ06	SCE	4,769	0	0.9	\$5,566	\$10,276	\$10,559	1.8	1.9	\$4,710	\$4,993
CZ06-2	LA	4,769	0	0.9	\$5,566	\$6,307	\$10,559	1.1	1.9	\$741	\$4,993
CZ07	SDG&E	4,960	0	1.0	\$5,566	\$14,576	\$10,861	2.6	2.0	\$9,010	\$5,295
CZ08	SCE	4,824	0	0.9	\$5,566	\$10,837	\$11,202	1.9	2.0	\$5,271	\$5,636
CZ08-2	LA	4,824	0	0.9	\$5,566	\$6,505	\$11,202	1.2	2.0	\$939	\$5,636
CZ09	SCE	4,779	0	0.9	\$5,566	\$10,298	\$10,824	1.9	1.9	\$4,732	\$5,258
CZ09-2	LA	4,779	0	0.9	\$5,566	\$6,201	\$10,824	1.1	1.9	\$635	\$5,258
CZ10	SDG&E	4,905	0	1.0	\$5,566	\$16,302	\$10,710	2.9	1.9	\$10,736	\$5,144
CZ10-2	SCE	4,905	0	1.0	\$5,566	\$9,468	\$10,710	1.7	1.9	\$3,902	\$5,144
CZ11	PG&E	4,701	0	0.9	\$5,566	\$14,193	\$10,483	2.6	1.9	\$8,627	\$4,917
CZ12	PG&E	4,770	0	0.9	\$5,566	\$15,262	\$10,596	2.7	1.9	\$9,696	\$5,030
CZ12-2	SMUD	4,770	0	0.9	\$5,566	\$7,848	\$10,596	1.4	1.9	\$2,282	\$5,030
CZ13	PG&E	4,633	0	0.9	\$5,566	\$14,674	\$10,105	2.6	1.8	\$9,108	\$4,539
CZ14	SDG&E	5,377	0	1.1	\$5,566	\$16,615	\$12,375	3.0	2.2	\$11,049	\$6,809
CZ14-2	SCE	5,377	0	1.1	\$5,566	\$10,021	\$12,375	1.8	2.2	\$4,455	\$6,809
CZ15	SCE	4,997	0	1.0	\$5,566	\$9,542	\$11,164	1.7	2.0	\$3,976	\$5,598
CZ16	PG&E	5,240	0	1.0	\$5,566	\$14,961	\$10,975	2.7	2.0	\$9,395	\$5,409
CZ16-2	LA	5,240	0	1.0	\$5,566	\$5,670	\$10,975	1.0	2.0	\$104	\$5,409



Figure 71. Cost Effectiveness for Small Hotel – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	3,941	0	0.8	\$9,520	\$12,616	\$8,326	1.3	0.9	\$3,096	(\$1,194)
CZ02	PG&E	4,785	0	0.9	\$9,520	\$12,639	\$10,332	1.3	1.1	\$3,119	\$811
CZ03	PG&E	4,733	0	0.9	\$9,520	\$15,146	\$9,991	1.6	1.0	\$5,626	\$471
CZ04	PG&E	4,834	0	1.0	\$9,520	\$13,266	\$10,445	1.4	1.1	\$3,746	\$925
CZ04-2	CPAU	4,834	0	1.0	\$9,520	\$11,507	\$10,445	1.2	1.1	\$1,987	\$925
CZ05	PG&E	5,027	0	1.0	\$9,520	\$16,048	\$10,634	1.7	1.1	\$6,528	\$1,114
CZ05-2	SCG	5,027	0	1.0	\$9,520	\$16,048	\$10,634	1.7	1.1	\$6,528	\$1,114
CZ06	SCE	4,769	0	0.9	\$9,520	\$10,276	\$10,559	1.1	1.1	\$756	\$1,039
CZ06-2	LA	4,769	0	0.9	\$9,520	\$6,307	\$10,559	0.7	1.1	(\$3,213)	\$1,039
CZ07	SDG&E	4,960	0	1.0	\$9,520	\$14,576	\$10,861	1.5	1.1	\$5,056	\$1,341
CZ08	SCE	4,824	0	0.9	\$9,520	\$10,837	\$11,202	1.1	1.2	\$1,317	\$1,682
CZ08-2	LA	4,824	0	0.9	\$9,520	\$6,505	\$11,202	0.7	1.2	(\$3,015)	\$1,682
CZ09	SCE	4,779	0	0.9	\$9,520	\$10,298	\$10,824	1.1	1.1	\$778	\$1,303
CZ09-2	LA	4,779	0	0.9	\$9,520	\$6,201	\$10,824	0.7	1.1	(\$3,319)	\$1,303
CZ10	SDG&E	4,905	0	1.0	\$9,520	\$16,302	\$10,710	1.7	1.1	\$6,782	\$1,190
CZ10-2	SCE	4,905	0	1.0	\$9,520	\$9,468	\$10,710	0.99	1.1	(\$52)	\$1,190
CZ11	PG&E	4,701	0	0.9	\$9,520	\$14,193	\$10,483	1.5	1.1	\$4,673	\$963
CZ12	PG&E	4,770	0	0.9	\$9,520	\$15,262	\$10,596	1.6	1.1	\$5,742	\$1,076
CZ12-2	SMUD	4,770	0	0.9	\$9,520	\$7,848	\$10,596	0.8	1.1	(\$1,672)	\$1,076
CZ13	PG&E	4,633	0	0.9	\$9,520	\$14,674	\$10,105	1.5	1.1	\$5,154	\$584
CZ14	SDG&E	5,377	0	1.1	\$9,520	\$16,615	\$12,375	1.7	1.3	\$7,095	\$2,855
CZ14-2	SCE	5,377	0	1.1	\$9,520	\$10,021	\$12,375	1.1	1.3	\$501	\$2,855
CZ15	SCE	4,997	0	1.0	\$9,520	\$9,542	\$11,164	1.0	1.2	\$22	\$1,644
CZ16	PG&E	5,240	0	1.0	\$9,520	\$14,961	\$10,975	1.6	1.2	\$5,441	\$1,455
CZ16-2	LA	5,240	0	1.0	\$9,520	\$5,670	\$10,975	0.6	1.2	(\$3,851)	\$1,455



**Figure 72. Cost Effectiveness for Small Hotel - Mixed Fuel +80kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 80kW PV</b>											
CZ01	PG&E	105,090	0	20.6	\$179,470	\$336,440	\$221,883	1.9	1.2	\$156,970	\$42,413
CZ02	PG&E	127,592	0	25.0	\$179,470	\$320,009	\$275,130	1.8	1.5	\$140,539	\$95,660
CZ03	PG&E	126,206	0	24.8	\$179,470	\$403,900	\$266,426	2.3	1.5	\$224,430	\$86,956
CZ04	PG&E	128,894	0	25.4	\$179,470	\$322,782	\$278,536	1.8	1.6	\$143,312	\$99,066
CZ04-2	CPAU	128,894	0	25.4	\$179,470	\$306,862	\$278,536	1.7	1.6	\$127,392	\$99,066
CZ05	PG&E	134,041	0	26.5	\$179,470	\$427,935	\$283,834	2.4	1.6	\$248,465	\$104,364
CZ06	SCE	127,168	0	25.0	\$179,470	\$200,425	\$281,488	1.1	1.6	\$20,955	\$102,018
CZ06-2	LA	127,168	0	25.0	\$179,470	\$119,357	\$281,488	0.7	1.6	(\$60,113)	\$102,018
CZ07	SDG&E	132,258	0	26.1	\$179,470	\$247,646	\$289,700	1.4	1.6	\$68,176	\$110,230
CZ08	SCE	128,641	0	25.3	\$179,470	\$207,993	\$298,594	1.2	1.7	\$28,523	\$119,124
CZ08-2	LA	128,641	0	25.3	\$179,470	\$122,591	\$298,594	0.7	1.7	(\$56,879)	\$119,124
CZ09	SCE	127,447	0	25.3	\$179,470	\$211,567	\$288,830	1.2	1.6	\$32,096	\$109,360
CZ09-2	LA	127,447	0	25.3	\$179,470	\$123,486	\$288,830	0.7	1.6	(\$55,984)	\$109,360
CZ10	SDG&E	130,792	0	25.8	\$179,470	\$274,832	\$285,386	1.5	1.6	\$95,361	\$105,916
CZ10-2	SCE	130,792	0	25.8	\$179,470	\$206,865	\$285,386	1.2	1.6	\$27,395	\$105,916
CZ11	PG&E	125,366	0	24.6	\$179,470	\$316,781	\$279,331	1.8	1.6	\$137,311	\$99,861
CZ12	PG&E	127,203	0	25.0	\$179,470	\$406,977	\$282,358	2.3	1.6	\$227,507	\$102,888
CZ12-2	SMUD	127,203	0	25.0	\$179,470	\$198,254	\$282,358	1.1	1.6	\$18,784	\$102,888
CZ13	PG&E	123,535	0	24.4	\$179,470	\$317,261	\$269,908	1.8	1.5	\$137,791	\$90,437
CZ14	SDG&E	143,387	0	28.1	\$179,470	\$309,521	\$330,345	1.7	1.8	\$130,051	\$150,875
CZ14-2	SCE	143,387	0	28.1	\$179,470	\$225,083	\$330,345	1.3	1.8	\$45,612	\$150,875
CZ15	SCE	133,246	0	25.9	\$179,470	\$207,277	\$297,648	1.2	1.7	\$27,807	\$118,177
CZ16	PG&E	139,738	0	27.3	\$179,470	\$341,724	\$292,728	1.9	1.6	\$162,254	\$113,258
CZ16-2	LA	139,738	0	27.3	\$179,470	\$114,215	\$292,728	0.6	1.6	(\$65,255)	\$113,258



**Figure 73. Cost Effectiveness for Small Hotel – Mixed Fuel + 80kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 80kW PV + 50kWh Battery</b>											
CZ01	PG&E	104,026	0	23.2	\$207,370	\$332,596	\$237,740	1.6	1.1	\$125,226	\$30,370
CZ02	PG&E	126,332	0	28.1	\$207,370	\$336,179	\$296,058	1.6	1.4	\$128,809	\$88,688
CZ03	PG&E	124,934	0	28.0	\$207,370	\$399,220	\$289,360	1.9	1.4	\$191,850	\$81,990
CZ04	PG&E	127,602	0	28.5	\$207,370	\$332,161	\$308,887	1.6	1.5	\$124,790	\$101,517
CZ04-2	CPAU	127,602	0	28.5	\$207,370	\$303,828	\$308,887	1.5	1.5	\$96,458	\$101,517
CZ05	PG&E	132,725	0	29.8	\$207,370	\$423,129	\$303,627	2.0	1.5	\$215,758	\$96,257
CZ06	SCE	125,880	0	28.4	\$207,370	\$193,814	\$297,950	0.9	1.4	(\$13,556)	\$90,580
CZ06-2	LA	125,880	0	28.4	\$207,370	\$123,083	\$297,950	0.6	1.4	(\$84,287)	\$90,580
CZ07	SDG&E	130,940	0	29.5	\$207,370	\$274,313	\$309,682	1.3	1.5	\$66,943	\$102,312
CZ08	SCE	127,332	0	28.5	\$207,370	\$199,786	\$312,899	1.0	1.5	(\$7,584)	\$105,529
CZ08-2	LA	127,332	0	28.5	\$207,370	\$124,651	\$312,899	0.6	1.5	(\$82,719)	\$105,529
CZ09	SCE	126,232	0	28.2	\$207,370	\$206,706	\$292,804	1.0	1.4	(\$664)	\$85,433
CZ09-2	LA	126,232	0	28.2	\$207,370	\$126,710	\$292,804	0.6	1.4	(\$80,660)	\$85,433
CZ10	SDG&E	129,683	0	28.4	\$207,370	\$292,202	\$287,278	1.4	1.4	\$84,832	\$79,908
CZ10-2	SCE	129,683	0	28.4	\$207,370	\$206,171	\$287,278	1.0	1.4	(\$1,199)	\$79,908
CZ11	PG&E	124,337	0	26.9	\$207,370	\$315,330	\$283,683	1.5	1.4	\$107,960	\$76,313
CZ12	PG&E	126,013	0	27.8	\$207,370	\$403,127	\$297,118	1.9	1.4	\$195,757	\$89,748
CZ12-2	SMUD	126,013	0	27.8	\$207,370	\$198,007	\$297,118	1.0	1.4	(\$9,363)	\$89,748
CZ13	PG&E	122,591	0	26.5	\$207,370	\$315,541	\$280,996	1.5	1.4	\$108,171	\$73,626
CZ14	SDG&E	142,257	0	30.7	\$207,370	\$317,565	\$334,697	1.5	1.6	\$110,195	\$127,327
CZ14-2	SCE	142,257	0	30.7	\$207,370	\$224,195	\$334,697	1.1	1.6	\$16,824	\$127,327
CZ15	SCE	132,418	0	27.8	\$207,370	\$208,044	\$299,199	1.0	1.4	\$674	\$91,829
CZ16	PG&E	138,402	0	30.7	\$207,370	\$358,582	\$315,699	1.7	1.5	\$151,212	\$108,329
CZ16-2	LA	138,402	0	30.7	\$207,370	\$118,770	\$315,699	0.6	1.5	(\$88,600)	\$108,329



**Figure 74. Cost Effectiveness for Small Hotel – All-Electric + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost*	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-155,861	16917	54.7	(\$1,265,139)	(\$568,892)	(\$106,835)	2.2	11.8	\$696,246	\$1,158,304
CZ02	PG&E	-113,954	12677	40.9	(\$1,266,111)	(\$229,433)	(\$41,288)	5.5	30.7	\$1,036,679	\$1,224,823
CZ03	PG&E	-105,862	12322	41.4	(\$1,268,383)	(\$309,874)	(\$41,175)	4.1	30.8	\$958,510	\$1,227,208
CZ04	PG&E	-108,570	11927	37.5	(\$1,268,218)	(\$208,239)	(\$42,689)	6.1	29.7	\$1,059,980	\$1,225,530
CZ04-2	CPAU	-108,570	11927	37.5	(\$1,268,218)	(\$6,261)	(\$42,689)	202.6	29.7	\$1,261,958	\$1,225,530
CZ05	PG&E	-103,579	11960	39.3	(\$1,268,272)	(\$332,879)	(\$44,051)	3.8	28.8	\$935,393	\$1,224,221
CZ06	SCE	-73,524	8912	30.3	(\$1,268,413)	\$48,898	(\$17,484)	>1	72.5	\$1,317,311	\$1,250,929
CZ06-2	LA	-64,859	8188	29.0	(\$1,266,760)	(\$120,842)	(\$12,337)	10.5	102.7	\$1,145,918	\$1,254,423
CZ07	SDG&E	-67,090	8353	29.2	(\$1,264,731)	(\$43,964)	(\$11,618)	28.8	108.9	\$1,220,767	\$1,253,113
CZ08	SCE	-67,090	8353	29.2	(\$1,264,731)	\$48,736	(\$11,618)	>1	108.9	\$1,313,467	\$1,253,113
CZ08-2	LA	-67,483	8402	29.3	(\$1,266,529)	(\$35,547)	(\$11,126)	35.6	113.8	\$1,230,982	\$1,255,403
CZ09	SCE	-67,483	8402	29.3	(\$1,266,529)	\$52,410	(\$11,126)	>1	113.8	\$1,318,939	\$1,255,403
CZ09-2	LA	-75,157	8418	27.2	(\$1,263,531)	(\$156,973)	(\$25,469)	8.0	49.6	\$1,106,558	\$1,238,061
CZ10	SDG&E	-75,157	8418	27.2	(\$1,263,531)	(\$54,711)	(\$25,469)	23.1	49.6	\$1,208,820	\$1,238,061
CZ10-2	SCE	-94,783	10252	31.9	(\$1,264,340)	(\$169,847)	(\$38,904)	7.4	32.5	\$1,094,493	\$1,225,436
CZ11	PG&E	-94,702	10403	33.0	(\$1,265,779)	(\$324,908)	(\$34,968)	3.9	36.2	\$940,872	\$1,230,811
CZ12	PG&E	-94,297	10403	33.1	(\$1,265,779)	\$13,603	(\$33,757)	>1	37.5	\$1,279,382	\$1,232,022
CZ12-2	SMUD	-92,196	10029	31.5	(\$1,264,152)	(\$168,358)	(\$40,229)	7.5	31.4	\$1,095,794	\$1,223,923
CZ13	PG&E	-96,021	10056	30.7	(\$1,264,510)	(\$308,542)	(\$44,202)	4.1	28.6	\$955,969	\$1,220,308
CZ14	SDG&E	-96,021	10056	30.7	(\$1,264,510)	(\$110,730)	(\$44,202)	11.4	28.6	\$1,153,780	\$1,220,308
CZ14-2	SCE	-44,856	5579	19.0	(\$1,262,631)	\$8,996	(\$10,256)	>1	123.1	\$1,271,627	\$1,252,375
CZ15	SCE	-211,468	17599	42.9	(\$1,268,907)	(\$625,671)	(\$228,203)	2.0	5.6	\$643,236	\$1,040,704
CZ16	PG&E	-211,468	17599	42.9	(\$1,268,907)	\$37,142	(\$228,203)	>1	5.6	\$1,306,049	\$1,040,704
CZ16-2	LA	-155,861	16917	54.7	(\$1,265,139)	(\$568,892)	(\$106,835)	2.2	11.8	\$696,246	\$1,158,304



**Figure 75. Cost Effectiveness for Small Hotel – All-Electric + 3kW PV + 5 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	-155,861	16917	54.7	(\$1,288,428)	(\$568,892)	(\$106,835)	2.3	12.1	\$719,536	\$1,181,593
CZ02	PG&E	-113,954	12677	40.9	(\$1,288,428)	(\$229,433)	(\$41,288)	5.6	31.2	\$1,058,996	\$1,247,140
CZ03	PG&E	-105,862	12322	41.4	(\$1,288,428)	(\$309,874)	(\$41,175)	4.2	31.3	\$978,554	\$1,247,253
CZ04	PG&E	-108,570	11927	37.5	(\$1,288,428)	(\$208,239)	(\$42,689)	6.2	30.2	\$1,080,190	\$1,245,740
CZ04-2	CPAU	-108,570	11927	37.5	(\$1,288,428)	(\$6,261)	(\$42,689)	205.8	30.2	\$1,282,167	\$1,245,740
CZ05	PG&E	-103,579	11960	39.3	(\$1,288,428)	(\$332,879)	(\$44,051)	3.9	29.2	\$955,549	\$1,244,377
CZ06	SCE	-73,524	8912	30.3	(\$1,288,428)	(\$52,341)	(\$17,484)	24.6	73.7	\$1,236,087	\$1,270,944
CZ06-2	LA	-73,524	8912	30.3	(\$1,288,428)	\$48,898	(\$17,484)	>1	73.7	\$1,337,326	\$1,270,944
CZ07	SDG&E	-64,859	8188	29.0	(\$1,288,428)	(\$120,842)	(\$12,337)	10.7	104.4	\$1,167,586	\$1,276,091
CZ08	SCE	-67,090	8353	29.2	(\$1,288,428)	(\$43,964)	(\$11,618)	29.3	110.9	\$1,244,464	\$1,276,810
CZ08-2	LA	-67,090	8353	29.2	(\$1,288,428)	\$48,736	(\$11,618)	>1	110.9	\$1,337,164	\$1,276,810
CZ09	SCE	-67,483	8402	29.3	(\$1,288,428)	(\$35,547)	(\$11,126)	36.2	115.8	\$1,252,881	\$1,277,302
CZ09-2	LA	-67,483	8402	29.3	(\$1,288,428)	\$52,410	(\$11,126)	>1	115.8	\$1,340,838	\$1,277,302
CZ10	SDG&E	-75,157	8418	27.2	(\$1,288,428)	(\$156,973)	(\$25,469)	8.2	50.6	\$1,131,455	\$1,262,959
CZ10-2	SCE	-75,157	8418	27.2	(\$1,288,428)	(\$54,711)	(\$25,469)	23.5	50.6	\$1,233,718	\$1,262,959
CZ11	PG&E	-94,783	10252	31.9	(\$1,288,428)	(\$169,847)	(\$38,904)	7.6	33.1	\$1,118,582	\$1,249,524
CZ12	PG&E	-94,702	10403	33.0	(\$1,288,428)	(\$324,908)	(\$34,968)	4.0	36.8	\$963,520	\$1,253,460
CZ12-2	SMUD	-94,297	10403	33.1	(\$1,288,428)	\$13,603	(\$33,757)	>1	38.2	\$1,302,031	\$1,254,671
CZ13	PG&E	-92,196	10029	31.5	(\$1,288,428)	(\$168,358)	(\$40,229)	7.7	32.0	\$1,120,071	\$1,248,199
CZ14	SDG&E	-96,021	10056	30.7	(\$1,288,428)	(\$308,542)	(\$44,202)	4.2	29.1	\$979,887	\$1,244,226
CZ14-2	SCE	-96,021	10056	30.7	(\$1,288,428)	(\$110,730)	(\$44,202)	11.6	29.1	\$1,177,698	\$1,244,226
CZ15	SCE	-44,856	5579	19.0	(\$1,288,428)	\$8,996	(\$10,256)	>1	125.6	\$1,297,425	\$1,278,172
CZ16	PG&E	-211,468	17599	42.9	(\$1,288,428)	(\$625,671)	(\$228,203)	2.1	5.6	\$662,757	\$1,060,225
CZ16-2	LA	-211,468	17599	42.9	(\$1,288,428)	\$37,142	(\$228,203)	>1	5.6	\$1,325,570	\$1,060,225



**Figure 76. Cost Effectiveness for Small Hotel – All-Electric + 80kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 80kW PV</b>											
CZ01	PG&E	-54,712	16917	74.6	(\$1,123,442)	(\$240,170)	\$106,722	4.7	>1	\$883,272	\$1,230,164
CZ02	PG&E	8,853	12677	65.0	(\$1,124,415)	\$128,649	\$223,510	>1	>1	\$1,253,063	\$1,347,925
CZ03	PG&E	15,612	12322	65.3	(\$1,126,687)	\$44,532	\$215,260	>1	>1	\$1,171,219	\$1,341,947
CZ04	PG&E	15,490	11927	62.0	(\$1,126,522)	\$145,778	\$225,402	>1	>1	\$1,272,300	\$1,351,924
CZ04-2	CPAU	15,490	11927	62.0	(\$1,126,522)	\$289,094	\$225,402	>1	>1	\$1,415,616	\$1,351,924
CZ05	PG&E	25,436	11960	64.8	(\$1,126,575)	\$56,019	\$229,149	>1	>1	\$1,182,594	\$1,355,724
CZ06	SCE	48,875	8912	54.4	(\$1,126,716)	\$163,343	\$253,445	>1	>1	\$1,290,060	\$1,380,161
CZ06-2	LA	62,439	8188	54.1	(\$1,125,064)	\$115,822	\$266,502	>1	>1	\$1,240,886	\$1,391,565
CZ07	SDG&E	56,727	8353	53.5	(\$1,123,034)	\$147,987	\$275,773	>1	>1	\$1,271,022	\$1,398,808
CZ08	SCE	56,727	8353	53.5	(\$1,123,034)	\$163,971	\$275,773	>1	>1	\$1,287,005	\$1,398,808
CZ08-2	LA	55,185	8402	53.7	(\$1,124,832)	\$155,101	\$266,880	>1	>1	\$1,279,933	\$1,391,712
CZ09	SCE	55,185	8402	53.7	(\$1,124,832)	\$169,010	\$266,880	>1	>1	\$1,293,843	\$1,391,712
CZ09-2	LA	50,731	8418	52.0	(\$1,121,834)	\$113,936	\$249,207	>1	>1	\$1,235,770	\$1,371,041
CZ10	SDG&E	50,731	8418	52.0	(\$1,121,834)	\$138,265	\$249,207	>1	>1	\$1,260,099	\$1,371,041
CZ10-2	SCE	25,882	10252	55.6	(\$1,122,643)	\$162,626	\$229,944	>1	>1	\$1,285,269	\$1,352,587
CZ11	PG&E	27,731	10403	57.1	(\$1,124,083)	\$12,954	\$236,794	>1	>1	\$1,137,037	\$1,360,876
CZ12	PG&E	28,136	10403	57.2	(\$1,124,083)	\$206,756	\$238,005	>1	>1	\$1,330,839	\$1,362,087
CZ12-2	SMUD	26,706	10029	55.0	(\$1,122,455)	\$165,991	\$219,574	>1	>1	\$1,288,446	\$1,342,030
CZ13	PG&E	41,989	10056	57.8	(\$1,122,814)	\$22,333	\$273,768	>1	>1	\$1,145,147	\$1,396,582
CZ14	SDG&E	41,989	10056	57.8	(\$1,122,814)	\$120,943	\$273,768	>1	>1	\$1,243,757	\$1,396,582
CZ14-2	SCE	83,393	5579	44.0	(\$1,120,934)	\$210,511	\$276,228	>1	>1	\$1,331,445	\$1,397,162
CZ15	SCE	-76,971	17599	69.2	(\$1,127,210)	(\$199,308)	\$53,550	5.7	>1	\$927,902	\$1,180,760
CZ16	PG&E	-76,971	17599	69.2	(\$1,127,210)	\$172,787	\$53,550	>1	>1	\$1,299,997	\$1,180,760
CZ16-2	LA	-54,712	16917	74.6	(\$1,123,442)	(\$240,170)	\$106,722	4.7	>1	\$883,272	\$1,230,164



**Figure 77. Cost Effectiveness for Small Hotel – All-Electric + 80kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 80kW PV + 50kWh Battery</b>											
CZ01	PG&E	-55,323	16917	75.7	(\$1,095,542)	(\$238,351)	\$118,605	4.6	>1	\$857,191	\$1,214,147
CZ02	PG&E	7,849	12677	67.4	(\$1,096,515)	\$129,794	\$239,632	>1	>1	\$1,226,309	\$1,336,146
CZ03	PG&E	14,594	12322	67.7	(\$1,098,787)	\$43,166	\$235,280	>1	>1	\$1,141,953	\$1,334,067
CZ04	PG&E	14,459	11927	64.4	(\$1,098,622)	\$148,698	\$249,244	>1	>1	\$1,247,320	\$1,347,866
CZ04-2	CPAU	14,459	11927	64.4	(\$1,098,622)	\$286,573	\$249,244	>1	>1	\$1,385,195	\$1,347,866
CZ05	PG&E	24,292	11960	67.6	(\$1,098,675)	\$53,719	\$244,514	>1	>1	\$1,152,394	\$1,343,189
CZ06	SCE	47,762	8912	57.2	(\$1,098,816)	\$165,763	\$267,221	>1	>1	\$1,264,579	\$1,366,037
CZ06-2	LA	61,252	8188	57.1	(\$1,097,164)	\$138,060	\$283,797	>1	>1	\$1,235,223	\$1,380,960
CZ07	SDG&E	55,588	8353	56.2	(\$1,095,134)	\$138,718	\$286,483	>1	>1	\$1,233,852	\$1,381,618
CZ08	SCE	55,588	8353	56.2	(\$1,095,134)	\$165,932	\$286,483	>1	>1	\$1,261,066	\$1,381,618
CZ08-2	LA	54,162	8402	56.1	(\$1,096,932)	\$149,615	\$269,453	>1	>1	\$1,246,548	\$1,366,386
CZ09	SCE	54,162	8402	56.1	(\$1,096,932)	\$171,168	\$269,453	>1	>1	\$1,268,101	\$1,366,386
CZ09-2	LA	49,832	8418	54.1	(\$1,093,934)	\$120,627	\$250,720	>1	>1	\$1,214,561	\$1,344,654
CZ10	SDG&E	49,832	8418	54.1	(\$1,093,934)	\$136,144	\$250,720	>1	>1	\$1,230,078	\$1,344,654
CZ10-2	SCE	25,148	10252	57.3	(\$1,094,743)	\$160,744	\$233,842	>1	>1	\$1,255,487	\$1,328,585
CZ11	PG&E	26,813	10403	59.2	(\$1,096,183)	\$10,314	\$247,504	>1	>1	\$1,106,497	\$1,343,686
CZ12	PG&E	27,217	10403	59.3	(\$1,096,183)	\$206,749	\$248,790	>1	>1	\$1,302,931	\$1,344,973
CZ12-2	SMUD	26,027	10029	56.5	(\$1,094,555)	\$164,506	\$229,300	>1	>1	\$1,259,061	\$1,323,856
CZ13	PG&E	41,123	10056	59.7	(\$1,094,914)	\$25,707	\$276,947	>1	>1	\$1,120,621	\$1,371,860
CZ14	SDG&E	41,123	10056	59.7	(\$1,094,914)	\$119,382	\$276,947	>1	>1	\$1,214,296	\$1,371,860
CZ14-2	SCE	82,697	5579	45.5	(\$1,093,034)	\$209,837	\$277,287	>1	>1	\$1,302,871	\$1,370,321
CZ15	SCE	-77,815	17599	71.1	(\$1,099,310)	(\$193,758)	\$65,850	5.7	>1	\$905,552	\$1,165,160
CZ16	PG&E	-77,815	17599	71.1	(\$1,099,310)	\$175,872	\$65,850	>1	>1	\$1,275,182	\$1,165,160
CZ16-2	LA	-55,323	16917	75.7	(\$1,095,542)	(\$238,351)	\$118,605	4.6	>1	\$857,191	\$1,214,147



## 6.8 List of Relevant Efficiency Measures Explored

The Reach Code Team started with a potential list of energy efficiency measures proposed for 2022 Title 24 codes and standards enhancement measures, as well as measures from the 2018 International Green Construction Code, which is based on ASHRAE Standard 189.1-2017. The team also developed new measures based on their experience. This original list was over 100 measures long. The measures were filtered based on applicability to the prototypes in this study, ability to model in simulation software, previously demonstrated energy savings potential, and market readiness. The list of 28 measures below represent the list of efficiency measures that meet these criteria and were investigated to some degree. The column to the far right indicates whether the measure was ultimately included in analysis or not.

**Figure 78. List of Relevant Efficiency Measures Explored**

Building Component	Measure Name	Measure Description	Notes	Include?
Water Heating	Drain water Heat Recovery	Add drain water heat recovery in hotel prototype	Requires calculations outside of modeling software.	Y
Envelope	High performance fenestration	Improved fenestration SHGC (reduce to 0.22).		Y
Envelope	High SHGC for cold climates	Raise prescriptive fenestration SHGC (to 0.45) in cold climates where additional heat is beneficial.		Y
Envelope	Allowable fenestration by orientation	Limit amount of fenestration as a function of orientation		Y
Envelope	High Thermal Mass Buildings	Increase building thermal mass. Thermal mass slows the change in internal temperature of buildings with respect to the outdoor temperature, allowing the peak cooling load during summer to be pushed to the evening, resulting in lower overall cooling loads.	Initial energy modeling results showed marginal cooling savings, negative heating savings.	N
Envelope	Opaque Insulation	Increases the insulation requirement for opaque envelopes (i.e., roof and above-grade wall).	Initial energy modeling results showed marginal energy savings at significant costs which would not meet c/e criteria.	N
Envelope	Triple pane windows	U-factor of 0.20 for all windows	Initial energy modeling results showed only marginal energy savings and, in some cases, increased energy use.	N



Building Component	Measure Name	Measure Description	Notes	Include?
Envelope	Duct Leakage Testing	Expand duct leakage testing requirements based on ASHRAE Standard 215-2018: Method of Test to Determine Leakage of Operating HVAC Air Distribution Systems (ANSI Approved).	More research needs to be done on current duct leakage and how it can be addressed.	N
Envelope	Fenestration area	Reduce maximum allowable fenestration area to 30%.	Instead of this measure, analyzed measure which looked at limiting fenestration based on wall orientation.	N
Envelope	Skinny triple pane windows	U-factor of 0.20 for all windows, with no changes to existing framing or building structure.	Market not ready. No commercially-available products for commercial buildings.	N
Envelope	Permanent projections	Detailed prescriptive requirements for shading based on ASHRAE 189. PF >0.50 for first story and >0.25 for other floors. Many exceptions. Corresponding SHGC multipliers to be used.	Title 24 already allows owner to trade off SHGC with permanent projections. Also, adding requirements for permanent projections would raise concerns.	N
Envelope	Reduced infiltration	Reduce infiltration rates by improving building sealing.	Infiltration rates are a fixed ACM input and cannot be changed. A workaround attempt would not be precise, and the practicality of implementation by developers is low given the modeling capabilities and the fact that in-field verification is challenging. Benefits would predominantly be for air quality rather than energy.	N



Building Component	Measure Name	Measure Description	Notes	Include?
HVAC	Heat recovery ventilation	For the hotel, recover and transfer heat from exhausted air to ventilation air.	<p>For small hotels, the ventilation requirement could be met by various approaches, and the most common ones are:</p> <ul style="list-style-type: none"> <li>a. Exhaust only system, and ventilation is met by infiltration or window operation.</li> <li>b. Through a Z-duct that connects the zone AC unit's intake to an outside air intake louver.</li> <li>c. Centralized ventilation system (DOAS)</li> </ul> <p>The prototype developed for the small hotel is using Type 2 above. The major consideration is that currently, HRV + PTACs cannot be modeled at each guest room, only at the rooftop system. Option 1 would require the same type of HRV implementation as Option 2. Option 3 may be pursuable, but would require a significant redesign of the system, with questionable impacts. Previous studies have found heat recovery as cost effective in California only in buildings with high loads or high air exchange rates, given the relatively mild climate.</p>	N
HVAC	Require Economizers in Smaller Capacity Systems	Lower the capacity trigger for air economizers. Previous studies have shown cost effectiveness for systems as low as 3 tons.		Y
HVAC	Reduce VAV minimum flow limit	Current T24 and 90.1 requirements limit VAV minimum flow rates to no more than 20% of maximum flow. Proposal based on ASHRAE Guideline 36 which includes sequences that remove technical barriers that previously existed. Also, most new DDC controllers are now capable of lower limits. The new limit may be as low as the required ventilation rate. A non-energy benefit of this measure is a reduction in over-cooling, thus improving comfort.		Y



Building Component	Measure Name	Measure Description	Notes	Include?
HVAC	Building Automation System (BAS) improvements	With adoption of ASHRAE Guideline 36 (GDL-36), there is now a national consensus standard for the description of high-performance sequences of operation. This measure will update BAS control requirements to improve usability and enforcement and to increase energy efficiency. BAS control requirement language will be improved either by adoption of similar language to GDL-36, or reference to GDL-36. Specific T24 BAS control topics that will be addressed include at a minimum: DCV, demand-based reset of SAT, demand-based reset of SP, dual-maximum zone sequences, and zone groups for scheduling.	In order to realize any savings in the difference, we would need a very detailed energy model with space-by-space load/occupant diversity, etc. We would also need more modeling capability than is currently available in CBECC-Com.	N
HVAC	Fault Detection Devices (FDD)	Expand FDD requirements to a wider range of AHU faults beyond the economizer. Fault requirements will be based on NIST field research, which has consequently been integrated into ASHRAE Guideline 36 Best in Class Sequences of Operations. Costs are solely to develop the sequences, which is likely minimal, and much of the hardware required for economizer FDD is also used to detect other faults.	Market not ready.	N
HVAC	Small circulator pumps ECM, trim to flow rate	Circulator pumps for industry and commercial.	Hot water pump energy use is small already (<1% building electricity usage) so not much savings potential. More savings for CHW pumps. Modeling limitations as well.	N
HVAC	High Performance Ducts to Reduce Static Pressure	Revise requirements for duct sizing to reduce static pressure.	Preliminary energy modeling results showed only marginal energy savings compared to measure cost.	N
HVAC	Parallel fan-powered boxes	Use of parallel fan-powered boxes	Unable to model PFPB with variable speed fans in modeling software.	N
Lighting	Daylight Dimming Plus OFF	Automatic daylight dimming controls requirements include the OFF step.		Y
Lighting	Occupant Sensing in Open Plan Offices	Take the PAF without allowing for increased design wattage		Y
Lighting	Institutional tuning	Take the PAF without allowing for increased design wattage		Y



Building Component	Measure Name	Measure Description	Notes	Include?
Lighting	Reduced Interior Lighting Power Density	Reduced interior LPD values.		Y
Lighting	Shift from general to task illumination	Low levels of general illumination with task and accent lighting added to locations where higher light levels are required. The shift from general to task illumination measure is based on the assumption that proper lighting of a desk surface with high efficacy lighting can allow for the significant reduction of ambient general lighting.	This is a tough measure to require as the LPDs decrease.	N
Lighting	Future-proof lighting controls	Fill any holes in the current code that could lead to the situations where TLEDS or LED fixtures that are not dimmable or upgradable in the future, or any other issues with code that make it hard to transition to ALCS/IoT lighting in the future	Major lighting controls already covered in other measures being considered	N
Lighting	Integrated control of lighting and HVAC systems	Formalize the definition of "lighting and HVAC control integration" by defining the level of data sharing required between systems and the mechanism needed to share such data. The highest savings potential would likely be generated from VAV HVAC systems by closing the damper in unoccupied zones based on the occupancy sensor information from the lighting systems.	Not market ready enough.	N
Other	NR Plug Load Controls	Energy savings opportunities for plug loads, which may include: energy efficient equipment, equipment power management, occupancy sensor control, and occupant awareness programs. The proposal could be extending controlled receptacles requirements in Section 130.5(d) to more occupancy types. It would also consider circuit-level controls.	Office equipment now all have their own standby power modes that use very little power, making plug load controls very difficult to be cost-effective.	N



## 6.9 Additional Rates Analysis - Healdsburg

After the final version of the report was released, the Reach Code Team provided additional cost effectiveness analysis in Climate Zone 2 using City of Healdsburg electric utility rates and PG&E gas rates. All aspects of the methodology remain the same, and the results for each package and prototype are aggregated below in Figure 79 through Figure 81. Results generally indicate:

- ◆ Mixed fuel prototypes achieve positive compliance margins for EE packages and are cost effective.
- ◆ All-electric prototypes achieve slightly lower compliance margins than mixed fuel for EE packages and are cost effective.
- ◆ All PV and PV+Battery packages are cost effective both using an on-bill and TDV approach.



**Figure 79. Healdsburg Utility Rates Analysis – Medium Office, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Medium Office	Mixed Fuel + EE	40,985	-505	8.1	17%	\$66,649	\$89,645	\$99,181	1.3	1.5	\$22,996	\$32,532
	Mixed Fuel + EE + PVB	255,787	-505	50.6	17%	\$359,648	\$510,922	\$573,033	1.4	1.6	\$151,274	\$213,385
	Mixed Fuel + HE	3,795	550	4.3	4%	\$68,937	\$24,204	\$24,676	0.4	0.4	-\$44,733	-\$44,261
	All-Electric	-49,684	3,868	5.0	-7%	-\$73,695	-\$7,042	-\$41,429	10.5	1.8	\$66,653	\$32,266
	All-Electric + EE	-11,811	3,868	15.2	10%	-\$7,046	\$83,285	\$58,563	>1	>1	\$90,331	\$65,609
	All-Electric + EE + PVB	203,026	3,868	57.8	10%	\$285,953	\$511,954	\$532,273	1.8	1.9	\$226,001	\$246,320
	All-Electric + HE	-45,916	3,868	6.1	-5%	-\$22,722	\$6,983	-\$26,394	>1	0.9	\$29,705	-\$3,672
	Mixed Fuel + 3kW	4,785	0	0.9	n/a	\$5,566	\$10,430	\$10,500	1.9	1.9	\$4,864	\$4,934
	Mixed Fuel + 3kW + 5kWh	4,785	0	0.9	n/a	\$8,356	\$10,430	\$10,500	1.2	1.3	\$2,074	\$2,144
	Mixed Fuel + 135kW	215,311	0	41.5	n/a	\$250,470	\$424,452	\$471,705	1.7	1.9	\$173,982	\$221,235
	Mixed Fuel + 135kW + 50kWh	214,861	0	42.6	n/a	\$278,370	\$423,721	\$472,898	1.5	1.7	\$145,351	\$194,528
	All-Electric + 3kW	-44,899	3,868	6.0	n/a	-\$68,129	\$3,299	-\$30,928	>1	2.2	\$71,429	\$37,201
	All-Electric + 3kW + 5kWh	-44,899	3,868	6.0	n/a	-\$65,339	\$3,299	-\$30,928	>1	2.1	\$68,639	\$34,411
	All-Electric + 135kW	165,627	3,868	46.6	n/a	\$176,775	\$424,146	\$430,276	2.4	2.4	\$247,371	\$253,501
	All-Electric + 135kW + 50kWh	165,200	3,868	47.7	n/a	\$204,675	\$423,466	\$431,469	2.1	2.1	\$218,792	\$226,795
	All-Electric + 80kW + 50kWh	40,985	-505	8.1	17%	\$66,649	\$89,645	\$99,181	1.3	1.5	\$22,996	\$32,532



**Figure 80. Healdsburg Utility Rates Analysis – Medium Retail, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Medium Retail	Mixed Fuel + EE	18,885	613	8.7	13%	\$5,569	\$49,546	\$59,135	8.9	10.6	\$43,977	\$53,566
	Mixed Fuel + EE + PVB	189,400	613	43.8	13%	\$249,475	\$376,219	\$465,474	1.5	1.9	\$126,744	\$215,999
	Mixed Fuel + HE	2,288	229	2.0	3%	\$9,726	\$13,143	\$13,998	1.4	1.4	\$3,417	\$4,273
	All-Electric	-21,786	2,448	7.5	-1%	-\$27,464	\$9,228	-\$4,483	>1	6.1	\$36,692	\$22,981
	All-Electric + EE	2,843	2,448	14.6	13%	-\$21,895	\$61,918	\$56,893	>1	>1	\$83,813	\$78,788
	All-Electric + EE + PVB	173,387	2,448	49.9	13%	\$222,012	\$391,257	\$463,431	1.8	2.1	\$169,245	\$241,419
	All-Electric + HE	-16,989	2,448	8.9	3%	-\$4,211	\$23,567	\$11,251	>1	>1	\$27,779	\$15,463
	Mixed Fuel + 3kW	4,685	0	0.9	n/a	\$5,566	\$10,256	\$10,262	1.8	1.8	\$4,690	\$4,696
	Mixed Fuel + 3kW + 5kWh	4,685	0	0.9	n/a	\$8,356	\$10,256	\$10,262	1.2	1.2	\$1,900	\$1,906
	Mixed Fuel + 110kW	171,790	0	33.3	n/a	\$204,087	\$316,293	\$376,300	1.5	1.8	\$112,206	\$172,213
	Mixed Fuel + 110kW + 50kWh	170,542	0	35.1	n/a	\$231,987	\$320,349	\$398,363	1.4	1.7	\$88,363	\$166,376
	All-Electric + 3kW	-17,101	2,448	8.4	n/a	-\$21,898	\$19,523	\$5,779	>1	>1	\$41,421	\$27,677
	All-Electric + 3kW + 5kWh	-17,101	2,448	8.4	n/a	-\$19,108	\$19,523	\$5,779	>1	>1	\$38,631	\$24,887
	All-Electric + 110kW	150,004	2,448	40.8	n/a	\$176,623	\$332,213	\$371,817	1.9	2.1	\$155,591	\$195,194
	All-Electric + 110kW + 50kWh	148,793	2,448	42.9	n/a	\$204,523	\$335,043	\$394,099	1.6	1.9	\$130,520	\$189,577



**Figure 81. Healdsburg Utility Rates Analysis – Small Hotel, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Small Hotel	Mixed Fuel + EE	3,802	976	3.9	7%	\$20,971	\$22,829	\$29,353	1.1	1.4	\$1,857	\$8,381
	Mixed Fuel + EE + PVB	130,144	976	31.1	7%	\$205,967	\$254,577	\$336,575	1.2	1.6	\$48,610	\$130,608
	Mixed Fuel + HE	981	402	2.7	3%	\$23,092	\$12,291	\$11,808	0.5	0.5	-\$10,801	-\$11,284
	All-Electric	-	12,677	40.0	-12%	-\$1,297,757	-\$24,318	-\$51,620	53.4	25.1	\$1,273,439	\$1,246,137
	All-Electric + EE	-88,410	12,677	45.9	5%	-\$1,265,064	\$45,918	\$20,860	>1	>1	\$1,310,982	\$1,285,924
	All-Electric + EE + PVB	38,115	12,677	73.5	5%	-\$1,080,068	\$296,233	\$317,296	>1	>1	\$1,376,301	\$1,397,365
	All-Electric + HE	-	12,677	41.2	-11%	-\$1,283,243	-\$83,994	-\$44,505	15.3	28.8	\$1,199,249	\$1,238,738
	Mixed Fuel + 3kW	4,785	0	0.9	n/a	\$5,566	\$8,927	\$10,332	1.6	1.9	\$3,361	\$4,766
	Mixed Fuel + 3kW + 5kWh	4,785	0	0.9	n/a	\$8,356	\$8,927	\$10,332	1.1	1.2	\$571	\$1,976
	Mixed Fuel + 80kW	127,592	0	25.0	n/a	\$148,427	\$229,794	\$275,130	1.5	1.9	\$81,367	\$126,703
	Mixed Fuel + 80kW + 50kWh	126,332	0	28.1	n/a	\$176,327	\$236,570	\$296,058	1.3	1.7	\$60,243	\$119,731
	All-Electric + 3kW	-	12,677	40.9	n/a	-\$1,292,191	-\$14,447	-\$41,288	89.4	31.3	\$1,277,744	\$1,250,902
	All-Electric + 3kW + 5kWh	-	12,677	40.9	n/a	-\$1,289,401	-\$14,447	-\$41,288	89.3	31.2	\$1,274,954	\$1,248,112
	All-Electric + 80kW	8,853	12,677	65.0	n/a	-\$1,149,330	\$222,070	\$223,510	>1	>1	\$1,371,400	\$1,372,840
	All-Electric + 80kW + 50kWh	7,849	12,677	67.4	n/a	-\$1,121,430	\$223,812	\$239,632	>1	>1	\$1,345,241	\$1,361,062



Jurisdiction	Approach			Systems			Building Types							Add-Ons		
	Natural Gas Infrastructure Moratorium	All-Electric Reach	Electric-Preferred	Whole Building	Water Heating	Space Heating	Low Rise Residential	City-Owned Properties	High Rise Residential	Hotel	Retail	Office	Restaurant	Life Sciences	Additional Solar	Electric Vehicles
Alameda	X			X				X								
Albany			X				X			X	X				X	X
Berkeley*	X		X	X			X	X	X	X	X	X	X	X	X	X
Brisbane		X			X	X	X	X	X	X	X	X	X			X
Burlingame		X		X	X	X	X	X	X	X	X	X		X		X
Campbell		X			X	X	X									X
Carlsbad	X	X			X		X								X	X
Cupertino		X		X			X	X	X	X	X	X				X
Davis			X	X			X									
East Palo Alto		X		X			X	X	X	X	X		X			X
Hayward		X	X	X			X	X	X	X	X	X	X	X	X	X
Healdsburg		X			X	X	X	X	X	X	X	X	X	X		
Los Altos		X		X	X	X	X	X	X	X	X					X
Los Altos Hills		X			X	X	X	X	X	X	X	X				
Los Gatos		X		X			X									X
Marin County			X	X			X	X	X	X	X	X	X			X
Menlo Park		X			X	X	X	X	X	X	X	X		X		X
Millbrae		X			X	X	X	X	X	X	X	X	X			X
Mill Valley			X	X			X		X							X
Milpitas			X	X			X	X	X	X	X	X	X			X
Morgan Hill	X			X			X	X	X	X	X	X	X			
Mountain View		X		X			X	X	X	X	X	X		X		X
Oakland		X		X			X	X	X	X	X	X	X			
Ojai		X		X			X	X	X	X	X		X			
Pacifica		X			X	X	X	X	X	X	X	X		X		X
Palo Alto		X	X	X			X	X	X	X	X	X	X			X
Piedmont		X		X			X								X	
Redwood City		X		X			X	X	X	X	X					X
Richmond		X		X	X	X	X	X	X	X	X					X
San Anselmo			X	X			X	X	X	X	X	X	X			
San Francisco*	X		X	X			X	X	X	X	X	X	X	X	X	X
San Jose*	X			X			X	X	X	X	X	X	X	X	X	X
San Luis Obispo			X	X			X	X	X	X	X	X	X	X	X	
San Mateo*		X		X			X		X		X				X	X
San Mateo County		X		X			X	X	X	X	X	X				X
Santa Cruz	X			X			X	X	X	X	X		X			
Santa Monica			X	X			X	X	X	X	X	X	X	X	X	X
Santa Rosa		X		X			X									
Saratoga		X			X	X	X	X	X	X	X	X	X			X
Sunnyvale		X		X			X	X	X	X	X	X	X			X
Windsor			X	X			X									

\* Multiple ordinances passed to strengthen/expand scope





A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11  
Local Energy Efficiency Ordinances

**2019 Cost-effectiveness Study:  
Low-Rise Multifamily Residential New  
Construction Addendum –  
Passive House Equivalency Analysis for  
2019 Energy Efficiency Ordinances**

**Prepared for:**  
Kelly Cunningham  
Codes and Standards Program  
Pacific Gas and Electric Company

**Prepared by:**  
Frontier Energy, Inc.  
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# 1 Introduction

This addendum presents results from analysis of energy efficiency packages that meet minimum Passive House requirements as a potential approach to meeting 2019 local energy efficiency ordinances. The analysis scope is limited to newly constructed low-rise multifamily projects and is based upon the CEC multifamily 8-unit prototype design. The analysis was a collaborative effort between Passive House California (PHCA) and the Statewide Reach Codes Team. The PHCA team provided defined energy efficiency measure packages from the Passive House Planning Package (PHPP) for each climate zone that reflect the minimum requirements to meet the Passive House standard. The Reach Codes team completed energy modeling for each package using the certified version of the 2019 CBECC-Res compliance software for both mixed fuel (gas space heating, water heating, cooking and clothes drying) and all-electric prototypes to determine if buildings that meet Passive House requirements will also comply with proposed local energy efficiency ordinances.

This analysis builds upon the results of the 2019 Cost-effectiveness Study: Low-Rise Residential New Construction (Statewide Reach Codes Team, 2019) conducted for the California Statewide Codes and Standards Program and last modified August 1, 2019, which evaluated compliance packages across all sixteen California climate zones. Reference this report for additional details on methodology and results.

# 2 Methodology and Assumptions

Table 1 below shows a breakdown of the building specifications modeled for each climate zone. The highlighted cells in the table indicate where measures differ from either the Title 24, Part 6 prescriptive requirements as listed in Table 150.1-B of the 2019 Building Energy Efficiency Standards (California Energy Commission, 2018a) or the Standard Design in CBECC-Res as defined by the 2019 Residential Alternative Calculation Method Reference Manual (California Energy Commission, 2018b). Values highlighted in green reflect measures that are more stringent than the Standard Design reflected in 2019 prescriptive requirements, whereas values highlighted in orange reflect measures that are less stringent than the Standard Design. Values highlighted in blue reflect additional measures required, in addition to meeting minimum Passive House requirements, to meet the EDR Margins for the efficiency packages identified in the 2019 Cost-effectiveness study (Statewide Reach Codes Team, 2019). See the Results & Discussion section for further details.

Some modeling adjustments were made in CBECC-Res to be able to better evaluate Passive House characteristics as described below.

1. **Infiltration:** The maximum allowable infiltration for Passive House certified projects is 0.6 air changes per hour at 50 Pascals (ACH50). CBECC-Res does not allow credit for reduced infiltration in multifamily buildings and applies a default assumption in the model of 7 ACH50. The Reach Code Team used a research mode in CBECC-Res to be able to model 0.6 ACH50 for this analysis by adjusting the effective leakage area multipliers for the walls and ceiling to reflect a 92% reduction (0.6 ACH50 vs 7 ACH50).
2. **Heat Recovery Ventilation (HRV):** Most HRVs installed in Passive House certified projects operate with a bypass mode where the heat exchanger is bypassed during the summer when outdoor air conditions are cooler than the thermostat setpoint. This credit was included in the PHPP modeling. While CBECC-Res can model HRVs, it is not able to model this strategy. To estimate the energy impact, the Reach Code Team conducted two simulations, one with an HRV with the proposed heat exchanger effectiveness (70%) and another with an HRV with 0% effectiveness. The second run represents the cooling impact if the bypass mode were engaged throughout the entire summer. Cooling TDV energy use applied in the EDR Margin calculation was determined to be the lower of that from either the 0% or the 70% effectiveness run.



The Reach Code Team reviewed the Home Ventilating Institute's (HVI's) current list of certified equipment and determined that 1 Watt/cfm and 70% effectiveness was a good average representation of the products available. These also align with the values that were used in the PHPP modeling. The impact of 0.5 Watt/cfm and 75% effectiveness was investigated in the mild climates and because the same fan efficacy is applied to the basecase the impact on compliance was minimal.

3. Duct Leakage: Research from a prior study on high performance attics included measured data from 20 homes with ducts located in an unvented attic (PG&E 2015). For these 20 homes, the average total duct leakage to outside was below 25 cfm for all homes and average duct leakage to outside was 0.7% of total system airflow. Most Passive House certified projects do not have vented attics, therefore it is expected that duct leakage in a Passive House will be similar or better than the results from these 20 homes, particularly since total house leakage must be tested to not exceed 0.6 ACH50. It is assumed that duct leakage to outside is 1% of total system airflow for this analysis.
4. Attic Design: The attic insulation levels modeled for Climate Zones 2, 4, and 8-16 are lower than what is assumed for the Standard in CBECC-Res. PHPP modeling used prescriptive Option C, which allows for lower levels of attic insulation if ducts are located within the conditioned space. Prescriptive Option B requires higher levels of attic insulation (and a high performance attic in some climate zones) but allows for ducts to be located in an unvented attic. However, in CBECC-Res the Standard for multifamily buildings assumes Option B in addition to ducts in conditioned space which results in an energy penalty for the Passive House design.

Most Passive House certified projects do not have a vented attic space, but rather incorporate either a sealed attic with ducts in conditioned space or no attic at all and ductless heat pumps. The Reach Code Team compared the modeled impacts an unvented attic with R-30 insulation at the roof level with a vented attic with R-30 at the ceiling. In both cases ducts are located within conditioned space. Performance between these two cases was very similar based on CBECC-Res results.

Refer to the 2019 Cost-effectiveness Study: Low-Rise Residential New Construction (Statewide Reach Codes Team, 2019) for further details.



Table 1 – Modeled Building Specifications by Climate Zone

CZ	Duct <sup>1</sup>	Infiltration <sup>2</sup>	Wall	Attic <sup>1</sup>	Roof	Glazing (U-factor/SHGC)	Slab <sup>3</sup>	DHW	HVAC	HRV <sup>4</sup>
1	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-8	Code Min (R-38)	Code Min (Std roof)	0.15/0.35 (Std Design = 0.30/0.35)	R-20, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
2	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-8	R-30 + Radiant Barrier (Std Design = R-38 + RB)	Code Min (Std roof)	0.25/0.25 (Std Design = 0.30/0.23)	R-10, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
3	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	Code Min (R-30 + RB)	Code Min (Std roof)	Code Min (0.30/0.35)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
4	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	R-30 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Std roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
5	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	Code Min (R-30 + RB)	Code Min (Std roof)	Code Min (0.30/0.35)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
6	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-15 + R-4)	Code Min (R-30 + RB)	Code Min (Std roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
7	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-15 + R-4)	Code Min (R-30 + RB)	Code Min (Std roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Basic compact distribution credit	Code Min	1 W/cfm, 70% effect., free cooling bypass
8	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	R-30 + Radiant Barrier (Std Design = R-38 + R-19)	0.20 solar reflectance cool roof	Code Min (0.30/0.23)	Code Min (uninsulated)	Enhanced compact distribution credit	Code Min	1 W/cfm, 70% effect., free cooling bypass
9	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	R-30 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Std roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
10	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	R-30 + Radiant Barrier (Std Design = R-38 + R-13)	Code Min (Cool roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
11	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-8	R-42 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Cool roof)	Code Min (0.30/0.23)	R-20, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
12	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-8	R-42 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Cool roof)	Code Min (0.30/0.23)	R-20, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
13	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-12	R-38 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Cool roof)	0.30/0.15 + 2ft overhangs (Std Design = 0.30/0.23)	R-20, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
14	DCS, 1% leakage	QII + 0.6 ACH50	Code Min (R-21 + R-4)	R-38 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Cool roof)	Code Min (0.30/0.23)	Code Min (uninsulated)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
15	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-16	R-46 + Radiant Barrier (Std Design = R-38 + R-19)	Code Min (Cool roof)	0.12/0.12 + 3ft overhangs (Std Design = 0.30/0.23)	R-20, 4ft edge ins.	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass
16	DCS, 1% leakage	QII + 0.6 ACH50	R-21 + R-16	R-38 (Std Design = R-38 + R-13)	Code Min (Std roof)	0.18/0.50 + 3ft overhangs (Std Design = 0.30/0.35)	Code Min (R-7, 16in edge ins.)	Code Min	Code Min	1 W/cfm, 70% effect., free cooling bypass

<sup>1</sup>PHPP modeling used prescriptive Option C, this results in a penalty in CBECC-Res because Option B (high performance attic) is assumed in the Standard Design in addition to ducts in conditioned space. DCS signifies ducts in conditioned space; RB signifies radiant barrier.

<sup>2</sup>Reduced infiltration for multifamily buildings cannot be modeled as a compliance credit. 0.6 ACH50 was evaluated using a research mode of CBECC-Res. QII is prescriptive in all climate zones except 7.

<sup>3</sup>CBECC can only model edge insulation, max R-20 & 4ft depth. BEopt modeling was done to correlate under slab insulation with perimeter insulation.

<sup>4</sup>Standard Design is balanced ventilation 1 W/cfm and no heat recovery. % value is recovery effectiveness percentage of the HRV system. The impact of a free cooling bypass cannot be directly evaluated in CBECC-Res and was estimated.

Highlighted Cells: Green = More stringent than base (2019 T-24 Standard design); Orange = Less stringent than base; Blue = Required in addition to PH to meet ordinance



### 3 Results & Discussion

Results are summarized by comparing the final Energy Design Rating (EDR) Margin of each Passive House run to the EDR Margin targets that were determined in the statewide report. Table 2 summarizes the calculated EDR Margin for each of the climate zones broken down by fuel type and compared to the targets as identified in the 2019 reach code cost-effectiveness report. In almost all cases, the EDR Margins achieved by the Passive House designs exceed the EDR Margin targets, and in most cases, the Passive House EDR Margin is significantly higher than the target EDR Margins defined in the report.

Table 2 – EDR Margin Comparison of 2019 Reach Code Target vs. Passive House Model

Climate Zone	Mixed Fuel EDR Margin		All-Electric EDR Margin	
	2019 Reach Code Targets	Passive House Model	2019 Reach Code Targets	Passive House Model
1 - Arcata	2.0	10.0	3.0	11.1
2 – Santa Rosa	1.5	5.6	1.5	7.4
3 - Oakland	0.5	3.6	0.0	3.6
4 – San Jose	1.0	3.2	1.0	4.0
5 – Santa Maria	0.5	3.5	0.5	4.0
6 – Torrance	1.0	1.5	1.0	2.8
7 – San Diego	0.5	0.5	0.5	1.3
8 – Fullerton	1.0	1.0	1.0	1.4
9 – Burbank	1.5	1.6	1.5	2.6
10 – Riverside	1.5	2.2	1.5	3.5
11 – Red Bluff	2.5	6.4	3.5	8.2
12 – Sacramento	1.5	5.2	2.5	6.3
13 – Fresno	3.0	8.2	3.0	8.8
14 – Palmdale	3.0	6.0	3.5	7.1
15 – Palm Springs	4.0	11.5	4.0	11.8
16 – Blue Canyon	2.0	9.8	3.0	13.8

The exceptions are the mixed fuel cases in Climate Zones 7 and 8 (highlighted in Table 2), which fall short of the cost effective non-preempted efficiency packages developed in the 2019 reach code cost-effectiveness report. Meeting reach code targets are more challenging in mild climates. To meet the reach code targets for mixed fuel in Climate Zone 7, Passive House buildings would need to prescriptively require the basic compact water heating distribution credit. Mixed fuel buildings in Climate Zone 8 would need to prescriptively require expanded compact water heating credit (with verified 0.6 compactness factor) and a cool roof with minimum 0.20 solar reflectance in addition to meeting Passive House certification (see *Table 1*). All-electric buildings do not need to include the additional prescriptive measures to meet the reach code target requirements in these climates.

### 4 References

California Energy Commission. 2018a. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. CEC-400-2018-020-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf>



California Energy Commission. 2018b. 2019 Alternative Calculation Method Approval Manual. CEC-400-2018-023-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-023/CEC-400-2018-023-CMF.pdf>

Statewide Reach Codes Team. 2019. 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. July 2019. [https://localenergycodes.com/download/800/file\\_path/fieldList/2019%20Res%20NC%20Reach%20Codes](https://localenergycodes.com/download/800/file_path/fieldList/2019%20Res%20NC%20Reach%20Codes)

PG&E. 2015. Initial Assessment of High Performance Attics in New California Homes. ET13PGE1064. April 2015. Pacific Gas and Electric. <https://www.etcc-ca.com/reports/initial-assessment-high-performance-attics-new-california-homes>



2020 REACH CODE  
COST-EFFECTIVENESS ANALYSIS:  
**Detached Accessory Dwelling Units**

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## Acronym List

B/C – Benefit-to-Cost Ratio

CBEECC - California Building Energy Code Compliance

CBSC - California Building Standards Commission

CEC - California Energy Commission

CZ – Climate Zone

GHG - Greenhouse Gas

IOU – Investor-Owned Utility

POU – Publicly Owned Utility

PG&E – Pacific Gas & Electric (utility)

SCE – Southern California Edison (utility)

SCG – Southern California Gas (utility)

SDG&E – San Diego Gas & Electric (utility)

CPAU – City of Palo Alto Utilities

SMUD – Sacramento Municipal Utility District

LADWP – Los Angeles Department of Water and Power

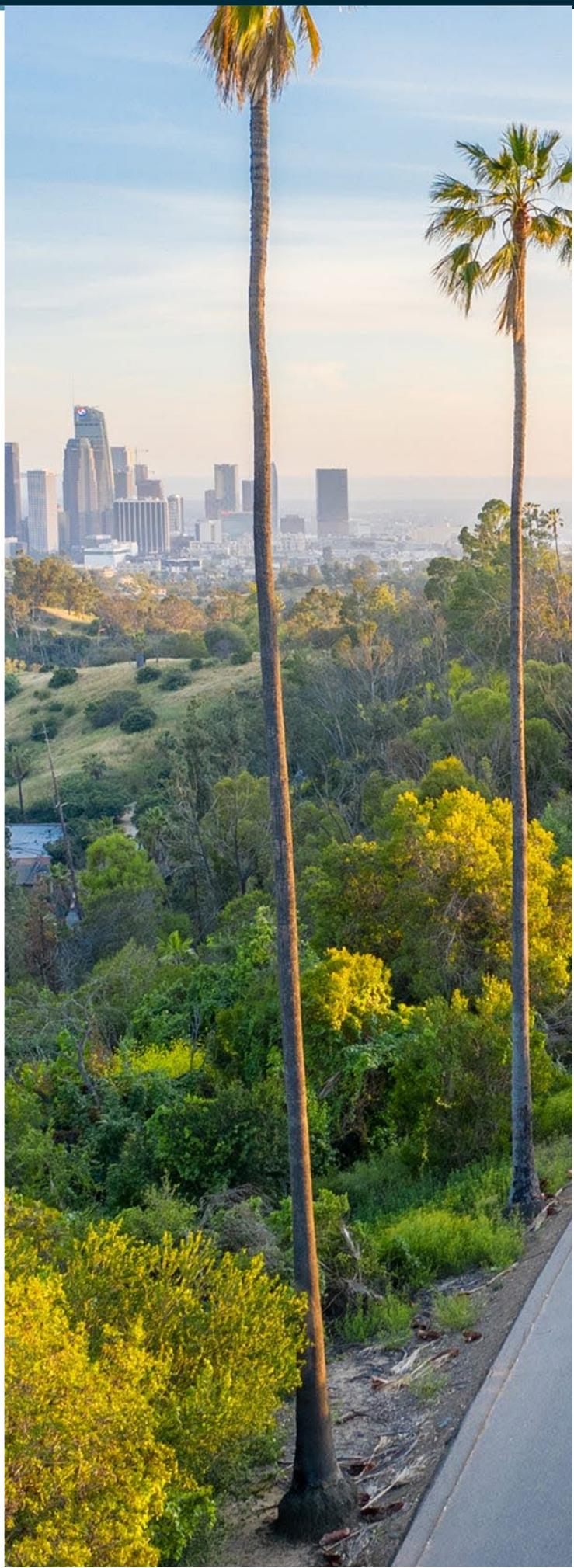
kWh – Kilowatt Hour

NPV – Net Present Value

PV - Solar Photovoltaic

TDV - Time Dependent Valuation

Title 24 – California Code of Regulations Title 24, Part 6



Summary of Revisions		
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# 1 Introduction

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (CEC, 2019) is maintained and updated every three years by two state agencies: the California Energy Commission (the Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances—or reach codes—that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable.

This report documents cost-effective combinations of measures that exceed the minimum state requirements, the 2019 Building Energy Efficiency Standards, effective January 1, 2020, for newly constructed detached Accessory Dwelling Unit (ADU) buildings. This report was developed in coordination with the California Statewide Investor-Owned Utilities (CA IOUs) Codes and Standards Program, key consultants, and engaged cities—collectively known as the Reach Code Team.

The Reach Code Team published a residential new construction report in 2019 that documented the cost-effectiveness of energy measure packages of single family and low-rise multifamily prototypes (Statewide Reach Code Team, 2019). Based on stakeholder requests, this report extends that analysis to Residential Detached Accessory Dwelling Units (ADUs). Measures include energy efficiency, electrification, solar photovoltaics (PV), and battery storage.

The Department of Energy (DOE) sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act, including heating, cooling, and water heating equipment (E-CFR, 2020). Since state and local governments are prohibited from adopting higher minimum efficiencies than the federal standards require, the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency heating, cooling, and water heating equipment. High efficiency appliances are often the easiest and most affordable measures to increase energy performance. While federal preemption limits reach code mandatory requirements for covered appliances, in practice, builders may install any package of compliant measures to achieve the performance requirements.

## 2 Methodology and Assumptions

The Reach Codes Team analyzed one prototype design to represent a detached ADU building using the cost-effectiveness methodology detailed in this section below. The general methodology is consistent with analyses of other prototypes, whereas some specifics such as utility rate selection are customized for the residential detached ADU prototype.

### 2.1 Reach Codes

This section describes the approach to calculating cost-effectiveness including benefits, costs, metrics, and utility rate selection.

#### 2.1.1 Benefits

This analysis used both on-bill and time dependent valuation (TDV) of energy-based approaches to evaluate cost-effectiveness. Both on-bill and TDV require estimating and quantifying the energy savings and costs associated with energy measures. The primary difference between on-bill and TDV is how energy is valued:

- On-Bill: Customer-based lifecycle cost approach that values energy based upon estimated site energy usage and customer on-bill savings using electricity and natural gas utility rate schedules over a 30-year duration for the detached ADU accounting for a three percent discount rate and energy cost inflation per Appendix 7.4 .
- TDV: TDV was developed by the Energy Commission to reflect the time dependent value of energy including long-term projected costs of energy such as the cost of providing energy during peak periods of demand and other societal costs including projected costs for carbon emissions and grid transmission impacts. This metric values energy use differently depending on the fuel source (gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods.

The Reach Code Team performed energy simulations using the most recent software available for 2019 Title 24 code compliance analysis, CBECC-Res 2019.1.3. The Team also used CBECC-Res 2022.0.1 RV for testing the impacts of updated weather files and 2022 TDV multipliers on cost-effectiveness. 2022 weather files have more cooling loads and less heating loads, and 2022 TDV multipliers increased significantly for fossil-fuel sources to reflect CO2 price forecasts and emissions abatement, while comparatively reducing for electricity to reflect increased renewable generation penetration (California Energy Commission, 2019).

#### 2.1.2 Costs

The Reach Code Team assessed the incremental costs and savings of the energy packages over the lifecycle of 30 years. Incremental costs represent the equipment, installation, replacements, and maintenance costs of the proposed measure relative to the 2019 Title 24 Standards minimum requirements or standard industry practices. The Reach Code Team obtained measure costs from manufacturer distributors, contractors, literature review, and online sources such as Home Depot and RS Means. Taxes and contractor markups were added as appropriate. Maintenance and replacement costs are included.

#### 2.1.3 Metrics

Cost-effectiveness is presented using net present value (NPV) and benefit-to-cost (B/C) ratio metrics.

- NPV: The Reach Code Team uses net savings (NPV benefits minus NPV costs) as the cost-effectiveness metric. If the net savings of a measure or package is positive, it is considered cost effective. Negative net savings represent net costs to the consumer. A measure that has negative energy cost benefits (energy cost increase) can still be cost effective if the costs to implement the measure are even more negative (i.e., construction and maintenance cost savings).

- B/C Ratio: Ratio of the present value of all benefits to the present value of all costs over 30 years (NPV benefits divided by NPV costs). The criteria for cost-effectiveness is a B/C greater than 1.0. A value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure. A value greater than one represents a positive return on investment.

Improving the energy performance of a building often requires an initial investment. In most cases the benefit is represented by annual on-bill utility or TDV savings, and the cost by incremental first cost and replacement costs. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). In cases where both construction costs and energy-related savings are negative, the construction cost savings are treated as the benefit while the increased energy costs are the cost. In cases where a measure or package is cost-effective immediately (i.e., upfront construction cost savings and lifetime energy cost savings), B/C ratio cost-effectiveness is represented by “>1”. Because of these situations, NPV savings are also reported, which, in these cases, are positive values.

### 2.1.4 Utility Rates

In coordination with the CA IOU rate team, and the publicly available information for several Publicly-Owned-Utilities (POUs), the Reach Code Team determined appropriate utility rates for each climate zone and package. The utility tariffs, summarized in Table 1, were determined based on the annual load profile of the prototype and the corresponding package, the most prevalent rate in each territory, and information assuring that the rates were not getting phased out.

TRC assumed that the ADU would have a separate electric and gas meter. A time-of-use (TOU) rate was applied to all cases. For cases with PV generation, the approved NEM tariffs were applied along with minimum daily use billing and mandatory non-bypassable charges. For the PV cases annual electric production was always less than annual electricity consumption; and therefore, no credits for surplus generation were necessary. For a more detailed breakdown of the rates selected refer to Appendix 7.2 - Utility Rate Schedules.

**Table 1. Utility Tariffs Used Based on Climate Zone**

Climate Zones	Electric / Gas Utility	Electricity	Natural Gas
<b>IOUs</b>			
1-5,11-13,16	PG&E	E-TOU Option C	G-1
6, 8-10, 14, 15	SCE / Southern California Gas Company	TOU-D Option 4-9	GM
7, 10, 14	San Diego Gas and Electric Company (SDG&E)	TOU-DR-1	GM
<b>POUs</b>			
4	City of Palo Alto (CPAU)	E-1	G-1
12	Sacramento Municipal Utility District (SMUD) / PG&E	R TOD Option 5-8	G-1
6, 8, 9	Los Angeles Department of Water and Power (LADWP) / SCG	R-1	GM (GM-E)
16	Los Angeles Department of Water and Power (LADWP) / PG&E	R-1	G-1

Utility rates are assumed to escalate over time, using assumptions from research conducted by Energy and Environmental Economics (E3) in the 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). Escalation of natural gas rates between 2020 and 2022 is based on the currently

filed General Rate Cases for PG&E, SoCalGas and SDG&E. From 2023 through 2025, gas rates are assumed to escalate at four percent per year above inflation, which reflects historical rate increases between 2013 and 2018. Escalation of electricity rates from 2020 through 2025 is assumed to be four percent per year above inflation, based on electric utility estimates. After 2025, escalation rates for both natural gas and electric rates are assumed to drop to a more conservative one percent escalation per year above inflation for long-term rate trajectories beginning in 2026 through 2050. See Appendix 7.4 - **Utility Rate Schedules** for additional details.

## 2.2 Greenhouse Gas Emissions

The analysis uses the greenhouse gas (GHG) emissions estimates built-in to CBECC-Res. There are 8760 hourly multipliers accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard projections. Natural gas fugitive emissions, which are shown to be substantial, are not included. There are two strings of multipliers—one for Northern California climate zones, and another for Southern California climate zones.<sup>1</sup>

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<sup>1</sup> CBECC-Res multipliers are the same for CZs 1-5 and 11-13 (presumed to be Northern California), while there is another set of multipliers for CZs 6-10 and 14-16 (assumed to be Southern California).

### 3 Prototypes, Measure Packages, and Costs

This section describes the prototype and the scope of analysis drawing from previous 2019 Reach Code research where necessary.

A customized detached ADU prototype was built to reflect California construction. TRC designed the baseline prototype to be mixed fuel and have total EDR margins as close to zero as possible to reflect a prescriptively compliant new construction building in each climate zone.

ADUs are additional dwelling units typically built on the property of an existing single-family parcel. ADUs are defined as new construction in the energy code when they are ground-up developments, do not convert an existing space to livable space, and are not attached to the primary dwelling. The Reach Code Team leveraged prior research and performed interviews to help define the detached ADU baseline and measure packages, primarily to include infrastructural costs.

#### 3.1 Prior Reach Code Research

In 2019, the Statewide CA IOU Reach Codes Team analyzed the cost-effectiveness of residential new construction projects for mixed-fuel plus efficiency, all-electric plus efficiency, and demand flexibility packages (Statewide Reach Codes Team 2019a). Using this analysis, several cities and counties in California adopted local energy code amendments encouraging or requiring that low-rise residential new construction to be all-electric. However, many jurisdictions exempted ADUs from these requirements due to uncertainties around how infrastructural and operational costs may be different between mixed-fuel and all-electric detached ADUs, and to avoid potentially stifling ADU development.

Because the mixed-fuel packages plus efficiency ADUs are not subject to jurisdictional exemptions, this study focuses on a new construction all-electric detached ADU and discerns how infrastructural costs and operational costs may impact the cost-effectiveness compared to a mixed-fuel baseline.

#### 3.2 Prototype Characteristics

To determine a typical set of ADU characteristics, the Reach Code team contacted over twenty ADU builders and city staff members from regions representing Sacramento, the San Francisco Bay Area, the Los Angeles area, and the San Diego area. Ultimately, four builders with construction experience with multiple projects and two city staff members with experience reviewing and approving ADU project plans were interviewed. Respondents indicated that there are not particular determinants for siting and sizing detached ADUs other than the site conditions—maximizing available space is the key consideration. Responses varied greatly on detached ADU size, as client preference, location, and avoidance of impact fees were expressed as considerations. Sizes can range from roughly 300 ft<sup>2</sup> for a studio to over 1200 ft<sup>2</sup> for a two-bedroom unit. The Reach Code team selected an average size of 750 ft<sup>2</sup> as a typical size for a detached ADU. 750 ft<sup>2</sup> also relates to a threshold for state regulation over which impact fees and discretionary approval would be applied. Some other findings include:

- **Setback requirements** follow the four-foot setback requirements of state Assembly Bill 881. Mechanical equipment may not reside in the setbacks, however, interviewees indicated that there is always one side of the ADU that isn't against a setback. Mechanical equipment can usually be placed along those sides and be hidden by a shed or fence.
- Mechanical **equipment footprints** may be too big to include inside an ADU with limited floor area, so clients tend to want to locate the mechanical equipment outside. This is reflected in the all-electric Package 2 (see [Section 3.4](#)).
- Some cities have **noise ordinances** that limit maximum decibels at the property line, which may pose issues for exterior heat pump water heaters or heating, ventilation, and air-conditioning (HVAC) equipment. These maximum noise requirements range from 50-66 decibels (dBs), and exterior heat pump equipment commonly ranges between 45-60 decibels at the equipment. Interviewees did not express significant concerns about

noise ordinances because manufacturers can provide sound blankets to reduce the decibel rating by five or more decibels, or developers can locate equipment in an insulated shed to reduce noise.

- When adding a detached ADU the primary dwelling’s **electrical panel and service connection** nearly always needs to be upgraded at least to a 125-amp panel, and at least a 200-amp panel where solar PV is being installed. A 225-amp panel is also common. Electrical upgrades cost roughly \$3500, for most common existing panel sizes or upgraded panel sizes.
- The **distance** between the detached ADU and primary dwelling can range widely due to lot size and location of meter and other infrastructure, from as little as five feet to over 100 feet. Based on respondent feedback, the Reach Code Team used an average distance of 50 feet as the length for both the natural gas and electrical line extensions for costing purposes.
- Cities do not impose a differing **fee structure** between all-electric or mixed-fuel ADU design. Fees range from \$4,000 - \$6,000 including inspections.

Table 2 summarizes the ADU prototype characteristics, based on prescriptive Title 24 new construction requirements.

**Table 2. Detached ADU Baseline Mixed-fuel Prototype Characteristics**

<b>Conditioned floor area (ft<sup>2</sup>)</b>	750
<b>Number of stories</b>	1
<b>Distance from primary dwelling (ft)</b>	50
<b>Wall U-factor</b>	0.048 (CZ 1-5, 8-16), 0.065 (CZ 6,7)
<b>Roof Assembly</b>	Option B in Table 150.1-A of Title 24 2019
<b>Window-to-floor area ratio</b>	20%
<b>Solar PV size</b>	Each climate zone sized as ‘Specific PV System Scaling’ = 1 offsetting 100% of electricity load

### 3.3 Measure Definitions and Costs

ADU measures fall into two categories: those associated with building all-electric, and those associated with general efficiency and demand flexibility.

#### 3.3.1 All-Electric

For HVAC and water heating appliance-related costs, the Reach Code Team primarily leveraged measure definitions and costs from the 2019 Residential New Construction Reach Code Cost-Effectiveness Study. For HVAC system, air-conditioning is included in both baseline and proposed models. For in-house and site infrastructure the Reach Code Team developed new data based on interviews and RS Means.

The Reach Code Team found that a new detached ADU would require that the building owner upgrade the service connection to the lot in both the mixed-fuel ADU design and the all-electric design. The most common size for this upgrade is 225A, which would not represent an incremental cost from the mixed-fuel project to the all-electric project. Feeder wiring to the ADU and the ADU subpanel will need to be slightly upgraded for the all-electric design. Electric vehicle (EV) infrastructure upgrades are excluded from this analysis as ADUs are not required to have dedicated parking – however, a 225-amp panel is likely to be sufficient for some EV infrastructure for a majority of existing homes. The total cost for the all-electric measures is summarized in Table 3.

**Table 3. New Construction Detached ADU Construction Costs, All CZs**

	Mixed-Fuel Cost	All-Electric Measure	All-Electric Cost	All-Electric Incremental Cost	Source
Appliances: Space heater, water heater, clothes dryer, range.				(\$221)	Residential New Construction Report (2019) Table 6
In-house gas plumbing	\$540	In-house electrical upgrades for branch circuits	\$600	\$60	RSMeans
Site gas service extension	\$1,998	No site gas service	\$0	(\$1998)	Interviews, RSMeans
Site electrical service connection upgrade 225A	\$3,500	Site electrical service connection upgrade 225A	\$3,500	\$0	
100A Feeder to ADU with breaker	\$933	125A feeder to ADU	\$1,206	\$273	
100A ADU subpanel	\$733	125A ADU subpanel	\$946	\$213	
Outdoor closet	n/a	Heat pump water heater closet*	\$650	\$650	
<b>Total (HPWH outside closet)</b>	<b>\$7,704</b>		<b>\$6,901</b>	<b>(\$1,024)</b>	
<b>Total (HPWH in conditioned space)</b>	<b>\$7,704</b>		<b>\$6,251</b>	<b>(\$1,674)</b>	

\* Additional cost for outdoor closet is required only for climate zones where heat pump water heater is located 'Outside'.

### 3.3.2 Efficiency and Solar PV

The Reach Code team used the efficiency measures and costs developed in the 2019 Residential New Construction report (2019). The measures are summarized below by climate zone, including measure costs, in Table 4.

**Table 4. Measures for Detached ADU**

Measure Name	Applicable Climate Zones	Incremental Cost Description	Cost for ADU Prototype
Verified low leakage ducts in conditioned space (including HERS* verification)	All	\$0.31/ft <sup>2</sup> of floor area + \$110 HERS test	\$343
Low pressure drop ducts - 2% vs 5%	All	\$96/hr labor for installation	\$96
Reduced infiltration: 3ACH50 vs 5ACH50	13, 14, 16	\$0.115/ft <sup>2</sup> + \$100 HERS test	\$186
Exterior wall insulation: R-7.5 vs R-5 (U-0.043)	15	\$0.36/ft <sup>2</sup> of floor area	\$272
High performance attics: R-38 attic floor + R-30 Under Deck	1, 11-16	\$0.34/ft <sup>2</sup> attic floor + \$1.61/ft <sup>2</sup> roof	\$1,563
Cool roof - 0.25 vs 0.20	9-15	\$0.09/ft <sup>2</sup> of roof	\$73
Improved fenestration	1, 2, 16	\$4.23/ft <sup>2</sup> of window	\$381

Measure Name	Applicable Climate Zones	Incremental Cost Description	Cost for ADU Prototype
Slab edge insulation: R-10 vs R-0	1-5, 10-15	\$4/linear foot	\$339
Solar PV to offset 90% of the annual electricity use**	All	\$3.99/Wdc	\$800-\$6,200 depending on climate zone
<b>Total Costs</b>			\$4,500 - \$10,253 depending on climate zone.

\*HERS = Home Energy Rating System

\*\*Incremental cost for added PV over and above the prescriptive PV size in baseline models.

The cost for solar PV is derived from an LBNL study (Barbose, 2019) and Rooftop Solar PV System Measure Study (California Energy Commission, 2017), summarized in Table 5. Solar PV prices have been discounted to reflect the federal solar investment tax credit, by an average of 26% over 2021 and 2022.

**Table 5. Solar PV Measure Cost Breakdown**

	Unit Cost, \$2020 Present Value	Useful Life (yrs.)	Source
Solar PV System	\$3.70 / Wdc	30	LBNL Study
Inverter Replacement, year 11	\$0.15 / Wdc	10	E3 Rooftop Solar PV System Report (CEC 2017) <sup>2</sup>
Inverter Replacement, year 21	\$0.12 / Wdc	10	
Annual Maintenance Costs	\$0.02 / Wdc	1	
<b>Total</b>	<b>\$3.99 / Wdc</b>		

### 3.4 Measure Packages

The Reach Code Team examined the two electrification packages against a baseline mixed-fuel prescriptive package:

- Detached ADU Baseline Package: Mixed-fuel prescriptively built, including gas utility extension from primarily dwelling to detached ADU.
- All-Electric Prescriptive Minimum: All-electric prescriptively built, including heat pump water heater location per Residential Alternate Calculation Method (ACM), shown in Table 6. Includes electric utility extension upgrade from the primary dwelling to the detached ADU and avoided cost of gas utility extension. This package has the same PV size as mixed-fuel prescriptive baseline model, offsetting 100 percent of annual electricity demand.
- All-Electric Energy Efficiency + PV: All-electric prescriptively built as above, except water heater location is outside in exterior closet in all climate zones except Climate Zones 14, 15, and 16, plus energy efficiency measures, and additional solar PV (offsetting 90 percent of kWh load) to improve cost-effectiveness based on prior reach code research.

<sup>2</sup> Available at: <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>

**Table 6. Heat Pump Water Heater Location, All-Electric Prescriptive Baseline**

Climate Zone	Single-Family
01	Outside
02	Conditioned
03	Outside
04	Conditioned
05	Outside
06	Outside
07	Outside
08	Conditioned
09	Conditioned
10	Conditioned
11	Conditioned
12	Conditioned
13	Conditioned
14	Conditioned
15	Conditioned
16	Conditioned

Source: California Energy Commission, Residential ACM

The Reach Code Team analyzed some additional measure packages:

- 2022 TDV: Both electrification packages, ‘Prescriptive Minimum’ and ‘Energy Efficiency + PV’ are analyzed against the mixed-fuel baseline package using 2022 TDV multipliers and weather files in CBECC-Res 2022 software.
- Efficiency-Only: The All-Electric Energy Efficiency + PV package is analyzed using CBECC-Res 2019 without solar PV measure to evaluate the impact of efficiency measures alone, in the case that solar PV cannot be installed due to shading.

## 4 Results

Results are presented as per the prototype-specific Measure Packages described in Section 3.

There are several overarching factors to keep in mind when reviewing the results include:

- What constitutes a **'benefit'** or a **'cost'** varies with the scenarios because both energy savings, and incremental construction costs may be negative depending on the package. Typically, utility bill savings are categorized as a 'benefit' while incremental construction costs are treated as 'costs.' In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the 'benefit' while the utility bill negative savings are the 'cost.'
- All-electric packages will have lower **GHG emissions** than mixed-fuel packages in all cases, due to the clean power sources currently available from California's power providers.
- Since January 2020, compliance of low-rise residential building is analyzed using **Energy Design Rating (EDR)**. This rating scales from 1 to 100 with 100 being the performance equivalent of a 2006 International Energy Conservation Code (IECC). This study uses 'Total EDR Margin' as a compliance metric that accounts for all compliant loads along with renewable energy and battery storage. 'Total EDR Margin' of 0 represents a prescriptively compliant building that exactly matches the minimum energy budget prescribed by the 2019 T24 code.
- To receive the Energy Commission's approval, local reach codes that amend the energy code must **both be cost effective** compared to the mixed-fuel baseline package **and exceed the energy performance budget** using 'Total EDR Margin' metric (i.e., have a positive compliance margin) compared to the standard model in the compliance software. To emphasize these two important factors, the figures in this Section highlight in green the modeling results that have a positive compliance margin and/or are cost effective. This will allow readers to identify whether a scenario is fully or partially supportive of a reach code, and the opportunities/challenges that the scenario presents. Conversely, *Section 5* only highlights results that have **both** a positive compliance margin and are cost effective, to allow readers to identify reach code-ready scenarios.
- When performance modeling residential buildings of three stories or less (such as the Detached ADU), the Standard Design is electric if the Proposed Design is electric, which removes TDV-related penalties and associated negative compliance margins. This essentially allows for a **compliance pathway for all-electric residential buildings**.
- As mentioned in *Section 2.1.4*, the Reach Code Team coordinated with utilities to select tariffs for each prototype given the annual energy demand profile and the most prevalent rates in each utility territory. The Reach Code Team **did not compare a variety of tariffs** to determine their impact on cost-effectiveness although utility rate changes or updates can affect on-bill cost-effectiveness results.
- As a point of comparison, **mixed-fuel baseline** energy figures are provided in *Appendix 7.2*.
- The cost-effectiveness results for 2022 analysis differs from 2019 mainly in \$TDV savings, but also differs slightly in energy consumption which translates in minor difference in on-bill energy savings. The Reach Code Team has not reported the software outputs for 2022 EDR margins as the 2022 Title 24 Part 6 code is still being developed.

### 4.1 All-Electric Prescriptive Minimum Results

Table 7 shows results of the ADU all-electric prescriptive minimum compared to a mixed-fuel baseline using 2019 TDV, with heat pump water heater location as per Residential ACM manual (reference Table 6). With federal-minimum efficiencies for mechanical equipment, the all-electric prescriptive pathway is not cost effective in any climate zone using IOU rates with 2019 TDV. However, with relatively lower electric prices and higher gas prices of POUs, the package is on-bill cost effective in some climate zones.

**Table 7. Cost-Effectiveness for ADU: All-Electric Prescriptive Minimum, 2019 TDV**

CZ	Utility	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Reductions (mtons)	Total EDR Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	Lifecycle \$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(3,600)	259	0.1	0.00	(\$1,024)	(\$7,213)	(\$6,951)	0.1	0.1	(\$6,190)	(\$5,927)
CZ02	PG&E	(2,646)	198	0.3	0.00	(\$1,674)	(\$3,753)	(\$3,897)	0.4	0.4	(\$2,079)	(\$2,223)
CZ03	PG&E	(2,397)	174	0.3	0.00	(\$1,024)	(\$3,518)	(\$4,366)	0.3	0.2	(\$2,495)	(\$3,342)
CZ04	PG&E	(2,263)	170	0.3	0.00	(\$1,674)	(\$2,996)	(\$2,765)	0.6	0.6	(\$1,322)	(\$1,092)
CZ04-2	CPAU	(2,263)	170	0.3	0.00	(\$1,674)	\$1,389	(\$2,765)	>1	0.6	\$3,062	(\$1,092)
CZ05	PG&E	(2,524)	170	0.2	0.00	(\$1,024)	(\$4,969)	(\$4,883)	0.2	0.2	(\$3,945)	(\$3,860)
CZ05-2	SCG	(2,524)	170	0.2	0.00	(\$1,024)	(\$4,842)	(\$4,883)	0.2	0.2	(\$3,818)	(\$3,860)
CZ06	SCE	(1,853)	136	0.3	0.00	(\$1,024)	(\$2,943)	(\$3,154)	0.3	0.3	(\$1,920)	(\$2,131)
CZ06-2	LA	(1,853)	136	0.3	0.00	(\$1,024)	\$1,357	(\$3,154)	>1	0.3	\$2,381	(\$2,131)
CZ07	SDG&E	(1,604)	121	0.3	0.00	(\$1,024)	(\$3,993)	(\$3,035)	0.3	0.3	(\$2,970)	(\$2,012)
CZ08	SCE	(1,594)	122	0.4	0.00	(\$1,674)	(\$2,282)	(\$2,279)	0.7	0.7	(\$609)	(\$605)
CZ08-2	LA	(1,594)	122	0.4	0.00	(\$1,674)	\$1,477	(\$2,279)	>1	0.7	\$3,151	(\$605)
CZ09	SCE	(1,669)	128	0.6	0.00	(\$1,674)	(\$2,403)	(\$2,476)	0.7	0.7	(\$729)	(\$803)
CZ09-2	LA	(1,669)	128	0.6	0.00	(\$1,674)	\$1,509	(\$2,476)	>1	0.7	\$3,183	(\$803)
CZ10	SDG&E	(1,714)	130	0.5	0.00	(\$1,674)	(\$5,035)	(\$2,544)	0.3	0.7	(\$3,362)	(\$871)
CZ10-2	SCE	(1,714)	130	0.5	0.00	(\$1,674)	(\$2,549)	(\$2,544)	0.7	0.7	(\$876)	(\$871)
CZ11	PG&E	(2,333)	177	0.4	0.00	(\$1,674)	(\$3,533)	(\$3,676)	0.5	0.5	(\$1,859)	(\$2,003)
CZ12	PG&E	(2,319)	182	0.5	0.00	(\$1,674)	(\$2,695)	(\$3,257)	0.6	0.5	(\$1,022)	(\$1,584)
CZ12-2	SMUD	(2,319)	182	0.5	0.00	(\$1,674)	\$627	(\$3,257)	>1	0.5	\$2,301	(\$1,584)
CZ13	PG&E	(2,158)	167	0.3	0.00	(\$1,674)	(\$2,683)	(\$3,334)	0.6	0.5	(\$1,009)	(\$1,661)
CZ14	SDG&E	(2,388)	175	0.7	0.00	(\$1,674)	(\$7,894)	(\$3,378)	0.2	0.5	(\$6,220)	(\$1,705)
CZ14-2	SCE	(2,388)	175	0.7	0.00	(\$1,674)	(\$4,476)	(\$3,378)	0.4	0.5	(\$2,803)	(\$1,705)
CZ15	SCE	(1,330)	99	(0.2)	0.00	(\$1,674)	(\$1,766)	(\$2,398)	0.9	0.7	(\$92)	(\$724)
CZ16	PG&E	(3,439)	274	(0.3)	0.00	(\$1,674)	(\$5,558)	(\$6,187)	0.3	0.3	(\$3,885)	(\$4,514)
CZ16-2	LA	(3,439)	274	(0.3)	0.00	(\$1,674)	\$2,821	(\$6,187)	>1	0.3	\$4,495	(\$4,514)

As shown in Table 8 below, the all-electric prescriptive minimum detached ADU is cost effective on TDV basis in all climate zones except 1 and 16 when using 2022 TDV and weather files, in contrast with results using 2019 TDV.

**Table 8. Cost-Effectiveness for ADU: All-Electric Prescriptive Minimum, 2022 TDV**

CZ	Utility	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Reductions (mtons)	Total EDR Margin	Upfront Incremental Package Cost	Lifecycle Utility Cost Savings	Lifecycle \$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(3,353)	242	0.7	0.00	(\$1,024)	(\$6,533)	(\$1,656)	0.2	0.6	(\$5,509)	(\$632)
CZ02	PG&E	(2,445)	180	0.7	0.00	(\$1,674)	(\$3,617)	\$219	0.5	>1	(\$1,944)	\$1,893
CZ03	PG&E	(2,111)	153	0.6	0.00	(\$1,024)	(\$3,192)	(\$7)	0.3	137.2	(\$2,168)	\$1,016
CZ04	PG&E	(1,880)	142	0.6	0.00	(\$1,674)	(\$2,437)	(\$167)	0.7	10.0	(\$763)	\$1,507
CZ04-2	CPAU	(1,880)	142	0.6	0.00	(\$1,674)	\$2,513	(\$167)	>1	10.0	\$4,186	\$1,507
CZ05	PG&E	(2,113)	145	0.6	0.00	(\$1,024)	(\$3,904)	(\$811)	0.3	1.3	(\$2,880)	\$212
CZ05-2	SCG	(2,113)	145	0.6	0.00	(\$1,024)	(\$3,564)	(\$811)	0.3	1.3	(\$2,541)	\$212
CZ06	SCE	(1,623)	121	0.4	0.00	(\$1,024)	(\$2,545)	\$62	0.4	>1	(\$1,521)	\$1,086
CZ06-2	LA	(1,623)	121	0.4	0.00	(\$1,024)	\$1,381	\$62	>1	>1	\$2,405	\$1,086
CZ07	SDG&E	(1,563)	117	0.4	0.00	(\$1,024)	(\$4,231)	\$98	0.2	>1	(\$3,207)	\$1,122
CZ08	SCE	(1,426)	114	0.4	0.00	(\$1,674)	(\$1,738)	\$606	1.0	>1	(\$64)	\$2,279
CZ08-2	LA	(1,426)	114	0.4	0.00	(\$1,674)	\$1,598	\$606	>1	>1	\$3,271	\$2,279
CZ09	SCE	(1,517)	119	0.4	0.00	(\$1,674)	(\$1,986)	\$239	0.8	>1	(\$312)	\$1,912
CZ09-2	LA	(1,517)	119	0.4	0.00	(\$1,674)	\$1,556	\$239	>1	>1	\$3,229	\$1,912
CZ10	SDG&E	(1,631)	125	0.4	0.00	(\$1,674)	(\$4,978)	\$537	0.3	>1	(\$3,304)	\$2,210
CZ10-2	SCE	(1,631)	125	0.4	0.00	(\$1,674)	(\$2,363)	\$537	0.7	>1	(\$689)	\$2,210
CZ11	PG&E	(2,155)	163	0.7	0.00	(\$1,674)	(\$3,472)	\$192	0.5	>1	(\$1,798)	\$1,865
CZ12	PG&E	(2,108)	163	0.7	0.00	(\$1,674)	(\$2,788)	\$244	0.6	>1	(\$1,114)	\$1,917
CZ12-2	SMUD	(2,108)	163	0.7	0.00	(\$1,674)	\$464	\$244	>1	>1	\$2,138	\$1,917
CZ13	PG&E	(1,887)	143	0.7	0.00	(\$1,674)	(\$2,765)	(\$93)	0.6	18.0	(\$1,092)	\$1,581
CZ14	SDG&E	(2,187)	158	0.4	0.00	(\$1,674)	(\$7,311)	(\$321)	0.2	5.2	(\$5,638)	\$1,353
CZ14-2	SCE	(2,187)	158	0.4	0.00	(\$1,674)	(\$4,058)	(\$321)	0.4	5.2	(\$2,385)	\$1,353
CZ15	SCE	(1,286)	97	0.5	0.00	(\$1,674)	(\$1,636)	(\$112)	1.0	15.0	\$38	\$1,562
CZ16	PG&E	(3,137)	249	0.5	0.00	(\$1,674)	(\$4,873)	(\$2,248)	0.3	0.7	(\$3,200)	(\$575)
CZ16-2	LA	(3,137)	249	0.5	0.00	(\$1,674)	\$2,502	(\$2,248)	>1	0.7	\$4,175	(\$575)

### 4.2 All Electric Plus Efficiency and PV Results

Table 9 shows results of the all-electric prescriptive minimum using 2019 TDV with 1) heat pump water heater location is outside in exterior closet in all climate zones except Climate Zones 14, 15, and 16, 2) energy efficiency measures, and 3) additional solar PV capacity. The all-electric detached ADU is cost effective using either the on-bill or TDV approach in several climate zones. Also, similar to the package above, it is always on-bill cost effective using POU rates.

**Table 9. Cost-Effectiveness for ADU: All-Electric Energy Efficiency + Additional PV, 2019 TDV**

CZ	Utility	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Reductions (mtons)	Total EDR Margin	Upfront Incremental Package Cost	Lifecycle Utility Cost Savings	Lifecycle \$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(524)	259	0.8	29.30	\$5,794	\$4,323	\$4,123	0.7	0.7	(\$1,472)	(\$1,671)
CZ02	PG&E	(497)	198	0.8	18.70	\$3,207	\$2,159	\$3,333	0.7	1.0	(\$1,048)	\$126
CZ03	PG&E	(459)	174	0.8	19.00	\$2,363	\$2,331	\$2,348	1.0	1.0	(\$32)	(\$15)
CZ04	PG&E	(465)	170	0.7	16.10	\$2,314	\$1,934	\$2,635	0.8	1.1	(\$380)	\$320
CZ04-2	CPAU	(465)	170	0.7	16.10	\$2,314	\$5,434	\$2,635	2.3	1.1	\$3,120	\$320
CZ05	PG&E	(472)	170	0.7	20.00	\$2,339	\$2,538	\$2,206	1.1	0.9	\$199	(\$133)
CZ05-2	SCG	(472)	170	0.7	20.00	\$2,339	\$2,664	\$2,206	1.1	0.9	\$326	(\$133)
CZ06	SCE	(427)	136	0.6	16.10	\$1,512	\$1,836	\$1,898	1.2	1.3	\$324	\$386
CZ06-2	LA	(427)	136	0.6	16.10	\$1,512	\$4,487	\$1,898	3.0	1.3	\$2,975	\$386
CZ07	SDG&E	(404)	121	0.6	14.00	\$1,170	\$2,843	\$1,134	2.4	1.0	\$1,672	(\$36)
CZ08	SCE	(421)	122	0.6	12.20	\$1,244	\$1,503	\$1,618	1.2	1.3	\$260	\$375
CZ08-2	LA	(421)	122	0.6	12.20	\$1,244	\$4,058	\$1,618	3.3	1.3	\$2,814	\$375
CZ09	SCE	(439)	128	0.8	12.90	\$1,317	\$1,641	\$2,170	1.2	1.6	\$324	\$853
CZ09-2	LA	(439)	128	0.8	12.90	\$1,317	\$4,227	\$2,170	3.2	1.6	\$2,910	\$853
CZ10	SDG&E	(449)	130	0.8	12.20	\$1,680	\$2,168	\$2,065	1.3	1.2	\$488	\$385
CZ10-2	SCE	(449)	130	0.8	12.20	\$1,680	\$1,632	\$2,065	1.0	1.2	(\$49)	\$385
CZ11	PG&E	(535)	177	0.9	15.00	\$3,975	\$1,994	\$3,433	0.5	0.9	(\$1,980)	(\$542)
CZ12	PG&E	(494)	182	0.9	15.60	\$4,121	\$1,508	\$3,510	0.4	0.9	(\$2,613)	(\$611)
CZ12-2	SMUD	(494)	182	0.9	15.60	\$4,121	\$4,685	\$3,510	1.1	0.9	\$564	(\$611)
CZ13	PG&E	(525)	167	0.7	13.30	\$3,991	\$1,917	\$3,109	0.5	0.8	(\$2,074)	(\$881)
CZ14	SDG&E	(515)	175	1.1	15.90	\$3,316	\$3,257	\$3,874	1.0	1.2	(\$59)	\$558
CZ14-2	SCE	(515)	175	1.1	15.90	\$3,316	\$2,363	\$3,874	0.7	1.2	(\$953)	\$558
CZ15	SCE	(544)	99	0.2	7.40	\$1,744	\$1,630	\$1,534	0.9	0.9	(\$115)	(\$210)
CZ16	PG&E	(547)	274	0.4	23.10	\$4,091	\$3,785	\$3,801	0.9	0.9	(\$306)	(\$290)
CZ16-2	LA	(547)	274	0.4	23.10	\$4,091	\$9,042	\$3,801	2.2	0.9	\$4,951	(\$290)

Table 10 shows that All-Electric detached ADUs are TDV cost effective in all climate zones using 2022 TDV when including efficiency measures and additional solar PV. Note that the EDR margins have been removed since the 2022 Title 24 Part 6 code has not yet completed rulemaking at the time of the draft, but preliminary results indicate that all EDR margins will be positive.

**Table 10. Cost-Effectiveness for ADU: All-Electric Energy Efficiency + Additional PV, 2022 TDV Results**

CZ	Utility	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Reductions (mtons)	Total EDR Margin	Upfront Incremental Package Cost	Lifecycle Utility Cost Savings	Lifecycle \$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(512)	242	0.3	>0	\$5,648	\$3,588	\$7,903	0.6	1.4	(\$2,060)	\$2,255
CZ02	PG&E	(479)	180	0.4	>0	\$3,012	\$1,936	\$6,490	0.6	2.2	(\$1,076)	\$3,478
CZ03	PG&E	(441)	153	0.3	>0	\$2,070	\$2,119	\$5,235	1.0	2.5	\$49	\$3,165
CZ04	PG&E	(444)	142	0.4	>0	\$1,875	\$1,780	\$4,473	0.9	2.4	(\$95)	\$2,597
CZ04-2	CPAU	(444)	142	0.4	>0	\$1,875	\$5,210	\$4,473	2.8	2.4	\$3,335	\$2,597
CZ05	PG&E	(443)	145	0.4	>0	\$1,949	\$2,121	\$4,416	1.1	2.3	\$173	\$2,468
CZ05-2	SCG	(443)	145	0.4	>0	\$1,949	\$2,461	\$4,416	1.3	2.3	\$513	\$2,468
CZ06	SCE	(413)	121	0.3	>0	\$1,049	\$1,550	\$4,256	1.5	4.1	\$501	\$3,208
CZ06-2	LA	(413)	121	0.3	>0	\$1,049	\$4,067	\$4,256	3.9	4.1	\$3,018	\$3,208
CZ07	SDG&E	(409)	117	0.3	>0	\$1,073	\$2,480	\$3,899	2.3	3.6	\$1,407	\$2,826
CZ08	SCE	(431)	114	0.3	>0	\$975	\$1,458	\$4,086	1.5	4.2	\$483	\$3,110
CZ08-2	LA	(431)	114	0.3	>0	\$975	\$3,825	\$4,086	3.9	4.2	\$2,850	\$3,110
CZ09	SCE	(434)	119	0.3	>0	\$1,049	\$1,608	\$4,002	1.5	3.8	\$560	\$2,954
CZ09-2	LA	(434)	119	0.3	>0	\$1,049	\$3,960	\$4,002	3.8	3.8	\$2,912	\$2,954
CZ10	SDG&E	(457)	125	0.3	>0	\$1,485	\$1,760	\$4,404	1.2	3.0	\$274	\$2,919
CZ10-2	SCE	(457)	125	0.3	>0	\$1,485	\$1,525	\$4,404	1.0	3.0	\$40	\$2,919
CZ11	PG&E	(524)	163	0.4	>0	\$3,853	\$1,517	\$5,752	0.4	1.5	(\$2,336)	\$1,899
CZ12	PG&E	(481)	163	0.4	>0	\$3,829	\$1,293	\$5,448	0.3	1.4	(\$2,535)	\$1,619
CZ12-2	SMUD	(481)	163	0.4	>0	\$3,829	\$4,066	\$5,448	1.1	1.4	\$237	\$1,619
CZ13	PG&E	(514)	143	0.4	>0	\$3,503	\$2,400	\$4,852	0.7	1.4	(\$1,103)	\$1,349
CZ14	SDG&E	(496)	158	0.3	>0	\$2,731	\$2,772	\$5,873	1.0	2.2	\$41	\$3,142
CZ14-2	SCE	(496)	158	0.3	>0	\$2,731	\$2,090	\$5,873	0.8	2.2	(\$641)	\$3,142
CZ15	SCE	(539)	97	0.5	>0	\$1,549	\$1,608	\$3,383	1.0	2.2	\$58	\$1,834
CZ16	PG&E	(526)	249	0.3	>0	\$3,871	\$3,173	\$6,689	0.8	1.7	(\$698)	\$2,818
CZ16-2	LA	(526)	249	0.8	>0	\$3,871	\$8,099	\$6,689	2.1	1.7	\$4,227	\$2,818

## 5 Summary

The Reach Codes Team developed packages of energy efficiency measures as well as packages combining energy efficiency with solar PV generation, simulated them in building modeling software, and gathered costs to determine the cost-effectiveness of multiple scenarios. The Reach Codes Team coordinated assumptions with multiple utilities, cities, and building community experts to develop a set of assumptions considered reasonable in the current market. Changing assumptions, such as the period of analysis, measure selection, cost assumptions, energy escalation rates, or utility tariffs are likely to change results.

Table 11 summarizes results for each prototype and depicts the compliance margins achieved for each climate zone and package. Because local reach codes must both exceed the Energy Commission performance budget (i.e., have a positive compliance margin) and be cost-effective, the Reach Code Team highlighted cells meeting these two requirements to help clarify the upper boundary for potential reach code policies:

- Cells highlighted in **green** depict a positive compliance margin and cost-effective results using both On-Bill and TDV approaches.
- Cells highlighted in **yellow** depict a positive compliance and cost-effective results using either the On-Bill or TDV approach.
- Cells **not highlighted** either depict a negative compliance margin or a package that was not cost effective using either the On-Bill or TDV approach.

The Reach Code Team found that all-electric detached ADUs can have positive compliance margins and are cost effective in all climate zones through either the utility bill or TDV metrics when compared to a mixed fuel baseline. This is true for either prescriptive minimum or efficiency + PV packages. To promote decarbonization, local jurisdictions may choose to include new construction detached ADUs in all-electric requirements.

**Table 11. Detached ADU Summary of EDR Margin and Cost-Effectiveness**

CZ	Utility	All Electric, 2019 EDR		All Electric, 2022 EDR	
		Code Minimum	EE+PV	Code Minimum	EE+PV
CZ01	PG&E	0.0	29.3	0.0	>0
CZ02	PG&E	0.0	18.7	0.0	>0
CZ03	PG&E	0.0	19.0	0.0	>0
CZ04	PG&E	0.0	16.1	0.0	>0
CZ04-2	CPAU	0.0	16.1	0.0	>0
CZ05	PG&E	0.0	20.0	0.0	>0
CZ05-2	SCG	0.0	20.0	0.0	>0
CZ06	SCE	0.0	16.1	0.0	>0
CZ06-2	LADWP	0.0	16.1	0.0	>0
CZ07	SDG&E	0.0	14.0	0.0	>0
CZ08	SCE	0.0	12.2	0.0	>0
CZ08-2	LADWP	0.0	12.2	0.0	>0
CZ09	SCE	0.0	12.9	0.0	>0
CZ09-2	LADWP	0.0	12.9	0.0	>0
CZ10	SDG&E	0.0	12.2	0.0	>0
CZ10-2	SCE	0.0	12.2	0.0	>0
CZ11	PG&E	0.0	15.0	0.0	>0
CZ12	PG&E	0.0	15.6	0.0	>0
CZ12-2	SMUD	0.0	15.6	0.0	>0
CZ13	PG&E	0.0	13.3	0.0	>0
CZ14	SDG&E	0.0	15.9	0.0	>0
CZ14-2	SCE	0.0	15.9	0.0	>0
CZ15	SCE	0.0	7.4	0.0	>0
CZ16	PG&E	0.0	23.1	0.0	>0
CZ16-2	LADWP	0.0	23.1	0.0	>0

## 6 References

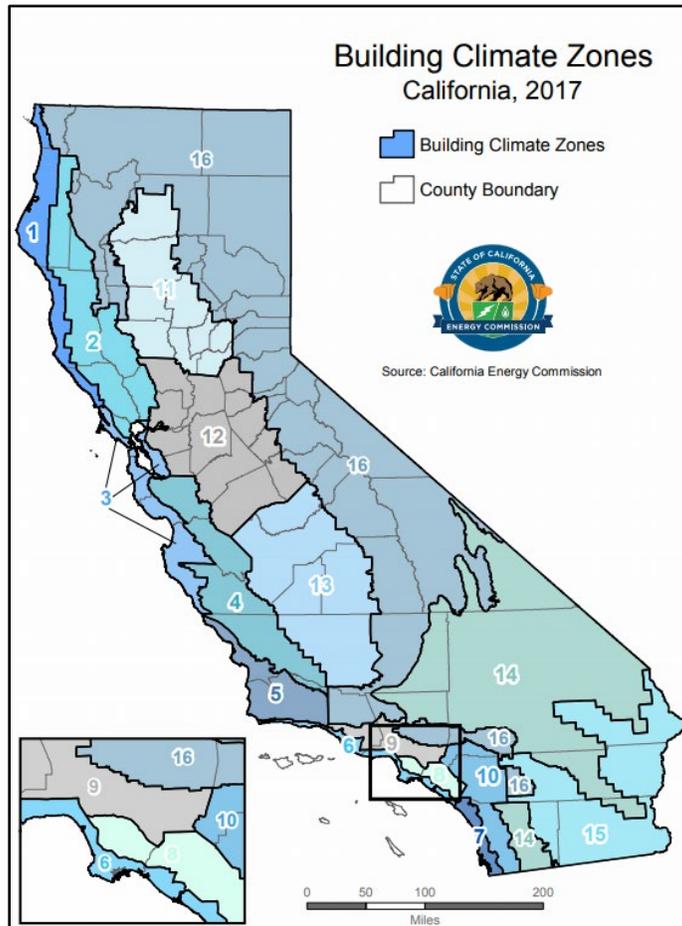
- Barbose, G. a. (2019, October). Tracking the Sun. Pricing and Design Trends for Distributed Photovoltaic Systems in the United States 2019 Edition. Retrieved from [https://emp.lbl.gov/sites/default/files/tracking\\_the\\_sun\\_2019\\_report.pdf](https://emp.lbl.gov/sites/default/files/tracking_the_sun_2019_report.pdf)
- California Energy Commission. (2017). Rooftop Solar PV System. Measure number: 2019-Res-PV-D Prepared by Energy and Environmental Economics, Inc. Retrieved from <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>
- California Energy Commission. (2019). Retrieved from [https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/documents/2019-10-17\\_workshop/2019-10-17\\_presentations.php](https://ww2.energy.ca.gov/title24/2022standards/prerulemaking/documents/2019-10-17_workshop/2019-10-17_presentations.php)
- E3. (2020). *E3 Rooftop Solar PV System Report*. Retrieved from <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>
- E-CFR. (2020). [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431\\_197](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197). Retrieved from Electronic Code of Federal Regulations: [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431\\_197](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197)
- National Renewable Energy Laboratory. (2018). *National Renewable Energy Laboratory (NREL) Q1 2018*. Retrieved from <https://www.nrel.gov/docs/fy19osti/72399.pdf>
- Self Generation Incentive Program. (2020). Retrieved from [http://localenergycodes.com/download/430/file\\_path/fieldList/PV%20Plus%20Battery%20Storage%20Report](http://localenergycodes.com/download/430/file_path/fieldList/PV%20Plus%20Battery%20Storage%20Report)
- Statewide Reach Code Team. (2019, August). 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. Retrieved from [https://localenergycodes.com/download/800/file\\_path/fieldList/2019%20Res%20NC%20Reach%20Codes](https://localenergycodes.com/download/800/file_path/fieldList/2019%20Res%20NC%20Reach%20Codes)

## 7 Appendices

### 7.1 Map of California Climate Zones

Climate zone geographical boundaries are depicted in Figure 1. The map in Figure 1 along with a zip-code search directory is available at: [https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)

Figure 1. Map of California climate zones.



## 7.2 Mixed Fuel Baseline Energy Figures

Table 12 show the annual electricity and natural gas consumption and on-bill cost, total EDR margin, and GHG emissions for each prototype under the mixed-fuel design baseline. The non-zero EDR margins are largely a result of compliance software complexities, and they are not expected to significantly impact the proposed case results or nature of recommendations. The annual kWh usage is 0 since code requires that PV offset 100 percent of kWh usage.

**Table 12. Detached ADU Mixed Fuel Baseline**

CZ	Utility	Annual Electricity Consumption (kWh)	Annual Natural Gas Consumption (Therms)	Annual Electricity Cost	Annual Natural Gas Cost	Total Annual Utility Cost	Annual GHG Emissions (mtons)
CZ01	PG&E	0	259	\$194	\$358	\$552	1.0
CZ02	PG&E	0	198	\$194	\$269	\$463	0.9
CZ03	PG&E	0	174	\$189	\$237	\$425	0.9
CZ04	PG&E	0	170	\$185	\$231	\$416	0.8
CZ04-2	CPAU	0	170	\$131	\$297	\$429	0.8
CZ05	PG&E	0	170	\$167	\$232	\$399	0.8
CZ05-2	SCG	0	170	\$167	\$237	\$404	0.8
CZ06	SCE	0	136	\$156	\$202	\$358	0.8
CZ06-2	LA	0	136	\$124	\$202	\$326	0.8
CZ07	SDG&E	0	121	\$160	\$200	\$359	0.8
CZ08	SCE	0	122	\$161	\$187	\$348	0.9
CZ08-2	LA	0	122	\$124	\$187	\$311	0.9
CZ09	SCE	0	128	\$172	\$193	\$366	1.1
CZ09-2	LA	0	128	\$125	\$193	\$318	1.1
CZ10	SDG&E	0	130	\$166	\$215	\$381	1.0
CZ10-2	SCE	0	130	\$183	\$195	\$379	1.0
CZ11	PG&E	0	177	\$205	\$244	\$450	1.0
CZ12	PG&E	0	182	\$197	\$250	\$447	1.0
CZ12-2	SMUD	0	182	\$293	\$250	\$542	1.0
CZ13	PG&E	0	167	\$224	\$231	\$454	0.9
CZ14	SDG&E	0	175	\$178	\$290	\$468	1.4
CZ14-2	SCE	0	175	\$212	\$243	\$455	1.4
CZ15	SCE	0	99	\$333	\$163	\$496	0.5
CZ16	PG&E	0	274	\$181	\$379	\$560	0.6
CZ16-2	LA	0	274	\$123	\$379	\$502	0.6

### 7.3 All-Electric Energy Efficiency Only Results

Table 13 and Table 14 show the cost-effectiveness results for the all-electric energy efficiency package without PV compared to the mixed-fuel baseline without PV, in scenarios where PV cannot be installed. Without PV, the efficiency packages selected are cost effective under 2022 TDV in most Climate Zones. It is likely that a different set of efficiency measures can improve cost effectiveness, given that the all-electric prescriptive minimum is TDV cost-effective (reference Table 8), though optimization of efficiency measure packages have not been examined in this study.

Note that the 2022 EDR margins have been removed since the 2022 Title 24 Part 6 code has not yet completed rulemaking at the time of the draft, but preliminary results indicate that all EDR margins will be positive.

**Table 13. Cost-Effectiveness for ADU: All-Electric Energy Efficiency Without PV, 2019 TDV**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Total EDR Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(2,760)	259	0.8	9.30	\$1,698	(\$7,485)	(\$3,679)	-4.4	-2.2	(\$9,183)	(\$5,377)
CZ02	PG&E	(2,492)	198	0.6	1.00	\$135	(\$7,004)	(\$3,739)	-51.9	-27.7	(\$7,139)	(\$3,874)
CZ03	PG&E	(2,151)	174	0.5	2.80	(\$246)	(\$6,522)	(\$3,578)	0.0	0.1	(\$6,276)	(\$3,332)
CZ04	PG&E	(2,171)	170	0.5	0.30	(\$246)	(\$6,890)	(\$3,428)	0.0	0.1	(\$6,644)	(\$3,182)
CZ04-2	CPAU	(2,171)	170	0.5	0.30	(\$246)	(\$3,483)	(\$3,428)	0.1	0.1	(\$3,237)	(\$3,182)
CZ05	PG&E	(2,284)	170	0.5	2.70	(\$246)	(\$7,393)	(\$4,140)	0.0	0.1	(\$7,147)	(\$3,894)
CZ05-2	SCG	(2,284)	170	0.5	2.70	(\$246)	(\$7,266)	(\$4,140)	0.0	0.1	(\$7,021)	(\$3,894)
CZ06	SCE	(1,790)	136	0.4	1.70	(\$585)	(\$3,428)	(\$2,823)	0.2	0.2	(\$2,843)	(\$2,238)
CZ06-2	LA	(1,790)	136	0.4	1.70	(\$585)	\$1,475	(\$2,823)	>1	0.2	\$2,060	(\$2,238)
CZ07	SDG&E	(1,592)	121	0.4	0.70	(\$585)	(\$5,304)	(\$3,042)	0.1	0.2	(\$4,719)	(\$2,457)
CZ08	SCE	(1,622)	122	0.4	0	(\$585)	(\$2,987)	(\$2,644)	0.2	0.2	(\$2,402)	(\$2,059)
CZ08-2	LA	(1,622)	122	0.4	0	(\$585)	\$1,405	(\$2,644)	>1	0.2	\$1,990	(\$2,059)
CZ09	SCE	(1,685)	128	0.4	1.50	(\$512)	(\$2,763)	(\$2,198)	0.2	0.2	(\$2,251)	(\$1,686)
CZ09-2	LA	(1,685)	128	0.4	1.50	(\$512)	\$1,481	(\$2,198)	>1	0.2	\$1,993	(\$1,686)
CZ10	SDG&E	(1,714)	130	0.4	1.60	(\$173)	(\$6,070)	(\$2,211)	0.0	0.1	(\$5,897)	(\$2,038)
CZ10-2	SCE	(1,714)	130	0.4	1.60	(\$173)	(\$2,821)	(\$2,211)	0.1	0.1	(\$2,649)	(\$2,038)
CZ11	PG&E	(2,255)	177	0.5	2.60	\$1,390	(\$5,976)	(\$2,879)	-4.3	-2.1	(\$7,366)	(\$4,270)
CZ12	PG&E	(2,282)	182	0.5	1.20	\$1,390	(\$6,151)	(\$3,012)	-4.4	-2.2	(\$7,541)	(\$4,403)
CZ12-2	SMUD	(2,282)	182	0.5	1.20	\$1,390	\$730	(\$3,012)	0.5	-2.2	(\$661)	(\$4,403)
CZ13	PG&E	(2,084)	167	0.5	2.40	\$1,577	(\$5,407)	(\$2,465)	-3.4	-1.6	(\$6,983)	(\$4,041)
CZ14	SDG&E	(2,066)	175	0.6	4.50	\$927	(\$5,783)	(\$1,635)	-6.2	-1.8	(\$6,710)	(\$2,562)
CZ14-2	SCE	(2,066)	175	0.6	4.50	\$927	(\$3,804)	(\$1,635)	-4.1	-1.8	(\$4,731)	(\$2,562)
CZ15	SCE	(949)	99	0.4	4.80	\$1,013	(\$413)	(\$10)	-0.4	0.0	(\$1,426)	(\$1,023)
CZ16	PG&E	(2,872)	274	0.9	5.10	\$799	(\$6,367)	(\$4,021)	-8.0	-5.0	(\$7,166)	(\$4,820)
CZ16-2	LA	(2,872)	274	0.9	5.10	\$799	\$3,889	(\$4,021)	4.9	-5.0	\$3,090	(\$4,820)

**Table 14. Cost-Effectiveness for ADU: All-Electric Energy Efficiency Without PV, 2022 TDV**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Total EDR Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
CZ01	PG&E	(2,629)	242	0.7	>0	\$1,698	(\$7,361)	\$1,769	-4.3	1.0	(\$9,059)	\$71
CZ02	PG&E	(2,279)	180	0.5	>0	\$135	(\$6,500)	\$1,060	-48.2	7.9	(\$6,635)	\$925
CZ03	PG&E	(1,958)	153	0.4	>0	(\$246)	(\$6,269)	\$764	0.0	>1	(\$6,023)	\$1,009
CZ04	PG&E	(1,852)	142	0.4	>0	(\$246)	(\$6,124)	\$57	0.0	>1	(\$5,879)	\$303
CZ04-2	CPAU	(1,852)	142	0.4	>0	(\$246)	(\$3,703)	\$57	0.1	>1	(\$3,457)	\$303
CZ05	PG&E	(1,984)	145	0.4	>0	(\$246)	(\$6,680)	(\$167)	0.0	1.5	(\$6,434)	\$78
CZ05-2	SCG	(1,984)	145	0.4	>0	(\$246)	(\$6,340)	(\$167)	0.0	1.5	(\$6,095)	\$78
CZ06	SCE	(1,585)	121	0.4	>0	(\$585)	(\$2,706)	\$615	0.2	>1	(\$2,121)	\$1,200
CZ06-2	LA	(1,585)	121	0.4	>0	(\$585)	\$1,466	\$615	>1	>1	\$2,051	\$1,200
CZ07	SDG&E	(1,520)	117	0.4	>0	(\$585)	(\$5,017)	\$528	0.1	>1	(\$4,432)	\$1,113
CZ08	SCE	(1,499)	114	0.3	>0	(\$585)	(\$2,627)	\$493	0.2	>1	(\$2,042)	\$1,078
CZ08-2	LA	(1,499)	114	0.3	>0	(\$585)	\$1,456	\$493	>1	>1	\$2,041	\$1,078
CZ09	SCE	(1,545)	119	0.3	>0	(\$512)	(\$2,351)	\$421	0.2	>1	(\$1,839)	\$933
CZ09-2	LA	(1,545)	119	0.3	>0	(\$512)	\$1,511	\$421	>1	>1	\$2,023	\$933
CZ10	SDG&E	(1,641)	125	0.4	>0	(\$173)	(\$5,824)	\$674	0.0	>1	(\$5,651)	\$847
CZ10-2	SCE	(1,641)	125	0.4	>0	(\$173)	(\$2,814)	\$674	0.1	>1	(\$2,641)	\$847
CZ11	PG&E	(2,087)	163	0.4	>0	\$1,390	(\$5,602)	\$1,063	-4.0	0.8	(\$6,993)	(\$328)
CZ12	PG&E	(2,094)	163	0.4	>0	\$1,390	(\$5,856)	\$634	-4.2	0.5	(\$7,246)	(\$757)
CZ12-2	SMUD	(2,094)	163	0.4	>0	\$1,390	\$500	\$634	0.4	0.5	(\$890)	(\$757)
CZ13	PG&E	(1,786)	143	0.4	>0	\$1,577	(\$4,659)	\$995	-3.0	0.6	(\$6,236)	(\$582)
CZ14	SDG&E	(1,887)	158	0.5	>0	\$927	(\$5,466)	\$1,460	-5.9	1.6	(\$6,393)	\$534
CZ14-2	SCE	(1,887)	158	0.5	>0	\$927	(\$3,266)	\$1,460	-3.5	1.6	(\$4,193)	\$534
CZ15	SCE	(917)	97	0.3	>0	\$1,013	(\$361)	\$2,200	-0.4	2.2	(\$1,374)	\$1,187
CZ16	PG&E	(2,642)	249	0.8	>0	\$799	(\$6,054)	\$354	-7.6	0.4	(\$6,853)	(\$445)
CZ16-2	LA	(2,642)	249	0.8	>0	\$799	\$3,419	\$354	4.3	0.4	\$2,620	(\$445)

## 7.4 Utility Rate Schedules

The Reach Codes Team used the CA IOU and POU rate tariffs detailed below to determine the On-Bill savings for each package.

### 7.4.1 Pacific Gas & Electric

<b>ELECTRIC SCHEDULE E-TOU-C</b>		Sheet 2		
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)				
RATES: (Cont'd.)	<b>E-TOU-C TOTAL RATES</b>			
Total Energy Rates (\$ per kWh)	PEAK		OFF-PEAK	
<i>Summer</i>				
Total Usage	\$0.41333	(I)	\$0.34989	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
<i>Winter</i>				
Total Usage	\$0.31624	(I)	\$0.29891	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
Delivery Minimum Bill Amount (\$ per meter per day)	\$0.32854			
California Climate Credit (per household, per semi-annual payment occurring in the April and October bill cycles) <sup>†</sup>	(\$35.73)			

**ELECTRIC SCHEDULE E-TOU-C**  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

Sheet 4

**SPECIAL CONDITIONS:**

- BASELINE (TIER 1) QUANTITIES:** The following quantities of electricity are to be used to define usage eligible for the baseline credit (also see Rule 19 for additional allowances for medical needs):

**BASELINE QUANTITIES (kWh PER DAY)**

Baseline Territory*	Code B - Basic Quantities		Code H - All-Electric Quantities	
	Summer	Winter	Summer	Winter
	Tier I	Tier I	Tier I	Tier I
P	14.2	12.0	16.0	27.4
Q	10.3	12.0	8.9	27.4
R	18.6	11.3	20.9	28.1
S	15.8	11.1	18.7	24.9
T	6.8	8.2	7.5	13.6
V	7.5	8.8	10.9	16.9
W	20.2	10.7	23.6	20.0
X	10.3	10.5	8.9	15.4
Y	11.0	12.1	12.6	25.3
Z	6.2	8.1	7.0	16.5

- TIME PERIODS FOR E-TOU-C:** Times of the year and times of the day are defined as follows:

Summer (service from June 1 through September 30):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times

Winter (service from October 1 through May 31):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times



**Pacific Gas and Electric Company**

U 39

San Francisco, California

Cancelling Revised Cal. P.U.C. Sheet No. 35808-G  
 Revised Cal. P.U.C. Sheet No. 35753-G

**GAS SCHEDULE G-1  
 RESIDENTIAL SERVICE**

Sheet 1

**APPLICABILITY:** This rate schedule<sup>1</sup> applies to natural gas service to Core End-Use Customers on PG&E's Transmission and/or Distribution Systems. To qualify, service must be to individually-metered single family premises for residential use, including those in a multifamily complex, and to separately-metered common areas in a multifamily complex where Schedules GM, GS, or GT are not applicable. Common area accounts that are separately metered by PG&E have an option of switching to a core commercial rate schedule. Common area accounts are those accounts that provide gas service to common use areas as defined in Rule 1.

Per D.15-10-032 and D.18-03-017, transportation rates include GHG Compliance Cost for non-covered entities. Customers who are directly billed by the Air Resources Board (ARB), i.e., covered entities, are exempt from paying AB 32 GHG Compliance Costs through PG&E's rates.<sup>2</sup> A "Cap-and-Trade Cost Exemption" credit for these costs will be shown as a line item on exempt customers' bills.<sup>3, 4</sup>

**TERRITORY:** Schedule G-1 applies everywhere within PG&E's natural gas Service Territory.

**RATES:** Customers on this schedule pay a Procurement Charge and a Transportation Charge, per meter, as shown below. The Transportation Charge will be no less than the Minimum Transportation Charge, as follows:

<u>Minimum Transportation Charge:</u> <sup>5</sup>			<u>Per Day</u>	
			\$0.13151	
			<u>Per Therm</u>	
	<u>Baseline</u>			<u>Excess</u>
<u>Procurement:</u>	\$0.23187	(R)	\$0.23187	(R)
<u>Transportation Charge:</u>	\$1.13126		\$1.64861	
<b>Total:</b>	\$1.36313	(R)	\$1.88048	(R)
California Natural Gas Climate Credit (per Household, annual payment occurring in the April bill cycle)	(\$27.18)			

**GAS SCHEDULE G-1  
RESIDENTIAL SERVICE**

Sheet 2

**BASELINE  
QUANTITIES:**

The delivered quantities of gas shown below are billed at the rates for baseline use.

<u>Baseline Territories</u>	BASELINE QUANTITIES (Therms Per Day Per Dwelling Unit)					
	Summer (April-October)		Winter Off-Peak (Nov, Feb, Mar)		Winter On-Peak (Dec, Jan)	
	Effective Apr. 1, 2020		Effective Nov. 1, 2019		Effective Dec. 1, 2019	
***						
P	0.39	(R)	1.88	(R)	2.16	(I)
Q	0.59	(R)	1.55	(R)	2.16	(I)
R	0.36	(R)	1.28	(R)	1.97	(I)
S	0.39	(R)	1.38	(R)	2.06	(I)
T	0.59	(R)	1.38	(R)	1.81	(I)
V	0.62	(R)	1.51	(R)	1.84	(I)
W	0.39	(R)	1.18	(R)	1.84	(I)
X	0.49	(R)	1.55	(R)	2.16	(I)
Y	0.69	(R)	2.15	(R)	2.65	(I)

**SEASONAL  
CHANGES:**

The summer season is April-October, the winter off-peak season is November, February and March, and the winter on-peak season is December and January. Baseline quantities for bills that include the April 1, November 1 and December 1 seasonal changeover dates will be calculated by multiplying the applicable daily baseline quantity for each season by the number of days in each season for the billing period.

### 7.4.2 Southern California Edison



**Southern California Edison**  
Rosemead, California (U 338-E)

Revised  
Cancelling Revised

Cal. PUC Sheet No. 68632-E  
Cal. PUC Sheet No. 68640-E

Schedule TOU-D Sheet 2  
TIME-OF-USE  
DOMESTIC  
 (Continued)

**RATES**

Customers receiving service under this Schedule will be charged the applicable rates under Option 4-9 PM, Option 4-9 PM-CPP, Option 5-8 PM, Option 5-8 PM-CPP, Option PRIME, Option PRIME-CPP Option A, Option A-CPP, Option B, or Option B-CPP, as listed below. CPP Event Charges will apply to all energy usage during CPP Event Energy Charge periods and CPP Non-Event Energy Credits will apply as a reduction on CPP Non-Event Energy Credit Periods during Summer Season weekdays, 4:00 p.m. to 9:00 p.m., as described in Special Conditions 1 and 3, below:

	Delivery Service		
	Total <sup>1</sup>	UG <sup>2,3</sup>	DWREC <sup>4</sup>
<b>Option 4-9 PM / Option 4-9 PM-CPP</b>			
Energy Charge - \$/kWh			
Summer Season - On-Peak	0.21574 (I)	0.17870 (I)	(0.00007)
Mid-Peak	0.21574 (I)	0.10434 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.07584 (R)	(0.00007)
Winter Season - Mid-Peak	0.21574 (I)	0.12676 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.08874 (R)	(0.00007)
Super-Off-Peak	0.16567 (I)	0.07025 (R)	(0.00007)
Baseline Credit <sup>****</sup> - \$/kWh	(0.07456) (R)	0.00000	
Basic Charge - \$/day			
Single-Family Residence	0.031		
Multi-Family Residence	0.024		
Minimum Charge <sup>**</sup> - \$/day			
Single Family Residence	0.346		
Multi-Family Residence	0.346		
Minimum Charge (Medical Baseline) <sup>**</sup> - \$/day			
Single Family Residence	0.173		
Multi-Family Residence	0.173		
California Climate Credit <sup>4</sup>	(37.00) (I)		
California Alternate Rates for			
Energy Discount - %	100.00 <sup>*</sup>		
Family Electric Rate Assistance Discount - %	100.00		
<b>Option 4-9 PM-CPP</b>			
CPP Event Energy Charge - \$/kWh		0.80000	
Summer CPP Non-Event Credit			(0.15170)
On-Peak Energy Credit - \$/kWh			(0.15170)
Maximum Available Credit - \$/kWh <sup>*****</sup>			
Summer Season		(0.58504) (R)	

<sup>\*</sup> Represents 100% of the discount percentage as shown in the applicable Special Condition of this Schedule.  
<sup>\*\*</sup> The Minimum Charge is applicable when the Delivery Service Energy Charge, plus the applicable Basic Charge is less than the Minimum Charge.  
<sup>\*\*\*</sup> The ongoing Competition Transition Charge CTC of \$0.00089 per kWh is recovered in the UG component of Generation.  
<sup>\*\*\*\*</sup> The Baseline Credit applies up to 100% of the Baseline Allocation, regardless of Time of Use. The Baseline Allocation is set forth in Preliminary Statement, Part H.  
<sup>\*\*\*\*\*</sup> The Maximum Available Credit is the capped credit amount for CPP Customers dual participating in other demand response programs.

1 Total = Total Delivery Service rates are applicable to Bundled Service, Direct Access (DA) and Community Choice Aggregation Service (CCA Service) Customers, except DA and CCA Service Customers are not subject to the DWRBC rate component of this Schedule but instead pay the DWRBC as provided by Schedule DA-CRS or Schedule CCA-CRS.  
 2 Generation = The Gen rates are applicable only to Bundled Service Customers.  
 3 DWREC = Department of Water Resources (DWR) Energy Credit – For more information on the DWR Energy Credit, see the Billing Calculation Special Condition of this Schedule.  
 4 Applied on an equal basis, per household, semi-annually. See the Special Conditions of this Schedule for more information.

(Continued)

(To be inserted by utility)

Advice 4172-E-A

Decision \_\_\_\_\_

2012

Issued by  
Carla Peterman  
Senior Vice President

(To be inserted by Cal. PUC)

Date Submitted Mar 13, 2020

Effective Apr 13, 2020

Resolution \_\_\_\_\_

Schedule TOU-D  
 TIME-OF-USE  
 DOMESTIC  
 (Continued)

Sheet 12

SPECIAL CONDITIONS

1. Applicable rate time periods are defined as follows:

Option 4-9 PM, Option 4-9 PM-CPP, Option PRIME, Option PRIME-CPP :

TOU Period	Weekdays		Weekends and Holidays	
	Summer	Winter	Summer	Winter
On-Peak	4 p.m. - 9 p.m.	N/A	N/A	N/A
Mid-Peak	N/A	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	All other hours	9 p.m. - 8 a.m.	All other hours	9 p.m. - 8 a.m.
Super-Off-Peak	N/A	8 a.m. - 4 p.m.	N/A	8 a.m. - 4 p.m.
CPP Event Period	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	N/A	N/A

7.4.3 Southern California Gas

<p><b>SOUTHERN CALIFORNIA GAS COMPANY</b> LOS ANGELES, CALIFORNIA</p>	<p>Revised CANCELING Revised</p>	<p>CAL. P.U.C. SHEET NO. 57658-G CAL. P.U.C. SHEET NO. 57573-G</p>																																																																
<p>Schedule No. GM <span style="float: right;">Sheet 2</span>  <b>MULTI-FAMILY SERVICE</b>                  (Includes GM-E, GM-C, GM-EC, GM-CC, GT-ME, GT-MC and all GMB Rates)                  (Continued)</p>																																																																		
<p><b>APPLICABILITY</b> (Continued)</p> <p>Multi-family Accommodations built prior to December 15, 1981 and currently served under this schedule may also be eligible for service under Schedule No. GS. If an eligible Multi-family Accommodation served under this schedule converts to an applicable submetered tariff, the tenant rental charges shall be revised for the duration of the lease to reflect removal of the energy related charges.</p> <p>Eligibility for service hereunder is subject to verification by the Utility.</p>																																																																		
<p><b>TERRITORY</b></p> <p>Applicable throughout the service territory.</p>																																																																		
<p><b>RATES</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="text-align: center; border-bottom: 1px solid black;"><u>GM/GT-M</u></td> <td style="text-align: center; border-bottom: 1px solid black;"><u>GMB/GT-MB</u></td> </tr> <tr> <td>Customer Charge, per meter, per day: .....</td> <td style="text-align: center;">16.438¢</td> <td style="text-align: center;">\$16.357</td> </tr> </table> <p>For "Space Heating Only" customers, a daily Customer Charge applies during the winter period from November 1 through April 30<sup>1/</sup>: .....</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="text-align: center;">33.149¢</td> <td></td> </tr> </table>				<u>GM/GT-M</u>	<u>GMB/GT-MB</u>	Customer Charge, per meter, per day: .....	16.438¢	\$16.357		33.149¢																																																								
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<p><sup>1/</sup> For the summer period beginning May 1 through October 31, with some exceptions, usage will be accumulated to at least 20 Ccf (100 cubic feet) before billing, or it will be included with the first bill of the heating season which may cover the entire duration since a last bill was generated for the current calendar year. (Footnotes continue next page.)</p>																																																																		
<p>(Continued)</p>																																																																		
<p>(TO BE INSERTED BY UTILITY)                  ADVICE LETTER NO. 5636                  DECISION NO. 98-07-068                  208</p>	<p>ISSUED BY  <b>Dan Skopec</b>                  Vice President                  Regulatory Affairs</p>	<p>(TO BE INSERTED BY CAL. PUC)                  SUBMITTED <u>May 29, 2020</u>                  EFFECTIVE <u>Jun 1, 2020</u>                  RESOLUTION NO. _____</p>																																																																

3. Baseline Usage: The following usage is to be billed at the Baseline rate for Multi-family Accommodation units. Usage in excess of applicable Baseline allowances will be billed at the Non-Baseline rate.

Per Residence	Daily Therm Allowance for Climate Zones*		
	1	2	3
Summer (May 1-Oct.31)	0.473	0.473	0.473
Winter (Nov. 1-Apr.30)	1.691	1.823	2.950

\* Climate Zones are described in the Preliminary Statement.

### 7.4.4 San Diego Gas & Electric

<b>SCHEDULE TOU-DR1</b>				
<u>RESIDENTIAL TIME-OF-USE</u>				
<u>RATES</u>				
<u>Total Rates:</u>				
Description – TOU DR1	UDC Total Rate	DWR-BC Rate	EECC Rate + DWR Credit	Total Rate
<b>Summer:</b>				
On-Peak	0.20577	0.00580	0.29042	0.50199
Off-Peak	0.20577	0.00580	0.09305	0.30462
Super Off-Peak	0.20577	0.00580	0.04743	0.25900
<b>Winter:</b>				
On-Peak	0.27206	0.00580	0.07844	0.35630
Off-Peak	0.27206	0.00580	0.06961	0.34747
Super Off-Peak	0.27206	0.00580	0.05981	0.33767
Summer Baseline Adjustment Credit up to 130% of Baseline	(0.07136)			(0.07136)
Winter Baseline Adjustment Credit up to 130% of Baseline	(0.07136)			(0.07136)
Minimum Bill (\$/day)	0.338			0.338



San Diego Gas & Electric Company  
San Diego, California

Revised Cal. P.U.C. Sheet No. 24762-G

Canceling Revised Cal. P.U.C. Sheet No. 24749-G

**SCHEDULE GM**

Sheet 2

**MULTI-FAMILY NATURAL GAS SERVICE**  
**(Includes Rates for GM, GM-C and GTC/GTCA)**

**RATES**

	GM	GM-C	GTC/GTCA <sup>1</sup>
<b>Baseline Rate, per therm (baseline usage defined in Special Condition 4)</b>			
Procurement Charge <sup>2</sup> .....	\$0.26263	\$0.26263	R N/A
Transmission Charge.....	\$1.39202	\$1.39202	\$1.40414
Total Baseline Charge.....	\$1.65465	\$1.65465	R \$1.40414
<b>Non-Baseline Rate (usage in excess of baseline usage)</b>			
Procurement Charge <sup>2</sup> .....	\$0.26263	\$0.26263	R N/A
Transmission Charge.....	\$1.62888	\$1.62888	\$1.64100
Total Non-Baseline Charge.....	\$1.89151	\$1.89151	R \$1.64100
<b>Minimum Bill, per day<sup>3</sup></b>			
Non-CARE customers.....	\$0.13151	\$0.13151	\$0.13151
CARE customers.....	\$0.10521	\$0.10521	\$0.10521

**Franchise Fee Differential:**

A Franchise Fee Differential of 1.03% will be applied to the monthly billings calculated under this schedule for all customers within the corporate limits of the City of San Diego. Such Franchise Fee Differential shall be so indicated and added as a separate item to bills rendered to such customers.

**Additional Charges**

Rates may be adjusted to reflect any applicable taxes, franchise fees or other fees, regulatory surcharges, and interstate or intrastate pipeline charges that may occur.

**SPECIAL CONDITIONS**

- Definitions.** The definitions of principal terms used in this schedule are found either herein or in Rule 1, Definitions.
- Number of Therms.** The number of therms to be billed shall be determined in accordance with Rule 2. The daily therm allowance in the Baseline Usage, shown in Special Condition 4, shall be multiplied by the number of qualified residential units. It is the responsibility of the customer to advise the Utility within 15 days following any change in the submetering arrangements or the number of dwelling units or Mobilehome Park spaces provided gas service. The number of qualifying units is subject to verification by the Utility.
- Exclusions.** Gas service for non-domestic enterprises such as rooming houses, boarding houses, dormitories, rest homes, military barracks, transient trailer parks, stores, restaurants, service stations, and other similar establishments will be separately metered and billed under the applicable schedules.

<sup>1</sup> The rates for core transportation-only customers, with the exception of customers taking service under Schedule GT-NGV, include any FERC Settlement Proceeds Memorandum Account (FSPMA) credit adjustments.  
<sup>2</sup> This charge is applicable to Utility Procurement Customers and includes the GPC and GPC-A Procurement Charges shown in Schedule GPC which are subject to change monthly as set forth in Special Condition 7.  
<sup>3</sup> Effective starting May 1, 2020, the minimum bill is calculated as the minimum bill charge of \$0.13151 per day times the number of days in the billing cycle (approximately \$4 per month) with a 20% discount applied for CARE customer resulting in a minimum bill charge of \$0.10521 per day (approximately \$3.20 per month).

(Continued)

206 Issued by Submitted Aug 7, 2020  
 Advice Ltr. No. 2889-G **Dan Skopec** Effective Aug 10, 2020  
 Decision No. \_\_\_\_\_ Vice President  
 Regulatory Affairs Resolution No. \_\_\_\_\_

### 7.4.5 City of Palo Alto Utilities

#### RESIDENTIAL ELECTRIC SERVICE

##### UTILITY RATE SCHEDULE E-1

**A. APPLICABILITY:**

This Rate Schedule applies to separately metered single-family residential dwellings receiving Electric Service from the City of Palo Alto Utilities.

**B. TERRITORY:**

This rate schedule applies everywhere the City of Palo Alto provides Electric Service.

**C. UNBUNDLED RATES:**

<u>Per kilowatt-hour (kWh)</u>	<u>Commodity</u>	<u>Distribution</u>	<u>Public Benefits</u>	<u>Total</u>
Tier 1 usage	\$0.08339	\$0.04971	\$0.00447	\$0.13757
Tier 2 usage Any usage over Tier 1	0.11569	0.07351	0.00447	0.19367
<u>Minimum Bill (\$/day)</u>				0.3283

**D. SPECIAL NOTES:**

**1. Calculation of Cost Components**

The actual bill amount is calculated based on the applicable rates in Section C above and adjusted for any applicable discounts, surcharges and/or taxes. On a Customer's bill statement, the bill amount may be broken down into appropriate components as calculated under Section C.

**2. Calculation of Usage Tiers**

Tier 1 Electricity usage shall be calculated and billed based upon a level of 11 kWh per day, prorated by Meter reading days of Service. As an example, for a 30-day bill, the Tier 1 level would be 330 kWh. For further discussion of bill calculation and proration, refer to Rule and Regulation 11.

*{End}*

---

**CITY OF PALO ALTO UTILITIES**

Issued by the City Council

*Supersedes Sheet No E-1-1  
dated 7-1-2018*



Sheet No **E-1-1**  
Effective 7-1-2019

**RESIDENTIAL GAS SERVICE**

**UTILITY RATE SCHEDULE G-1**

**A. APPLICABILITY:**

This schedule applies to the following Customers receiving Gas Service from City of Palo Alto Utilities:

1. Separately-metered single-family residential Customers.
2. Separately-metered multi-family residential Customers in multi-family residential facilities.

**B. TERRITORY:**

This schedule applies anywhere the City of Palo Alto provides Gas Service.

**C. UNBUNDLED RATES:**

Per Service

Monthly Service Charge: .....\$10.37

Tier 1 Rates:

Per Therm

Supply Charges:

- |  |               |
|--|---------------|
| 1. Commodity (Monthly Market Based)..... | \$0.10-\$2.00 |
| 2. Cap and Trade Compliance Charge ..... | \$0.00-\$0.25 |
| 3. Transportation Charge .....           | \$0.00-\$0.15 |
| 4. Carbon Offset Charge .....            | \$0.00-\$0.10 |

Distribution Charge:..... \$0.5038

Tier 2 Rates: (All usage over 100% of Tier 1)

Supply Charges:

- |  |               |
|--|---------------|
| 1. Commodity (Monthly Market Based)..... | \$0.10-2.00   |
| 2. Cap and Trade Compliance Charge ..... | \$0.00-\$0.25 |
| 3. Transportation Charge .....           | \$0.00-\$0.15 |
| 4. Carbon Offset Charge .....            | \$0.00-\$0.10 |

Distribution Charge:..... \$1.2882

**D. SPECIAL NOTES:**

1. Calculation of Cost Components

---

**CITY OF PALO ALTO UTILITIES**

Issued by the City Council

Supersedes Sheet No G-1-1  
 dated 7-1-2019



Sheet No G-1-1  
 Effective 7-1-2020

The ‘Commodity and Volumetric Rates’ are selected for the latest available month of December 2020.<sup>3</sup>

### 7.4.6 Sacramento Municipal Utilities District (Electric Only)

## Residential Time-of-Day Service Rate Schedule R-TOD

**Applicability**

This Rate Schedule R-TOD applies to single- and three-phase service for the following types of residential premises:

1. Individual or dual metered residences with digital communicating meter installed, including single-family homes, duplexes, apartments, and condominiums; and
2. General farm service where the meter also serves the residence or additional meters on a farm where the electricity consumed is solely for domestic purposes.

Master-metered service to a qualifying multifamily accommodation or mobile home parks are not eligible for Time-of-Day rates under rate schedule R-TOD.

For the purposes of this schedule a “month” is considered to be a single billing period of 27 to 34 days.

**A. Time-of-Day (5-8 p.m.) Rate (rate category RT02)**

1. The TOD (5-8 p.m.) Rate is the standard rate for SMUD’s residential customers. Eligible customers can elect the Fixed Rate under Rate Schedule R as an alternative rate.
2. Customers who have an eligible renewable electrical generation facility under Rate Schedule NEM1 that was approved for installation by SMUD after December 31, 2017, must be on the TOD (5-8 p.m.) Rate.
3. Customers who have an eligible renewable electrical generation facility under Rate Schedule NEM2 must be on the TOD (5-8 p.m.) Rate.
4. This rate has five kilowatt-hour (kWh) prices, depending on the time-of-day and season as shown below. Holidays are detailed in Section V. Conditions of Service.

<b>Summer (Jun 1 - Sept 30)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Mid-Peak</b>	Weekdays between noon and midnight except during the Peak hours.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .
<b>Non-Summer (Oct 1 - May 31)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .

<sup>1</sup> See Section V. Conditions of Service

<sup>3</sup> <https://www.cityofpaloalto.org/civicax/filebank/documents/30399>

<b>II. Firm Service Rates</b>		
<b>A. Time-of-Day (5-8 p.m.) Rate</b>		<b>Rate Category RT02</b>
<b>Non-Summer Prices* – January 1 through May 31</b>		
System Infrastructure Fixed Charge per month		\$21.05
Electricity Usage Charge		
Peak \$/kWh		\$0.1388
Off-Peak \$/kWh		\$0.1006
<b>Summer Prices - June 1 through September 30</b>		
System Infrastructure Fixed Charge per month		\$21.05
Electricity Usage Charge		
Peak \$/kWh		\$0.2941
Mid-Peak \$/kWh		\$0.1671
Off-Peak \$/kWh		\$0.1209
<b>Non-Summer Prices* – October 1 through December 31</b>		
System Infrastructure Fixed Charge per month		\$21.70
Electricity Usage Charge		
Peak \$/kWh		\$0.1430
Off-Peak \$/kWh		\$0.1035
* Non-Summer Season includes Fall (Oct 1 – Nov 30), Winter (Dec 1 – Mar 31) and Spring (Apr 1 – May 31) periods.		

### 7.4.7 Los Angeles Department of Water and Power (Electric Only)

Residential Service Rate Summary Time of Use R-1(B)						
Eligibility						
Applicable to service to single-family, single-family with guest house, individually metered accommodations, as well as to separately metered common areas of condominiums and cooperatives devoted primarily to residential uses and whose energy and capacity requirements do not exceed those for Small General Service Schedule A-1. Battery chargers, motors and appliances, which conform in capacities to applicable electrical codes, and meet requirements of the Department's Rules, may be served under this schedule. Not applicable to single-family residential customers with an on-site transformer dedicated solely to that individual customer.						
The Department requires mandatory service under Rate B for customers whose annual monthly average consumption reach or exceed 3000 kWh during the preceding 12 month period. If a customer's annual monthly average consumption does not reach or exceed 3,000 kWh in a year's period, a customer may choose to receive service either under Rate A or B. However, when a customer served under Rate B requests a change to Rate A, that customer may not revert to Rate B before 12 months have elapsed.						
Monthly rates beginning July 1, 2019	High Season June - Sep.			Low Season Oct. - May		
Residential R-1(B)	Capped	Incremental	Total	Capped	Incremental	Total
Rate B - Time of Use						
Service Charge \$ per month	\$8.00	\$4.00	\$12.00	\$8.00	\$4.00	\$12.00
Energy Charge - \$ per kWh						
High Peak Period	\$0.16061	-\$0.00203	\$0.15858	\$0.06515	\$0.03503	\$0.10018
Low Peak Period	\$0.08144	\$0.01874	\$0.10018	\$0.06515	\$0.03503	\$0.10018
Base Period	\$0.04655	\$0.02619	\$0.07274	\$0.05045	\$0.02619	\$0.07664
Electric Vehicle Discount \$ (1)	-\$0.02500	\$0.00000	-\$0.02500	-\$0.02500	\$0.00000	-\$0.02500
Rates below are in addition to above Charges						
<b>Elements Only in Capped Ordinance</b>						
ECA - per kWh	\$0.05690	\$0.00000	\$0.05690	\$0.05690	\$0.00000	\$0.05690
ESA - per kWh	\$0.00147	\$0.00000	\$0.00147	\$0.00147	\$0.00000	\$0.00147
RCA - per kWh	\$0.00300	\$0.00000	\$0.00300	\$0.00300	\$0.00000	\$0.00300
<b>Elements Only in Incremental Ordinance</b>						
VEA - per kWh*	Refer to <a href="http://www.LADWP.com">www.LADWP.com</a> >About Us >Power Rates >Variable Energy Factors and Reliability Cost Adjustment Factor for current Quarterly Electric Adjustment Factors					
CRPSEA - per kWh*						
VRPSEA - per kWh*						
IRCA - per kWh						

ECA- Energy Cost Adjustment  
 ESA - Electric Subsidy Adjustment  
 RCA - Reliability Cost Adjustment  
 VEA - Variable Energy Adjustment  
 CRPSEA - Capped Renewable Portfolio Standard Energy Adjustment  
 VRPSEA - Variable Renewable Portfolio Standard Energy Adjustment  
 IRCA - Incremental Reliability Cost Adjustment  
 High Peak Period : 1:00 p.m. – 5:00 p.m., Monday through Friday  
 Low Peak Period: 10:00 a.m. – 1:00 p.m., Monday through Friday, and 5:00 p.m. – 8:00 p.m., Monday through Friday.  
 Base Period: 8:00 p.m. – 10:00 a.m., Monday through Friday, all day Saturday and Sunday.  
 (1) Conditions for this element set in the capped ordinance.  
 \*This value will be computed quarterly in accordance with the incremental electric rate ordinance.

### 7.4.8 Fuel Escalation Rates

Escalation of natural gas rates between 2020 and 2022 is based on the currently filed General Rate Cases for PG&E, SoCalGas, and SDG&E. From 2023 through 2025, gas rates are assumed to escalate at 4 percent per year above inflation, which reflects historical rate increases between 2013 and 2018. Escalation of electricity rates from 2020 through 2025 is assumed to be 2 percent per year above inflation, based on electric utility estimates. After 2025, escalation rates for both natural gas and electric rates are assumed to drop to a more conservative 1 percent escalation per year above inflation for long-term rate trajectories beginning in 2026 through 2050.

Table 15 below demonstrate the escalation rates used for residential (detached ADU) buildings.

**Table 15. Real Utility Rate Escalation Rate Assumptions**

	Statewide Electric Residential Average Rate (%/year, real)	Natural Gas Residential Core Rate (%/yr escalation, real)		
		<u>PG&amp;E</u>	<u>SoCalGas</u>	<u>SDG&amp;E</u>
2020	2.0%	1.48%	6.37%	5.00%
2021	2.0%	5.69%	4.12%	3.14%
2022	2.0%	1.11%	4.12%	2.94%
2023	2.0%	4.0%	4.0%	4.0%
2024	2.0%	4.0%	4.0%	4.0%
2025	2.0%	4.0%	4.0%	4.0%
2026	1.0%	1.0%	1.0%	1.0%
2027	1.0%	1.0%	1.0%	1.0%
2028	1.0%	1.0%	1.0%	1.0%
2029	1.0%	1.0%	1.0%	1.0%
2030	1.0%	1.0%	1.0%	1.0%
2031	1.0%	1.0%	1.0%	1.0%
2032	1.0%	1.0%	1.0%	1.0%
2033	1.0%	1.0%	1.0%	1.0%
2034	1.0%	1.0%	1.0%	1.0%
2035	1.0%	1.0%	1.0%	1.0%
2036	1.0%	1.0%	1.0%	1.0%
2037	1.0%	1.0%	1.0%	1.0%
2038	1.0%	1.0%	1.0%	1.0%
2039	1.0%	1.0%	1.0%	1.0%
2040	1.0%	1.0%	1.0%	1.0%
2041	1.0%	1.0%	1.0%	1.0%
2042	1.0%	1.0%	1.0%	1.0%
2043	1.0%	1.0%	1.0%	1.0%
2044	1.0%	1.0%	1.0%	1.0%
2045	1.0%	1.0%	1.0%	1.0%
2046	1.0%	1.0%	1.0%	1.0%
2047	1.0%	1.0%	1.0%	1.0%
2048	1.0%	1.0%	1.0%	1.0%
2049	1.0%	1.0%	1.0%	1.0%

Source: Energy & Environmental Economics, 2019, Reach Code Team

## Get In Touch

The adoption of reach codes can differentiate jurisdictions as efficiency leaders and help accelerate the adoption of new equipment, technologies, code compliance, and energy savings strategies.

As part of the Statewide Codes & Standards Program, the Reach Codes Subprogram is a resource available to any local jurisdiction located throughout the state of California.

Our experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy reach codes. These include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process.

If you are interested in finding out more about local energy reach codes, the Reach Codes Team stands ready to assist jurisdictions at any stage of a reach code project.



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Contact [info@localenergycodes.com](mailto:info@localenergycodes.com) for no-charge assistance from expert Reach Code advisors



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A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11  
Local Energy Efficiency Ordinances

## **2019 Mid-Rise New Construction Reach Code Cost-Effectiveness Study**

**Prepared for:**

Kelly Cunningham  
Codes and Standards Program  
Pacific Gas and Electric Company

**Prepared by:**

Frontier Energy, Inc.  
Misti Bruceri & Associates, LLC  
EnergySoft

Last Modified: June 22, 2020

## **LEGAL NOTICE**

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## Acronyms

2020 PV\$	Present value costs in 2020
ACM	Alternative Calculation Method
B/C	Lifecycle Benefit-to-Cost Ratio
BSC	Building Standards Commission
CBECC-Com	Computer program developed by the California Energy Commission for use in demonstrating compliance with the California Residential Building Energy Efficiency Standards
CFI	California Flexible Installation
CFM	Cubic Feet per Minute
CPC	California Plumbing Code
CZ	California Climate Zone
DHW	Domestic Hot Water
DOE	Department of Energy
DWHR	Drain Water Heat Recovery
EDR	Energy Design Rating
EER	Energy Efficiency Ratio
EF	Energy Factor
EPS	Expanded Polystyrene
HERS Rater	Home Energy Rating System Rater
HPWH	Heat Pump Water Heater
HVAC	Heating, Ventilation, and Air Conditioning
IOU	Investor Owned Utility
kBtu	kilo-British thermal unit
kWh	Kilowatt Hour
kW <sub>DC</sub>	Kilowatt Direct Current. Nominal rated power of a photovoltaic system
LBNL	Lawrence Berkeley National Laboratory
LCC	Lifecycle Cost
MF	Multifamily
NAECA	National Appliance Energy Conservation Act
NEM	Net Energy Metering
NPV	Net Present Value
PG&E	Pacific Gas and Electric Company
PV	Photovoltaic
SCE	Southern California Edison

SDG&E	San Diego Gas and Electric
SF	Solar Fraction
SHGC	Solar Heat Gain Coefficient
SMUD	Sacramento Municipal Utility District
CASE	Codes and Standards Enhancement
TDV	Time Dependent Valuation
Therm	Unit for quantity of heat that equals 100,000 British thermal units
Title 24	Title 24, Part 6
TOU	Time-Of-Use
UEF	Uniform Energy Factor
W	Watts

## 1 Introduction

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (California Energy Commission, 2018b) is maintained and updated every three years by two state agencies, the California Energy Commission (Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances, or reach codes, that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable.

This report documents cost-effective combinations of measures that exceed the minimum state requirements, the 2019 Building Energy Efficiency Standards, effective January 1, 2020, for new mid-rise (four- to seven-story) multifamily residential construction. The analysis includes evaluation of both mixed-fuel and all-electric residential construction, documenting that the performance requirements can be met by either type of building design. Compliance package options and cost-effectiveness analysis in all 16 California climate zones (CZs) are presented (see Appendix A – California Climate Zone Map for a graphical depiction of Climate Zone locations).

## 2 Methodology and Assumptions

This analysis uses two different metrics to assess cost-effectiveness. Both methodologies require estimating and quantifying the incremental costs and energy savings associated with energy efficiency measures. The main difference between the methodologies is the manner in which they value energy and thus the cost savings of reduced or avoided energy use:

- **Utility Bill Impacts (On-Bill):** Customer-based Lifecycle Cost (LCC) approach that values energy based upon estimated site energy usage and customer on-bill savings using electricity and natural gas utility rate schedules over a 30-year duration accounting for discount rate and energy cost inflation.
- **Time Dependent Valuation (TDV):** Energy Commission LCC methodology, which is intended to capture the “societal value or cost” of energy use including long-term projected costs, such as the cost of providing energy during peak periods of demand and other societal costs, such as projected costs for carbon emissions, as well as grid transmission and distribution impacts. This metric values energy use differently depending on the fuel source (gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods (Horii et al., 2014). This is the methodology used by the Energy Commission in evaluating cost-effectiveness for efficiency measures in Title 24, Part 6.

### 2.1 Building Prototypes

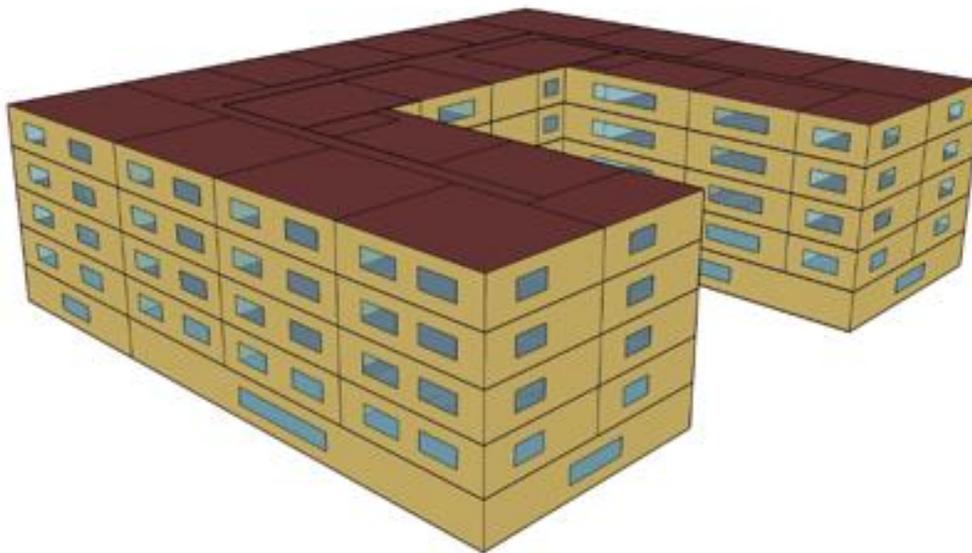
The Energy Commission defines building prototypes which it uses to evaluate the cost-effectiveness of proposed changes to Title 24 requirements. The CEC recently developed new prototype designs for multifamily buildings to more closely reflect typical designs for new multifamily buildings across the state. The new prototypes include two low-rise residential designs, a mid-rise, and a high-rise design. At the time that this report was written, there was one mid-rise multifamily prototype, which is used in this analysis in development of the above-code packages (TRC, 2019). The midrise prototype is a 6-story building with one below-grade parking level, ground floor commercial space, and four stories of residential space. Table 1 describes the basic characteristics of the mid-rise prototype and Figure 1 shows a depiction of the building.



**Table 1: Prototype Characteristics**

Characteristic	Multifamily 5-Story Mid-Rise
Conditioned Floor Area	113,100 ft <sup>2</sup> Total: 33,660 ft <sup>2</sup> Nonresidential & 79,440 ft <sup>2</sup> Residential
Number of Stories	6 Stories Total: 1 Story Parking Garage (below grade) 1 Story of Nonresidential Space 4 Stories of Residential Space
Number of Dwelling Units / Bedrooms	(8) studios, (40) 1-bed units, (32) 2-bed units, & (8) 3-bed units
Foundation	Concrete podium with underground parking
Wall Assembly	Wood frame over a first-floor concrete podium
Roof Assembly	Flat roof
Window-to-Wall Area Ratio	22.5%
HVAC System	Ducted split heat pumps at each apartment
Domestic Hot Water System	Gas central boiler with solar thermal sized to meet the prescriptive requirements by climate zone

Source: TRC 2019



Source: TRC 2019

**Figure 1: 5-story mid-rise multifamily prototype depiction.**

The methodology used in the analyses for the prototypical building type begins with a design that meets the minimum 2019 Title 24 prescriptive requirements (zero compliance margin). Table 140.3-B and 140.3-C in the 2019 Title 24 (California Energy Commission, 2018a) lists the prescriptive measures that determine the baseline design in each climate zone for the nonresidential and high-rise residential spaces, respectively. Other features are consistent with the Standard Design in the Nonresidential ACM Reference Manual (California Energy Commission, 2019a) with one exception. The apartments use split system heat pumps instead of a split furnace



and air conditioner that is prescribed in Table 2 of the Nonresidential ACM Reference Manual. This modeling choice was made to better reflect current market data, which shows heat pumps to be the most common system type and a very low prevalence of gas furnaces for multifamily buildings four stories and greater. This is based on a report completed by TRC (TRC, 2019) and validated by analysis of CA HERS Registry Data by SCE that showed 47% of low-rise multifamily new construction in the 2013 and 2016 code cycles had electric space heating. The analysis also assumed electric cooking in the apartment units to reflect current market data. Laundry was not addressed in this study. The building prototype assumes central laundry facilities and no laundry in the units.

## **2.2 Measure Analysis**

EnergyPro 8.1, which uses the California Building Energy Code Compliance simulation tool, CBECC-Com 2019.1.2, as the simulation engine, was used to evaluate energy impacts using the 2019 Title 24 prescriptive standards as the benchmark, and the 2019 TDV values. CBECC-Com was used for this analysis to evaluate the mid-rise building for code compliance under the 2019 non-residential standards. TDV is the energy metric used by the Energy Commission since the 2005 Title 24 energy code to evaluate compliance with the Title 24 Standards.

Using the 2019 baseline as the starting point, prospective energy efficiency measures were identified and modeled to determine the projected site energy (Therm and kWh) and compliance impacts. Annual utility costs were calculated using hourly data output from CBECC-Com, and electricity and natural gas tariffs for each of the investor owned utilities (IOUs).

This analysis focused on the residential apartments only. A prior study and report demonstrated the cost-effectiveness of above code packages for nonresidential buildings (Statewide Reach Code Team, 2019a). The Statewide Reach Code Team selected measures for evaluation based on the residential and nonresidential 2019 reach code analysis ((Statewide Reach Code Team, 2019a), (Statewide Reach Code Team, 2019b)) as well as experience with and outreach to architects, builders, and engineers along with general knowledge of the relative acceptance of many measures. Efficiency measure packages found to be cost-effective in the nonresidential building reach code analysis were applied to the nonresidential spaces for evaluating performance relative to compliance, but the incremental costs and energy impacts of these measures on the nonresidential spaces were not included in this analysis. Refer to the nonresidential reach code study for more details (Statewide Reach Code Team, 2019a).

### **2.2.1 Federal Preemption**

The Department of Energy (DOE) sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act (NAECA), including heating, cooling, and water heating equipment. Since state and local governments are prohibited from adopting policies that mandate higher minimum efficiencies than the federal standards require, the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency equipment. While this study is limited by federal preemption, in practice builders may use any package of compliant measures to achieve the performance goals, including high efficiency appliances. Often, these measures are the simplest and most affordable measures to increase energy performance.

### **2.2.2 Energy Efficiency Measures**

Following are descriptions of each of the efficiency measures evaluated for the residential spaces under this analysis. Because not all of the measures described below were found to be cost-effective, and cost-effectiveness varied by climate zone, not all measures are included in all packages and some of the measures listed are not included in any final package.

**Improved Fenestration – Lower U-factor:** Reduce window U-factor to 0.25 Btu/hr-ft<sup>2</sup>-°F. The prescriptive maximum U-factor is 0.36 in all climates. This measure is applied to all windows on floors two through five.



**Improved Fenestration – Lower SHGC:** Reduce window solar heat gain coefficient (SHGC) to 0.22. The prescriptive maximum SHGC is 0.25 for fixed windows in all climates. The Statewide Reach Code Team evaluated increased SHGC in heating dominated climates (Climate Zone 1, 3, 5, and 16) but results were better with a lower SHGC. This measure is applied to all windows on floors two through five.

**Exterior Wall Insulation:** Add one inch of R-4 exterior continuous insulation. To meet the prescriptive wall requirements, it's assumed that exterior wall insulation is used in the basecase, therefore this measure adds additional R-value to existing exterior insulation. This measure is applied to all walls on floors two through five.

**HERS Verification of Hot Water Pipe Insulation:** The California Plumbing Code (CPC) requires pipe insulation on all hot water lines. This measure provides credit for HERS Rater verification of pipe insulation requirements according to the procedures outlined in the 2019 Reference Appendices RA3.6.3. (California Energy Commission, 2018b).

**Low Pressure Drop Ducts:** Upgrade the duct distribution system to reduce external static pressure and meet a maximum fan efficacy of 0.25 watts per cfm operating at full speed. This may involve upsizing ductwork, reducing the total effective length of ducts, and/or selecting low pressure drop components, such as filters. This measure is applied to the ducted split heat pumps serving the apartments.

**Solar Thermal:** Prescriptively, central water heating systems require a solar thermal system with a 20% solar fraction in Climates Zones 1 through 9 and 35% solar fraction in Climate Zones 10 through 16. This measure upgrades the prescriptive solar thermal system to meet a 50% solar fraction in all climates, assuming there is available roof space for the additional collectors.

**Drain Water Heat Recovery:** Add drain water heat recovery with a 50% effectiveness to serve all the apartments. The assumption is for an unequal flow design where the output of the heat exchanger feeds only the cold water inlets to the apartment showers, not the water heater cold water makeup.

Efficiency measures were applied to the nonresidential spaces based on the 2019 Nonresidential Reach Code Cost-Effectiveness Study (Statewide Reach Code Team, 2019a).

### **2.2.3 All Electric Measures**

This analysis assumes that the basecase prototype model uses individual heat pumps for space heating and all electric appliances in the apartments. Therefore, the domestic hot water system is the only equipment serving the apartment spaces to electrify in the all-electric design. The Statewide Reach Code Team evaluated two configurations for electric heat pump water heaters (HPWHs) described below.

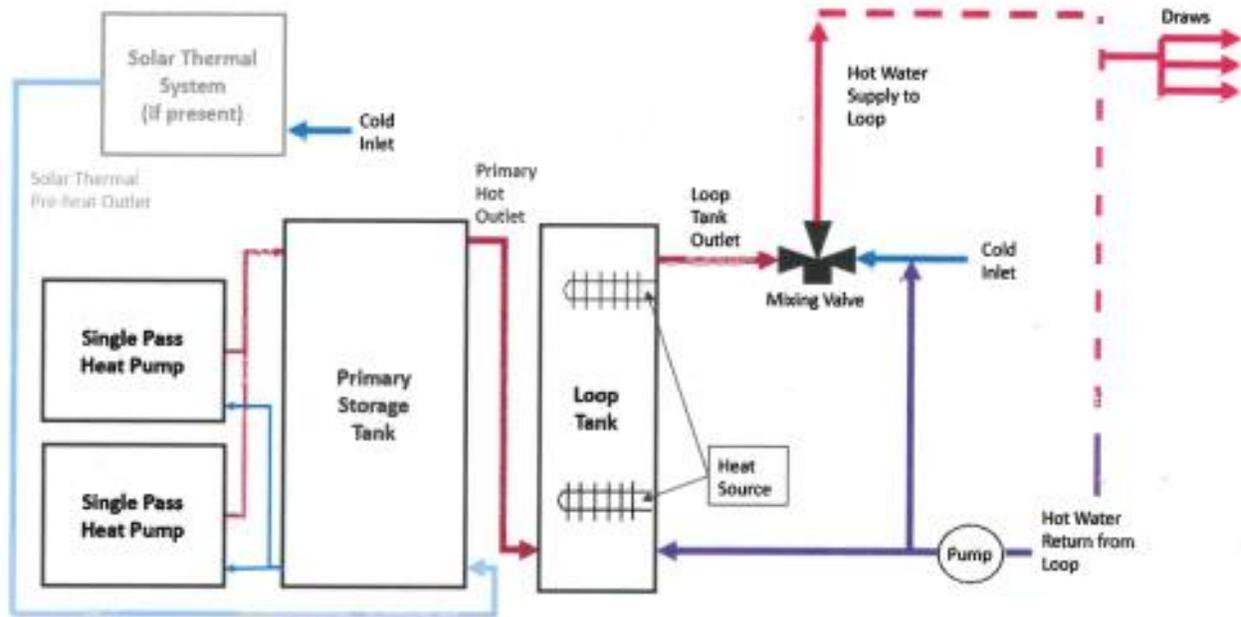
**Clustered Heat Pump Water Heater:** This clustered design uses residential integrated storage HPWHs to serve more than one apartment; 4 to 5 bedrooms on average for a total of 32 HPWHs in the 88-unit building. The water heaters are located in interior closets throughout the building and designed for short plumbing runs without using a hot water recirculation loop. A minimum efficiency 2.0 UEF HPWH was used for this analysis (to avoid federal preemption). This approach has been selectively used in multifamily projects because of its reliance on lower cost small capacity HPWH products. Since it uses residential equipment with each HPWH serving fewer than 8 apartments the CBECC-Com compliance software had the capability to evaluate this design strategy, even before central HPWH recirculation options were incorporated into the software. The clustered strategy is not a prescriptive option but is allowed in the performance path if the water heater serves no more than 8 units and has no recirculation control. The standard design assumes solar thermal, so the proposed design is penalized in compliance for no solar thermal and made up with other efficiency measures.



**Prescriptive Central Heat Pump Water Heater:** Per Section 150.1(c)8C of the 2019 Standards, the Energy Commission made an executive determination outlining requirements of a prescriptive approach for central heat pump water heating systems in December 2019 (California Energy Commission, 2019b). Key aspects of the prescriptive approach are described below:

- The system must be configured with a design similar to what is presented in the schematic in Figure 2 of the executive determination document.
- HPWH must be single-pass split system with the compressor located outdoors and be able to operate down to -20°F. In CBECC-Com 2019.1.2, the current version at the time of writing this report, the software only has the capability of modeling Sanden HPWHs.
- The system must include either a solar thermal water heating system that meets the current prescriptive requirements or 0.1 kW<sub>DC</sub> of photovoltaic system capacity per apartment/dwelling unit.

For this configuration the Statewide Reach Code Team evaluated costs for a central HPWH system using Sanden compressors that met these prescriptive requirements. Based on the system sizing requirements, 15 Sanden units and 1,200 gallons of primary storage capacity are required for the 88-unit building. At the time that cost-effectiveness was initially compared for the two HPWH configurations, the latest CBECC-Com software with the ability to model central HPWH systems was not yet available. To estimate the energy use for the central configuration, the water heating energy use for the clustered configuration was used. It is expected that the energy use of the central system will be higher than the clustered approach primarily as a result of recirculation pump energy and losses.



**Figure 2: Prescriptive central heat pump water heater system schematic.**

All-electric measures were applied to the nonresidential spaces based on the 2019 Nonresidential Reach Code Cost-Effectiveness Study (Statewide Reach Code Team, 2019a).

### 2.2.4 Renewable Energy

**Solar Photovoltaic (PV):** There is no existing requirement for PV in the 2019 Title 24 nonresidential code for high-rise residential buildings (four or more stories). The PV sizing methodology was developed to offset a portion of annual residential electricity use and avoid oversizing which would violate net energy metering (NEM)



rules. In all cases, PV is evaluated using the PV simulations within CBECC-Com using a Standard module type, 180 degree azimuth, and 22 degree .tilt. The analysis evaluated PV system capacities equal to 0.1, 0.2, 0.3, and 1 kW<sub>DC</sub> per apartment. The PV system offsets approximately XX4%, XX8%, XX13%, and 42%, of the apartment electricity usage, respectively. Assuming 15 Watts per square foot for a typical commercial PV system, 1 kW<sub>DC</sub> per apartment, or 88 kW<sub>DC</sub> total, would take up about 25% of the total roof area.

### 2.3 Package Development

Four packages were evaluated for each climate zone, as described below.

- 1) **Efficiency – Mixed-fuel:** This package applies efficiency measures that don't trigger federal preemption including envelope, water heating distribution, and duct distribution efficiency measures.
- 2) **Efficiency – All Electric:** This package applies efficiency measures that don't trigger federal preemption in addition to converting any natural gas appliances to electric appliances. For the residential spaces, only water heating is converted from natural gas to electric.
- 3) **Efficiency & PV – Mixed-fuel:** Beginning with the Efficiency Package , PV was added to offset a portion of the apartment estimated electricity use.
- 4) **Efficiency & PV – All Electric:** Beginning with the Efficiency Package, PV was added to offset a portion of the apartment estimated electricity use.

### 2.4 Incremental Costs

#### 2.4.1 Energy Efficiency Measure Costs

Table 22 summarizes the incremental cost assumptions for measures evaluated in this study relative to the residential parts of the building. Incremental costs represent the equipment, installation, replacement, and maintenance costs of the proposed measures relative to the base case. Replacement costs are applied to PV inverters and battery systems over the 30-year evaluation period. There is no assumed maintenance on the envelope, HVAC, or DHW measures. Costs were estimated to reflect costs to the building owner. When costs were obtained from a source that did not already include builder overhead and profit, a markup of 10% was added. All costs are provided as present value in 2020 (2020 PV\$). Costs due to variations in furnace, air conditioner, and heat pump capacity by climate zone were not accounted for in the analysis.



**Table 2: Incremental Cost Assumptions**

Measure	Performance Level	Incremental Cost (2020 PV\$)	Source & Notes
<b>Non-Preempted Measures</b>			
Window U-factor	0.25 vs 0.36	\$28,301	\$6.95/ft <sup>2</sup> window area based on analysis conducted for the 2019 and 2022 Title 24 code cycles (Statewide CASE Team, 2018).
Window SHGC	0.22 vs 0.25	\$0	Data from CASE Report along with direct feedback from Statewide CASE Team that higher SHGC does not necessarily have any incremental cost impact (Statewide CASE Team, 2017b).
Exterior Wall Insulation	Add 1-inch	\$14,058	\$0.86/ft <sup>2</sup> based on adding 1" of exterior insulation on a wall with some level of existing exterior insulation. Costs are averaged from two sources ((Statewide CASE Team, 2014), (Statewide CASE Team, 2017a)) and for expanded polystyrene (EPS) and polyisocyanurate products with a 10% mark-up added to account for cost increases over time.
HERS Verified Pipe Insulation	HERS verified pipe insulation vs no verification	\$7,260	\$83 per apartment for a HERS Rater to conduct verification of pipe insulation based on feedback from HERS Raters.
Low Pressure Drop Ducts	0.25 W/cfm vs 0.35 W/cfm	\$12,654	\$144 per apartment. Costs assume 1.5 hours labor per multifamily apartment. Labor rate of \$96 per hour is from 2019 RSMMeans for sheet metal workers and includes an average City Cost Index for labor for California cities.
Solar Thermal	50% solar fraction vs prescriptive 20%-35%	\$79,560	Costs based on 2022 multifamily solar thermal measure CASE proposal (Statewide CASE Team, 2020) and include first cost of \$70,727 and \$8,834 present value for replacement/maintenance costs.
Drain Water Heat Recovery	50% effectiveness, flows to shower	\$16,984	Costs from 2019 DWHR CASE Report which assumes 1 heat exchanger per 4 units (Statewide CASE Team, 2017c). Costs do not include additional cost of water meters at each apartment (per SB7), which would add approx. \$175 per dwelling unit.
<b>Renewable Energy (PV)</b>			
PV System	System size varies	\$3.17/W <sub>DC</sub>	First costs are from LBNL's Tracking the Sun 2018 costs (Barbose et al., 2018) and represent costs for the first half of 2018 of \$2.90/W <sub>DC</sub> for nonresidential systems ≤500 kW <sub>DC</sub> . These costs were reduced by 16% for the solar investment tax credit, which is the average credit over years 2020-2022. Inverter replacement cost of \$0.14/W <sub>DC</sub> present value includes replacements at year 11 at \$0.15/W <sub>DC</sub> (nominal) and at year 21 at \$0.12/W <sub>DC</sub> (nominal) per the 2019 PV CASE Report (California Energy Commission, 2017). System maintenance costs of \$0.31/W <sub>DC</sub> present value assumes additional \$0.02/W <sub>DC</sub> (nominal) annually per the 2019 PV CASE Report (California Energy Commission, 2017). 10% overhead and profit added to all costs.



**2.4.2 All Electric Measure Costs**

The Statewide Reach Code Team reached out to stakeholders to collect project cost information for central gas boilers and both clustered and central HPWH designs. Project data sources included Association for Energy Affordability (AEA), Redwood Energy, Mithun, Ecotope, and the All-Electric Multifamily Compliance Pathway 2022 Draft CASE Report (Statewide CASE Team, 2020). Costs are presented in Table 3.

**Table 3: Costs for Gas versus Electric Water Heating Equipment over 30-Year Period of Analysis**

	Central Gas Boiler (CZs 1-9)	Central Gas Boiler (CZs 10-16)	Clustered HPWH	Central HPWH
<b>System Quantity/Description</b>	1 boiler recirc		32 units 80 gal. each no recirc	15 units .1,200-gal total recirc
<b>Total Equipment Cost</b>	\$98,733		\$126,778	\$213,364
<b>Solar Thermal</b>	(20% SF) 110,096	(35% SF) \$131,817	-	-
<b>Solar PV</b>	-	-	-	\$23,580 (8.8 kW <sub>DC</sub> )
<b>Total First Cost</b>	\$202,920	\$224,641	\$126,778	\$236,944
<b>Maintenance/Replacement Cost (NPV)</b>	\$69,283	\$69,283	\$81,374	\$120,683
<b>Total Cost (NPV)</b>	\$272,203	\$293,924	\$208,152	\$357,627
<b>Incremental Cost CZ 1-9 (NPV)</b>			(\$64,051)	\$85,424
<b>Incremental Cost CZ 10-16 (NPV)</b>			(\$85,772)	\$63,703

Typical costs for the water heating systems are based on the following assumptions:

**Central Gas Boiler:** Based on the average of total estimated project costs from contractors for four multi-family projects ranging from 32 to 340 apartments and cost estimates for mid-rise and high-rise buildings from the All-Electric Multifamily Compliance Pathway 2022 Draft CASE Report (Statewide CASE Team, 2020). The cost per dwelling unit ranged from \$547 to \$2,089 and the average cost applied in this analysis was \$1,122 per dwelling unit. Costs include installation of gas piping from the building meter to the water heater. Water heater lifetime is assumed to be 15 years and the net present value replacement cost at year 15 is \$63,373.

**Clustered HPWH:** Based on costs from one project with RHEEM HPWHs used in a clustered design. Costs include water heater interior closet, electrical outlets, and increased breaker size and sub feed. Water heater based on 2.0 UEF 80-gallon appliance with 32 total HPWHs serving the building (1 per 4 to 5 bedrooms). Water heater lifetime is assumed to be 15 years and the net present value replacement cost at year 15 is \$81,374. This design assumes 8 water heater closets per floor, at approximately 15 square feet per closet. While this has an impact on leasable floor area, the design impacts have been found to be minimal when addressed early in design.

**Central HPWH:** Based on average total installed project costs from four multi-family projects with Sanden HPWHs ranging from 4 to 16 Sanden units per project. The cost per Sanden HPWH ranged from \$13,094 to \$15,766 and the average cost applied in this analysis was \$14,224 per HPWH. Based on the prescriptive system sizing requirements, 15 Sanden units are required for the 88-unit building, resulting in a total first cost of \$213,364. Water heater lifetime is assumed to be 15 years. Because Sanden HPWHs are an emerging technology in the United States, it is expected that over time their costs will decrease and for replacement at year 15 the costs are assumed to have decreased by 15%.



**Solar Thermal:** Based on system costs provided in the All-Electric Multifamily Compliance Pathway 2022 Draft CASE Report (Statewide CASE Team, 2020). First costs reflect the material, labor, and markup costs presented in the Draft CASE Report for the mid-rise prototype. Replacement and maintenance costs assume replacement of the solar thermal tank at year 15 at \$6,110 and glycol replacement of \$1,300 each time at years 9, 18, and 27. The cost of the remaining useful life of the glycol at year 30 is deducted from the final cost. The Draft CASE Report included costs for replacing the solar collectors at year 20. Collectors can have longer lifetimes up to 30 years if well maintained, therefore this analysis does not assume any replacement of the collectors over the 30 year analysis period.

**Table 4: Solar Thermal Detailed Costs over 30-Year Period of Analysis**

Solar Fraction	20%	35%
Materials	\$33,975	\$48,975
Labor	\$47,740	\$49,776
Markup	27.5%	27.5%
First Cost	\$104,187	\$125,908
Replacement/Maintenance (PV)	\$5,910	\$5,910
<b>Total PV Cost</b>	<b>\$110,096</b>	<b>\$131,817</b>

### 2.4.3 Natural Gas Infrastructure Costs

This analysis assumes that in an all-electric new construction project, natural gas would not be supplied to the building. Eliminating natural gas to the building would save costs associated with connecting a service line from the street main to the building, piping distribution within the building, and monthly meter connection charges from the utility. Incremental costs for natural gas infrastructure in the mixed-fuel building are presented in Table 5. Cost data for the plan review and service extension was estimated on a per building basis and then apportioned to the residential and nonresidential portions of the buildings based on annual gas consumption. For the basecase prototype building 49% to 93% of estimated building annual gas use is attributed to the residential water heating system across all climate zones. A statewide average of 80% was calculated and applied to the costs in Table 5 based on housing starts provided by the California Energy Commission for the 2019 Title 24 code development process. The meter costs were based on the service provided to the residential and nonresidential portion of the building separately. Following the table are descriptions of assumptions for each of the cost components. Costs for gas piping from the meter to the gas boilers are included in the central gas boiler costs above. Gas piping distribution costs were typically included in total project costs and could not be broken out in all cases.

**Table 5: Natural Gas Infrastructure Cost Savings for All-Electric Building**

Item	Total	NonResidential Portion	Residential Portion
Natural Gas Plan Review	\$2,316	\$452	\$1,864
Service Extension <sup>1</sup>	\$4,600	\$898	\$3,702
Meter	\$7,200	\$3,600	\$3,600
<b>Total First Cost</b>	<b>\$14,116</b>	<b>\$4,950</b>	<b>\$9,166</b>

<sup>1</sup>Service extension costs include 50% reduction assuming portion of the costs are passed on to gas customers.

**Natural Gas Plan Review:** Total costs are based on TRC's 2019 reach code analysis for Palo Alto (TRC, 2019) and then split between the residential and nonresidential spaces in the building proportionately according to annual gas consumption with 80% of the annual load is attributed to residential units on a statewide basis.

**Service Extension:** Service extension costs to the building were taken from PG&E memo dated December 5, 2019, to Energy Commission staff, include costs for trenching, and assume non-residential new construction within a developed area (see Appendix C – PG&E Gas Infrastructure Cost Memo, PG&E, 2019). The total cost of



\$9,200 from the memo is reduced by 50% to account for the portion of the costs paid for by all customers due to application of Utility Gas Main Extensions rules<sup>1</sup>. The resultant cost is apportioned between the residential and nonresidential spaces in the building based on annual gas consumption of residential and nonresidential uses, with 80% of the annual load natural gas use attributed to residential units on a statewide basis.

**Meter:** Cost per meter provided by PG&E for commercial meters. Assume one meter for nonresidential boilers serving space heating and service water heating, and another for residential boilers serving domestic hot water.

## 2.5 Cost-effectiveness

Cost-effectiveness was evaluated for all 16 California climate zones and is presented based on both TDV energy, using the Energy Commission’s LCC methodology, and an On-Bill approach using residential customer utility rates. Both methodologies require estimating and quantifying the value of the energy impact associated with energy efficiency measures over the life of the measures (30 years) as compared to the prescriptive Title 24 requirements.

Cost-effectiveness is presented using both lifecycle net present value (NPV) savings and benefit-to-cost (B/C) ratio metrics, which represent the cost-effectiveness of a measure over a 30-year lifetime taking into account discounting of future savings and costs.

- **Net Present Value (NPV) Savings:** NPV benefits minus NPV costs is reported as a cost effectiveness metric. If the net savings of a measure or package is positive, it is considered cost effective. Negative savings represent net costs. A measure that has negative energy cost benefits (energy cost increase) can still be cost effective if the costs to implement the measure are more negative (i.e., material and maintenance cost savings).
- **Benefit-to-Cost (B/C) Ratio:** Ratio of the present value of all benefits to the present value of all costs over 30 years (NPV benefits divided by NPV costs). The criteria for cost effectiveness is a B/C greater than 1.0. A value of one indicates the NPV of the savings over the life of the measure is equivalent to the NPV of the lifetime incremental cost of that measure. A value greater than one represents a positive return on investment. The B/C ratio is calculated according to Equation 1.

### Equation 1

$$\text{Benefit – to – Cost Ratio} = \frac{\text{NPV of lifetime benefit}}{\text{NPV of lifetime cost}}$$

Improving the efficiency of a project often requires an initial incremental investment. In most cases the benefit is represented by annual “On-Bill” utility or TDV savings, and the cost by incremental first cost and replacement costs. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). In cases where both construction costs and energy-related savings are negative, the construction cost savings are treated as the ‘benefit’ while the increased energy costs are the ‘cost.’ In cases where a measure or package is cost-effective immediately (i.e. upfront construction cost savings and lifetime energy cost savings), B/C ratio cost-effectiveness is represented by “>1”. Because of these situations, NPV savings are also reported, which, in these cases, are positive values.

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<sup>1</sup> PG&E Rule 15: [https://www.pge.com/tariffs/tm2/pdf/GAS\\_RULES\\_15.pdf](https://www.pge.com/tariffs/tm2/pdf/GAS_RULES_15.pdf)

SoCalGas Rule 20: <https://www.socalgas.com/regulatory/tariffs/tm2/pdf/20.pdf>

SDG&E Rule 15: [http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-RULES\\_GRULE15.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-RULES_GRULE15.pdf)



The lifetime costs or benefits are calculated according to Equation 2.

**Equation 2**

$$PV \text{ of lifetime cost/benefit} = \sum_{t=1}^n \text{Annual cost/benefit}_t * (1 + r)^t$$

Where:

- $n$  = analysis term
- $r$  = real discount rate
- $t$  = year at which cost/benefit is incurred

The following summarizes the assumptions applied in this analysis to both methodologies.

- Analysis term of 30 years
- Real discount rate of 3% (does not include inflation)

**2.5.1 On-Bill Customer Lifecycle Cost**

Residential utility rates were used to calculate utility costs for all cases and determine On-Bill customer cost-effectiveness for the proposed packages. Utility costs of the nonresidential spaces were not evaluated in this study, only apartment and water heating energy use. The Statewide Reach Code Team obtained the recommended utility rates from each IOU based on the assumption that the reach codes go into effect in 2020. Annual utility costs were calculated using hourly electricity and gas output from CBECC-Com, and applying the utility tariffs summarized in Table 6. Appendix B – Utility Tariff Details includes details on the utility rate schedules used for this study. The applicable residential time-of-use (TOU) rate was applied to all cases. For cases with PV generation, the approved NEM2 tariffs were applied along with minimum daily use billing and mandatory non-bypassable charges. For the PV cases annual electric production was always less than annual electricity consumption; and therefore, no credits for surplus generation were necessary. Future changes to the NEM tariffs are likely; however, there is a lot of uncertainty about what those changes will be and if they will become effective during the 2019 Title 24 code cycle (2020-2022).

Based on guidance from the IOUs, the residential electric TOU tariffs that apply to individually metered residential apartments were also used to calculate electricity costs for the central water heating systems. Where baseline allowances are included in the tariffs (SCE TOU-D and SDG&E TOU-DR1) the allowances were applied on a per unit basis for all-electric service.

Based on guidance from the IOUs, master metered multifamily service gas tariffs were used to calculate gas costs for the central water heating systems. The baseline quantities were applied on a per unit basis, as is defined in the schedules, and when available water heating only baseline values were used.

Utility rates were applied to each climate zone based on the predominant IOU serving the population of each zone according to Table 6. Climate Zones 10 and 14 are evaluated with both SCE/SoCalGas and SDG&E tariffs since each utility has customers within these climate zones. Climate Zone 5 is evaluated under both PG&E and SoCalGas natural gas rates. Two municipal utility rates were also evaluated, Sacramento Municipal Utility District (SMUD) in Climate Zone 12 and City of Palo Alto Utilities (CPAU) in Climate Zone 4.



**Table 6: IOU Utility Tariffs Applied Based on Climate Zone**

Climate Zones	Electric/Gas Utility	Electricity (Apartment Use)	Electricity (Central Water Heating)	Natural Gas (Central Water Heating) <sup>1</sup>
1-5, 11-13, 16	PG&E	E-TOU-C	E-TOU-C	PG&E GM
5	PG&E/SoCalGas			SoCalGas GM-E
6, 8-10, 14,15	SCE/SoCalGas	TOU-D (Option 4-9)	TOU-D (Option 4-9)	SoCalGas GM-E
7, 10, 14	SDG&E	TOU-DR1	TOU-DR1	SDG&E GM
12	SMUD/PG&E	R-TOD (RT02)	GSN-T	PG&E GM
4	CPAU	E-1	E-2	G-2

<sup>1</sup> These rates are allowed assuming no gas is used in the apartments.

Utility rates are assumed to escalate over time, using assumptions from research conducted by Energy and Environmental Economics (E3) in the 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). Escalation of natural gas rates between 2019 and 2022 is based on the currently filed General Rate Cases (GRCs) for PG&E, SoCalGas and SDG&E. From 2023 through 2025, gas rates are assumed to escalate at 4% per year above inflation, which reflects historical rate increases between 2013 and 2018. Escalation of electricity rates from 2019 through 2025 is assumed to be 2% per year above inflation, based on electric utility estimates. After 2025, escalation rates for both natural gas and electric rates are assumed to drop to a more conservative 1% escalation per year above inflation for long-term rate trajectories beginning in 2026 through 2050. See Appendix B – Utility Tariff Details for additional details.

### 2.5.2 TDV Lifecycle Cost

Cost-effectiveness was also assessed using the Energy Commission’s TDV LCC methodology. TDV is a normalized monetary format developed and used by the Energy Commission for comparing electricity and natural gas savings, and it considers the cost of electricity and natural gas consumed during different times of the day and year. The 2019 TDV values are based on long term discounted costs of 30 years for all residential measures. The CBECC-Com simulation software results are expressed in terms of TDV kBtus. The present value of the energy cost savings in dollars is calculated by multiplying the TDV kBtu savings by a net present value (NPV) factor, also developed by the Energy Commission. The 30-year NPV factor is \$0.154/TDV kBtu for nonresidential projects under 2019 Title 24.

Like the customer B/C ratio, a TDV B/C ratio value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure. A value greater than one represents a positive return on investment. The ratio is calculated according to Equation 3.

#### Equation 3

$$TDV \text{ Benefit} - \text{to} - \text{Cost Ratio} = \frac{TDV \text{ energy savings} * NPV \text{ factor}}{NPV \text{ of lifetime incremental cost}}$$

## 2.6 Greenhouse Gas Emissions

Equivalent CO2 emission savings were calculated based on estimates from Zero Code reports available in CBECC-Com simulation software.<sup>2</sup> Electricity emissions vary by region and by hour of the year, accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard

<sup>2</sup> More information at: : <https://zero-code.org/wp-content/uploads/2018/11/ZERO-Code-TSD-California.pdf>



projections. Two distinct hourly profiles, one for Climate Zones 1 through 5 and 11 through 13 and another for Climate Zones 6 through 10 and 14 through 16. For natural gas a fixed factor of 0.005307 metric tons/therm is used. To compare the mixed fuel and all-electric cases side-by-side, greenhouse gas (GHG) emissions are presented as CO<sub>2</sub>-equivalent emissions per dwelling unit.

### 3 Results

The primary objective of the evaluation is to identify cost-effective, non-preempted performance targets for mid-rise multifamily buildings, under both mixed-fuel and all-electric cases, to support the design of local ordinances requiring new mid-rise residential buildings to exceed the minimum state requirements. The packages presented are representative examples of designs and measures that can be used to meet the requirements. In practice, a builder can use any combination of non-preempted or preempted compliant measures to meet the requirements.

This analysis evaluated a package of efficiency measures applied to a mixed-fuel design and a similar package for an all-electric design. Each design was evaluated using the predominant utility rates in all 16 California climate zones. Solar PV was also added to the efficiency packages and a sensitivity analysis was conducted at various PV system capacities to optimize cost-effectiveness.

Although some of the efficiency measures evaluated were not cost-effective and were eliminated, the following measures are included in at least one package:

- Improved fenestration
- Wall insulation
- Low pressure-drop distribution system
- HERS verified pipe insulation

The following measures were evaluated but were found to not be cost-effective and were not included in any of the packages.

- Solar thermal system with higher solar fraction than prescriptive requirements
- Drain water heat recovery

Cost-effectiveness results for the all-electric case are based upon the clustered HPWH approach only. Lower first costs with the clustered approach resulted in better cost-effectiveness than the central HPWH design.

#### 3.1 Mid-Rise Multifamily Results

Table 7 and Table 9 present results for the mixed-fuel and all-electric packages, respectively. Each table shows cost-effectiveness results for **Efficiency Only** packages and **Efficiency + PV** packages (with a 17.6 kW<sub>DC</sub> PV system sized based on 0.2 kW<sub>DC</sub> per apartment). Both mixed-fuel and all-electric results are relative to the mixed-fuel 2019 Title 24 prescriptive baseline. B/C ratios for all packages are presented according to both the On-Bill and TDV methodologies for the mixed-fuel and the all-electric cases, respectively. Detailed results are presented in *Appendix D – Detailed Results Mixed-Fuel* and *Appendix E – Detailed Results All-Electric*.

##### **Efficiency Only:**

Compliance margins for the **Mixed-Fuel Efficiency Only** cases range from 5% to 8%, which meets the CALGreen Tier 1 energy performance requirement for high-rise residential buildings. **Mixed-Fuel Efficiency Only** cases are cost-effective based on TDV in all climate zones except for 1 and 16. The cases are cost-effective from an On-Bill perspective in all climate zones except 1.

The **All-Electric Efficiency Only** package does not meet minimum code requirements in Climate Zones 1 and 16. Compliance margins for all other climate zones range from 1% to 5%. **All-Electric Efficiency Only** cases are cost-



effective in all climate zones based on TDV. Cost-effectiveness from an On-Bill perspective is favorable in all climate zones except 1, 16, and 5 in SCG territory.

**Efficiency + PV:**

Several PV system size options were evaluated for the **Efficiency + PV** packages. Of the PV system sizes evaluated, 0.2 kW<sub>DC</sub> per apartment represents the smallest system that resulted in B/C ratios greater than one based on both metrics in all climate zones for the mixed-fuel scenario. Adding a 0.1 kW<sub>DC</sub> per apartment in the all-electric cases, resulted in B/C ratios greater than one in all climate zones.

Table 11 and Table 12 describe the efficiency measures included in the mixed-fuel and all-electric packages, respectively.



**Table 7: Mixed-Fuel Package Results: Efficiency Only (SAVINGS/COST PER APARTMENT)**

Climate Zone	Elec Utility	Gas Utility	Comp. Margin	Total Gas Savings (therms)	Total Electric Savings (kWh)	GHG Reductions (lb. CO2)	Savings (2020 PV\$)		Incremental Cost (2020 PV\$)	B/C Ratio <sup>1</sup>		NPV	
							Utility Cost Savings	TDV Savings		On-Bill	TDV	On-Bill	TDV
CZ01	PGE	PGE	5.8%	0	26	18	\$133	\$105	\$304	0.44	0.35	(\$171)	(\$199)
CZ02	PGE	PGE	5.9%	0	47	29	\$391	\$285	\$144	2.72	1.98	\$248	\$141
CZ03	PGE	PGE	6.7%	0	44	27	\$345	\$226	\$144	2.40	1.57	\$202	\$82
CZ04	PGE	PGE	6.6%	0	61	37	\$465	\$331	\$144	3.24	2.31	\$321	\$188
CZ04-2	CPAU	CPAU	6.6%	0	61	37	\$248	\$331	\$144	1.73	2.31	\$104	\$188
CZ05	PGE	PGE	6.7%	0	42	24	\$320	\$206	\$144	2.22	1.43	\$176	\$62
CZ05-2	PGE	SCG	6.7%	0	42	24	\$320	\$206	\$144	2.22	1.43	\$176	\$62
CZ06	SCE	SCG	7.1%	0	74	42	\$424	\$351	\$144	2.95	2.44	\$280	\$207
CZ07	SDGE	SDGE	7.6%	0	81	48	\$593	\$374	\$144	4.13	2.60	\$449	\$230
CZ08	SCE	SCG	7.0%	0	84	50	\$484	\$420	\$144	3.37	2.92	\$341	\$276
CZ09	SCE	SCG	6.5%	0	83	51	\$468	\$441	\$144	3.26	3.06	\$324	\$297
CZ10	SCE	SCG	6.5%	0	82	50	\$410	\$427	\$144	2.85	2.97	\$266	\$283
CZ10-2	SDGE	SDGE	6.5%	0	82	50	\$599	\$427	\$144	4.16	2.97	\$455	\$283
CZ11	PGE	PGE	6.8%	0	104	70	\$637	\$635	\$625	1.02	1.02	\$11	\$10
CZ12	PGE	PGE	6.8%	0	93	60	\$572	\$568	\$304	1.88	1.87	\$268	\$265
CZ12-2	SMUD	PGE	6.8%	0	93	71	\$319	\$568	\$304	1.05	1.87	\$15	\$265
CZ13	PGE	PGE	7.3%	0	132	89	\$798	\$779	\$625	1.28	1.25	\$173	\$154
CZ14	SCE	SCG	6.0%	0	80	49	\$407	\$449	\$304	1.34	1.48	\$103	\$145
CZ14-2	SDGE	SDGE	6.0%	0	80	49	\$576	\$449	\$304	1.90	1.48	\$273	\$145
CZ15	SCE	SCG	6.8%	0	145	93	\$719	\$802	\$625	1.15	1.28	\$94	\$177
CZ16	PGE	PGE	7.4%	0	117	76	\$646	\$563	\$625	1.03	0.90	\$21	(\$62)

<sup>1</sup> Values in red indicate B/C ratios less than 1.



**Table 8: Mixed-Fuel Package Results: PV + Efficiency 0.2 kW<sub>DC</sub> per Apartment (SAVINGS/COST PER APARTMENT)**

Climate Zone	Elec Utility	Gas Utility	Comp. Margin	Total Gas Savings (therms)	Total Electric Savings (kWh)	GHG Reductions (lb. CO2)	Savings (2020 PV\$)		Incremental Cost (2020 PV\$)	B/C Ratio <sup>1</sup>		NPV	
							Utility Cost Savings	TDV Savings		On-Bill	TDV	On-Bill	TDV
CZ01	PGE	PGE	5.8%	0	291	131	\$1,637	\$1,090	\$937	1.75	1.16	\$701	\$153
CZ02	PGE	PGE	5.9%	0	360	163	\$2,431	\$1,469	\$777	3.13	1.89	\$1,655	\$692
CZ03	PGE	PGE	6.7%	0	359	161	\$2,400	\$1,397	\$777	3.09	1.80	\$1,624	\$620
CZ04	PGE	PGE	6.6%	0	385	176	\$2,579	\$1,562	\$777	3.32	2.01	\$1,802	\$785
CZ04-2	CPAU	CPAU	6.6%	0	61	176	\$1,335	\$1,562	\$777	1.72	2.01	\$558	\$785
CZ05	PGE	PGE	6.7%	0	379	168	\$2,480	\$1,461	\$777	3.19	1.88	\$1,704	\$685
CZ05-2	PGE	SCG	6.7%	0	379	168	\$2,480	\$1,461	\$777	3.19	1.88	\$1,704	\$685
CZ06	SCE	SCG	7.1%	0	392	178	\$1,987	\$1,587	\$777	2.56	2.04	\$1,210	\$810
CZ07	SDGE	SDGE	7.6%	0	411	189	\$2,770	\$1,647	\$777	3.57	2.12	\$1,993	\$870
CZ08	SCE	SCG	7.0%	0	402	186	\$2,059	\$1,708	\$777	2.65	2.20	\$1,282	\$931
CZ09	SCE	SCG	6.5%	0	410	192	\$1,876	\$1,742	\$777	2.41	2.24	\$1,099	\$965
CZ10	SCE	SCG	6.5%	0	409	190	\$1,797	\$1,681	\$777	2.31	2.16	\$1,020	\$904
CZ10-2	SDGE	SDGE	6.5%	0	409	190	\$2,646	\$1,681	\$777	3.41	2.16	\$1,869	\$904
CZ11	PGE	PGE	6.8%	0	422	206	\$2,438	\$1,877	\$1,258	1.94	1.49	\$1,180	\$619
CZ12	PGE	PGE	6.8%	0	406	193	\$2,352	\$1,794	\$937	2.51	1.91	\$1,415	\$857
CZ12-2	SMUD	PGE	6.8%	0	406	193	\$1,226	\$1,794	\$937	1.31	1.91	\$289	\$857
CZ13	PGE	PGE	7.3%	0	441	221	\$2,548	\$1,965	\$1,258	2.03	1.56	\$1,290	\$707
CZ14	SCE	SCG	6.0%	0	439	201	\$1,923	\$1,901	\$937	2.05	2.03	\$987	\$964
CZ14-2	SDGE	SDGE	6.0%	0	439	201	\$2,819	\$1,901	\$937	3.01	2.03	\$1,882	\$964
CZ15	SCE	SCG	6.8%	0	478	234	\$2,128	\$2,110	\$1,258	1.69	1.68	\$870	\$852
CZ16	PGE	PGE	7.4%	0	457	222	\$2,567	\$1,818	\$1,258	2.04	1.44	\$1,309	\$560

<sup>1</sup> Values in red indicate B/C ratios less than 1.



**Table 9: All-Electric Package Results: Efficiency Only (SAVINGS/COSTS PER APARTMENT)**

Climate Zone	Elec Utility	Gas Utility	Comp. Margin	Total Gas Savings (therms)	Total Electric Savings (kWh)	GHG Reductions (lb. CO2)	Savings (2020 PV\$)		Incremental Cost (2020 PV\$)	B/C Ratio <sup>1,2</sup>		NPV	
							Utility Cost Savings	TDV Savings		On-Bill	TDV	On-Bill	TDV
CZ01	PGE	PGE	-0.4%	125	-873	1040	-\$674	\$199	-\$446	0.7	>1	(\$228)	\$645
CZ02	PGE	PGE	1.6%	114	-762	971	-\$238	\$528	-\$606	2.5	>1	\$368	\$1,134
CZ03	PGE	PGE	1.1%	115	-767	975	-\$287	\$390	-\$606	2.1	>1	\$319	\$996
CZ04	PGE	PGE	3.4%	111	-714	952	-\$102	\$625	-\$606	6.0	>1	\$504	\$1,231
CZ04-2	CPAU	CPAU	3.4%	111	-714	952	\$345	\$625	-\$606	>1	>1	\$951	\$1,231
CZ05	PGE	PGE	1.3%	117	-788	991	-\$350	\$391	-\$606	1.7	>1	\$255	\$996
CZ05-2	PGE	SCG	1.3%	117	-788	991	-\$827	\$391	-\$606	0.7	>1	(\$221)	\$996
CZ06	SCE	SCG	3.7%	107	-670	933	\$153	\$612	-\$606	>1	>1	\$759	\$1,218
CZ07	SDGE	SDGE	4.8%	106	-653	930	-\$58	\$665	-\$606	10.4	>1	\$547	\$1,271
CZ08	SCE	SCG	3.9%	104	-633	912	\$227	\$693	-\$606	>1	>1	\$833	\$1,298
CZ09	SCE	SCG	3.8%	104	-633	912	\$212	\$739	-\$606	>1	>1	\$817	\$1,345
CZ10	SCE	SCG	1.8%	90	-626	743	-\$214	\$396	-\$853	4.0	>1	\$639	\$1,249
CZ10-2	SDGE	SDGE	1.8%	90	-626	743	-\$478	\$396	-\$853	1.8	>1	\$375	\$1,249
CZ11	PGE	PGE	2.0%	91	-619	769	-\$241	\$430	-\$371	1.5	>1	\$130	\$802
CZ12	PGE	PGE	1.4%	94	-662	773	-\$414	\$288	-\$693	1.7	>1	\$279	\$980
CZ12-2	SMUD	PGE	1.4%	94	-662	773	\$1,060	\$288	-\$693	>1	>1	\$1,753	\$980
CZ13	PGE	PGE	2.6%	90	-579	777	-\$62	\$505	-\$371	6.0	>1	\$309	\$876
CZ14	SCE	SCG	1.1%	92	-653	759	-\$258	\$305	-\$693	2.7	>1	\$435	\$998
CZ14-2	SDGE	SDGE	1.1%	92	-653	759	-\$532	\$305	-\$693	1.3	>1	\$161	\$998
CZ15	SCE	SCG	4.4%	74	-409	679	\$332	\$832	-\$371	>1	>1	\$704	\$1,203
CZ16	PGE	PGE	-5.8%	108	-777	895	-\$621	\$127	-\$371	0.6	>1	(\$250)	\$498

<sup>1</sup> Values in red indicate B/C ratios less than 1.

<sup>2</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.



**Table 10: All-Electric Package Results: PV + Efficiency 0.1 kW<sub>DC</sub> per Apartment (SAVINGS/COSTS PER APARTMENT)**

Climate Zone	Elec Utility	Gas Utility	Comp. Margin	Total Gas Savings (therms)	Total Electric Savings (kWh)	GHG Reductions (lb. CO <sub>2</sub> )	Savings (2020 PV\$)		Incremental Cost (2020 PV\$)	B/C Ratio <sup>1,2</sup>		NPV	
							Utility Cost Savings	TDV Savings		On-Bill	TDV	On-Bill	TDV
CZ01	PGE	PGE	-0.4%	125	-741	1,097	\$78	\$692	-\$129	>1	>1	\$208	\$821
CZ02	PGE	PGE	1.6%	114	-606	1,038	\$782	\$1,120	-\$289	>1	>1	\$1,071	\$1,409
CZ03	PGE	PGE	1.1%	115	-609	1,042	\$741	\$975	-\$289	>1	>1	\$1,030	\$1,264
CZ04	PGE	PGE	3.4%	111	-552	1,021	\$955	\$1,240	-\$289	>1	>1	\$1,244	\$1,529
CZ04-2	CPAU	CPAU	3.4%	111	-714	1,021	\$904	\$1,240	-\$289	>1	>1	\$1,194	\$1,529
CZ05	PGE	PGE	1.3%	117	-619	1,063	\$730	\$1,018	-\$289	>1	>1	\$1,019	\$1,307
CZ05-2	PGE	SCG	1.3%	117	-619	1,063	\$254	\$1,018	-\$289	>1	>1	\$543	\$1,307
CZ06	SCE	SCG	3.7%	107	-512	1,001	\$935	\$1,231	-\$289	>1	>1	\$1,224	\$1,520
CZ07	SDGE	SDGE	4.8%	106	-488	1,000	\$1,049	\$1,302	-\$289	>1	>1	\$1,339	\$1,591
CZ08	SCE	SCG	3.9%	104	-474	981	\$1,014	\$1,337	-\$289	>1	>1	\$1,304	\$1,626
CZ09	SCE	SCG	3.8%	104	-469	983	\$924	\$1,390	-\$289	>1	>1	\$1,213	\$1,679
CZ10	SCE	SCG	1.8%	90	-463	813	\$480	\$1,023	-\$536	>1	>1	\$1,016	\$1,559
CZ10-2	SDGE	SDGE	1.8%	90	-463	813	\$546	\$1,023	-\$536	>1	>1	\$1,082	\$1,559
CZ11	PGE	PGE	2.0%	91	-460	837	\$660	\$1,052	-\$55	>1	>1	\$714	\$1,106
CZ12	PGE	PGE	1.4%	94	-505	839	\$476	\$900	-\$376	>1	>1	\$852	\$1,276
CZ12-2	SMUD	PGE	1.4%	94	-505	839	\$1,513	\$900	-\$376	>1	>1	\$1,890	\$1,276
CZ13	PGE	PGE	2.6%	90	-424	843	\$813	\$1,098	-\$55	>1	>1	\$867	\$1,153
CZ14	SCE	SCG	1.1%	92	-473	835	\$500	\$1,031	-\$376	>1	>1	\$877	\$1,407
CZ14-2	SDGE	SDGE	1.1%	92	-473	835	\$589	\$1,031	-\$376	>1	>1	\$965	\$1,407
CZ15	SCE	SCG	4.4%	74	-242	750	\$1,037	\$1,485	-\$55	>1	>1	\$1,091	\$1,540
CZ16	PGE	PGE	-5.8%	108	-608	969	\$339	\$754	-\$55	>1	>1	\$394	\$809

<sup>1</sup> Values in red indicate B/C ratios less than 1.

<sup>2</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.



**Table 11: Mixed-Fuel Measure Package Summary**

Climate Zone	Compliance Margin	MEASURE SPECIFICATION				
		Window U-value	Window SHGC	Add Wall Ins.	Fan Watt Draw	HERS Pipe Ins.
CZ01	5.8%			+ 1"	0.25 W/cfm	No
CZ02	5.9%		0.22		0.25 W/cfm	No
CZ03	6.7%		0.22		0.25 W/cfm	No
CZ04	6.6%		0.22		0.25 W/cfm	No
CZ05	6.7%		0.22		0.25 W/cfm	No
CZ06	7.1%		0.22		0.25 W/cfm	No
CZ07	7.6%		0.22		0.25 W/cfm	No
CZ08	7.0%		0.22		0.25 W/cfm	No
CZ09	6.5%		0.22		0.25 W/cfm	No
CZ10	6.5%		0.22		0.25 W/cfm	No
CZ11	6.8%	0.25	0.22	+ 1"	0.25 W/cfm	No
CZ12	7.3%		0.22	+ 1"	0.25 W/cfm	No
CZ13	7.3%	0.25	0.22	+ 1"	0.25 W/cfm	No
CZ14	6.8%		0.22	+ 1"	0.25 W/cfm	No
CZ15	6.8%	0.25	0.22	+ 1"	0.25 W/cfm	No
CZ16	7.4%	0.25	0.22	+ 1"	0.25 W/cfm	No

**Table 12: All-Electric Measure Package Summary**

Climate Zone	Compliance Margin	MEASURE SPECIFICATION				
		Window U-value	Window SHGC	Add Wall Ins.	Fan Watt Draw	HERS Pipe Ins.
CZ01	-0.4%			+ 1"	0.25 W/cfm	Yes
CZ02	1.6%		0.22		0.25 W/cfm	Yes
CZ03	1.1%		0.22		0.25 W/cfm	Yes
CZ04	3.4%		0.22		0.25 W/cfm	Yes
CZ05	1.3%		0.22		0.25 W/cfm	Yes
CZ06	3.7%		0.22		0.25 W/cfm	Yes
CZ07	4.8%		0.22		0.25 W/cfm	Yes
CZ08	3.9%		0.22		0.25 W/cfm	Yes
CZ09	3.8%		0.22		0.25 W/cfm	Yes
CZ10	1.8%		0.22		0.25 W/cfm	Yes
CZ11	2.0%	0.25	0.22	+ 1"	0.25 W/cfm	Yes
CZ12	2.0%		0.22	+ 1"	0.25 W/cfm	Yes
CZ13	2.6%	0.25	0.22	+ 1"	0.25 W/cfm	Yes
CZ14	2.0%		0.22	+ 1"	0.25 W/cfm	Yes
CZ15	4.4%	0.25	0.22	+ 1"	0.25 W/cfm	Yes
CZ16	-5.8%	0.25	0.22	+ 1"	0.25 W/cfm	Yes



## 4 Conclusions & Summary

This report evaluated the feasibility and cost-effectiveness of “above code” performance specifications for newly constructed mid-rise multifamily buildings. The analysis included application of efficiency measures, electric appliances, and PV in all 16 California climate zones, and found cost-effective packages across the state. For the building designs and climate zones where cost-effective packages were identified, the results of this analysis can be used by local jurisdictions to support the adoption of reach codes. Cost-effectiveness was evaluated according to two metrics: On-Bill customer lifecycle benefit-to-cost ratio and TDV lifecycle benefit-to-cost ratio.

For mixed-fuel buildings, this analysis demonstrates that there are cost-effective **Efficiency Only** packages that achieve a minimum 5% compliance margin in most climate zones. The exception is Climate Zone 1 where the package was not cost-effective based on either the TDV or the On-Bill methodology. In all other cases the package is cost-effective for at least one of the metrics.

When 0.1 kW<sub>DC</sub> per apartment is included, all climate zones are cost-effective based on at least one of the metrics. The addition of 0.1 kW<sub>DC</sub> per apartment, or 8.8 kW<sub>DC</sub> total for the building, results in an incremental cost for the PV system of \$27,855. When 0.2 kW<sub>DC</sub> per apartment is included, all climate zones are cost-effective based on both metrics. The addition of 0.2 kW<sub>DC</sub> per apartment, or 17.6 kW<sub>DC</sub> for the building, results in an incremental cost for the PV system of \$55,711.

This study evaluated electrification of residential loads in new mid-rise multifamily buildings. Based on typical construction across California, the basecase condition incorporated all electric appliances within the apartment spaces. As a result, only central water heating was converted from natural gas to electric as part of this analysis. For all-electric buildings, this analysis demonstrates that there are cost-effective **All-Electric Efficiency Only** packages that meet minimum Title 24 code compliance in all climate zones except 1 and 16. The package is cost-effective based on the TDV methodology in all climate zones. It is cost-effective based on the On-Bill methodology in Climate Zones 2 through 15, except for Climate Zones 5 in SCG territory.

When 0.1 kW<sub>DC</sub> per apartment is included, all climate zones are cost-effective based on both metrics. The addition of 0.1 kW<sub>DC</sub> per apartment, or 8.8 kW<sub>DC</sub> for the building, results in an incremental cost for the PV system of \$27,855.

### Additional considerations

- This study found that electrification of central domestic hot water loads, in combination with efficiency measures, can result in a benefit to the consumer through lower utility bills under certain electricity and gas tariff scenarios (Climate Zones 6, 8, 9, 15, 4 in CPAU territory, and 12 in SMUD territory). The all-electric results demonstrate a trend with On-Bill cost-effectiveness across the different electric utilities. Net Present Value in SCE and SDG&E territories, as well as SMUD and CPAU territories, are typically higher than the cases in PG&E territory. This indicates that rate design can play an important role in encouraging or discouraging electrification.
- This study did not evaluate federally preempted high efficiency appliances. Specifying high efficiency equipment is a viable approach to meeting Title 24 code compliance and local ordinance requirements and is commonly used by project teams. Other studies have found that efficiency packages and electrification packages that employ high efficiency equipment can be quite cost-effective ((Statewide Reach Code Team, 2019b), (Energy & Environmental Economics. 2019)).
- If PV capacity is added to both the mixed-fuel and all-electric efficiency packages, all cases are cost-effective based on at least one of the two evaluated metrics. In some cases, cost-effectiveness improves, and in other cases it decreases relative to the case with efficiency and/or electrification measures only. The cost-effectiveness of adding PV up to 1 kW per apartment, as an independent measure, results in On-Bill benefit-to-cost ratios between 2.3 and 3.1 for PGE territory, 2.1 to 2.3 for SCE territory, and 3.2 to 3.5 for SDG&E territory. The TDV B/C ratio for PV alone is approximately 2.0 for most climate zones



for all service territories. Adding PV in addition to the efficiency packages improves cost-effectiveness where the B/C ratios for the efficiency measures alone are lower than the B/C ratios for PV alone, and vice versa where they are higher. Annual basecase electricity costs and annual utility savings from PV are lower in SCE territory than in PG&E and SDG&E territories. This is due to lower off-peak cost and a bigger difference in peak versus off-peak rate for the TOU-D SCE electricity rate tariff. Most PV production occurs during off-peak times (4 pm to 9 pm peak period).

Table 13 summarizes compliance margin and cost-effectiveness results for the mixed-fuel and all-electric cases. Compliance margin is reported in the cells and cost-effectiveness is indicated by the color of the cell according to the following:

- Cells highlighted in green depict a positive compliance margin and cost-effective results using both On-Bill and TDV approaches.
- Cells highlighted in yellow depict a positive compliance margin and cost-effective results using either the On-Bill or TDV approach but not both.
- Cells not highlighted either depict a negative compliance margin (red text) or a package that was not cost-effective using either the On-Bill or TDV approach.

For more detail on the results, please refer to *Section 3.1 Mid-Rise Multifamily Results, Appendix D – Detailed Results Mixed-Fuel* and *Appendix E – Detailed Results All-Electric*.

**Table 13: Mid-Rise Multifamily Summary of Compliance Margin and Cost-Effectiveness**

Climate Zone	Elec Utility	Gas Utility	Mixed-Fuel			All-Electric				
			No PV	0.1 kW <sub>DC</sub> /Apt	0.2 kW <sub>DC</sub> /Apt	0.3 kW <sub>DC</sub> /Apt	No PV	0.1 kW <sub>DC</sub> /Apt	0.2 kW <sub>DC</sub> /Apt	0.3 kW <sub>DC</sub> /Apt
CZ01	PGE	PGE	5.8%	5.8%	5.8%	5.8%	-0.4%	-0.4%	-0.4%	-0.4%
CZ02	PGE	PGE	5.9%	5.9%	5.9%	5.9%	1.6%	1.6%	1.6%	1.6%
CZ03	PGE	PGE	6.7%	6.7%	6.7%	6.7%	1.1%	1.1%	1.1%	1.1%
CZ04	PGE	PGE	6.6%	6.6%	6.6%	6.6%	3.4%	3.4%	3.4%	3.4%
CZ04-2	CPAU	CPAU	6.6%	6.6%	6.6%	6.6%	3.4%	3.4%	3.4%	3.4%
CZ05	PGE	PGE	6.7%	6.7%	6.7%	6.7%	1.3%	1.3%	1.3%	1.3%
CZ05-2	PGE	SCG	6.7%	6.7%	6.7%	6.7%	1.3%	1.3%	1.3%	1.3%
CZ06	SCE	SCG	7.1%	7.1%	7.1%	7.1%	3.7%	3.7%	3.7%	3.7%
CZ07	SDGE	SDGE	7.6%	7.6%	7.6%	7.6%	4.8%	4.8%	4.8%	4.8%
CZ08	SCE	SCG	7.0%	7.0%	7.0%	7.0%	3.9%	3.9%	3.9%	3.9%
CZ09	SCE	SCG	6.5%	6.5%	6.5%	6.5%	3.8%	3.8%	3.8%	3.8%
CZ10	SCE	SCG	6.5%	6.5%	6.5%	6.5%	1.8%	1.8%	1.8%	1.8%
CZ10-2	SDGE	SDGE	6.5%	6.5%	6.5%	6.5%	1.8%	1.8%	1.8%	1.8%
CZ11	PGE	PGE	6.8%	6.8%	6.8%	6.8%	2.0%	2.0%	2.0%	2.0%
CZ12	PGE	PGE	6.8%	6.8%	6.8%	6.8%	1.4%	1.4%	1.4%	1.4%
CZ12-2	SMUD	PGE	6.8%	6.8%	6.8%	6.8%	1.4%	1.4%	1.4%	1.4%
CZ13	PGE	PGE	7.3%	7.3%	7.3%	7.3%	2.6%	2.6%	2.6%	2.6%
CZ14	SCE	SCG	6.0%	6.0%	6.0%	6.0%	1.1%	1.1%	1.1%	1.1%
CZ14-2	SDGE	SDGE	6.0%	6.0%	6.0%	6.0%	1.1%	1.1%	1.1%	1.1%
CZ15	SCE	SCG	6.8%	6.8%	6.8%	6.8%	4.4%	4.4%	4.4%	4.4%
CZ16	PGE	PGE	7.4%	7.4%	7.4%	7.4%	-5.8%	-5.8%	-5.8%	-5.8%



## 5 References

- California Energy Commission. 2017. Rooftop Solar PV System. Measure number: 2019-Res-PV-D Prepared by Energy and Environmental Economics, Inc. <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>
- California Energy Commission. 2018a. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. CEC-400-2018-020-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf>
- California Energy Commission. 2018b. 2019 Reference Appendices. CEC-400-2018-021-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-021/CEC-400-2018-021-CMF.pdf>
- California Energy Commission. 2019a. 2019 Nonresidential Alternative Calculation Method Reference Manual. CEC-400-2019-006-CMF. May 2019. California Energy Commission. <https://ww2.energy.ca.gov/2019publications/CEC-400-2019-006/CEC-400-2019-006-CMF.pdf>
- California Energy Commission. 2019b. Executive Director Determination Pursuant to Section 150.1(c)8C for Central Heat Pump Water Heating System. December 26, 2019. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=231318&DocumentContentId=63067>
- Energy & Environmental Economics. 2019. Residential Building Electrification in California. April 2019. [https://www.ethree.com/wp-content/uploads/2019/04/E3\\_Residential\\_Building\\_Electrification\\_in\\_California\\_April\\_2019.pdf](https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf)
- Horii, B., E. Cutter, N. Kapur, J. Arent, and D. Conotyannis. 2014. “Time Dependent Valuation of Energy for Developing Building Energy Efficiency Standards.” [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09\\_workshop/2017\\_TDV\\_Documents/](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents/)
- Barbose, Galen and Darghouth, Naim. 2018. Tracking the Sun. Installed Price Trends for Distributed Photovoltaic Systems in the United States – 2018 Edition. Lawrence Berkeley National Laboratory. September 2018. [https://emp.lbl.gov/sites/default/files/tracking\\_the\\_sun\\_2018\\_edition\\_final\\_0.pdf](https://emp.lbl.gov/sites/default/files/tracking_the_sun_2018_edition_final_0.pdf)
- Statewide CASE Team. 2014. Codes and Standards Enhancement (CASE) Initiative Nonresidential Opaque Envelope. December 2014. <https://title24stakeholders.com/wp-content/uploads/2019/02/2016-T24-CASE-Report-NR-Opaque-Envelope-Dec2014-V3.pdf>
- Statewide CASE Team. 2017a. Codes and Standards Enhancement (CASE) Initiative High Performance Walls – Final Report. September 2017. <http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report-HPW-Final-September-2017.pdf>
- Statewide CASE Team. 2017b. Codes and Standards Enhancement (CASE) Initiative Residential High Performance Windows & Doors – Final Report. August 2017. <http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report-Res-Windows-and-Doors-Final-September-2017.pdf>
- Statewide CASE Team. 2017c. Codes and Standards Enhancement (CASE) Initiative Drain Water Heat Recovery – Final Report. July 2017. <https://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report-DWHR-Final-September-2017.pdf>
- Statewide CASE Team. 2018. Energy Savings Potential and Cost-Effectiveness Analysis of High Efficiency Windows in California. Prepared by Frontier Energy. May 2018. <https://www.etcc-ca.com/reports/energy-savings-potential-and-cost-effectiveness-analysis-high-efficiency-windows-california>
- Statewide CASE Team. 2020. All-Electric Multifamily Compliance Pathway Draft CASE Report. <https://title24stakeholders.com/wp-content/uploads/2018/10/2022-T24-Draft-CASE-Report-MF-All-Electric.pdf>



Statewide Reach Code Team. 2019a. 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study. Prepared for Southern California Edison. Prepared by TRC. July 25, 2019.

[https://localenergycodes.com/download/801/file\\_path/fieldList/2019%20NR%20NC%20Cost%20Effectiveness%20Study-2019-07-25.pdf](https://localenergycodes.com/download/801/file_path/fieldList/2019%20NR%20NC%20Cost%20Effectiveness%20Study-2019-07-25.pdf)

Statewide Reach Code Team. 2019b. 2019 Cost-effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. August 1, 2019.

[https://localenergycodes.com/download/800/file\\_path/fieldList/2019%20Res%20NC%20Reach%20Codes](https://localenergycodes.com/download/800/file_path/fieldList/2019%20Res%20NC%20Reach%20Codes)

TRC. 2018. City of Palo Alto 2019 Title 24 Energy Reach Code Cost-effectiveness Analysis Draft. September 2018.

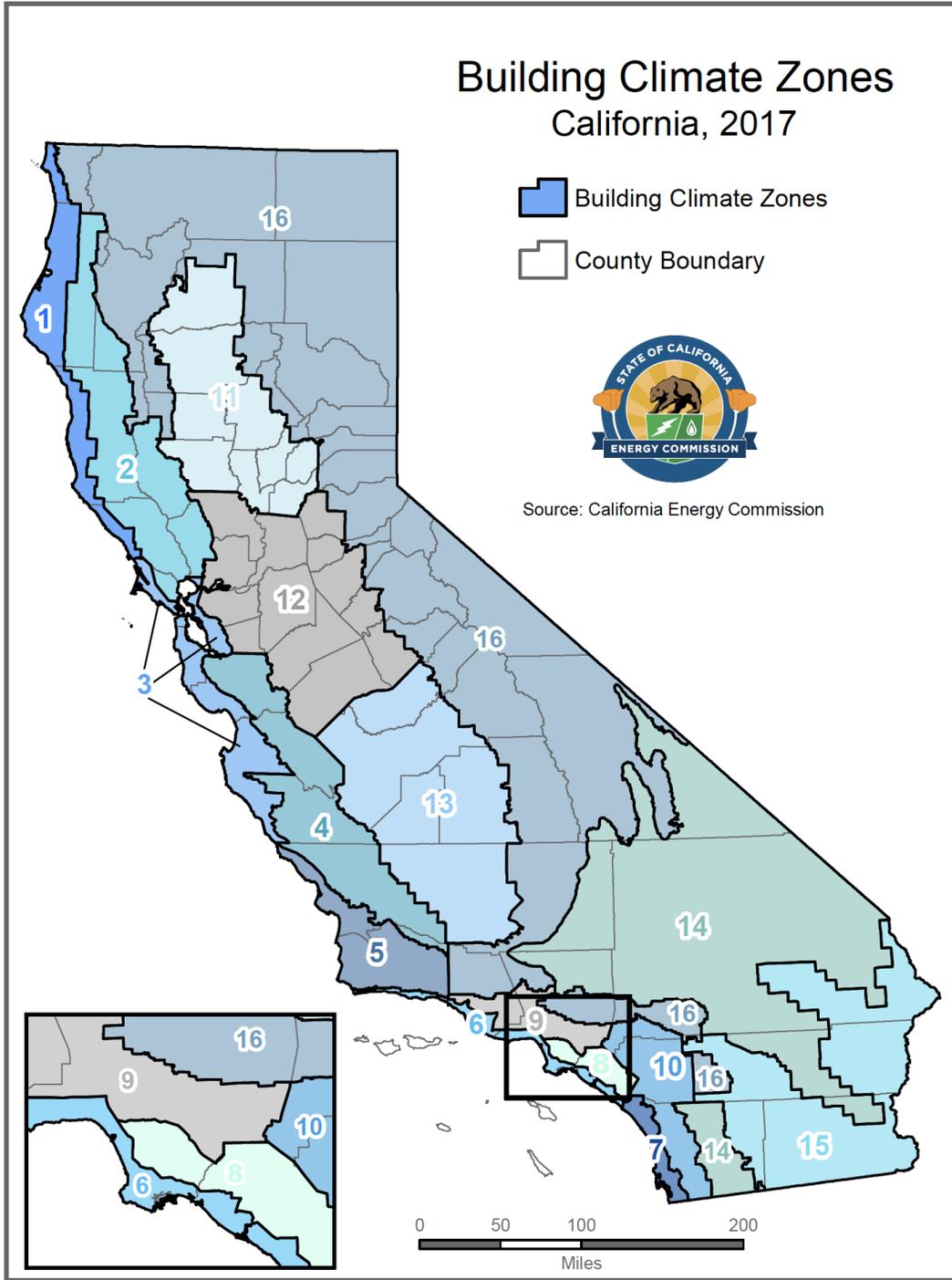
<https://cityofpaloalto.org/civicax/filebank/documents/66742>

TRC. 2019. Multifamily Prototypes. June 7, 2019. Submitted to Southern California Edison.

[https://title24stakeholders.com/wp-content/uploads/2019/06/SCE-MFModeling\\_MultifamilyPrototypesReport\\_2019-06-07\\_clean.pdf](https://title24stakeholders.com/wp-content/uploads/2019/06/SCE-MFModeling_MultifamilyPrototypesReport_2019-06-07_clean.pdf)



## Appendix A – California Climate Zone Map



**Figure 3: Map of California climate zones.** (Source, California Energy Commission<sup>3</sup>)

<sup>3</sup> [https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)



## Appendix B – Utility Tariff Details

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**PG&E**

The following pages provide details on the PG&E electricity and natural gas tariffs applied in this study. Table 14 describes the baseline territories that were assumed for each climate zone.

**Table 14: PG&E Baseline Territory by Climate Zone**

	Baseline Territory
CZ01	V
CZ02	X
CZ03	T
CZ04	X
CZ05	T
CZ11	R
CZ12	S
CZ13	R
CZ16	Y

The PG&E monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 15. Rates are based on historical data provided by PG&E.<sup>4</sup>

**Table 15: PG&E Monthly Gas Rate (\$/Therm)**

Month	Procurement Charge	Transportation Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.45813	\$0.99712	\$1.59540	\$1.45525	\$2.05353
Feb 2020	\$0.44791	\$0.99712	\$1.59540	\$1.44503	\$2.04331
Mar 2020	\$0.35346	\$1.13126	\$1.64861	\$1.48472	\$2.00207
Apr 2020	\$0.23856	\$1.13126	\$1.64861	\$1.36982	\$1.88717
May 2019	\$0.21791	\$0.99933	\$1.59892	\$1.21724	\$1.81683
June 2019	\$0.20648	\$0.99933	\$1.59892	\$1.20581	\$1.80540
July 2019	\$0.28462	\$0.99933	\$1.59892	\$1.28395	\$1.88354
Aug 2019	\$0.30094	\$0.96652	\$1.54643	\$1.26746	\$1.84737
Sept 2019	\$0.25651	\$0.96652	\$1.54643	\$1.22303	\$1.80294
Oct 2019	\$0.27403	\$0.98932	\$1.58292	\$1.26335	\$1.85695
Nov 2019	\$0.33311	\$0.96729	\$1.54767	\$1.30040	\$1.88078
Dec 2019	\$0.40178 <sup>7/</sup>	\$0.96729	\$1.54767	\$1.36907	\$1.94945

<sup>4</sup>The PG&E procurement and transportation charges were obtained from the following site:

<https://www.pge.com/tariffs/GRF.SHTML#RESGAS>





**Pacific Gas and Electric Company**  
San Francisco, California

Cancelling Revised

Revised Revised

Cal. P.U.C. Sheet No. 46539-E  
Cal. P.U.C. Sheet No. 46325-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 2  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

RATES:  
(Cont'd.)

**E-TOU-C TOTAL RATES**

Total Energy Rates (\$ per kWh)	PEAK		OFF-PEAK	
<i>Summer</i>				
Total Usage	\$0.41333	(I)	\$0.34989	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
<i>Winter</i>				
Total Usage	\$0.31624	(I)	\$0.29891	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
Delivery Minimum Bill Amount (\$ per meter per day)	\$0.32854			
California Climate Credit (per household, per semi-annual payment occurring in the April and October bill cycles) <sup>†</sup>	(\$35.73)			(T)

Total bundled service charges shown on customer's bills are unbundled according to the component rates shown below. Where the delivery minimum bill amount applies, the customer's bill will equal the sum of (1) the delivery minimum bill amount plus (2) for bundled service, the generation rate times the number of kWh used. For revenue accounting purposes, the revenues from the delivery minimum bill amount will be assigned to the Transmission, Transmission Rate Adjustments, Reliability Services, Public Purpose Programs, Nuclear Decommissioning, Competition Transition Charges, Energy Cost Recovery Amount, DWR Bond, and New System Generation Charges based on kWh usage times the corresponding unbundled rate component per kWh, with any residual revenue assigned to Distribution.

<sup>†</sup> Pursuant to D.20-04-027, distribution of the October 2020 California Climate Credit will be advanced and split to the May 2020 and June 2020 bill cycles, \$17.87 and \$17.86 respectively.. (N)

(Continued)

Advice	5661-E-B	Issued by	Submitted	<u>April 28, 2020</u>
Decision		<b>Robert S. Kenney</b>	Effective	<u>May 1, 2020</u>
		Vice President, Regulatory Affairs	Resolution	





**Pacific Gas and Electric Company**  
San Francisco, California

Revised Revised Cal. P.U.C. Sheet No. 46540-E  
Cancelling Revised Cal. P.U.C. Sheet No. 46252-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 3  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

RATES: UNBUNDLING OF E-TOU-C TOTAL RATES  
(Cont'd.)

Energy Rates by Component (\$ per kWh)	PEAK		OFF-PEAK	
<b>Generation:</b>				
Summer (all usage)	\$0.16735	(R)	\$0.11391	(R)
Winter (all usage)	\$0.11859	(R)	\$0.10356	(R)
<b>Distribution**:</b>				
Summer (all usage)	\$0.12767	(I)	\$0.11767	(I)
Winter (all usage)	\$0.07935	(I)	\$0.07705	(I)
Conservation Incentive Adjustment (Baseline Usage)			(\$0.03294)	(I)
Conservation Incentive Adjustment (Over Baseline Usage)			\$0.05339	(I)
Transmission* (all usage)			\$0.03595	
Transmission Rate Adjustments* (all usage)			\$0.00314	
Reliability Services* (all usage)			(\$0.00066)	
Public Purpose Programs (all usage)			\$0.01298	(I)
Nuclear Decommissioning (all usage)			\$0.00101	(I)
Competition Transition Charges (all usage)			\$0.00096	(R)
Energy Cost Recovery Amount (all usage)			\$0.00005	(I)
DWR Bond (all usage)			\$0.00580	
New System Generation Charge (all usage)**			\$0.00571	(I)

\* Transmission, Transmission Rate Adjustments and Reliability Service charges are combined for presentation on customer bills.  
\*\* Distribution and New System Generation Charges are combined for presentation on customer bills.

(Continued)

Advice	5861-E-B	Issued by	Submitted	<u>April 28, 2020</u>
Decision		<b>Robert S. Kenney</b>	Effective	<u>May 1, 2020</u>
		Vice President, Regulatory Affairs	Resolution	





**Pacific Gas and Electric Company**  
San Francisco, California

Revised Cal. P.U.C. Sheet No. 46190-E  
Cancelling Revised Cal. P.U.C. Sheet No. 43414-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 4 (T)  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

**SPECIAL CONDITIONS:** 1. **BASELINE (TIER 1) QUANTITIES:** The following quantities of electricity are to be used to define usage eligible for the baseline credit (also see Rule 19 for additional allowances for medical needs):

**BASELINE QUANTITIES (kWh PER DAY)**

Baseline Territory*	Code B - Basic Quantities		Code H - All-Electric Quantities	
	Summer	Winter	Summer	Winter
	Tier I	Tier I	Tier I	Tier I
P	14.2	12.0	16.0	27.4
Q	10.3	12.0	8.9	27.4
R	18.6	11.3	20.9	28.1
S	15.8	11.1	18.7	24.9
T	6.8	8.2	7.5	13.6
V	7.5	8.8	10.9	16.9
W	20.2	10.7	23.6	20.0
X	10.3	10.5	8.9	15.4
Y	11.0	12.1	12.6	25.3
Z	6.2	8.1	7.0	16.5

2. **TIME PERIODS FOR E-TOU-C:** Times of the year and times of the day are defined as follows: (T)

Summer (service from June 1 through September 30):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times

Winter (service from October 1 through May 31):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times

\* The applicable baseline territory is described in Part A of the Preliminary Statement

(Continued)

Advice	5759-E	Issued by	Submitted	February 14, 2020
Decision	D.19-07-004	<b>Robert S. Kenney</b>	Effective	March 1, 2020
		Vice President, Regulatory Affairs	Resolution	





**Pacific Gas and Electric Company**  
 San Francisco, California

Cancelling

Revised  
 Revised

Cal. P.U.C. Sheet No.  
 Cal. P.U.C. Sheet No.

35762-G  
 35696-G

**GAS SCHEDULE GM**  
 MASTER-METERED MULTIFAMILY SERVICE

Sheet 2

RATES: Customers on this schedule pay a Procurement Charge and a Transportation Charge, per meter, as follows:

	<u>Baseline</u>		<u>Per Therm</u>		<u>Excess</u>
<u>Procurement Charge:</u>	\$0.23856	(R)	\$0.23856	(R)	
<u>Transportation Charge:</u>	<u>\$1.13126</u>		<u>\$1.64861</u>		
Total:	\$1.36982	(R)	\$1.88717	(R)	

California Natural Gas Climate Credit (\$27.18)  
 (per Household, annual payment  
 occurring in the April bill cycle)

Public Purpose Program Surcharge:

Customers served under this schedule are subject to a gas Public Purpose Program (PPP) Surcharge under Schedule G-PPPS.

See Preliminary Statement, Part B for the Default Tariff Rate Components.

The Procurement Charge on this schedule is equivalent to the rate shown on informational Schedule G-CP—Gas Procurement Service to Core End-Use Customers.





**Pacific Gas and Electric Company**  
 San Francisco, California

Cancelling Revised Cal. P.U.C. Sheet No. 35447-G  
 Revised Cal. P.U.C. Sheet No. 34307-G

**GAS SCHEDULE GM**  
 MASTER-METERED MULTIFAMILY SERVICE

Sheet 3

**BASELINE QUANTITIES:** The above rates are applicable only to residential use. PG&E may require the Customer to submit a completed "Declaration of Eligibility for Baseline Quantities for Residential Rates." The delivered quantities of gas shown below are billed at the rates for baseline use. As an exception, service under this schedule not used to supply space heating but used to supply water heating from a central source to residential dwelling units that are individually metered by PG&E for either gas or electricity will be billed using a baseline quantity of 0.5 therms per dwelling unit per day (Code W) in all baseline territories and in both seasons.

Baseline Territories	BASELINE QUANTITIES (Therms Per Day Per Dwelling Unit)						(T)   (T)
	Summer (April-October)		Winter Off-Peak (Nov, Feb, Mar)		Winter On-Peak (Dec, Jan)		
	Effective Apr. 1, 2020		Effective Nov. 1, 2019		Effective Dec. 1, 2019		
**							
P	0.29	(R)	0.87	(R)	1.00	(I)	
Q	0.49	(R)	0.64	(R)	0.77	(I)	
R	0.33	(R)	0.84	(R)	1.19	(I)	
S	0.29	(R)	0.54	(R)	0.68	(I)	
T	0.49	(R)	0.94	(R)	1.06	(R)	
V	0.56		1.18	(R)	1.29	(I)	
W	0.23	(R)	0.61	(R)	0.87	(R)	
X	0.33	(R)	0.64	(R)	0.77	(I)	
Y	0.36		0.87	(R)	1.00	(I)	

**SEASONAL CHANGES:** The summer season is April-October, the winter off-peak season is November, February and March, and the winter on-peak season is December and January. Baseline quantities for bills that include the April 1, November 1 and December 1 seasonal changeover dates will be calculated by multiplying the applicable daily baseline quantity for each season by the number of days in each season for the billing period.

**STANDARD MEDICAL QUANTITIES:** Additional medical quantities (Code M) are available as provided in Rule 19.

**RESIDENTIAL DWELLING UNITS:** It is the responsibility of the Customer to advise PG&E within 15 days following any change in the number of residential dwelling units, mobile home spaces, and permanent-residence RV units receiving gas service.

**CENTRAL BOILERS:** Service to central boilers for water and/or space heating will be billed with monthly baseline quantities related to the number of dwelling units furnished such water and/or space heating.



**SCE**

The following pages provide details on are the SCE electricity tariffs applied in this study. Table 16 describes the baseline territories that were assumed for each climate zone.

**Table 16: SCE Baseline Territory by Climate Zone**

	Baseline Territory
CZ06	6
CZ08	8
CZ09	9
CZ10	10
CZ14	14
CZ15	15

Schedule TOU-D  
TIME-OF-USE  
DOMESTIC  
 (Continued)

Sheet 2

RATES

Customers receiving service under this Schedule will be charged the applicable rates under Option 4-9 PM, Option 4-9 PM-CPP, Option 5-8 PM, Option 5-8 PM-CPP, Option PRIME, Option PRIME-CPP Option A, Option A-CPP, Option B, or Option B-CPP, as listed below. CPP Event Charges will apply to all energy usage during CPP Event Energy Charge periods and CPP Non-Event Energy Credits will apply as a reduction on CPP Non-Event Energy Credit Periods during Summer Season weekdays, 4:00 p.m. to 9:00 p.m., as described in Special Conditions 1 and 3, below:

	Delivery Service		
	Total <sup>1</sup>	UG <sup>2</sup>	DWREC <sup>3</sup>
<b>Option 4-9 PM / Option 4-9 PM-CPP</b>			
Energy Charge - \$/kWh			
Summer Season - On-Peak	0.21574 (I)	0.17870 (I)	(0.00007)
Mid-Peak	0.21574 (I)	0.10434 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.07584 (R)	(0.00007)
Winter Season - Mid-Peak	0.21574 (I)	0.12676 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.08874 (R)	(0.00007)
Super-Off-Peak	0.16567 (I)	0.07025 (R)	(0.00007)
Baseline Credit <sup>4</sup> - \$/kWh	(0.07456) (R)	0.00000	
Basic Charge - \$/day			
Single-Family Residence	0.031		
Multi-Family Residence	0.024		
Minimum Charge <sup>2</sup> - \$/day			
Single Family Residence	0.346		
Multi-Family Residence	0.346		
Minimum Charge (Medical Baseline) <sup>3</sup> - \$/day			
Single Family Residence	0.173		
Multi-Family Residence	0.173		
California Climate Credit <sup>4</sup>	(37.00) (I)		
California Alternate Rates for Energy Discount - %	100.00 <sup>*</sup>		
Family Electric Rate Assistance Discount - %	100.00		
<b>Option 4-9 PM-CPP</b>			
CPP Event Energy Charge - \$/kWh		0.80000	
Summer CPP Non-Event Credit			
On-Peak Energy Credit - \$/kWh		(0.15170)	
Maximum Available Credit - \$/kWh <sup>4</sup>			
Summer Season		(0.58504) (R)	

\* Represents 100% of the discount percentage as shown in the applicable Special Condition of this Schedule.  
<sup>2</sup> The Minimum Charge is applicable when the Delivery Service Energy Charge, plus the applicable Basic Charge is less than the Minimum Charge.  
<sup>3</sup> The ongoing Competition Transition Charge CTC of \$0.00089 per kWh is recovered in the UG component of Generation.  
<sup>4</sup> The Baseline Credit applies up to 100% of the Baseline Allocation, regardless of Time of Use. The Baseline Allocation is set forth in Preliminary Statement, Part H.  
<sup>4</sup> The Maximum Available Credit is the capped credit amount for CPP Customers dual participating in other demand response programs.  
 1 Total - Total Delivery Service rates are applicable to Bundled Service, Direct Access (DA) and Community Choice Aggregation Service (CCA Service) Customers, except DA and CCA Service Customers are not subject to the DWRBC rate component of this Schedule but instead pay the DWRBC as provided by Schedule DA-CRS or Schedule CCA-CRS.  
 2 Generation - The Gen rates are applicable only to Bundled Service Customers.  
 3 DWREC - Department of Water Resources (DWR) Energy Credit - For more information on the DWR Energy Credit, see the Billing Calculation Special Condition of this Schedule.  
 4 Applied on an equal basis, per household, semi-annually. See the Special Conditions of this Schedule for more information.



Schedule TOU-D  
 TIME-OF-USE  
 DOMESTIC  
 (Continued)

SPECIAL CONDITIONS

1. Applicable rate time periods are defined as follows:

Option 4-9 PM, Option 4-9 PM-CPP, Option PRIME, Option PRIME-CPP:

(T)

TOU Period	Weekdays		Weekends and Holidays	
	Summer	Winter	Summer	Winter
On-Peak	4 p.m. - 9 p.m.	N/A	N/A	N/A
Mid-Peak	N/A	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	All other hours	9 p.m. - 8 a.m.	All other hours	9 p.m. - 8 a.m.
Super-Off-Peak	N/A	8 a.m. - 4 p.m.	N/A	8 a.m. - 4 p.m.
CPP Event Period	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	N/A	N/A

Summer Daily Allocations (June through September)

Baseline Region Number	Daily kWh Allocation	All-Electric Allocation
5	17.2	17.9
6	11.4	8.8
8	12.6	9.8
9	16.5	12.4
10	18.9	15.8
13	22.0	24.6
14	18.7	18.3
15	46.4	24.1
16	14.4	13.5



Winter Daily Allocations (October through May)

Baseline Region Number	Daily kWh Allocation	All-Electric Allocation
5	18.7	29.1
6	11.3	13.0
8	10.6	12.7
9	12.3	14.3
10	12.5	17.0
13	12.6	24.3
14	12.0	21.3
15	9.9	18.2
16	12.6	23.1



**SoCalGas**

Following are the SoCalGas natural gas tariffs applied in this study. Table 17 describes the baseline territories that were assumed for each climate zone.

**Table 17: SoCalGas Baseline Territory by Climate Zone**

	Baseline Territory
CZ05	2
CZ06	1
CZ08	1
CZ09	1
CZ10	1
CZ14	2
CZ15	1

The SoCalGas monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 18. Historical natural gas rate data was only available for SoCalGas’ procurement charges<sup>5</sup>. To estimate total costs by month, the baseline and excess transmission charges were assumed to be relatively consistent and applied for the entire year based on April 2020 costs.

**Table 18: SoCalGas Monthly Gas Rate (\$/Therm)**

Month	Procurement Charge	Transmission Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.34730	\$0.81742	\$1.17186	\$1.16472	\$1.51916
Feb 2020	\$0.28008	\$0.81742	\$1.17186	\$1.09750	\$1.45194
Mar 2020	\$0.22108	\$0.81742	\$1.17186	\$1.03850	\$1.39294
Apr 2020	\$0.20307	\$0.81742	\$1.17186	\$1.02049	\$1.37493
May 2019	\$0.23790	\$0.81742	\$1.17186	\$1.05532	\$1.40976
June 2019	\$0.24822	\$0.81742	\$1.17186	\$1.06564	\$1.42008
July 2019	\$0.28475	\$0.81742	\$1.17186	\$1.10217	\$1.45661
Aug 2019	\$0.27223	\$0.81742	\$1.17186	\$1.08965	\$1.44409
Sept 2019	\$0.26162	\$0.81742	\$1.17186	\$1.07904	\$1.43348
Oct 2019	\$0.30091	\$0.81742	\$1.17186	\$1.11833	\$1.47277
Nov 2019	\$0.27563	\$0.81742	\$1.17186	\$1.09305	\$1.44749
Dec 2019	\$0.38067	\$0.81742	\$1.17186	\$1.19809	\$1.55253

<sup>5</sup> The SoCalGas procurement and transmission charges were obtained from the following site:

<https://www.socalgas.com/for-your-business/energy-market-services/gas-prices>



SOUTHERN CALIFORNIA GAS COMPANY Revised CAL. P.U.C. SHEET NO. 57458-G  
 LOS ANGELES, CALIFORNIA CANCELING Revised CAL. P.U.C. SHEET NO. 57432-G

Schedule No. GM			Sheet 2
<b>MULTI-FAMILY SERVICE</b>			
(Includes GM-E, GM-C, GM-EC, GM-CC, GT-ME, GT-MC and all GMB Rates)			
(Continued)			
<b>APPLICABILITY</b> (Continued)			
Multi-family Accommodations built prior to December 15, 1981 and currently served under this schedule may also be eligible for service under Schedule No. GS. If an eligible Multi-family Accommodation served under this schedule converts to an applicable submetered tariff, the tenant rental charges shall be revised for the duration of the lease to reflect removal of the energy related charges.			
Eligibility for service hereunder is subject to verification by the Utility.			
<b>TERRITORY</b>			
Applicable throughout the service territory.			
<b>RATES</b>			
<u>Customer Charge</u> , per meter, per day: .....	<u>GM/GT-M</u> 16.438¢	<u>GMB/GT-MB</u> \$16.357	
For "Space Heating Only" customers, a daily Customer Charge applies during the winter period from November 1 through April 30 <sup>1/</sup> : .....			
	33.149¢		
<b>GM</b>			
<u>Baseline Rate</u> , per therm (baseline usage defined per Special Conditions 3 and 4):	<u>GM-E</u>	<u>GM-EC</u> <sup>1/</sup>	<u>GT-ME</u>
Procurement Charge: <sup>2/</sup> .....	20.307¢	20.307¢	N/A
Transmission Charge: .....	81.742¢	81.742¢	81.742¢
Total Baseline Charge (all usage): .....	102.049¢	102.049¢	81.742¢
<u>Non-Baseline Rate</u> , per therm (usage in excess of baseline usage):			
Procurement Charge: <sup>2/</sup> .....	20.307¢	20.307¢	N/A
Transmission Charge: .....	117.186¢	117.186¢	117.186¢
Total Non Baseline Charge (all usage): .....	137.493¢	137.493¢	117.186¢
<u>Non-Baseline Rate</u> , per therm (usage in excess of baseline usage):	<u>GM-C</u>	<u>GM-CC</u> <sup>3/</sup>	<u>GT-MC</u>
Procurement Charge: <sup>2/</sup> .....	20.307¢	20.307¢	N/A
Transmission Charge: .....	117.186¢	117.186¢	117.186¢
Total Non Baseline Charge (all usage): .....	137.493¢	137.493¢	117.186¢
<sup>1/</sup> For the summer period beginning May 1 through October 31, with some exceptions, usage will be accumulated to at least 20 Ccf (100 cubic feet) before billing, or it will be included with the first bill of the heating season which may cover the entire duration since a last bill was generated for the current calendar year. (Footnotes continue next page.)			
(Continued)			

(TO BE INSERTED BY UTILITY)  
 ADVICE LETTER NO. 5614  
 DECISION NO.  
 207

ISSUED BY  
**Dan Skopec**  
 Vice President  
 Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)  
 SUBMITTED Apr 6, 2020  
 EFFECTIVE Apr 10, 2020  
 RESOLUTION NO. G-3351



Schedule No. GM Sheet 5  
MULTI-FAMILY SERVICE  
 (Includes GM-E, GM-C, GM-EC, GM-CC, GT-ME, GT-MC and all GMB Rates)  
 (Continued)

SPECIAL CONDITIONS (Continued)

3. (Continued)

Codes	Per Residence	Daily Therm Allowance for Climate Zones*		
		1	2	3
1	Space heating only			
	Summer	0.000	0.000	0.000
	Winter	1.210	1.343	2.470
2	Water heating and cooking	0.477	0.477	0.477
3	Cooking, water heating and space heating			
	Summer	0.473	0.473	0.473
	Winter	1.691	1.823	2.950
4	Cooking and space heating			
	Summer	0.088	0.088	0.088
	Winter	1.299	1.432	2.559
5	Cooking only	0.089	0.089	0.089
6	Water heating only	0.388	0.388	0.388
7	Water heating and space heating			
	Summer	0.385	0.385	0.385
	Winter	1.601	1.734	2.861

\* Climate Zones are described in the Preliminary Statement.

4. Medical Baseline: Upon completion of an application and verification by a state-licensed physician, nurse practitioner, physician's assistant, or osteopath (Form No. 4859-E), an additional Baseline allowance of 0.822 therms per day will be provided for paraplegic, quadriplegic, or hemiplegic persons, those afflicted with multiple sclerosis or scleroderma, or persons being treated for a life threatening illness or who have a compromised immune system.

Where it is established that the energy required for a Life-Support Device, as defined in Rule No. 1, exceeds 0.822 therms per day, an additional uniform daily Baseline allowance will be provided. The amount of the additional allowance will be determined by the Utility from load and operating time data of the Life-Support Device.

5. Space Heating Only: Applies to customers who are using gas primarily for space heating, as determined by survey or under the presumption that customers who use less than 11 Ccf per month during each of the regular billing periods ending in August and September qualify for Heat Only billing.

(Continued)

(TO BE INSERTED BY UTILITY)  
 ADVICE LETTER NO. 5576-A  
 DECISION NO. 02-04-026

ISSUED BY  
**Dan Skopec**  
 Vice President

(TO BE INSERTED BY CAL. PUC)  
 SUBMITTED Jan 31, 2020  
 EFFECTIVE Feb 27, 2020



**SDG&E**

Following are the SDG&E electricity and natural gas tariffs applied in this study. Table 19 describes the baseline territories that were assumed for each climate zone. All-Electric baseline allowances were applied.

**Table 19: SDG&E Baseline Territory by Climate Zone**

	Baseline Territory
CZ07	Coastal
CZ10	Inland
CZ14	Mountain



Revised Cal. P.U.C. Sheet No. 33144-E

Canceling Revised Cal. P.U.C. Sheet No. 32930-E

<b>SCHEDULE TOU-DR1</b>							Sheet 2
<b>RESIDENTIAL TIME-OF-USE</b>							
<b>RATES</b>							
<b>Total Rates:</b>							
Description – TOU DR1	UDC Total Rate	DWR-BC Rate	EECC Rate + DWR Credit	R	Total Rate	R	
<b>Summer:</b>							
On-Peak	0.22374	I 0.00580	0.29042	R	0.51996	R	
Off-Peak	0.22374	I 0.00580	0.09305	R	0.32259	R	
Super Off-Peak	0.22374	I 0.00580	0.04743	R	0.27697	R	
<b>Winter:</b>							
On-Peak	0.25734	R 0.00580	0.07844	R	0.34158	R	
Off-Peak	0.25734	R 0.00580	0.06961	R	0.33275	R	
Super Off-Peak	0.25734	R 0.00580	0.05981	R	0.32295	R	
Summer Baseline Adjustment Credit up to 130% of Baseline	(0.07506)	I			(0.07506)	I	
Winter Baseline Adjustment Credit up to 130% of Baseline	(0.06833)	I			(0.06833)	I	
Minimum Bill (\$/day)	0.338				0.338		
<b>Note:</b>							
(1) Total Rates consist of UDC, Schedule DWR-BC (Department of Water Resources Bond Charge), and Schedule EECC (Electric Energy Commodity Cost) rates, with the EECC rates reflecting a DWR Credit.							
(2) Total Rates presented are for customers that receive commodity supply and delivery service from Utility.							
(3) DWR-BC charges do not apply to CARE customers.							
(4) As identified in the rates tables, customer bills will also include line-item summer and winter credits for usage up to 130% of baseline to provide the rate capping benefits adopted by Assembly Bill 1X and Senate Bill 695.							
(Continued)							

2C8

Advice Ltr. No. 3514-E

Decision No. D.20-01-021

Issued by  
**Dan Skopec**  
Vice President  
Regulatory Affairs

Submitted Mar 26, 2020  
Effective Apr 1, 2020  
Resolution No. \_\_\_\_\_



Time Periods

All time periods listed are applicable to local time. The definition of time will be based upon the date service is rendered.

TOU Periods – Weekdays	Summer	Winter
On-Peak	4:00 p.m. – 9:00 p.m.	4:00 p.m. – 9:00 p.m.
Off-Peak	6:00 a.m. – 4:00 p.m.; 9:00 p.m. - midnight	6:00 a.m. – 4:00 p.m. Excluding 10:00 a.m. – 2:00 p.m. in March and April; 9:00 p.m. - midnight
Super Off-Peak	Midnight – 6:00 a.m.	Midnight – 6:00 a.m. 10:00 a.m. – 2:00 p.m. in March and April
TOU Period – Weekends and Holidays	Summer	Winter
On-Peak	4:00 p.m. – 9:00 p.m.	4:00 p.m. – 9:00 p.m.
Off-Peak	2:00 p.m. – 4:00 p.m.; 9:00 p.m. - midnight	2:00 p.m. – 4:00 p.m.; 9:00 p.m. - midnight
Super Off-Peak	Midnight – 2:00 p.m.	Midnight – 2:00 p.m.

Seasons:        Summer        June 1 – October 31  
                   Winter         November 1 – May 31

Baseline Usage: The following quantities of electricity are used to calculate the baseline adjustment credit.

	Baseline Allowance For Climatic Zones*			
	Coastal	Inland	Mountain	Desert
<b>Basic Allowance</b>				
Summer (June 1 to October 31)	9.0	10.4	13.6	15.9
Winter (November 1 to May 31)	9.2	9.6	12.9	10.9
<b>All Electric**</b>				
Summer (June 1 to October 31)	6.8	9.2	15.6	17.5
Winter (November 1 to May 31)	10.4	13.4	23.4	18.1

\* Climatic Zones are shown on the Territory Served, Map No. 1.

\*\* All Electric allowances are available upon application to those customers who have permanently installed space heating or who have electric water heating and receive no energy from another source.





San Diego Gas & Electric Company  
San Diego, California

Revised Cal. P.U.C. Sheet No. 24487-G

Canceling Revised Cal. P.U.C. Sheet No. 24422-G

<b>SCHEDULE GM</b>				Sheet 2
<b>MULTI-FAMILY NATURAL GAS SERVICE</b>				
<i>(Includes Rates for GM, GM-C and GTC/GTCA)</i>				
<b>RATES</b>				
	GM		GM-C	GTC/GTCA <sup>1</sup>
<u>Baseline Rate, per therm (baseline usage defined in Special Condition 4)</u>				
Procurement Charge <sup>2</sup> .....	\$0.20327	R	\$0.22130	N/A
Transmission Charge.....	<u>\$1.35946</u>		<u>\$1.35946</u>	<u>\$1.37374</u>
Total Baseline Charge.....	\$1.56273	R	\$1.58076	\$1.37374
<u>Non-Baseline Rate (usage in excess of baseline usage)</u>				
Procurement Charge <sup>2</sup> .....	\$0.20327	R	\$0.22130	N/A
Transmission Charge.....	<u>\$1.59125</u>		<u>\$1.59125</u>	<u>\$1.60553</u>
Total Non-Baseline Charge.....	\$1.79452	R	\$1.81255	\$1.60553
<u>Minimum Bill, per day<sup>3</sup></u>				
Non-CARE customers.....	\$0.09863		\$0.09863	\$0.09863
CARE customers.....	\$0.07890		\$0.07890	\$0.07890

(Continued)

2C6

Advice Ltr. No. 2858-G

Decision No. \_\_\_\_\_

Issued by  
**Dan Skopec**  
Vice President  
Regulatory Affairs

Submitted Mar 31, 2020

Effective Apr 1, 2020

Resolution No. \_\_\_\_\_

**Baseline Usage.** The following quantities of gas are to be billed at the baseline rate for multi-family units. Usage in excess of applicable baseline usage will be billed at non-baseline rates.

	<u>Daily Therm Allowance Per Residential Unit</u>
Summer (May 1 to October 31, inclusive)	0.345
Winter (November 1 to April 30, inclusive)	1.082



The SDG&E monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 20. Historical natural gas rate data was only available for SoCalGas' procurement charges<sup>6</sup>. To estimate total costs by month, the baseline and excess transmission charges were assumed to be relatively consistent and applied for the entire year based on April 2020 costs.

**Table 20: SDG&E Monthly Gas Rate (\$/Therm)**

Month	Procurement Charge	Transmission Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.34761	\$1.36166	\$1.59166	\$1.70927	\$1.93927
Feb 2020	\$0.28035	\$1.36166	\$1.59166	\$1.64201	\$1.87201
Mar 2020	\$0.22130	\$1.36166	\$1.59166	\$1.58296	\$1.81296
Apr 2020	\$0.20327	\$1.35946	\$1.59125	\$1.56273	\$1.79452
May 2019	\$0.23804	\$1.06349	\$1.25253	\$1.30153	\$1.49057
June 2019	\$0.24838	\$1.06349	\$1.25253	\$1.31187	\$1.50091
July 2019	\$0.28491	\$1.06349	\$1.25253	\$1.34840	\$1.53744
Aug 2019	\$0.27239	\$1.06349	\$1.25253	\$1.33588	\$1.52492
Sept 2019	\$0.26178	\$1.06349	\$1.25253	\$1.32527	\$1.51431
Oct 2019	\$0.30109	\$1.06349	\$1.25253	\$1.36458	\$1.55362
Nov 2019	\$0.27580	\$1.06349	\$1.25253	\$1.33929	\$1.52833
Dec 2019	\$0.38090	\$1.06349	\$1.25253	\$1.44439	\$1.63343

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<sup>6</sup> The SDG&E procurement and transmission charges were obtained from the following sets of documents:  
[http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-SCHEDS\\_GM\\_2020.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-SCHEDS_GM_2020.pdf)  
[http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-SCHEDS\\_GM\\_2019.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-SCHEDS_GM_2019.pdf)



**SMUD**

Following are the SMUD electricity tariffs applied in this study.

RTOD Rate Schedule

**II. Firm Service Rates**

<b>A. Time-of-Day (5-8 p.m.) Rate</b>	<b>Rate Category RT02</b>
<b>Non-Summer Prices* – January 1 through May 31</b>	
System Infrastructure Fixed Charge per month	\$21.05
Electricity Usage Charge	
Peak \$/kWh	\$0.1388
Off-Peak \$/kWh	\$0.1006
<b>Summer Prices - June 1 through September 30</b>	
System Infrastructure Fixed Charge per month	\$21.05
Electricity Usage Charge	
Peak \$/kWh	\$0.2941
Mid-Peak \$/kWh	\$0.1671
Off-Peak \$/kWh	\$0.1209
<b>Non-Summer Prices* – October 1 through December 31</b>	
System Infrastructure Fixed Charge per month	\$21.70
Electricity Usage Charge	
Peak \$/kWh	\$0.1430
Off-Peak \$/kWh	\$0.1035

\* Non-Summer Season includes Fall (Oct 1 – Nov 30), Winter (Dec 1 – Mar 31) and Spring (Apr 1 – May 31) periods.

<b>Summer (Jun 1 - Sept 30)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Mid-Peak</b>	Weekdays between noon and midnight except during the Peak hours.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .
<b>Non-Summer (Oct 1 - May 31)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .



GSN\_T Rate Schedule:

**II. Firm Service Rates**

Rate Category	Nondemand GSN_T	Flat GFN	Demand GSS_T
<b>Winter Season – January 1 through May 31</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.15	\$9.45	\$25.75
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$7.94
Electricity Usage Charge			
All day \$/kWh	\$0.1365	\$0.1381	\$0.1071
<b>Summer Season - June 1 through September 30</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.15	\$9.45	\$25.75
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$7.94
Electricity Usage Charge			
On-peak \$/kWh	\$0.3151	\$0.1381	\$0.2733
Off-peak \$/kWh	\$0.1152	\$0.1381	\$0.0948

Rate Category	Nondemand GSN_T	Flat GFN	Demand GSS_T
<b>Winter Season - October 1 through December 31</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.80	\$9.70	\$26.50
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$8.18
Electricity Usage Charge			
All day \$/kWh	\$0.1406	\$0.1423	\$0.1103

**D. Billing Periods**

1. Winter (October 1 – May 31) All hours are off-peak.

2. Summer Time-of-Use Billing Periods (June 1 – September 30)

<b>On-Peak</b>	Summer weekdays between 3:00 p.m. and 6:00 p.m.
<b>Off-Peak</b>	All other hours, including holidays shown below



**CPAU**

Following are the CPAU electricity and natural gas tariffs applied in this study.

**E1 Rate Schedule:**

**RESIDENTIAL ELECTRIC SERVICE**

UTILITY RATE SCHEDULE E-1

**A. APPLICABILITY:**

This Rate Schedule applies to separately metered single-family residential dwellings receiving Electric Service from the City of Palo Alto Utilities.

**B. TERRITORY:**

This rate schedule applies everywhere the City of Palo Alto provides Electric Service.

**C. UNBUNDLED RATES:**

<u>Per kilowatt-hour (kWh)</u>	<u>Commodity</u>	<u>Distribution</u>	<u>Public Benefits</u>	<u>Total</u>
Tier 1 usage	\$0.08339	\$0.04971	\$0.00447	\$0.13757
Tier 2 usage Any usage over Tier 1	0.11569	0.07351	0.00447	0.19367
<u>Minimum Bill (\$/day)</u>				0.3283

**E2 Rate Schedule:**

**RESIDENTIAL MASTER-METERED AND SMALL NON-RESIDENTIAL ELECTRIC SERVICE**

UTILITY RATE SCHEDULE E-2

**A. APPLICABILITY:**

This Rate Schedule applies to the following Customers receiving Electric Service from the City of Palo Alto Utilities:

1. Small non-residential Customers receiving Non-Demand Metered Electric Service; and
2. Customers with Accounts at Master-Metered multi-family facilities.

**B. TERRITORY:**

This rate schedule applies everywhere the City of Palo Alto provides Electric Service.

**C. UNBUNDLED RATES:**

<u>Per kilowatt-hour (kWh)</u>	<u>Commodity</u>	<u>Distribution</u>	<u>Public Benefits</u>	<u>Total</u>
Summer Period	\$0.11855	\$0.08551	\$0.00447	\$0.20853
Winter Period	0.08502	0.05675	0.00447	0.14624
<u>Minimum Bill (\$/day)</u>				0.8359



G-2 Rate Schedule:

**RESIDENTIAL MASTER-METERED AND COMMERCIAL GAS SERVICE**

UTILITY RATE SCHEDULE G-2

**A. APPLICABILITY:**

This schedule applies to the following Customers receiving Gas Service from the City of Palo Alto Utilities:

1. Commercial Customers who use less than 250,000 therms per year at one site.
2. Master-metered residential Customers in multi-family residential facilities.

**B. TERRITORY:**

This schedule applies anywhere the City of Palo Alto provides Gas Service.

**C. UNBUNDLED RATES:**

Per Service

Monthly Service Charge: .....\$104.95

Per Therm

Supply Charges:

1. Commodity (Monthly Market Based) ..... \$0.10-\$2.00
2. Cap and Trade Compliance Charges ..... \$0.00-0.25
3. Transportation Charge.....\$0.00-\$0.15
4. Carbon Offset Charge .....\$0.00-\$0.10

Distribution Charge: ..... \$0.6102

G2 Monthly Per Therm Rates:

Effective Date	Commodity Rate	Cap and Trade Compliance Charge	Transportation Charge	Carbon Offset Charge	G2 Total Volumetric Rate
1/1/20	\$0.3289	0.033	0.09941	0.040	1.11151
2/1/20	0.2466	0.033	0.09941	0.040	1.02921
3/1/20	0.2416	0.033	0.09891	0.040	1.02371
4/1/20	0.2066	0.033	0.09891	0.040	0.98871
5/1/20	0.2258	0.033	0.09891	0.040	1.00791
6/1/20	0.2279	0.033	0.09891	0.040	1.01001
7/1/19	0.2471	0.033	0.11757	0.040	1.04787
8/1/19	0.2507	0.033	0.10066	0.040	1.03456
9/1/19	0.2461	0.033	0.10066	0.040	1.02996
10/1/19	0.2811	0.033	0.10288	0.040	1.06718
11/1/19	0.2923	0.033	0.10288	0.040	1.07838
12/1/19	0.3781	0.033	0.10288	0.040	1.16418



**Escalation Assumptions**

The average annual escalation rates in the following table were used in this study and are from E3’s 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). These rates are applied to the 2019 rate schedules over a 30-year period beginning in 2020. SDG&E was not covered in the E3 study. The Statewide Reach Code Team reviewed SDG&E’s GRC filing and applied the same approach that E3 applied for PG&E and SoCalGas to arrive at average escalation rates between 2020 and 2022. The statewide electricity escalation rates were also applied to the analysis for SMUD and CPAU. PG&E gas escalation rates were applied to CPAU as the best available estimate since CPAU uses PG&E gas infrastructure.

**Table 21: Real Utility Rate Escalation Rate Assumptions**  
**Statewide Electric Residential Average Rate (%/year, real)**      **Natural Gas Residential Core Rate (%/yr escalation, real)**

	<b>Statewide Electric Residential Average Rate (%/year, real)</b>	<b>PG&amp;E</b>	<b>SoCalGas</b>	<b>SDG&amp;E</b>
2020	2.0%	1.48%	6.37%	5.00%
2021	2.0%	5.69%	4.12%	3.14%
2022	2.0%	1.11%	4.12%	2.94%
2023	2.0%	4.0%	4.0%	4.0%
2024	2.0%	4.0%	4.0%	4.0%
2025	2.0%	4.0%	4.0%	4.0%
2026	1.0%	1.0%	1.0%	1.0%
2027	1.0%	1.0%	1.0%	1.0%
2028	1.0%	1.0%	1.0%	1.0%
2029	1.0%	1.0%	1.0%	1.0%
2030	1.0%	1.0%	1.0%	1.0%
2031	1.0%	1.0%	1.0%	1.0%
2032	1.0%	1.0%	1.0%	1.0%
2033	1.0%	1.0%	1.0%	1.0%
2034	1.0%	1.0%	1.0%	1.0%
2035	1.0%	1.0%	1.0%	1.0%
2036	1.0%	1.0%	1.0%	1.0%
2037	1.0%	1.0%	1.0%	1.0%
2038	1.0%	1.0%	1.0%	1.0%
2039	1.0%	1.0%	1.0%	1.0%
2040	1.0%	1.0%	1.0%	1.0%
2041	1.0%	1.0%	1.0%	1.0%
2042	1.0%	1.0%	1.0%	1.0%
2043	1.0%	1.0%	1.0%	1.0%
2044	1.0%	1.0%	1.0%	1.0%
2045	1.0%	1.0%	1.0%	1.0%
2046	1.0%	1.0%	1.0%	1.0%
2047	1.0%	1.0%	1.0%	1.0%
2048	1.0%	1.0%	1.0%	1.0%
2049	1.0%	1.0%	1.0%	1.0%



## Appendix C – PG&E Gas Infrastructure Cost Memo



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December 5, 2019

Energy Commission Staff:

On March 2, 2018, PG&E provided gas extension cost estimates for residential existing and new subdivisions (see attached memo). We have recently updated our estimates and are therefore providing an updated memo.

In addition to mainline and service extension costs, we are also providing estimates of the cost of gas meters for different building types including both residential and commercial customers. These estimates are based on PG&E historical jobs.

Developing gas extension cost estimates is complex and the actual costs are project dependent. Costs vary widely with location, terrain, distance to the nearest main, joint trenching, materials, number of dwellings per development, and several other site and job-specific conditions. For these reasons, it is not practical to come up with estimates that represent every case. Instead we are including estimates based on historical averages taken from projects within PG&E's territory. It is not recommended to compare specific project costs to these estimates as any number of factors could lead to higher or lower costs than these averages are representing.

We are also including estimates for in-house gas infrastructure costs and specific plan review costs. These estimates are from external sources, and are not based on PG&E data, but have been provided for the sake of completeness and for use in energy efficiency analysis.

To further anchor the estimates, several assumptions have been made:

1. It is assumed that during new construction, gas infrastructure will likely be joint trenched with electric infrastructure. As a result, the incremental cost of trenching associated with the gas infrastructure alone is minimal. Therefore, all mainline cost estimates exclude trench costs. Service extension cost estimates include both estimates with and without trench costs. In the case where new construction would require overhead electric and underground gas infrastructure, the estimates with trench costs included for service extensions should be utilized.
2. It is assumed that new construction in an existing subdivision would not generally require a mainline extension. In cases where a mainline extension would be required to an existing subdivision, the costs are highly dependent on the location, terrain, and distance to the nearest main.





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- These estimates are for total costs. The cost estimates have not been reduced to account for the portion of the costs paid by all customers due to application of Rule 15<sup>1</sup> and Rule 16<sup>2</sup> allowances. Hence, costs to the specific customer may be lower than the estimates below, as the specific customer benefits from the Rule 15 and Rule 16 allowances.

Table 1: PG&E Gas Infrastructure Cost Estimates

	Existing Subdivision/Development	New Greenfield Subdivision/Development
Mainline Extension	N/A <sup>3</sup>	<u>Single-Family</u> \$17/ft <sup>4</sup>  <u>Multi-Family</u> \$11/ft <sup>4</sup>
Service Extension (Typically 1" pipe from mainline to the meter)	\$6750 per service/building <sup>4</sup> (excludes trench costs)  \$9200 per service/building <sup>4</sup> (includes trench costs)	\$1300 per service/building <sup>4</sup> (includes mainline extension costs within the subdivision; excludes trench costs)  \$1850 per service/building <sup>4</sup> (includes mainline extension costs within the subdivision; includes trench costs)
Meter	<u>Residential Single Family</u> \$300 per meter <sup>5</sup>  <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet <sup>5</sup>  <u>Small/Medium Commercial</u> \$3600 per meter <sup>6</sup>	<u>Residential Single Family</u> \$300 per meter <sup>5</sup>  <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet <sup>5</sup>  <u>Small/Medium Commercial</u> \$3600 per meter <sup>6</sup>

<sup>1</sup> [https://www.pge.com/tariffs/tm2/pdf/ELEC\\_RULES\\_15.pdf](https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_15.pdf)

<sup>2</sup> [https://www.pge.com/tariffs/tm2/pdf/ELEC\\_RULES\\_16.pdf](https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_16.pdf)

<sup>3</sup> It is assumed that new construction in an existing subdivision would not require a main extension.

<sup>4</sup> Estimates based on PG&E jobs from Jan 2016 - Dec 2017 from PG&E's Service Planning team.

<sup>5</sup> Estimates from PG&E's Dedicated Estimating Team. For Multi-Family units, the costs of \$300 per meter and \$300 per meter manifold outlet should be combined for a total of \$600 per meter.

<sup>6</sup> PG&E Marginal Customer Access Cost Estimates presented in the 2018 Gas Cost Allocation Proceedings (GCAP), A.17-09-006, Exhibit PG&E-2, Appendix A, Section A, Table A-1. The Average Connection Cost per Customer values were included in the MCAC workpaper that accompanied the GCAP testimony





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	<u>Large Commercial</u> \$32,000 per meter <sup>6</sup>	<u>Large Commercial</u> \$32,000 per meter <sup>6</sup>
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Note: Service extension cost estimates for New Greenfield Subdivisions include mainline extension costs as well. Therefore, mainline cost estimates can be ignored for the purpose of estimating total project costs.

Table 2: Gas Infrastructure Cost Estimates from Other Sources

	Existing Subdivision/Development	New Greenfield Subdivision/Development
In-House Infrastructure	<u>Single-Family</u> \$800 <sup>7</sup>	<u>Single-Family</u> \$800 <sup>7</sup>
	<u>Multi-Family</u> \$600 per unit <sup>7</sup>	<u>Multi-Family</u> \$600 per unit <sup>7</sup>
	<u>Medium Office</u> \$600-4500 <sup>7,8</sup>	<u>Medium Office</u> \$600-4500 <sup>7,8</sup>
	<u>Medium Retail</u> \$10,000 <sup>8</sup>	<u>Medium Retail</u> \$10,000 <sup>8</sup>
Plan Review (Will vary by city and often not a fixed fee)	<u>Residential</u> Palo Alto - \$850 <sup>9</sup>	<u>Residential</u> Palo Alto - \$850 <sup>9</sup>
	<u>Nonresidential</u> Palo Alto - \$2316 <sup>9</sup>	<u>Nonresidential</u> Palo Alto - \$2316 <sup>9</sup>

Please let us know if there are any follow-up questions or clarifications.

Best regards,

<sup>7</sup> Frontier Energy, Inc., Misti Bruceri & Associates, LLC. 2019. "2019 Cost-effectiveness Study: Low Rise Residential New Construction." Available at: <https://localenergycodes.com/content/performance-ordinances>

<sup>8</sup> TRC, EnergySoft. 2019. "2019 Nonresidential New Construction Reach Code Cost Effectiveness Study." Available at: <https://localenergycodes.com/content/performance-ordinances>

<sup>9</sup> TRC. 2018. "City of Palo Alto 2019 Title 24 Energy Reach Code Cost Effectiveness Analysis Draft." Available at: <http://cityofpaloalto.org/civicax/filebank/documents/66742>



## Appendix D – Detailed Results Mixed-Fuel

**Table 22: Mixed-Fuel Efficiency Only Package Results (SAVINGS/COST PER APARTMENT)<sup>1</sup>**

Climate Zone	Elec Utility	Gas Utility	Apartments			Central Water Heating			Total	Savings (2020 PV\$)			B/C Ratio <sup>1</sup>	
			Gas Savings (therms)	Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therms)	Elec Savings (kWh)	Year 1 Utility Cost Savings	Year 1 Utility Cost Savings	On-Bill Utility Cost Savings	TDV Cost Savings	Total Inc. Cost (\$)	On-Bill	TDV
<b>CZ01</b>	PGE	PGE	0.0	26	\$6	0.0	0	\$0	\$6	\$133	\$105	\$304	0.44	0.35
<b>CZ02</b>	PGE	PGE	0.0	47	\$17	0.0	0	\$0	\$17	\$391	\$285	\$144	2.72	1.98
<b>CZ03</b>	PGE	PGE	0.0	44	\$15	0.0	0	\$0	\$15	\$345	\$226	\$144	2.40	1.57
<b>CZ04</b>	PGE	PGE	0.0	61	\$20	0.0	0	\$0	\$20	\$465	\$331	\$144	3.24	2.31
<b>CZ04-2</b>	CPAU	CPAU	0.0	61	\$10	0.0	0	\$0	\$10	\$248	\$331	\$144	1.73	2.31
<b>CZ05</b>	PGE	PGE	0.0	42	\$14	0.0	0	\$0	\$14	\$320	\$206	\$144	2.22	1.43
<b>CZ05-2</b>	PGE	SCG	0.0	42	\$14	0.0	0	\$0	\$14	\$320	\$206	\$144	2.22	1.43
<b>CZ06</b>	SCE	SCG	0.0	74	\$18	0.0	0	\$0	\$18	\$424	\$351	\$144	2.95	2.44
<b>CZ07</b>	SDGE	SDGE	0.0	81	\$25	0.0	0	\$0	\$25	\$593	\$374	\$144	4.13	2.60
<b>CZ08</b>	SCE	SCG	0.0	84	\$20	0.0	0	\$0	\$20	\$484	\$420	\$144	3.37	2.92
<b>CZ09</b>	SCE	SCG	0.0	83	\$20	0.0	0	\$0	\$20	\$468	\$441	\$144	3.26	3.06
<b>CZ10</b>	SCE	SCG	0.0	82	\$17	0.0	0	\$0	\$17	\$410	\$427	\$144	2.85	2.97
<b>CZ10-2</b>	SDGE	SDGE	0.0	82	\$25	0.0	0	\$0	\$25	\$599	\$427	\$144	4.16	2.97
<b>CZ11</b>	PGE	PGE	0.0	104	\$27	0.0	0	\$0	\$27	\$637	\$635	\$625	1.02	1.02
<b>CZ12</b>	PGE	PGE	0.0	93	\$24	0.0	0	\$0	\$24	\$572	\$568	\$304	1.88	1.87
<b>CZ12-2</b>	SMUD	PGE	0.0	93	\$13	0.0	0	\$0	\$13	\$319	\$568	\$304	1.05	1.87
<b>CZ13</b>	PGE	PGE	0.0	132	\$34	0.0	0	\$0	\$34	\$798	\$779	\$625	1.28	1.25
<b>CZ14</b>	SCE	SCG	0.0	80	\$17	0.0	0	\$0	\$17	\$407	\$449	\$304	1.34	1.48
<b>CZ14-2</b>	SDGE	SDGE	0.0	80	\$24	0.0	0	\$0	\$24	\$576	\$449	\$304	1.90	1.48
<b>CZ15</b>	SCE	SCG	0.0	145	\$30	0.0	0	\$0	\$30	\$719	\$802	\$625	1.15	1.28
<b>CZ16</b>	PGE	PGE	0.0	117	\$27	0.0	0	\$0	\$27	\$646	\$563	\$625	1.03	0.90

<sup>1</sup> Values in red indicate B/C ratios less than 1.



**Table 23: Mixed-Fuel Efficiency + PV Package Results (SAVINGS/COST PER APARTMENT)<sup>1</sup>**

Climate Zone	Elec Utility	Gas Utility	0.1 kW <sub>DC</sub> per Apartment					0.2 kW <sub>DC</sub> per Apartment				
			On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio	On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio
<b>CZ01</b>	PGE	PGE	\$885	\$597	\$620	1.43	0.96	\$1,637	\$1,090	\$937	1.75	1.16
<b>CZ02</b>	PGE	PGE	\$1,411	\$877	\$460	3.07	1.91	\$2,431	\$1,469	\$777	3.13	1.89
<b>CZ03</b>	PGE	PGE	\$1,373	\$812	\$460	2.98	1.76	\$2,400	\$1,397	\$777	3.09	1.80
<b>CZ04</b>	PGE	PGE	\$1,522	\$947	\$460	3.31	2.06	\$2,579	\$1,562	\$777	3.32	2.01
<b>CZ04-2</b>	CPAU	CPAU	\$807	\$947	\$460	1.75	2.06	\$1,335	\$1,562	\$777	1.72	2.01
<b>CZ05</b>	PGE	PGE	\$1,400	\$834	\$460	3.04	1.81	\$2,480	\$1,461	\$777	3.19	1.88
<b>CZ05-2</b>	PGE	SCG	\$1,400	\$834	\$460	3.04	1.81	\$2,480	\$1,461	\$777	3.19	1.88
<b>CZ06</b>	SCE	SCG	\$1,206	\$969	\$460	2.62	2.11	\$1,987	\$1,587	\$777	2.56	2.04
<b>CZ07</b>	SDGE	SDGE	\$1,701	\$1,010	\$460	3.69	2.19	\$2,770	\$1,647	\$777	3.57	2.12
<b>CZ08</b>	SCE	SCG	\$1,272	\$1,064	\$460	2.76	2.31	\$2,059	\$1,708	\$777	2.65	2.20
<b>CZ09</b>	SCE	SCG	\$1,181	\$1,091	\$460	2.57	2.37	\$1,876	\$1,742	\$777	2.41	2.24
<b>CZ10</b>	SCE	SCG	\$1,104	\$1,054	\$460	2.40	2.29	\$1,797	\$1,681	\$777	2.31	2.16
<b>CZ10-2</b>	SDGE	SDGE	\$1,622	\$1,054	\$460	3.52	2.29	\$2,646	\$1,681	\$777	3.41	2.16
<b>CZ11</b>	PGE	PGE	\$1,537	\$1,256	\$942	1.63	1.33	\$2,438	\$1,877	\$1,258	1.94	1.49
<b>CZ12</b>	PGE	PGE	\$1,462	\$1,181	\$620	2.36	1.90	\$2,352	\$1,794	\$937	2.51	1.91
<b>CZ12-2</b>	SMUD	PGE	\$772	\$1,181	\$620	1.25	1.90	\$1,226	\$1,794	\$937	1.31	1.91
<b>CZ13</b>	PGE	PGE	\$1,673	\$1,372	\$942	1.78	1.46	\$2,548	\$1,965	\$1,258	2.03	1.56
<b>CZ14</b>	SCE	SCG	\$1,165	\$1,175	\$620	1.88	1.89	\$1,923	\$1,901	\$937	2.05	2.03
<b>CZ14-2</b>	SDGE	SDGE	\$1,697	\$1,175	\$620	2.74	1.89	\$2,819	\$1,901	\$937	3.01	2.03
<b>CZ15</b>	SCE	SCG	\$1,423	\$1,456	\$942	1.51	1.55	\$2,128	\$2,110	\$1,258	1.69	1.68
<b>CZ16</b>	PGE	PGE	\$1,606	\$1,191	\$942	1.71	1.26	\$2,567	\$1,818	\$1,258	2.04	1.44

<sup>1</sup> Values in red indicate B/C ratios less than 1.



**Table 24: Mixed-Fuel Efficiency + PV Package Results, cont. (SAVINGS/COST PER APARTMENT)<sup>1</sup>**

Climate Zone	Elec Utility	Gas Utility	0.3 kW <sub>DC</sub> per Apartment				1 kW <sub>DC</sub> per Apartment					
			On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio	On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio
<b>CZ01</b>	PGE	PGE	\$2,389	\$1,582	\$1,253	1.91	1.26	\$7,466	\$5,029	\$3,469	2.15	1.45
<b>CZ02</b>	PGE	PGE	\$3,452	\$2,061	\$1,093	3.16	1.88	\$9,590	\$6,203	\$3,309	2.90	1.87
<b>CZ03</b>	PGE	PGE	\$3,428	\$1,982	\$1,093	3.14	1.81	\$9,687	\$6,079	\$3,309	2.93	1.84
<b>CZ04</b>	PGE	PGE	\$3,635	\$2,177	\$1,093	3.32	1.99	\$9,992	\$6,483	\$3,309	3.02	1.96
<b>CZ04-2</b>	CPAU	CPAU	\$1,863	\$2,177	\$1,093	1.70	1.99	\$5,184	\$6,483	\$3,309	1.57	1.96
<b>CZ05</b>	PGE	PGE	\$3,561	\$2,089	\$1,093	3.26	1.91	\$10,109	\$6,482	\$3,309	3.05	1.96
<b>CZ05-2</b>	PGE	SCG	\$3,561	\$2,089	\$1,093	3.26	1.91	\$10,109	\$6,482	\$3,309	3.05	1.96
<b>CZ06</b>	SCE	SCG	\$2,769	\$2,206	\$1,093	2.53	2.02	\$7,593	\$6,534	\$3,309	2.29	1.97
<b>CZ07</b>	SDGE	SDGE	\$3,805	\$2,283	\$1,093	3.48	2.09	\$10,818	\$6,739	\$3,309	3.27	2.04
<b>CZ08</b>	SCE	SCG	\$2,838	\$2,352	\$1,093	2.60	2.15	\$7,543	\$6,861	\$3,309	2.28	2.07
<b>CZ09</b>	SCE	SCG	\$2,570	\$2,393	\$1,093	2.35	2.19	\$7,285	\$6,948	\$3,309	2.20	2.10
<b>CZ10</b>	SCE	SCG	\$2,490	\$2,308	\$1,093	2.28	2.11	\$7,197	\$6,697	\$3,309	2.17	2.02
<b>CZ10-2</b>	SDGE	SDGE	\$3,670	\$2,308	\$1,093	3.36	2.11	\$10,636	\$6,697	\$3,309	3.21	2.02
<b>CZ11</b>	PGE	PGE	\$3,338	\$2,498	\$1,575	2.12	1.59	\$9,480	\$6,846	\$3,791	2.50	1.81
<b>CZ12</b>	PGE	PGE	\$3,242	\$2,406	\$1,253	2.59	1.92	\$9,299	\$6,694	\$3,469	2.68	1.93
<b>CZ12-2</b>	SMUD	PGE	\$1,680	\$2,406	\$1,253	1.34	1.92	\$4,855	\$6,694	\$3,469	1.40	1.93
<b>CZ13</b>	PGE	PGE	\$3,423	\$2,558	\$1,575	2.17	1.62	\$9,402	\$6,709	\$3,791	2.48	1.77
<b>CZ14</b>	SCE	SCG	\$2,682	\$2,626	\$1,253	2.14	2.10	\$7,820	\$7,707	\$3,469	2.25	2.22
<b>CZ14-2</b>	SDGE	SDGE	\$3,940	\$2,626	\$1,253	3.14	2.10	\$11,557	\$7,707	\$3,469	3.33	2.22
<b>CZ15</b>	SCE	SCG	\$2,832	\$2,764	\$1,575	1.80	1.76	\$7,676	\$7,342	\$3,791	2.03	1.94
<b>CZ16</b>	PGE	PGE	\$3,527	\$2,445	\$1,575	2.24	1.55	\$10,032	\$6,836	\$3,791	2.65	1.80

<sup>1</sup> Values in red indicate B/C ratios less than 1.



## Appendix E – Detailed Results All-Electric

**Table 25: All-Electric Efficiency Only Package Results (SAVINGS/COST PER APARTMENT)<sup>1,2</sup>**

Climate Zone	Elec Utility	Gas Utility	Apartments			Central Water Heating			Total	Savings (2020 PV\$)		Total Inc. Cost (\$)	B/C Ratio	
			Gas Savings (therms)	Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therms)	Elec Savings (kWh)	Year 1 Utility Cost Savings	Year 1 Utility Cost Savings	On-Bill Utility Cost Savings	TDV Cost Savings		On-Bill	TDV
CZ01	PGE	PGE	0.0	26	\$6	124.6	-899	-\$46	-\$40	-\$674	\$199	-\$446	0.7	>1
CZ02	PGE	PGE	0.0	48	\$17	114.3	-810	-\$38	-\$21	-\$238	\$528	-\$606	2.5	>1
CZ03	PGE	PGE	0.0	44	\$15	114.9	-811	-\$38	-\$23	-\$287	\$390	-\$606	2.1	>1
CZ04	PGE	PGE	0.0	62	\$20	110.7	-775	-\$35	-\$15	-\$102	\$625	-\$606	6.0	>1
CZ04-2	CPAU	CPAU	0.0	62	\$11	110.7	-775	-\$5	\$5	\$345	\$625	-\$606	>1	>1
CZ05	PGE	PGE	0.0	42	\$14	117.3	-830	-\$40	-\$26	-\$350	\$391	-\$606	1.7	>1
CZ05-2	PGE	SCG	0.0	42	\$14	117.3	-830	-\$66	-\$53	-\$827	\$391	-\$606	0.7	>1
CZ06	SCE	SCG	0.0	74	\$18	107.0	-744	-\$28	-\$10	\$153	\$612	-\$606	>1	>1
CZ07	SDGE	SDGE	0.0	81	\$25	105.9	-734	-\$43	-\$18	-\$58	\$665	-\$606	10.4	>1
CZ08	SCE	SCG	0.0	84	\$20	103.6	-717	-\$27	-\$6	\$227	\$693	-\$606	>1	>1
CZ09	SCE	SCG	0.0	83	\$20	103.5	-716	-\$27	-\$7	\$212	\$739	-\$606	>1	>1
CZ10	SCE	SCG	0.0	83	\$17	90.0	-709	-\$40	-\$23	-\$214	\$396	-\$853	4.0	>1
CZ10-2	SDGE	SDGE	0.0	83	\$25	90.0	-709	-\$59	-\$34	-\$478	\$396	-\$853	1.8	>1
CZ11	PGE	PGE	0.0	104	\$27	91.1	-723	-\$46	-\$19	-\$241	\$430	-\$371	1.5	>1
CZ12	PGE	PGE	0.0	93	\$24	93.9	-755	-\$51	-\$27	-\$414	\$288	-\$693	1.7	>1
CZ12-2	SMUD	PGE	0.0	93	\$13	93.9	-755	\$22	\$36	\$1,060	\$288	-\$693	>1	>1
CZ13	PGE	PGE	0.0	132	\$34	89.6	-711	-\$45	-\$11	-\$62	\$505	-\$371	6.0	>1
CZ14	SCE	SCG	0.0	80	\$17	92.2	-733	-\$42	-\$25	-\$258	\$305	-\$693	2.7	>1
CZ14-2	SDGE	SDGE	0.0	80	\$24	92.2	-733	-\$61	-\$36	-\$532	\$305	-\$693	1.3	>1
CZ15	SCE	SCG	0.0	145	\$30	73.8	-554	-\$28	\$3	\$332	\$832	-\$371	>1	>1
CZ16	PGE	PGE	0.0	119	\$28	107.8	-896	-\$64	-\$37	-\$621	\$127	-\$371	0.6	>1

<sup>1</sup> Values in red indicate B/C ratios less than 1.

<sup>2</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.



**Table 26: Table 19: All-Electric Efficiency + PV Package Results (SAVINGS/COST PER APARTMENT)<sup>1,2</sup>**

Climate Zone	Elec Utility	Gas Utility	0.1 kW <sub>DC</sub> per Apartment					0.2 kW <sub>DC</sub> per Apartment				
			On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio	On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio
<b>CZ01</b>	PGE	PGE	\$78	\$692	-\$129	>1	>1	\$830	\$1,184	\$187	4.44	6.33
<b>CZ02</b>	PGE	PGE	\$782	\$1,120	-\$289	>1	>1	\$1,802	\$1,712	\$27	65.85	62.55
<b>CZ03</b>	PGE	PGE	\$741	\$975	-\$289	>1	>1	\$1,768	\$1,560	\$27	64.62	57.02
<b>CZ04</b>	PGE	PGE	\$955	\$1,240	-\$289	>1	>1	\$2,012	\$1,855	\$27	73.51	67.79
<b>CZ04-2</b>	CPAU	CPAU	\$904	\$1,240	-\$289	>1	>1	\$1,432	\$1,855	\$27	52.33	67.79
<b>CZ05</b>	PGE	PGE	\$730	\$1,018	-\$289	>1	>1	\$1,810	\$1,646	\$27	66.14	60.14
<b>CZ05-2</b>	PGE	SCG	\$254	\$1,018	-\$289	>1	>1	\$1,334	\$1,646	\$27	48.74	60.14
<b>CZ06</b>	SCE	SCG	\$935	\$1,231	-\$289	>1	>1	\$1,716	\$1,849	\$27	62.71	67.56
<b>CZ07</b>	SDGE	SDGE	\$1,049	\$1,302	-\$289	>1	>1	\$2,118	\$1,938	\$27	77.41	70.82
<b>CZ08</b>	SCE	SCG	\$1,014	\$1,337	-\$289	>1	>1	\$1,802	\$1,981	\$27	65.83	72.37
<b>CZ09</b>	SCE	SCG	\$924	\$1,390	-\$289	>1	>1	\$1,619	\$2,040	\$27	59.16	74.56
<b>CZ10</b>	SCE	SCG	\$480	\$1,023	-\$536	>1	>1	\$1,173	\$1,650	-\$219	>1	>1
<b>CZ10-2</b>	SDGE	SDGE	\$546	\$1,023	-\$536	>1	>1	\$1,570	\$1,650	-\$219	>1	>1
<b>CZ11</b>	PGE	PGE	\$660	\$1,052	-\$55	>1	>1	\$1,560	\$1,673	\$262	5.96	6.39
<b>CZ12</b>	PGE	PGE	\$476	\$900	-\$376	>1	>1	\$1,366	\$1,513	-\$60	>1	>1
<b>CZ12-2</b>	SMUD	PGE	\$1,513	\$900	-\$376	>1	>1	\$1,967	\$1,513	-\$60	>1	>1
<b>CZ13</b>	PGE	PGE	\$813	\$1,098	-\$55	>1	>1	\$1,687	\$1,691	\$262	6.44	6.46
<b>CZ14</b>	SCE	SCG	\$500	\$1,031	-\$376	>1	>1	\$1,259	\$1,757	-\$60	>1	>1
<b>CZ14-2</b>	SDGE	SDGE	\$589	\$1,031	-\$376	>1	>1	\$1,710	\$1,757	-\$60	>1	>1
<b>CZ15</b>	SCE	SCG	\$1,037	\$1,485	-\$55	>1	>1	\$1,741	\$2,139	\$262	6.65	8.17
<b>CZ16</b>	PGE	PGE	\$339	\$754	-\$55	>1	>1	\$1,299	\$1,381	\$262	4.96	5.27

<sup>1</sup> Values in red indicate B/C ratios less than 1.<sup>2</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings. Values in red indicate B/C ratios less than 1.0

**Table 27: All-Electric Package Results with PV, cont. (SAVINGS/COST PER APARTMENT)<sup>1,2</sup>**

Climate Zone	Elec Utility	Gas Utility	0.3 kW <sub>DC</sub> per Apartment					1.0 kW <sub>DC</sub> per Apartment				
			On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio	On-Bill Utility Cost Savings (2020 PV\$)	TDV Cost Savings (2020 PV\$)	Total Inc. Cost	On-Bill B/C Ratio	TDV B/C Ratio
CZ01	PGE	PGE	\$1,582	\$1,676	\$504	3.14	3.33	\$6,660	\$5,123	\$2,719	2.45	1.88
CZ02	PGE	PGE	\$2,822	\$2,304	\$344	8.21	6.70	\$8,960	\$6,446	\$2,560	3.50	2.52
CZ03	PGE	PGE	\$2,796	\$2,146	\$344	8.13	6.24	\$9,055	\$6,242	\$2,560	3.54	2.44
CZ04	PGE	PGE	\$3,069	\$2,470	\$344	8.92	7.18	\$9,425	\$6,777	\$2,560	3.68	2.65
CZ04-2	CPAU	CPAU	\$1,960	\$2,470	\$344	5.70	7.18	\$5,281	\$6,777	\$2,560	2.06	2.65
CZ05	PGE	PGE	\$2,890	\$2,274	\$344	8.40	6.61	\$9,439	\$6,667	\$2,560	3.69	2.60
CZ05-2	PGE	SCG	\$2,414	\$2,274	\$344	7.02	6.61	\$8,962	\$6,667	\$2,560	3.50	2.60
CZ06	SCE	SCG	\$2,498	\$2,467	\$344	7.26	7.17	\$7,322	\$6,796	\$2,560	2.86	2.65
CZ07	SDGE	SDGE	\$3,154	\$2,575	\$344	9.17	7.49	\$10,166	\$7,030	\$2,560	3.97	2.75
CZ08	SCE	SCG	\$2,581	\$2,625	\$344	7.51	7.63	\$7,286	\$7,133	\$2,560	2.85	2.79
CZ09	SCE	SCG	\$2,314	\$2,691	\$344	6.73	7.83	\$7,028	\$7,247	\$2,560	2.75	2.83
CZ10	SCE	SCG	\$1,866	\$2,277	\$97	19.22	23.46	\$6,573	\$6,666	\$2,313	2.84	2.88
CZ10-2	SDGE	SDGE	\$2,594	\$2,277	\$97	26.72	23.46	\$9,560	\$6,666	\$2,313	4.13	2.88
CZ11	PGE	PGE	\$2,461	\$2,294	\$578	4.25	3.97	\$8,602	\$6,641	\$2,794	3.08	2.38
CZ12	PGE	PGE	\$2,256	\$2,125	\$257	8.78	8.28	\$8,313	\$6,413	\$2,473	3.36	2.59
CZ12-2	SMUD	PGE	\$2,421	\$2,125	\$257	9.43	8.28	\$5,596	\$6,413	\$2,473	2.26	2.59
CZ13	PGE	PGE	\$2,562	\$2,284	\$578	4.43	3.95	\$8,541	\$6,435	\$2,794	3.06	2.30
CZ14	SCE	SCG	\$2,017	\$2,482	\$257	7.85	9.67	\$7,155	\$7,563	\$2,473	2.89	3.06
CZ14-2	SDGE	SDGE	\$2,831	\$2,482	\$257	11.02	9.67	\$10,448	\$7,563	\$2,473	4.23	3.06
CZ15	SCE	SCG	\$2,445	\$2,793	\$578	4.23	4.83	\$7,289	\$7,371	\$2,794	2.61	2.64
CZ16	PGE	PGE	\$2,260	\$2,009	\$578	3.91	3.47	\$8,764	\$6,399	\$2,794	3.14	2.29

<sup>1</sup> Values in red indicate B/C ratios less than 1.<sup>2</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings. Values in red indicate B/C ratios less than 1.0

# 2019 Cost-Effectiveness Study: 2020 Analysis of High-Rise Residential New Construction

Last Modified: 2021-02-22

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# Acronym List

2020 PV\$	Present Value costs in 2020 dollars
ACM	Alternative Calculation Method
B/C	Benefit-to-Cost as in Benefit-to-Cost ratio
BSC	Building Standards Commission
CALGreen	California Green Building Standards Code (California Code of Regulations Title 24, Part 11)
CASE	Codes and Standards Enhancement
CBECC-Com	California Building Energy Code Compliance software program developed by the California Energy Commission for use in demonstrating compliance with the Non-Residential California Building Energy Efficiency Standards
cfm	Cubic Feet per Minute
CPAU	City of Palo Alto Utilities
CPC	California Plumbing Code
CZ	California Climate Zone
DOAS	Dedicated Outdoor Air System
ERV/HRV	Energy- or Heat-Recovery Ventilation
EPS	Expanded Polystyrene
ft <sup>2</sup>	Square foot
GHG	Greenhouse Gas
GRC	General Rate Case
HERS Rater	Home Energy Rating System Rater
HPWH	Heat Pump Water Heater
HVAC	Heating, Ventilation, and Air Conditioning
IOU	Investor-Owned Utility
kBtu	kilo-British thermal unit
kWh	kilowatt-hour
KWDC	Direct Current kilowatt. Nominal rated power of a photovoltaic system
LCC	Lifecycle Cost
NEM	Net Energy Metering
NPV	Net Present Value
PG&E	Pacific Gas and Electric Company
PV	Photovoltaic
SCE	Southern California Edison

SDG&E	San Diego Gas and Electric
SHGC	Solar Heat Gain Coefficient
SMUD	Sacramento Municipal Utility District
TDV	Time Dependent Valuation
therm	Unit for quantity of heat that equals 100,000 British thermal units
Title 24	California Code of Regulations Title 24, Part 6
TOU	Time-Of-Use
UEF	Uniform Energy Factor
W	Watt
WDC	Watt Direct Current.

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# 1 Introduction

The California Codes and Standards Reach Codes program provides technical support to local governments considering adopting a local ordinance (reach code) intended to support meeting local and/or statewide energy and greenhouse gas (GHG) reduction goals. The program facilitates adoption and implementation of the code when requested by local jurisdictions by providing resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation. This cost-effectiveness study was sponsored by Pacific Gas and Electric Company (PG&E). Local jurisdictions that are considering adopting ordinances may contact the program for support through its website, [LocalEnergyCodes.com](https://www.localenergycodes.com).

The California Building Energy Efficiency Standards Title 24, or Title 24, Part 6 (Title 24) (California Energy Commission, 2018a) is maintained and updated every three years by two state agencies: the California Energy Commission (Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances—or reach codes—that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and result in buildings consuming less energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable.

This report documents cost-effective combinations of measures that exceed the minimum state requirements, 2019 Title 24, effective January 1, 2020. Local jurisdictions in California may consider adopting local energy ordinances to achieve energy savings beyond what will be accomplished by enforcing building efficiency requirements that apply statewide. This report was developed in coordination with the California Statewide Investor-Owned Utilities (IOUs) Codes and Standards Program, key consultants, and engaged cities—collectively known as the Statewide Reach Codes Team.

The focus of this study is on new high-rise (eight stories and higher) multifamily residential construction. The analysis evaluates both mixed-fuel and all-electric residential construction, documenting performance requirements that can be met by either type of building design. Compliance package options and cost-effectiveness analysis in all 16 California climate zones (CZs) are presented (see Appendix A – Map of California Climate Zones for a graphical depiction of climate zone locations). This analysis complements the analysis conducted for mid-rise multifamily residential construction in June 2020 (Statewide Reach Codes Team, 2020).

## 2 Methodology and Assumptions

This analysis uses two different metrics to assess cost effectiveness. Both methodologies require estimating and quantifying the incremental costs and energy savings associated with energy efficiency measures. The main difference between the methodologies is the way they value energy and thus the cost savings of reduced or avoided energy use:

- **Utility Bill Impacts (On-Bill):** Customer-based Lifecycle Cost (LCC) approach that values energy based upon estimated site energy usage and customer On-Bill savings using electricity and natural gas utility rate schedules over a 30-year duration accounting for discount rate and energy cost inflation.
- **Time Dependent Valuation (TDV):** Energy Commission LCC methodology, which is intended to capture the “societal value or cost” of energy use including long-term projected costs, such as the cost of providing energy during peak periods of demand and other societal costs, such as projected costs for carbon emissions, as well as grid transmission and distribution impacts. This metric values energy use differently depending on the fuel source (natural gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods (Horii et al., 2014). This is the methodology used by the Energy Commission in evaluating cost effectiveness for efficiency measures in Title 24. Both 2019 and 2022 TDV multipliers are evaluated and documented in this analysis.

The general approach applied in this analysis is to evaluate performance and determine cost effectiveness of various packages of energy measures in high-rise multifamily dwelling units. The California Building Energy Code Compliance – Commercial (CBECC-Com) 2019.1.3 and 2022 beta compliance simulation tools were used to evaluate energy savings for all measures. 2022 weather files were used to evaluate site energy use and TDV cost effectiveness along with the 2022 TDV.

### 2.1 Building Prototypes

The Energy Commission defines building prototypes which it uses to evaluate the cost effectiveness of proposed changes to Title 24 requirements. The Energy Commission recently developed new prototype designs for multifamily buildings to more closely reflect typical designs for new multifamily buildings across the state. The new prototypes include two low-rise residential designs, a mid-rise, and a high-rise design. This analysis uses the new high-rise multifamily prototype (TRC, 2019), which is a variation of the previous ten-story high-rise prototype used in prior code cycles. The high-rise prototype is a ten-story building with two below-grade parking levels, ground floor commercial space, and nine stories of residential space. Table 1 describes the basic characteristics of the high-rise prototype and Figure 1 shows a depiction of the building.

**Table 1: Prototype Characteristics**

<b>Multifamily 10-Story High-Rise</b>	
<b>Conditioned Floor Area</b>	125,400 Square Foot (ft <sup>2</sup> ) Total: 24,960 ft <sup>2</sup> Nonresidential <sup>a</sup> & 100,440 ft <sup>2</sup> Residential
<b>Number of Stories</b>	12 Stories Total: 2-Story Parking Garage (below grade) 1 Story of Nonresidential Space 9 Stories of Residential Space
<b>Number of Dwelling Units/Bedrooms</b>	(18) Studios, (54) 1-Bed Units, & (45) 2-Bed Units
<b>Foundation</b>	Concrete Podium with Underground Parking
<b>Wall Assembly</b>	Steel Frame
<b>Roof Assembly</b>	Flat Roof
<b>Window-to-Wall Area Ratio</b>	40%
<b>HVAC System</b>	Ducted split system heat pumps at each dwelling unit. Dedicated outdoor air system for dwelling unit ventilation.
<b>Domestic Hot Water System</b>	Gas central boiler with solar thermal sized to meet the prescriptive requirements by climate zone.

<sup>a</sup>. includes ground floor commercial space, corridors and common areas.

Source: TRC, 2019.



**Figure 1: Ten-story high-rise multifamily prototype depiction.**

Source: TRC, 2019.

The methodology used in the analyses for the prototypical building type begins with a design that meets the minimum 2019 Title 24 prescriptive requirements (zero compliance margin). Table 140.3-B and 140.3-C in the 2019 Title 24 (California Energy Commission, 2018a) list the prescriptive measures that determine the baseline design in each climate zone for the nonresidential and high-rise residential spaces, respectively. Other features are consistent with the Standard Design in the Nonresidential Alternative Calculation Method (ACM) Reference Manual (California Energy Commission, 2019a) with two exceptions:

1. The dwelling units use split system heat pumps instead of a split furnace and air conditioner that is prescribed in Table 2 of the Nonresidential ACM Reference Manual. This modeling choice was made to better reflect current market data, which shows heat pumps to be the most common system type and a very low prevalence of gas furnaces for multifamily buildings four stories and greater (TRC, 2019). In most climate zones the difference between a heat pump or gas furnace is nearly compliance neutral.
2. A dedicated outdoor air system (DOAS) is used for ventilation serving the dwelling units. This is based on anecdotal information that this practice is more common than individual ventilation systems in high-rise buildings. It also provides variability across the mid- and high-rise analysis, which is important so that this analysis provides more realistic solutions for the high-rise multifamily building type. The selection of a DOAS does not match the Standard Design, which applies individual balanced fans for ventilation at all residential spaces, and results in a small compliance penalty.<sup>1</sup>

The analysis also assumed electric resistance cooking in the dwelling unit units to reflect the current market based on anecdotal information. Laundry was not addressed in this study. The building prototype assumes central laundry facilities and no laundry in the units.

## 2.2 Measure Analysis

EnergyPro software, using CBECC-Com as the simulation engine, was used to evaluate energy impacts and code compliance applying the 2019 Title 24 prescriptive standards as the benchmark. TDV is the energy metric used by Title 24 since 2005 to evaluate compliance. Although both the 2019 and 2022 compliance software were used for evaluation, the 2019 software was used for reporting compliance margins and the 2022 software, with the 2022 weather, was used for reporting site energy and utility bill impacts.

Using the 2019 baseline as the starting point, prospective energy efficiency measures were identified and modeled to determine the projected site energy (therm and kWh) and compliance impacts. Annual utility costs were calculated using hourly data output from CBECC-Com, and electricity and natural gas tariffs for each of the IOUs.

The Statewide Reach Codes Team selected measures for evaluation based on prior residential and nonresidential 2019 reach code analysis ((Statewide Reach Codes Team, 2019a), (Statewide Reach Codes Team, 2019b), (Statewide Reach Codes Team, 2020)) as well as experience with and outreach to architects, builders, and engineers and general knowledge of the relative acceptance of many measures. This analysis focuses on the residential dwelling units only. A prior study and report demonstrated the cost effectiveness of above code packages for nonresidential buildings (Statewide Reach Codes Team, 2019a).

### 2.2.1 Federal Preemption

The United States Department of Energy sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act of 1975, including heating, cooling, and water heating equipment. Since state and local governments are prohibited from adopting policies that mandate higher minimum efficiencies than the federal standards require (federal preemption), the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency equipment. While this

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<sup>1</sup> The compliance penalty is not reflected in the results in this analysis since the baseline and proposed designs both include a DOAS.

study is limited by federal preemption, in practice builders may use any package of compliant measures to achieve the performance goals, including high efficiency appliances. Often, these measures are the simplest and most affordable measures to increase energy performance.

## 2.2.2 Energy Efficiency Measures

Following are descriptions of each of the efficiency measures evaluated for the residential spaces under this analysis. Because not all of the measures described below were found to be cost-effective, and cost effectiveness varied by climate zone, not all measures are included in all packages and some of the measures listed are not included in any final package.

**Improved Fenestration – Lower U-factor:** Reduce window U-factor to 0.25 Btu/hour-ft<sup>2</sup>-°F. The prescriptive maximum U-factor is 0.36 in all climates. This measure applies to all windows on floors two through ten.

**Improved Fenestration – Lower SHGC:** Reduce window solar heat gain coefficient (SHGC) to 0.22. The prescriptive maximum SHGC is 0.25 for fixed windows in all climates. The Statewide Reach Codes Team evaluated increased SHGC in heating dominated climates (Climate Zones 1, 3, 5, and 16) but results were better with a lower SHGC. This measure applies to all windows on floors two through ten.

**Exterior Wall Insulation:** Additional R-4 exterior continuous insulation on exterior walls. To meet the prescriptive wall requirements, it is assumed that exterior wall insulation is used in the base case, therefore this measure adds the additional R-value to existing exterior insulation. This measure applies to all walls on floors two through ten.

**HERS Verification of Hot Water Pipe Insulation:** The California Plumbing Code (CPC) requires pipe insulation on all hot water lines. This measure provides credit for HERS Rater verification of pipe insulation requirements according to the procedures outlined in the 2019 Reference Appendices RA3.6.3. (California Energy Commission, 2018b).

**Low Pressure Drop Ducts:** Upgrade the duct distribution system to reduce external static pressure and meet a maximum fan efficacy of 0.25 watts (W) per cubic feet per minute (cfm) operating at full speed. This may involve upsizing ductwork, reducing the total effective length of ducts, and/or selecting low pressure drop components, such as filters. This measure is applied to the ducted split system heat pumps serving the dwelling units.

**Energy- or Heat- Recovery Ventilation:** An energy- or heat-recovery ventilation (ERV/HRV) system installed on the central DOAS with 67 percent sensible recovery effectiveness and 1.0 W/cfm fan efficacy (total including both supply and return fans). The DOAS in the base case model also has a 1.0 W/cfm fan efficacy, so there is no fan efficacy credit or penalty evaluated for this measure.

**Solar Thermal:** Prescriptively, central water heating systems require a solar thermal system with a 20 percent solar fraction in Climate Zones 1 through 9 and 35 percent solar fraction in Climate Zones 10 through 16. This measure upgrades the prescriptive solar thermal system to meet a 50 percent solar fraction in all climates, assuming there is available roof space for the additional collectors.

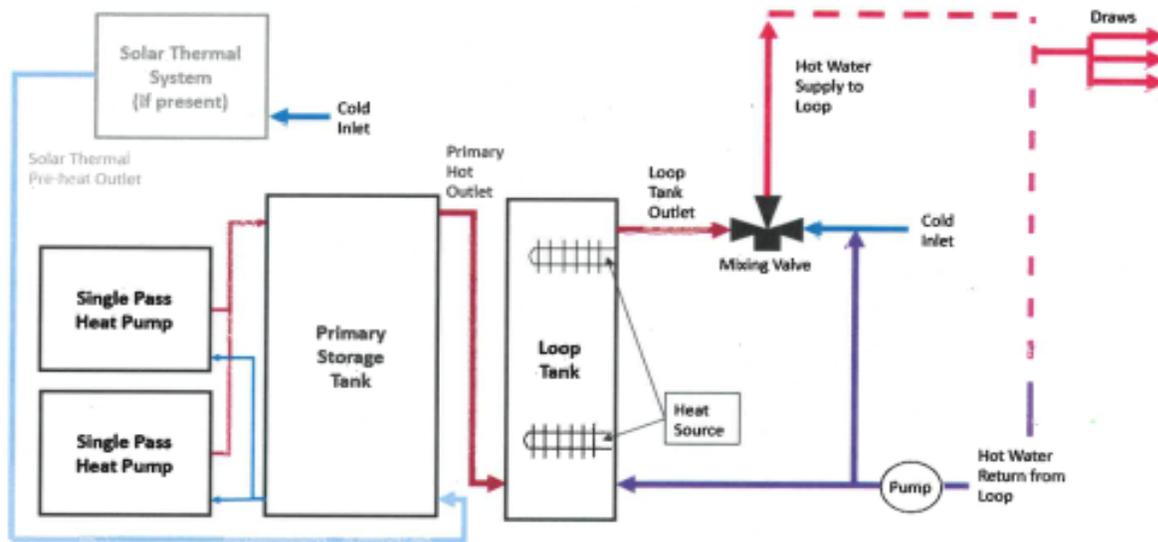
## 2.2.3 Equipment Fuel Substitution Measures – Water Heating

Since the base case prototype model assumes individual heat pumps for space heating and all-electric appliances in the dwelling units, the central domestic hot water system is the only equipment serving the dwelling unit spaces to electrify in the all-electric design. The Statewide Reach Codes Team evaluated two configurations for electric heat pump water heaters (HPWHs) described below.

New functionality was added to CBECC-Com 2019.1.3 with the ability to model central HPWH systems. There are two primary system types: “Small, Integrated, Packaged System” and “Large Single Pass Primary”. The former allows for modeling 40- to 85-gallon residential HPWHs including Northwest Energy Efficiency Alliance rated units and is how the clustered approach referred to in this analysis is modeled. The latter models large central HPWHs and covers various product models over six manufacturers (at the time of writing this report). CBECC-Com 2019.1.3 also provides a “Solar Thermal Flexibility Credit” to allow for projects with electric central water heating to use a photovoltaic (PV) system to offset the energy use of the solar thermal system in the Standard Design base case. Under these conditions, PV’s impact on compliance margin is limited to the value of the solar thermal credit.

**Central HPWH with Recirculation:** Per Section 150.1(c)8C of 2019 Title 24, the Energy Commission made an executive determination outlining requirements of a prescriptive approach for central heat pump water heating systems in December 2019 (California Energy Commission, 2019b). Key aspects of the prescriptive approach are described below:

- The system must be configured with a design similar to what is presented in the schematic in Figure 2, copied from the executive determination document.
- HPWH must be a single-pass split system with the compressor located outdoors and be able to operate down to -20°F.
- The system must include either a solar thermal water heating system that meets the current prescriptive requirements or 0.1 direct current kilowatt (kW<sub>DC</sub>) of PV system capacity per dwelling unit/dwelling unit.



**Figure 2: Prescriptive central HPWH system schematic.**

Source: Energy Commission (California Energy Commission, 2019b).

For this configuration, the Statewide Reach Codes Team evaluated a central recirculating HPWH system using Sanden compressors that meet the prescriptive requirements. Based on the system sizing requirements, 19 Sanden units and 1,520 gallons of primary storage capacity are required for the 117-dwelling unit building. The system is modeled with the tanks located indoors in a conditioned zone and source air provided from outdoors with the Sanden units likely located on rooftops. The rooftop space required for the heat pump units and the prescriptive PV system (0.1 kW<sub>DC</sub> per dwelling unit) will be similar or less than that required for the prescriptive solar thermal water heating system. The recirculation system is demand controlled meeting the requirements of the 2019 Reference Appendices RA4.4.13.

**Clustered HPWH:** This clustered design uses residential integrated storage HPWHs to serve more than one dwelling unit; four to five bedrooms on average for a total of 38 HPWHs in the 117-dwelling unit, 162-bed building. The water heaters are located in conditioned interior closets throughout the building and designed for short plumbing runs without using a hot water recirculation loop. A minimum efficiency 2.0 uniform energy factor (UEF) HPWH was used for this analysis (to avoid federal preemption). This approach has been selectively used in multifamily projects because of its reliance on lower cost, small capacity HPWH products. The clustered strategy is not a prescriptive option but is allowed in the performance path if the water heater serves no more than eight units. Since each water heater serves multiple dwelling units, the Standard Design includes a solar thermal water heating system and the project is penalized in compliance if a solar thermal or PV system is not included.

## 2.2.4 Renewable Energy

**PV:** There is no existing requirement for PV in the 2019 Title 24 nonresidential code for high-rise residential buildings (four or more stories). The PV sizing methodology was developed to offset a portion of annual residential electricity use and avoid oversizing which would violate net energy metering (NEM) rules. In all cases, PV is evaluated with the PV simulations within CBECC-Com using a standard module type, 180-degree azimuth, and 22-degree tilt. The analysis evaluated a PV system capacity equal to 0.1 and 0.2 kW<sub>DC</sub> per dwelling unit. Assuming 15 W per ft<sup>2</sup> this requires 780 to 1,560 ft<sup>2</sup> of the 12,540 ft<sup>2</sup> rooftop. The benefit of the PV was applied to the dwelling units assuming virtual NEM.

## 2.2.5 Nonresidential and Common Area Spaces

Efficiency measure packages and electric equipment (for the all-electric analysis) found to be cost-effective in the nonresidential building reach code analysis were applied to the nonresidential spaces for evaluating performance relative to compliance, but the incremental costs and energy impacts of these measures on the nonresidential spaces were not included in this analysis. Refer to the nonresidential reach code study for more details (Statewide Reach Codes Team, 2019a).

## 2.3 Package Development

Three types of measure packages were evaluated for each climate zone to identify cost-effective combinations, as described below.

1. **Efficiency Packages:** These packages combine efficiency measures that do not trigger federal preemption including envelope, water heating distribution, and duct distribution efficiency measures.
2. **Fuel Substitution:** In addition to applying the efficiency measures these packages also use electric appliances in place of natural gas appliances. For the residential spaces, only water heating is converted from using natural gas to electricity.
  - a. For water heating both a central design with recirculation and a clustered design are evaluated.
3. **Efficiency and PV Packages (with or without fuel substitution):** In addition to applying efficiency measures these packages have a PV system to offset a portion of dwelling unit estimated electricity use.

## 2.4 Measure Cost

Measure costs were obtained from various sources, including prior reach code studies, past Title 24 Codes and Standards Enhancement (CASE) work (developed by the Statewide CASE Team), local contractors, internet searches, past projects, and technical reports.

### 2.4.1 Energy Efficiency and Renewable Measures

Table 2 summarizes the incremental cost assumptions for the residential measures evaluated in this study. Incremental costs represent the equipment, installation, replacement, and maintenance costs of the proposed measures relative to the base case. Replacement costs are applied to PV inverters and water heating equipment over the 30-year evaluation period. There is no assumed incremental maintenance on the envelope, HVAC, or water heating measures. Costs were estimated to reflect costs to the building owner. When costs were obtained from a source that did not already include builder overhead and profit, a markup of ten percent was added. All costs are provided as present value in 2020 (2020 PV\$). Costs due to variations in heat pump capacity by climate zone were not accounted for in the analysis. While the efficiency measures will reduce required cooling and heating capacities, in most cases they will not be reduced enough to drop to the next nominal capacity system.

**Table 2: Incremental Cost Details**

Measure	Performance Level	Incremental Cost (2020 PV\$)	Source & Notes
<b>Non-Preempted Measures</b>			
Window U-factor	0.25 vs 0.36	\$27,342	\$6.95/ft <sup>2</sup> window area based on analysis conducted for the 2019 and 2022 Title 24 code cycles (Statewide CASE Team, 2018).
Window SHGC	0.22 vs 0.25	\$0	Data from CASE Report along with direct feedback from Statewide CASE Team that higher SHGC does not necessarily have any incremental cost impact (Statewide CASE Team, 2017b).
Exterior Wall Insulation	Add 1 inch	\$8,497	\$0.86/ft <sup>2</sup> based on adding 1 inch of exterior insulation on exterior walls with some level of existing exterior insulation. Costs are averaged from two sources ((Statewide CASE Team, 2014), (Statewide CASE Team, 2017a)) and for both expanded polystyrene (EPS) and polyisocyanurate products with a 10% mark-up added to account for cost increases since the time of the report.
HERS Verified Pipe Insulation	HERS verified pipe insulation vs no verification	\$13,275	\$83 per dwelling unit for a HERS Rater to conduct verification of pipe insulation based on feedback from HERS Raters.
Low Pressure Drop Duct Design	0.25 W/cfm vs 0.35 W/cfm	\$16,824	\$144 per dwelling unit. Costs assume 1.5 hours labor per multifamily dwelling unit. Labor rate of \$96 per hour is from 2019 RSMeans for sheet metal workers and includes an average City Cost Index for labor for California cities.
ERV/HRV (on central DOAS)	67% sensible recovery effectiveness	\$110,331	Based on costs from the Multifamily Indoor Air Quality 2022 CASE Report (Statewide CASE Team, 2020b).
Solar Thermal System	50% solar fraction vs prescriptive 20%-35%	\$59,452 - \$84,932	Costs based on 2022 multifamily solar thermal measure CASE proposal (Statewide CASE Team, 2020a) and include first cost of \$70,727 and \$8,834 present value for replacement/maintenance costs.
<b>Renewable Energy (PV)</b>			
PV System	0.1 and 0.2 kW <sub>DC</sub> per dwelling unit	\$3.17/W <sub>DC</sub>	<p>First costs are from Lawrence Berkeley National Laboratory's Tracking the Sun 2018 costs (Barbose et al., 2018) and represent costs for the first half of 2018 of \$2.90/W<sub>DC</sub> for nonresidential systems ≤ 500 kW<sub>DC</sub>. These costs were reduced by 16% for the solar investment tax credit, which is the average credit over years 2020-2022.</p> <p>Inverter replacement cost of \$0.14/W<sub>DC</sub> present value includes replacements at year 11 at \$0.15/W<sub>DC</sub> (nominal) and at year 21 at \$0.12/W<sub>DC</sub> (nominal) per the 2019 PV CASE Report (California Energy Commission, 2017).</p> <p>System maintenance costs of \$0.31/W<sub>DC</sub> present value assumes additional \$0.02/W<sub>DC</sub> (nominal) annually per the 2019 PV CASE Report (California Energy Commission, 2017).</p> <p>10% overhead and profit added to all costs.</p>

## 2.4.2 Equipment Fuel Substitution Measures – Water Heating

The Statewide Reach Codes Team reached out to stakeholders to collect project cost information for central gas boilers and central recirculating and clustered HPWH designs. Project data sources included Association for Energy Affordability, Redwood Energy, Mithun, Ecotope, and the All-Electric Multifamily Compliance Pathway 2022 CASE Report (Statewide CASE Team, 2020a). Costs are presented in Table 3 and do not include PV system costs. The cases were evaluated with and without PV even though PV or solar thermal is prescriptively required as part of the electric central water heating prescriptive approach.

**Table 3: Gas and Electric Water Heating Equipment Present Value (2020\$) Costs over 30-Year Period of Analysis**

	Central Gas Boiler (CZs 1-9)	Central Gas Boiler (CZs 10-16)	Central Recirculating HPWH	Clustered HPWH
System Quantity/Description	1 boiler recirculation		19 units, 1,547-gallon total	38 units, 80-gallon each
Total Equipment Cost	\$131,270		\$270,261	\$153,409
Solar Thermal System	(20% solar fraction) \$122,216	(35% solar fraction) \$147,696	-	-
Total First Cost	\$253,486	\$278,966	\$270,261	\$153,409
Maintenance/Replacement Cost (PV)	\$90,167	\$90,167	\$147,450	\$98,467
Total Cost (NPV)	\$343,653	\$369,133	\$417,710	\$251,876
<b>Incremental Cost CZ 1-9 (PV)</b>	-	-	\$74,057	(\$91,777)
<b>Incremental Cost CZ 10-16 (PV)</b>	-	-	\$48,577	(\$117,257)

Source: Statewide CASE Team, 2020a.

Typical costs for the water heating systems are based on the following assumptions:

**Central Gas Boiler:** Based on the average of total estimated project costs from contractors for four multi-family projects ranging from 32 to 340 dwelling units and cost estimates for mid- and high-rise buildings from the All-Electric Multifamily Compliance Pathway 2022 CASE Report (Statewide CASE Team, 2020a). The cost per dwelling unit ranged from \$547 to \$2,089 and the average cost applied in this analysis was \$1,122 per dwelling unit. Costs include installation of gas piping from the building meter to the water heater. Water heater lifetime is assumed to be 15 years and the net present value (NPV) replacement cost at year 15 is \$84,257.

**Central Recirculating HPWH:** Based on average total installed project costs from four multi-family projects with Sanden HPWHs ranging from four to 16 Sanden units per project. The cost per Sanden HPWH ranged from \$13,094 to \$15,766 and the average cost applied in this analysis was \$14,224 per HPWH. Based on the prescriptive system sizing requirements, 19 Sanden units are required for the 117-dwelling unit building, resulting in a total first cost of \$270,261. Water heater lifetime is assumed to be 15 years. Because Sanden HPWHs are an emerging technology in the United States, it is expected that over time their costs will decrease and for replacement at year 15 the costs are assumed to have decreased by 15 percent.

**Clustered HPWH:** Based on costs from one project with RHEEM HPWHs used in a clustered design. Costs include water heater interior closet, electrical outlets, and increased breaker size and sub feed. Water heater based on 2.0 UEF 80-gallon appliance with 38 total HPWHs serving the building (one per four to five bedrooms). Water heater lifetime is assumed to be 15 years and the NPV replacement cost at year 15 is \$98,467. While this has an impact on leasable floor area, the design impacts have been found to be minimal when addressed early in design and is equivalent to less than one percent of the residential floor area. This design assumes eight water heater closets per floor, at approximately 15 ft<sup>2</sup> per closet.

**Solar Thermal:** Based on system costs provided in the All-Electric Multifamily Compliance Pathway 2022 CASE Report (Statewide CASE Team, 2020a). First costs for materials for the 35 percent solar fraction case and the markup percentage reflect that presented in the CASE Report for the high-rise prototype. The labor costs and 20 percent solar fraction case costs are estimated based on detailed costs in the CASE Report. Replacement and maintenance costs assume replacement of the solar thermal tank at year 15 at \$6,110 and glycol replacement of \$1,300 each time at years 9, 18, and 27. The cost of the remaining useful life of the glycol at year 30 is deducted from the final cost. The CASE Report included costs for replacing the solar collectors at year 20. Collectors can have longer lifetimes up to 30 years if well maintained, therefore this analysis does not assume any replacement of the collectors over the 30-year analysis period. See Table 4 for details.

**Table 4: Solar Thermal Detailed Costs over 30-Year Period of Analysis**

Solar Fraction	20%	35%
Materials	\$39,854	\$57,450
Labor	\$56,001	\$58,390
Markup	27.5%	27.5%
First Cost	\$122,216	\$147,696
Replacement/Maintenance (2020 \$PV)	\$5,910	\$5,910
<b>Total Cost (2020 \$PV)</b>	<b>\$128,126</b>	<b>\$153,605</b>

Source: Statewide CASE Team, 2020a.

### 2.4.3 Natural Gas Infrastructure Costs

This analysis assumes that in an all-electric new construction project, natural gas would not be supplied to the building. Eliminating natural gas to the building would save costs associated with connecting a service line from the street main to the building, piping distribution within the building, and monthly meter customer charges from the utility. Incremental costs for natural gas infrastructure in the mixed-fuel building are presented in Table 5. Cost data for the plan review and service extension was estimated on a per building basis and then apportioned to the residential and nonresidential portions of the buildings based on annual gas consumption. For the base case prototype building 49 to 82 percent of estimated building annual gas use is attributed to the residential water heating system across all climate zones. A statewide average of 75 percent was calculated and applied to the costs in Table 5 based on housing starts provided by the Energy Commission for the 2019 Title 24 code development process. The meter costs were based on the service provided to the residential and nonresidential portion of the building separately. Following the table are descriptions of assumptions for each of the cost components. Costs for gas piping from the meter to the gas boilers are included in the central gas boiler costs above. Gas piping distribution costs were typically included in total project costs and could not be broken out in all cases.

**Table 5: Natural Gas Infrastructure Cost Savings for All-Electric Building**

Item	Source	Total	Nonresidential Portion	Residential Portion
Natural Gas Plan Review	(TRC, 2018)	\$2,316	\$588	\$1,728
Service Extension <sup>a</sup>	(PG&E, 2019)	\$4,600	\$1,169	\$3,431
Meter	(PG&E, 2019)	\$7,200	\$3,600	\$3,600
<b>Total First Cost</b>		<b>\$14,116</b>	<b>\$5,357</b>	<b>\$8,759</b>

<sup>a</sup> Service extension costs include 50 percent reduction assuming portion of the costs are passed on to gas customers.

**Natural Gas Plan Review:** Total costs are based on TRC’s 2019 reach code analysis for Palo Alto (TRC, 2018) and then split between the residential and nonresidential spaces in the building proportionately according to annual gas consumption with 75 percent of the annual load is attributed to residential units on a statewide basis.

**Service Extension:** Service extension costs to the building were taken from a PG&E memo dated December 5, 2019 to Energy Commission staff. They include costs for trenching and assume nonresidential new construction within a developed area (see Appendix C – PG&E Gas Infrastructure Cost Memo). The total cost of \$9,200 from the memo is reduced by 50 percent to account for the portion of the costs paid for by all customers due to application of Utility Gas Main Extensions rules<sup>2</sup>. The resultant cost is apportioned between the residential and nonresidential spaces in the building based on annual gas consumption of residential and nonresidential uses, with 75 percent of the annual natural gas use attributed to residential units on a statewide basis.

**Meter:** Cost per meter provided by PG&E for commercial meters (see Appendix C – PG&E Gas Infrastructure Cost Memo). Assume one meter for nonresidential boilers serving space heating and service water heating, and another for residential boilers serving domestic hot water.

## 2.5 Cost Effectiveness

Cost effectiveness was evaluated for all climate zones and is presented based on both TDV energy, using the Energy Commission’s LCC methodology, and an On-Bill approach using residential customer utility rates. Both methodologies require estimating and quantifying the value of the energy impact associated with energy efficiency measures over the life of the measures (30 years) as compared to the prescriptive Title 24 requirements.

Additional analysis included evaluating the measures using both the 2019 and proposed 2022 TDV multipliers. The proposed 2022 weather files were also used to calculate site energy use and evaluate On-Bill energy performance. The 2022 weather files were updated in 2019 and are considered to better represent conditions now and in the future. They tend to increase cooling and reduce space heating energy use, based on recent warming trends throughout the state.

Cost effectiveness is presented using both lifecycle NPV savings and benefit-to-cost (B/C) ratio metrics, which represent the cost effectiveness of a measure over a 30-year lifetime taking into account discounting of future savings and costs.

- **NPV Savings:** PV benefits minus PV costs is reported as a cost-effectiveness metric. If the net savings of a measure or package is positive, it is considered cost-effective. Negative savings represent net costs. A measure that has negative energy cost benefits (energy cost increase) can still be cost-effective if the costs to implement the measure are more negative (i.e., material and maintenance cost savings).
- **B/C Ratio:** Ratio of the present value of all benefits to the present value of all costs over 30 years (PV benefits divided by PV costs). The criterion for cost effectiveness is a B/C ratio greater than one. A value of one indicates the NPV of the savings over the life of the measure is equivalent to the NPV of the lifetime incremental cost of that measure. A value greater than one represents a positive return on investment. The B/C ratio is calculated according to Equation 1.

### Equation 1

$$\text{Benefit – to – Cost Ratio} = \frac{\text{PV of lifetime benefit}}{\text{PV of lifetime cost}}$$

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<sup>2</sup> PG&E Rule 15: [https://www.pge.com/tariffs/tm2/pdf/GAS\\_RULES\\_15.pdf](https://www.pge.com/tariffs/tm2/pdf/GAS_RULES_15.pdf)

SoCalGas Rule 20: <https://www.socalgas.com/regulatory/tariffs/tm2/pdf/20.pdf>

SDG&E Rule 15: [http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-RULES\\_GRULE15.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-RULES_GRULE15.pdf)

Improving the efficiency of a project often requires an initial incremental investment. In most cases the benefit is represented by annual On-Bill utility or TDV savings, and the cost by incremental first cost and replacement costs. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). In cases where both construction costs and energy-related savings are negative, the construction cost savings are treated as the ‘benefit’ while the increased energy costs are the ‘cost.’ In cases where a measure or package is cost-effective immediately (i.e. upfront construction cost savings and lifetime energy cost savings), B/C ratio cost effectiveness is represented by “>1”. Because of these situations, NPV savings are also reported, which, in these cases, are positive values.

The lifetime costs or benefits are calculated according to Equation 2.

### Equation 2

$$PV \text{ of lifetime cost or benefit} = \sum_{t=0}^n \frac{(Annual \text{ cost or benefit})_t}{(1 + r)^t}$$

Where:

- $n$  = analysis term
- $r$  = discount rate
- $t$  = year at which cost/benefit is incurred

The following summarizes the assumptions applied in this analysis to both methodologies.

- Analysis term of 30-years
- Real discount rate of three percent (does not include inflation)

## 2.5.1 On-Bill Customer LCC

Residential utility rates were used to calculate utility costs for all cases and determine On-Bill customer cost effectiveness for the proposed packages. Utility costs of the nonresidential spaces were not evaluated in this study, only dwelling unit and water heating energy use. The Statewide Reach Codes Team obtained the recommended utility rates from the representative utility based on the assumption that the reach codes go into effect in 2020. Annual utility costs were calculated using hourly electricity and gas output from CBECC-Com and applying the utility tariffs summarized in Table 6. Appendix B – Utility Rate Schedules includes details on the utility rate schedules used for this study. The applicable residential time-of-use (TOU) rate was applied to all cases. For cases with PV generation, the approved NEM2 tariffs were applied along with minimum daily use billing and mandatory non-bypassable charges. For the PV cases annual electric production was always less than annual electricity consumption; and therefore, no credits for surplus generation were necessary. Future changes to the NEM tariffs are likely; however, there is a lot of uncertainty about what those changes will be and when they will become effective.

There are no master metered multifamily service electric tariffs available from the IOUs. Based on guidance from the IOUs, the residential electric TOU tariffs that apply to individually metered residential dwelling units were also used to calculate electricity costs for the central water heating systems. Baseline allowances included in the electric tariff were applied on a per unit basis for all-electric service.

Based on guidance from the IOUs, master metered multifamily service gas tariffs were used to calculate gas costs for the central water heating systems. The baseline quantities were applied on a per unit basis, as is defined in the schedules, and when available water heating only baseline values were used.

Utility rates were applied to each climate zone based on the predominant IOU serving the population of each zone according to Table 6. Climate Zones 10 and 14 are evaluated with both SCE/SoCalGas and SDG&E tariffs since each utility has customers within these climate zones. Climate Zone 5 is evaluated under both PG&E and SoCalGas natural gas rates. Two municipal utility rates were also evaluated, Sacramento Municipal Utility District (SMUD) in Climate Zone 12 and City of Palo Alto Utilities (CPAU) in Climate Zone 4.

**Table 6: IOU Tariffs Applied Based on Climate Zone**

Climate Zone	Electric/Gas Utility	Electricity (Dwelling Unit Use)	Electricity (Central Water Heating)	Natural Gas (Central Water Heating) <sup>a</sup>
1-5, 11-13, 16	PG&E	E-TOU-C	E-TOU-C	PG&E GM
5	PG&E/SoCalGas			SoCalGas GM-E
6, 8-10, 14, 15	SCE/SoCalGas	TOU-D (Option 4-9)	TOU-D (Option 4-9)	SoCalGas GM-E
7, 10, 14	SDG&E	TOU-DR1	TOU-DR1	SDG&E GM
12	SMUD/PG&E	R-TOD (RT02)	GSN-T	PG&E GM
4	CPAU	E-1	E-2	G-2

<sup>a</sup> These rates are allowed assuming no gas is used in the dwelling units.

Utility rates are assumed to escalate over time, using assumptions from research conducted by Energy and Environmental Economics (E3) in the 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). Escalation of natural gas rates between 2019 and 2022 is based on the currently filed GRCs for PG&E, SoCalGas, and SDG&E. Consistent with the E3 study, gas rates are assumed to escalate at four percent per year above inflation from 2023 through 2025, which reflects historical rate increases between 2013 and 2018. Escalation of electricity rates from 2019 through 2025 is assumed to be two percent per year above inflation, based on electric utility estimates. After 2025 escalation rates for both natural gas and electric rates are assumed to drop to a more conservative one percent escalation per year above inflation for long-term rate trajectories beginning in 2026 through 2050. See Appendix B – Utility Rate Schedules for additional details.

### 2.5.2 TDV LCC

Cost effectiveness was also assessed using the Energy Commission’s TDV LCC methodology. TDV is a normalized monetary format developed and used by the Energy Commission for comparing electricity and natural gas savings, and it considers the cost of electricity and natural gas consumed during different times of the day and year. Two versions of TDV were evaluated in this study: the 2019 TDV values used under current 2019 Title 24 for compliance and the 2022 TDV values recently developed and approved by the Energy Commission for the upcoming 2022 Title 24 cycle which will become effective January 1, 2023.

The Energy Commission adopted the TDV methodology to more accurately reflect the variations in the value of energy used (or saved) based on the mix of generation resources and demand on the grid at any given time, as well as impacts on retail energy costs. The 2022 TDV values reflect changes in the generation mix as well as the shift in the peak demand time from mid-afternoon toward early evenings.

The TDV values are based on long term discounted costs of 30 years for all residential measures. The CBEC-Com simulation software results are expressed in terms of TDV kBtu. The present value of the energy cost savings in dollars is calculated by multiplying the TDV kBtu savings by a NPV factor, also developed by the Energy Commission. The 30-year NPV factor is \$0.154/TDV kBtu for nonresidential projects under both the 2019 and 2022 Title 24.

Like the customer B/C ratio, a TDV B/C ratio value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure. A value greater than one represents a positive return on investment. The ratio is calculated according to Equation 3.

#### Equation 3

$$TDV\ Benefit - to - Cost\ Ratio = \frac{TDV\ energy\ savings * NPV\ factor}{PV\ of\ lifetime\ incremental\ cost}$$

### 2.5.2.1 2019 and 2022 TDV Differences

There were key changes to the 2022 TDV methodology as compared to the 2019 TDV. Major updates include the following and are further described in the final 2022 TDV methodology report (Energy & Environmental Economics, 2020).

- Updated weather files to reflect historical data from recent years.
- New load profiles representing building and transportation electrification and renewable generation.
- Addition of internalized cost streams to account for carbon emissions.
- Shaped retail rate adjustment partially scaled to hourly marginal cost of service.
- Addition of non-combustion emissions from methane and refrigerant leakage.

The impact of these key changes for electricity TDV are lower values during the mid-day that correspond with an abundance of solar production and a shift of the peak TDV to later in the day as a result of increasing levels of rooftop PV systems. However, the overall magnitude of the electricity 2022 TDV does not increase significantly relative to 2019 TDV. For natural gas TDV there is a large increase in magnitude with the 2022 TDV roughly 40 percent higher than in 2019. This is driven by the new retail rate forecast, increased fixed costs for maintaining the distribution system, and the new carbon cost component.

The updated 2022 weather files represent an updated dataset based on historical weather sampled from recent years (1998-2017) to reflect the impacts of climate change. Cooling loads increase significantly, particularly for the mild climate zones where cooling energy use was previously low. Heating loads decrease on average 30 percent across all climate zones. The weather files used for the 2019 code cycle had not been updated since the 2013 code cycle and represented data only up until 2009. The Energy Commission and the Statewide Reach Codes Team contend that the updated 2022 weather files better reflect changing climate conditions in California. Therefore, the 2022 files are used for all the analysis reported in this study.

## 2.6 GHG Emissions Reductions

Equivalent CO<sub>2</sub> emission reductions were calculated based on estimates from Zero Code reports available in CBEC-Com simulation software.<sup>3</sup> Electricity emissions vary by region and by hour of the year, accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard projections. Hourly profiles reflect Climate Zones 1 through 5 and 11 through 13 as a single region and Climate Zones 6 through 10 and 14 through 16 as another. For natural gas, a fixed factor of 11.7 pounds (lb) per therm is used. To compare the mixed-fuel and all-electric cases side-by-side, GHG emissions are presented as CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emissions per dwelling unit.

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<sup>3</sup> More information at: <https://zero-code.org/wp-content/uploads/2018/11/ZERO-Code-TSD-California.pdf>

### 3 Results

The primary objective of this evaluation is to identify cost-effective, non-preempted performance targets for high-rise multifamily buildings, under both mixed-fuel and all-electric cases, to support the design of local ordinances requiring new high-rise residential buildings to exceed the minimum state requirements. The packages presented are representative examples of designs and measures that can be used to meet the requirements. In practice, a builder can use any combination of non-preempted or preempted compliant measures to meet the requirements.

This analysis evaluated a package of efficiency measures applied to a mixed-fuel design and a similar package for an all-electric design. Each design was evaluated using the predominant utility rates in all climate zones. PV was also added to the efficiency packages.

The following measures are included in at least one package:

- Lower SHGC fenestration
- Wall insulation
- Low pressure-drop HVAC distribution system
- HERS verified pipe insulation

The following measures were evaluated but were found to not be cost-effective in any of the climate zones and were not included in any of the packages:

- Solar thermal system with higher solar fraction than prescriptive requirements
- ERV/HRV System
- Lower U-factor fenestration

Table 7 describes the efficiency measures included in the mixed-fuel and all-electric packages.

**Table 7: Measure Package Summary**

Climate Zone	MEASURE SPECIFICATION			
	Window SHGC	Add Exterior Wall Insulation (inch)	Fan Watt Draw (W/cfm)	HERS Pipe Insulation
1		+ 1	0.25	No
2	0.22		0.25	No
3	0.22	+ 1 (all-electric only)	0.25	Yes (all-electric only)
4	0.22		0.25	No
5	0.22	+ 1 (all-electric only)	0.25	Yes (all-electric only)
6	0.22		0.25	No
7	0.22		0.25	No
8	0.22		0.25	No
9	0.22		0.25	No
10	0.22		0.25	No
11	0.22	+ 1	0.25	No
12	0.22	+ 1	0.25	No
13	0.22	+ 1	0.25	No
14	0.22	+ 1	0.25	No
15	0.22	+ 1	0.25	No
16	0.22	+ 1	0.25	No

Table 8 presents results for the mixed-fuel packages and Table 9 through Table 11 present results for the all-electric packages. Both mixed-fuel and all-electric results are relative to the mixed-fuel 2019 Title 24 prescriptive baseline model with in-unit heat pumps for heating and cooling and central gas water heating. B/C ratios for all packages are calculated according to the On-Bill, 2019 TDV, and 2022 TDV methodologies. The all-electric results are presented both without PV and with a PV system sized based on 0.1 and 0.2 kW<sub>DC</sub> per dwelling unit. The mixed-fuel package was also evaluated with 0.1 kW<sub>DC</sub> per dwelling unit and results are presented in Appendix D – Detailed Results - Mixed Fuel. Appendix E – Detailed Results - All-Electric provides detailed results for the all-electric packages.

Compliance margins for the mixed-fuel efficiency packages range from six to eight percent (except in Climate Zone 1), which meets the Title 24, Part 11 (CALGreen) Tier 1 energy performance requirement for high-rise residential buildings (minimum five percent compliance margin). The packages are cost-effective based on all metrics in Climate Zones 2 through 16.

The all-electric efficiency packages with central recirculating HPWH equipment meet minimum Title 24 requirements in all climate zones except 1 and 16, with compliance margins ranging from 0.1 to 4.7 percent. The all-electric packages result in natural gas savings and an increase in electricity use. The central recirculating case is not cost-effective On-Bill with higher lifecycle utility costs except in SMUD territory but is cost-effective based on 2022 TDV in all climates.

The clustered HPWH case only meets minimum Title 24 requirements in Climate Zones 4, 6 through 9, and 15. Even though the clustered HPWH is cost-effective in almost all climate zones, it is not code compliant in many and may not be used to support a local reach code in those zones. The package is cost-effective On-Bill everywhere except Climate Zones 1, 3, 5, and 16. The clustered approach has lower installed costs compared to the mixed fuel baseline but results in higher utility costs in all Climate Zones except 8, 9, 15, 4 (in CPAU territory), and 12 (in SMUD territory). The clustered HPWH case is cost-effective based on TDV in all climates.

The all-electric packages become cost-effective On-Bill when either 0.1 or 0.2 kW<sub>DC</sub> of PV per dwelling unit is installed, except with the central HPWH with recirculation design in Climate Zone 1. The all-electric packages in Climate Zones 1 and 16 are not code compliant with PV and may not be used to support a local reach code in those climate zones.

**Table 8: Mixed-Fuel Package Results: Efficiency Only (Savings/Cost Per Dwelling Unit)<sup>a</sup>**

Climate Zone	Elec Utility	Gas Utility	Comp. Margin	Total Gas Savings (therm)	Total Electric Savings (kWh)	Utility Cost Savings (2020 PV\$)	Incremental Cost (2020 PV\$)	On-Bill		2019 TDV		2022 TDV	
								B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	4.5%	0	39	\$199	\$216	0.9	(\$17)	0.6	(\$83)	0.8	(\$42)
2	PGE	PGE	6.5%	0	79	\$570	\$144	4.0	\$426	3.0	\$289	2.7	\$247
3	PGE	PGE	6.7%	0	60	\$420	\$144	2.9	\$276	2.3	\$184	1.9	\$131
4	PGE	PGE	7.2%	0	95	\$678	\$144	4.7	\$534	3.2	\$321	3.2	\$313
4	CPAU	CPAU	7.2%	0	95	\$394	\$144	2.7	\$250	3.2	\$321	3.2	\$313
5	PGE	PGE	6.8%	0	71	\$484	\$144	3.4	\$340	2.3	\$180	1.9	\$122
5	PGE	SCG	6.8%	0	71	\$484	\$144	3.4	\$340	2.3	\$180	1.9	\$122
6	SCE	SCG	7.8%	0	113	\$619	\$144	4.3	\$475	3.4	\$344	3.2	\$315
7	SDGE	SDGE	8.1%	0	105	\$789	\$144	5.5	\$645	3.4	\$339	2.8	\$264
8	SCE	SCG	7.8%	0	128	\$728	\$144	5.1	\$585	3.9	\$413	3.9	\$421
9	SCE	SCG	7.6%	0	125	\$695	\$144	4.8	\$551	4.2	\$461	3.9	\$413
10	SCE	SCG	7.5%	0	130	\$623	\$144	4.3	\$479	4.2	\$457	3.9	\$415
10	SDGE	SDGE	7.5%	0	130	\$972	\$144	6.8	\$828	4.2	\$457	3.9	\$415
11	PGE	PGE	7.7%	0	148	\$897	\$216	4.1	\$681	3.7	\$584	3.4	\$523
12	PGE	PGE	7.5%	0	122	\$736	\$216	3.4	\$519	3.1	\$448	2.8	\$397
12	SMUD	PGE	7.5%	0	122	\$401	\$216	1.9	\$185	3.1	\$448	2.8	\$397
13	PGE	PGE	7.4%	0	152	\$923	\$216	4.3	\$706	3.4	\$523	3.5	\$534
14	SCE	SCG	7.9%	0	152	\$735	\$216	3.4	\$518	3.6	\$556	3.5	\$532
14	SDGE	SDGE	7.9%	0	152	\$1,055	\$216	4.9	\$838	3.6	\$556	3.5	\$532
15	SCE	SCG	7.8%	0	213	\$1,021	\$216	4.7	\$804	4.5	\$768	4.4	\$725
16	PGE	PGE	6.0%	0	115	\$679	\$216	3.1	\$463	2.3	\$279	2.1	\$244

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values.

**Table 9: All-Electric Package Results: Central Recirculating vs Clustered HPWH Approach with Efficiency (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Total Gas Savings (therm)	Central Recirculating						Clustered					
				Comp Margin	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	B/C Ratio			Comp Margin	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	B/C Ratio		
							On-Bill	2019 TDV	2022 TDV				On-Bill	2019 TDV	2022 TDV
1	PGE	PGE	96	-4.6%	(671)	\$775	0.0	0.0	2.1	-6.2%	(770)	(\$643)	0.6	1.9	>1
2	PGE	PGE	87	1.0%	(557)	\$702	0.0	0.5	2.5	-0.8%	(648)	(\$715)	1.3	>1	>1
3	PGE	PGE	87	0.1%	(549)	\$888	0.0	0.3	1.9	-1.9%	(642)	(\$529)	0.9	>1	>1
4	PGE	PGE	81	4.1%	(495)	\$702	0.2	0.5	2.5	2.4%	(578)	(\$715)	2.3	>1	>1
4	CPAU	CPAU	81	4.1%	(495)	\$702	0.6	0.5	2.5	2.4%	(578)	(\$715)	>1	>1	>1
5	PGE	PGE	87	0.2%	(536)	\$888	0.0	0.3	1.7	-1.1%	(630)	(\$529)	1.0	>1	>1
5	PGE	SCG	87	0.2%	(536)	\$888	0.0	0.3	1.7	-1.1%	(630)	(\$529)	0.6	>1	>1
6	SCE	SCG	78	3.4%	(447)	\$702	0.6	0.7	2.4	0.6%	(532)	(\$715)	10.7	>1	>1
7	SDGE	SDGE	78	3.5%	(452)	\$702	0.2	0.7	2.2	1.1%	(537)	(\$715)	1.8	>1	>1
8	SCE	SCG	76	4.6%	(416)	\$702	0.7	0.9	2.7	1.4%	(492)	(\$715)	>1	>1	>1
9	SCE	SCG	76	4.2%	(428)	\$702	0.7	0.9	2.7	1.9%	(503)	(\$715)	>1	>1	>1
10	SCE	SCG	63	1.5%	(422)	\$484	0.0	0.4	2.5	-0.8%	(494)	(\$933)	2.2	>1	>1
10	SDGE	SDGE	63	1.5%	(422)	\$484	0.0	0.4	2.5	-0.8%	(494)	(\$933)	1.5	>1	>1
11	PGE	PGE	65	2.0%	(434)	\$557	0.0	0.7	2.4	-1.2%	(495)	(\$861)	2.0	>1	>1
12	PGE	PGE	68	1.4%	(474)	\$557	0.0	0.5	2.2	-1.9%	(550)	(\$861)	1.2	10.9	>1
12	SMUD	PGE	68	1.4%	(474)	\$557	1.5	0.5	2.2	-1.9%	(550)	(\$861)	>1	10.9	>1
13	PGE	PGE	63	1.7%	(411)	\$557	0.0	0.6	2.4	-1.9%	(467)	(\$861)	2.4	7.1	>1
14	SCE	SCG	65	2.3%	(433)	\$557	0.1	0.8	2.6	-0.7%	(498)	(\$861)	2.4	>1	>1
14	SDGE	SDGE	65	2.3%	(433)	\$557	0.0	0.8	2.6	-0.7%	(498)	(\$861)	1.4	>1	>1
15	SCE	SCG	51	4.7%	(252)	\$557	0.9	1.4	2.7	2.1%	(279)	(\$861)	>1	>1	>1
16	PGE	PGE	78	-7.5%	(622)	\$557	0.0	0.0	1.3	-7.1%	(698)	(\$861)	0.7	1.3	>1

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 10: All-Electric Central Recirculating HPWH Results: With and Without PV (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Comp Margin		No PV			0.1 kW <sub>DC</sub> /dwelling unit			0.2 kW <sub>DC</sub> /dwelling unit		
			No PV	With PV <sup>b</sup>	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio
1	PGE	PGE	-4.6%	-2.5%	(671)	\$775	0.0	(538)	\$1,091	0.2	(406)	\$1,408	0.72
2	PGE	PGE	1.0%	3.0%	(557)	\$702	0.0	(400)	\$1,018	1.0	(242)	\$1,335	1.54
3	PGE	PGE	0.1%	3.0%	(549)	\$888	0.0	(386)	\$1,205	0.8	(224)	\$1,521	1.36
4	PGE	PGE	4.1%	6.1%	(495)	\$702	0.2	(329)	\$1,018	1.2	(163)	\$1,335	1.75
4	CPAU	CPAU	4.1%	6.1%	(495)	\$702	0.6	(329)	\$1,018	1.1	(163)	\$1,335	1.25
5	PGE	PGE	0.2%	2.3%	(536)	\$888	0.0	(362)	\$1,205	0.9	(188)	\$1,521	1.48
5	PGE	SCG	0.2%	2.3%	(536)	\$888	0.0	(362)	\$1,205	0.7	(188)	\$1,521	1.25
6	SCE	SCG	3.4%	5.7%	(447)	\$702	0.6	(270)	\$1,018	1.2	(94)	\$1,335	1.60
7	SDGE	SDGE	3.5%	5.6%	(452)	\$702	0.2	(288)	\$1,018	1.3	(123)	\$1,335	1.80
8	SCE	SCG	4.6%	6.6%	(416)	\$702	0.7	(246)	\$1,018	1.3	(75)	\$1,335	1.64
9	SCE	SCG	4.2%	5.8%	(428)	\$702	0.7	(250)	\$1,018	1.2	(72)	\$1,335	1.52
10	SCE	SCG	1.5%	5.7%	(422)	\$484	0.0	(244)	\$801	1.0	(67)	\$1,117	1.36
10	SDGE	SDGE	1.5%	5.7%	(422)	\$484	0.0	(244)	\$801	1.3	(67)	\$1,117	1.96
11	PGE	PGE	2.0%	6.7%	(434)	\$557	0.0	(275)	\$873	1.0	(116)	\$1,190	1.46
12	PGE	PGE	1.4%	6.3%	(474)	\$557	0.0	(311)	\$873	0.8	(147)	\$1,190	1.36
12	SMUD	PGE	1.4%	6.3%	(474)	\$557	1.5	(311)	\$873	1.5	(147)	\$1,190	1.51
13	PGE	PGE	1.7%	6.8%	(411)	\$557	0.0	(245)	\$873	1.1	(80)	\$1,190	1.56
14	SCE	SCG	2.3%	6.5%	(433)	\$557	0.1	(242)	\$873	1.0	(51)	\$1,190	1.40
14	SDGE	SDGE	2.3%	6.5%	(433)	\$557	0.0	(242)	\$873	1.2	(51)	\$1,190	1.90
15	SCE	SCG	4.7%	7.7%	(252)	\$557	0.9	(75)	\$873	1.4	102	\$1,190	1.66
16	PGE	PGE	-7.5%	-3.2%	(622)	\$557	0.0	(453)	\$873	0.3	(283)	\$1,190	1.03

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values.

<sup>b</sup> 0.1 kW<sub>DC</sub>/dwelling unit sufficient in all climate zones to achieve reported compliance margins except in Climate Zones 11-13 0.2 kW<sub>DC</sub>/dwelling unit is necessary.

**Table 11: All-Electric Clustered HPWH Results: With and Without PV (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Comp Margin		No PV			0.1 kW <sub>DC</sub> /dwelling unit			0.2 kW <sub>DC</sub> /dwelling unit		
			No PV	With PV <sup>c</sup>	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio	Total Electric Savings (kWh)	Incremental Cost (2020 PV\$)	On-Bill B/C Ratio
1	PGE	PGE	-6.2%	-4.1%	(770)	(\$643)	0.6	(637)	(\$326)	0.96	(504)	(\$10)	>1
2	PGE	PGE	-0.8%	1.2%	(648)	(\$715)	1.3	(490)	(\$399)	>1	(333)	(\$82)	>1
3	PGE	PGE	-1.9%	0.9%	(642)	(\$529)	0.9	(479)	(\$213)	>1	(317)	\$104	14.67
4	PGE	PGE	2.4%	4.3%	(578)	(\$715)	2.3	(412)	(\$399)	>1	(246)	(\$82)	>1
4	CPAU	CPAU	2.4%	4.3%	(578)	(\$715)	>1	(412)	(\$399)	>1	(246)	(\$82)	>1
5	PGE	PGE	-1.1%	0.9%	(630)	(\$529)	1.0	(457)	(\$213)	>1	(283)	\$104	16.38
5	PGE	SCG	-1.1%	0.9%	(630)	(\$529)	0.6	(457)	(\$213)	>1	(283)	\$104	12.97
6	SCE	SCG	0.6%	2.9%	(532)	(\$715)	10.7	(355)	(\$399)	>1	(179)	(\$82)	>1
7	SDGE	SDGE	1.1%	3.1%	(537)	(\$715)	1.8	(372)	(\$399)	>1	(207)	(\$82)	>1
8	SCE	SCG	1.4%	3.5%	(492)	(\$715)	>1	(322)	(\$399)	>1	(151)	(\$82)	>1
9	SCE	SCG	1.9%	3.4%	(503)	(\$715)	>1	(325)	(\$399)	>1	(148)	(\$82)	>1
10	SCE	SCG	-0.8%	3.5%	(494)	(\$933)	2.2	(316)	(\$617)	>1	(139)	(\$300)	>1
10	SDGE	SDGE	-0.8%	3.5%	(494)	(\$933)	1.5	(316)	(\$617)	>1	(139)	(\$300)	>1
11	PGE	PGE	-1.2%	3.5%	(495)	(\$861)	2.0	(336)	(\$544)	>1	(177)	(\$228)	>1
12	PGE	PGE	-1.9%	3.0%	(550)	(\$861)	1.2	(387)	(\$544)	>1	(223)	(\$228)	>1
12	SMUD	PGE	-1.9%	3.0%	(550)	(\$861)	>1	(387)	(\$544)	>1	(223)	(\$228)	>1
13	PGE	PGE	-1.9%	3.3%	(467)	(\$861)	2.4	(301)	(\$544)	>1	(136)	(\$228)	>1
14	SCE	SCG	-0.7%	3.5%	(498)	(\$861)	2.4	(308)	(\$544)	>1	(117)	(\$228)	>1
14	SDGE	SDGE	-0.7%	3.5%	(498)	(\$861)	1.4	(308)	(\$544)	>1	(117)	(\$228)	>1
15	SCE	SCG	2.1%	5.1%	(279)	(\$861)	>1	(102)	(\$544)	>1	75	(\$228)	>1
16	PGE	PGE	-7.1%	-2.9%	(698)	(\$861)	0.7	(529)	(\$544)	2.70	(359)	(\$228)	>1

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

<sup>c</sup> 0.1 kW<sub>DC</sub>/dwelling unit sufficient in all climate zones to achieve reported compliance margins except in Climate Zones 11-13 0.2 kW<sub>DC</sub>/dwelling unit is necessary.

## 4 Conclusions and Summary

This report evaluated the feasibility and cost effectiveness of “above code” performance specifications for newly constructed high-rise multifamily buildings. The analysis included application of efficiency measures, electric appliances, and PV in all climate zones and found cost-effective packages across the state. For the building designs and climate zones where cost-effective packages were identified, the results of this analysis can be used by local jurisdictions to support the adoption of reach codes. Cost effectiveness was evaluated according to three metrics: On-Bill customer, 2019 TDV, and 2022 TDV LCC B/C ratio.

For mixed-fuel buildings, this analysis demonstrates that there are cost-effective efficiency packages based on at least one of the evaluated cost-effectiveness metrics that achieve a minimum five percent compliance margin in most climate zones. The exception is Climate Zone 1 where the package only resulted in a 4.5 percent compliance margin. Although the Climate Zone 1 package is not cost-effective based on either the 2019 TDV or the On-Bill methodologies, it is cost-effective based on 2022 TDV.

This study evaluated electrification of residential loads in new high-rise multifamily buildings. Based on typical construction across California, the base case condition incorporated all-electric appliances within the dwelling unit spaces. As a result, only central water heating was converted from natural gas to electric as part of this analysis. For all-electric buildings, this analysis demonstrates that there are cost-effective efficiency packages with a HPWH that are Title 24 compliant in all climate zones except Climate Zones 1 and 16.

The case with the central recirculating HPWH is cost-effective based on the 2022 TDV methodology in all climate zones. Additionally, in Climate Zone 15 it is cost-effective based on 2019 TDV and in Climate Zone 12 in SMUD territory it is cost-effective On-Bill. Utility cost savings were found in Climate Zones 2, 4, 5 (in PG&E territory), 6-9, 10 (in SCE territory), 12 (in SMUD territory), 14 (in SCE territory), and 15. This case (Table 9) demonstrates how the analysis results differ under the 2019 and 2022 TDV metrics. The B/C ratios are typically two to five times greater under 2022 than 2019 because of the higher relative gas versus electric TDV multipliers in 2022. When 0.1 to 0.2 kW<sub>DC</sub> per dwelling unit is included, the package is cost-effective based on On-Bill in all climate zones except Climate Zone 1.

The central recirculating HPWH case is based on the Energy Commission’s approved prescriptive design and applies Sanden HPWHs, which are higher cost than other available products. As HPWHs gain market share, installed costs are anticipated to decrease as the labor force becomes more familiar with the technology, performance improvements are achieved, and available product options increase. It is also anticipated that modeling of central HPWHs will improve as results from field and lab testing inform the modeling algorithms. This will allow for more accurate modeling of system performance and modeling of other design strategies such as multi-pass HPWH systems.

The clustered HPWH case is cost-effective without PV On-Bill everywhere except Climate Zones 1, 3, 5 (in SoCalGas territory), and 16, although the package is not code compliant in numerous climate zones. It was found to have a much lower installed cost than the recirculating HPWH case but higher operating cost because federal minimum efficiency was assumed (2.0 UEF). When 0.1 to 0.2 kW<sub>DC</sub> per dwelling unit is included, the package is cost-effective On-Bill in all climate zones, although still not code compliant in Climate Zone 1 or 16.

Table 12 summarizes compliance margin and cost-effectiveness results for the mixed-fuel and all-electric cases. Compliance margin is reported in the cells and cost effectiveness is indicated by the color of the cell according to the following:

- Cells highlighted in green depict cost-effective results using the On-Bill approach. In most cases results are also cost-effective based on TDV.
  - Cells highlighted in blue depict cost-effective results using both the 2019 and 2022 TDV approach, but not On-Bill.
  - Cells highlighted in yellow depict cost-effective results using the 2022 TDV approach only.
  - Cells highlighted in red depict a package that was not cost-effective using any metric.
- Red text depicts a negative compliance margin.

For more detail on the results, please refer to Appendix D – Detailed Results - Mixed Fuel and Appendix E – Detailed Results - All-Electric.

**Table 12: High-Rise Multifamily Summary of Compliance Margin and Cost Effectiveness**

Climate Zone	Elec Utility	Gas Utility	Mixed Fuel (No PV)	Central Recirculating HPWH			Clustered HPWH		
				No PV	0.1 kW <sub>DC</sub> /apt	0.2 kW <sub>DC</sub> /apt	No PV	0.1 kW <sub>DC</sub> /apt	0.2 kW <sub>DC</sub> /apt
1	PGE	PGE	4.5%	-4.6%	-2.5%	-2.5%	-6.2%	-4.1%	-4.1%
2	PGE	PGE	6.5%	1.0%	3.0%	3.0%	-0.8%	1.2%	1.2%
3	PGE	PGE	6.7%	0.1%	3.0%	3.0%	-1.9%	0.9%	0.9%
4	PGE	PGE	7.2%	4.1%	6.1%	6.1%	2.4%	4.3%	4.3%
4	CPAU	CPAU	7.2%	4.1%	6.1%	6.1%	2.4%	4.3%	4.3%
5	PGE	PGE	6.8%	0.2%	2.3%	2.3%	-1.1%	0.9%	0.9%
5	PGE	SCG	6.8%	0.2%	2.3%	2.3%	-1.1%	0.9%	0.9%
6	SCE	SCG	7.8%	3.4%	5.7%	5.7%	0.6%	2.9%	2.9%
7	SDGE	SDGE	8.1%	3.5%	5.6%	5.6%	1.1%	3.1%	3.1%
8	SCE	SCG	7.8%	4.6%	6.6%	6.6%	1.4%	3.5%	3.5%
9	SCE	SCG	7.6%	4.2%	5.8%	5.8%	1.9%	3.4%	3.4%
10	SCE	SCG	7.5%	1.5%	5.7%	5.7%	-0.8%	3.5%	3.5%
10	SDGE	SDGE	7.5%	1.5%	5.7%	5.7%	-0.8%	3.5%	3.5%
11	PGE	PGE	7.7%	2.0%	2.0%	6.7%	-1.2%	-1.2%	3.5%
12	PGE	PGE	7.5%	1.4%	1.4%	6.3%	-1.9%	-1.9%	3.0%
12	SMUD	PGE	7.5%	1.4%	1.4%	6.3%	-1.9%	-1.9%	3.0%
13	PGE	PGE	7.4%	1.7%	1.7%	6.8%	-1.9%	-1.9%	3.3%
14	SCE	SCG	7.9%	2.3%	6.5%	6.5%	-0.7%	3.5%	3.5%
14	SDGE	SDGE	7.9%	2.3%	6.5%	6.5%	-0.7%	3.5%	3.5%
15	SCE	SCG	7.8%	4.7%	7.7%	7.7%	2.1%	5.1%	5.1%
16	PGE	PGE	6.0%	-7.5%	-7.5%	-3.2%	-7.1%	-7.1%	-2.9%

## 4.1 Additional conclusions

- This study found that electrification of central domestic hot water loads, in combination with efficiency measures, can result in an overall benefit to the consumer through lower utility bills, depending on the HPWH strategy and electricity and gas tariff. The all-electric results demonstrate a trend with On-Bill cost effectiveness across the different electric utilities. B/C ratios and NPV in SCE, SMUD, and CPAU territories are typically higher than the cases in PG&E and SDG&E territories. This indicates that rate design can play an important role in encouraging or discouraging electrification. Refer to Appendix D – Detailed Results - Mixed Fuel and Appendix E – Detailed Results - All-Electric for utility cost data.
- Two electric water heating scenarios were evaluated. The most appropriate HPWH design approach for any particular building will depend on many aspects including number and size of dwelling units, building layout, and first costs.
- In multifamily buildings with central water heating where multiple people or entities are responsible for the utility bills, utility impacts may not align. If tenants pay dwelling unit utility bills and the owner pays the water heating bill, the benefits of efficiency measures or PV serving the dwelling unit will benefit the tenant and savings would not directly impact any water heating electrification cost increases.
- This study did not evaluate federally preempted high efficiency appliances. Specifying high efficiency equipment is a viable approach to meeting Title 24 compliance and local ordinance requirements and is commonly used by project teams. Other studies have found that efficiency packages and electrification packages that employ high efficiency equipment can be quite cost-effective ((Statewide Reach Codes Team, 2019b), (Energy & Environmental Economics, 2019)).
- When PV capacity is added to the all-electric packages, all cases are cost-effective based on the On-Bill metric (except Climate Zone 1 with the central recirculating HPWH). In some cases, PV improves cost effectiveness, and in other cases it reduces it. The cost effectiveness of adding PV as an independent measure results in On-Bill B/C ratios between 2.4 and 3.5 for PG&E territory, 2.4 to 2.7 for SCE territory, and 3.5 to 3.8 for SDG&E territory. The B/C ratio is 1.9 and 1.5 in CPAU and SMUD territories, respectively. Adding PV in addition to the efficiency packages improves cost effectiveness where the B/C ratios for the efficiency measures alone are lower than the B/C ratios for PV alone, and vice versa where they are higher. Annual base case electricity costs and annual utility savings from PV are lower in SCE territory than in PG&E and SDG&E territories. This is due to lower off-peak rates and a bigger difference in peak versus off-peak rates for the TOU-D SCE electricity rate tariff. Most PV production occurs during off-peak times (4 pm to 9 pm peak period).

## 5 References

- Barbose, Galen and Darghouth, Naim. 2018. Tracking the Sun. Installed Price Trends for Distributed Photovoltaic Systems in the United States – 2018 Edition. Lawrence Berkeley National Laboratory. September 2018. [https://emp.lbl.gov/sites/default/files/tracking\\_the\\_sun\\_2018\\_edition\\_final\\_0.pdf](https://emp.lbl.gov/sites/default/files/tracking_the_sun_2018_edition_final_0.pdf)
- California Energy Commission. 2017. Rooftop Solar PV System. Measure number: 2019-Res-PV-D Prepared by Energy and Environmental Economics, Inc. <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>
- California Energy Commission. 2018a. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. CEC-400-2018-020-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf>
- California Energy Commission. 2018b. 2019 Reference Appendices. CEC-400-2018-021-CMF. December 2018. California Energy Commission. <https://www.energy.ca.gov/2018publications/CEC-400-2018-021/CEC-400-2018-021-CMF.pdf>
- California Energy Commission. 2019a. 2019 Nonresidential Alternative Calculation Method Reference Manual. CEC-400-2019-006-CMF. May 2019. California Energy Commission. <https://ww2.energy.ca.gov/2019publications/CEC-400-2019-006/CEC-400-2019-006-CMF.pdf>
- California Energy Commission. 2019b. Executive Director Determination Pursuant to Section 150.1(c)8C for Central Heat Pump Water Heating System. December 26, 2019. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=231318&DocumentContentId=63067>
- Energy & Environmental Economics. 2019. Residential Building Electrification in California. April 2019. [https://www.ethree.com/wp-content/uploads/2019/04/E3\\_Residential\\_Building\\_Electrification\\_in\\_California\\_April\\_2019.pdf](https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf)
- Energy & Environmental Economics. 2020. Time Dependent valuation of Energy for Developing Building Efficiency Standards. 2022 Time Dependent Valuation (TDV) and Source Energy Metric Data Sources and Inputs. Prepared for the California Energy Commission. May 2020. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=233345&DocumentContentId=65837>
- Horii, B., E. Cutter, N. Kapur, J. Arent, and D. Conotyannis. 2014. “Time Dependent Valuation of Energy for Developing Building Energy Efficiency Standards.” [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09\\_workshop/2017\\_TDV\\_Documents/](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents/)
- Statewide CASE Team. 2014. Codes and Standards Enhancement (CASE) Initiative Nonresidential Opaque Envelope. December 2014. <https://title24stakeholders.com/wp-content/uploads/2019/02/2016-T24-CASE-Report-NR-Opaque-Envelope-Dec2014-V3.pdf>
- Statewide CASE Team. 2017a. Codes and Standards Enhancement (CASE) Initiative High Performance Walls – Final Report. September 2017. <http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report-HPW-Final-September-2017.pdf>
- Statewide CASE Team. 2017b. Codes and Standards Enhancement (CASE) Initiative Residential High Performance Windows & Doors – Final Report. August 2017. <http://title24stakeholders.com/wp-content/uploads/2017/09/2019-T24-CASE-Report-Res-Windows-and-Doors-Final-September-2017.pdf>
- Statewide CASE Team. 2018. Energy Savings Potential and Cost-Effectiveness Analysis of High Efficiency Windows in California. Prepared by Frontier Energy. May 2018. <https://www.etc-ca.com/reports/energy-savings-potential-and-cost-effectiveness-analysis-high-efficiency-windows-california>
- Statewide CASE Team. 2020a. All-Electric Multifamily Compliance Pathway Final CASE Report (Updated). Prepared by TRC. November 2020. [https://title24stakeholders.com/wp-content/uploads/2020/11/2022-T24-Final-CASE-Report-MF-All-Electric\\_updated.pdf](https://title24stakeholders.com/wp-content/uploads/2020/11/2022-T24-Final-CASE-Report-MF-All-Electric_updated.pdf)

Statewide CASE Team. 2020b. Multifamily Indoor Air Quality Draft CASE Report. Prepared by TRC.

[https://title24stakeholders.com/wp-content/uploads/2018/10/MF-IAQ\\_Draft-CASE-Report\\_Statewide-CASE-Team.pdf](https://title24stakeholders.com/wp-content/uploads/2018/10/MF-IAQ_Draft-CASE-Report_Statewide-CASE-Team.pdf)

Statewide Reach Codes Team. 2019a. 2019 Nonresidential New Construction Reach Code Cost-Effectiveness Study. Prepared for Southern California Edison. Prepared by TRC. July 25, 2019.

[https://localenergycodes.com/download/801/file\\_path/fieldList/2019%20NR%20NC%20Cost%20Effectiveness%20Study-2019-07-25.pdf](https://localenergycodes.com/download/801/file_path/fieldList/2019%20NR%20NC%20Cost%20Effectiveness%20Study-2019-07-25.pdf)

Statewide Reach Codes Team. 2019b. 2019 Cost-Effectiveness Study: Low-Rise Residential New Construction. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. August 1, 2019.

[https://localenergycodes.com/download/800/file\\_path/fieldList/2019%20Res%20NC%20Reach%20Codes](https://localenergycodes.com/download/800/file_path/fieldList/2019%20Res%20NC%20Reach%20Codes)

Statewide Reach Codes Team. 2020. 2019 Mid-Rise New Construction Reach Code Cost-Effectiveness Study. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. June 22, 2020.

[https://localenergycodes.com/download/492/file\\_path/fieldList/2019%20Mid-rise%20NC%20Cost-Eff%20Report](https://localenergycodes.com/download/492/file_path/fieldList/2019%20Mid-rise%20NC%20Cost-Eff%20Report)

TRC. 2018. City of Palo Alto 2019 Title 24 Energy Reach Code Cost-Effectiveness Analysis Draft. September 2018. <https://cityofpaloalto.org/civicax/filebank/documents/66742>

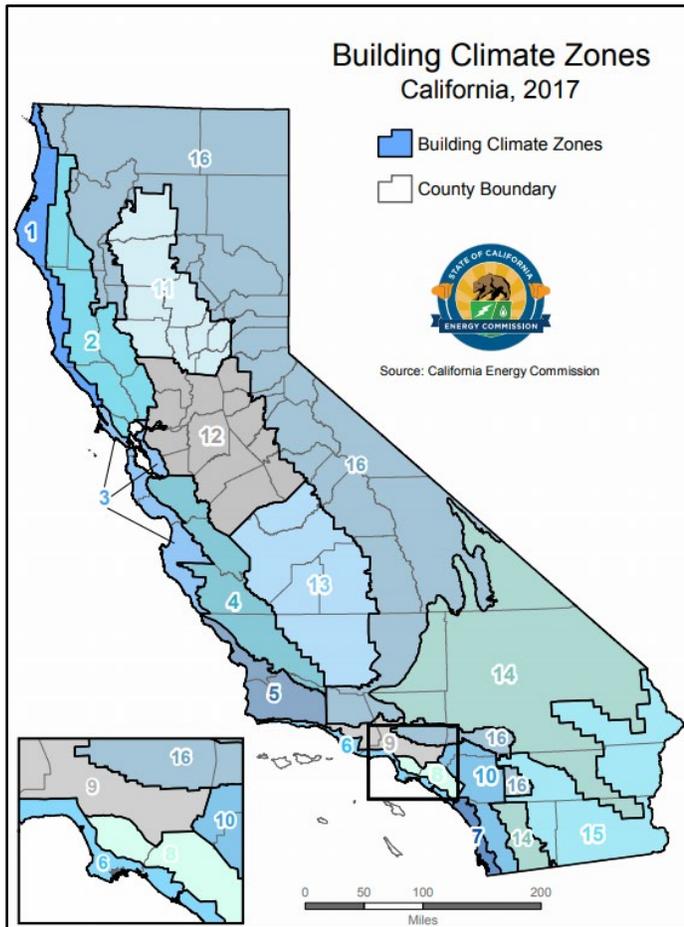
TRC. 2019. Multifamily Prototypes. June 7, 2019. Submitted to Southern California Edison.

[https://title24stakeholders.com/wp-content/uploads/2019/06/SCE-MFModeling\\_MultifamilyPrototypesReport\\_2019-06-07\\_clean.pdf](https://title24stakeholders.com/wp-content/uploads/2019/06/SCE-MFModeling_MultifamilyPrototypesReport_2019-06-07_clean.pdf)

## 6 Appendices

### 6.1 Appendix A – Map of California Climate Zones

Climate zone geographical boundaries are depicted in Figure 3. The map in Figure 3 along with a zip-code search directory is available at: [https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html).



**Figure 3: Map of California climate zones.**

Source: Energy Commission.

## 6.2 Appendix B – Utility Rate Schedules

### **PG&E**

The following pages provide details on the PG&E electricity and natural gas tariffs applied in this study. Table 13 describes the baseline territories that were assumed for each climate zone.

**Table 13: PG&E Baseline Territory by Climate Zone**

Climate Zone	Baseline Territory
1	V
2	X
3	T
4	X
5	T
11	R
12	S
13	R
16	Y

Source: PG&E.

The PG&E monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 14. Rates are based on historical data provided by PG&E.<sup>4</sup>

**Table 14: PG&E Monthly Gas Rate (\$/therm)**

Month	Procurement Charge	Transportation Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.45813	\$0.99712	\$1.59540	\$1.45525	\$2.05353
Feb 2020	\$0.44791	\$0.99712	\$1.59540	\$1.44503	\$2.04331
Mar 2020	\$0.35346	\$1.13126	\$1.64861	\$1.48472	\$2.00207
Apr 2020	\$0.23856	\$1.13126	\$1.64861	\$1.36982	\$1.88717
May 2019	\$0.21791	\$0.99933	\$1.59892	\$1.21724	\$1.81683
June 2019	\$0.20648	\$0.99933	\$1.59892	\$1.20581	\$1.80540
July 2019	\$0.28462	\$0.99933	\$1.59892	\$1.28395	\$1.88354
Aug 2019	\$0.30094	\$0.96652	\$1.54643	\$1.26746	\$1.84737
Sept 2019	\$0.25651	\$0.96652	\$1.54643	\$1.22303	\$1.80294
Oct 2019	\$0.27403	\$0.98932	\$1.58292	\$1.26335	\$1.85695
Nov 2019	\$0.33311	\$0.96729	\$1.54767	\$1.30040	\$1.88078
Dec 2019	\$0.40178	\$0.96729	\$1.54767	\$1.36907	\$1.94945

Source: PG&E.

<sup>4</sup> The PG&E procurement and transportation charges were obtained from the following site:  
[https://www.pge.com/tariffs/GRF\\_SHTML#RESGAS](https://www.pge.com/tariffs/GRF_SHTML#RESGAS)  
[https://www.pge.com/tariffs/GRF\\_SHTML#RESGAS](https://www.pge.com/tariffs/GRF_SHTML#RESGAS)



**Pacific Gas and Electric Company**  
San Francisco, California

Revised Revised Cal. P.U.C. Sheet No. 35447-G  
Cancelling Revised Cal. P.U.C. Sheet No. 34307-G

**GAS SCHEDULE GM**  
MASTER-METERED MULTIFAMILY SERVICE

Sheet 3

**BASELINE QUANTITIES:** The above rates are applicable only to residential use. PG&E may require the Customer to submit a completed "Declaration of Eligibility for Baseline Quantities for Residential Rates." The delivered quantities of gas shown below are billed at the rates for baseline use. As an exception, service under this schedule not used to supply space heating but used to supply water heating from a central source to residential dwelling units that are individually metered by PG&E for either gas or electricity will be billed using a baseline quantity of 0.5 therms per dwelling unit per day (Code W) in all baseline territories and in both seasons.

Baseline Territories	BASELINE QUANTITIES (Therms Per Day Per Dwelling Unit)						(T)   (T)
	Summer (April-October)		Winter Off-Peak (Nov, Feb, Mar)		Winter On-Peak (Dec, Jan)		
	Effective Apr. 1, 2020		Effective Nov. 1, 2019		Effective Dec. 1, 2019		
**							
P	0.29	(R)	0.87	(R)	1.00	(I)	
Q	0.49	(R)	0.64	(R)	0.77	(I)	
R	0.33	(R)	0.84	(R)	1.19	(I)	
S	0.29	(R)	0.54	(R)	0.68	(I)	
T	0.49	(R)	0.94	(R)	1.06	(R)	
V	0.56		1.18	(R)	1.29	(I)	
W	0.23	(R)	0.61	(R)	0.87	(R)	
X	0.33	(R)	0.64	(R)	0.77	(I)	
Y	0.36		0.87	(R)	1.00	(I)	

**SEASONAL CHANGES:** The summer season is April-October, the winter off-peak season is November, February and March, and the winter on-peak season is December and January. Baseline quantities for bills that include the April 1, November 1 and December 1 seasonal changeover dates will be calculated by multiplying the applicable daily baseline quantity for each season by the number of days in each season for the billing period.

**STANDARD MEDICAL QUANTITIES:** Additional medical quantities (Code M) are available as provided in Rule 19.

**RESIDENTIAL DWELLING UNITS:** It is the responsibility of the Customer to advise PG&E within 15 days following any change in the number of residential dwelling units, mobile home spaces, and permanent-residence RV units receiving gas service.

**CENTRAL BOILERS:** Service to central boilers for water and/or space heating will be billed with monthly baseline quantities related to the number of dwelling units furnished such water and/or space heating.



**Pacific Gas and Electric Company**  
San Francisco, California

Cancelling Revised Cal. P.U.C. Sheet No. 46539-E  
Revised Cal. P.U.C. Sheet No. 46325-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 2  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

RATES:  
(Cont'd.)

**E-TOU-C TOTAL RATES**

Total Energy Rates (\$ per kWh)	<u>PEAK</u>		<u>OFF-PEAK</u>	
<i>Summer</i>				
Total Usage	\$0.41333	(I)	\$0.34989	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
<i>Winter</i>				
Total Usage	\$0.31624	(I)	\$0.29891	(I)
Baseline Credit (Applied to Baseline Usage Only)	(\$0.08633)	(R)	(\$0.08633)	(R)
Delivery Minimum Bill Amount (\$ per meter per day)	\$0.32854			
California Climate Credit (per household, per semi-annual payment occurring in the April and October bill cycles) <sup>f</sup>	(\$35.73)			(T)

Total bundled service charges shown on customer's bills are unbundled according to the component rates shown below. Where the delivery minimum bill amount applies, the customer's bill will equal the sum of (1) the delivery minimum bill amount plus (2) for bundled service, the generation rate times the number of kWh used. For revenue accounting purposes, the revenues from the delivery minimum bill amount will be assigned to the Transmission, Transmission Rate Adjustments, Reliability Services, Public Purpose Programs, Nuclear Decommissioning, Competition Transition Charges, Energy Cost Recovery Amount, DWR Bond, and New System Generation Charges based on kWh usage times the corresponding unbundled rate component per kWh, with any residual revenue assigned to Distribution.

<sup>f</sup> Pursuant to D.20-04-027, distribution of the October 2020 California Climate Credit will be advanced and split to the May 2020 and June 2020 bill cycles, \$17.87 and \$17.86 respectively.. (N)

(Continued)

Advice	5661-E-B	<i>Issued by</i>	<i>Submitted</i>	<u>April 28, 2020</u>
Decision		<b>Robert S. Kenney</b>	<i>Effective</i>	<u>May 1, 2020</u>
		<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	



Cancelling Revised Cal. P.U.C. Sheet No. 46540-E  
 Revised Revised Cal. P.U.C. Sheet No. 46252-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 3  
**RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)**

**RATES:** **UNBUNDLING OF E-TOU-C TOTAL RATES**  
 (Cont'd.)

Energy Rates by Component (\$ per kWh)	PEAK		OFF-PEAK	
<b>Generation:</b>				
Summer (all usage)	\$0.16735	(R)	\$0.11391	(R)
Winter (all usage)	\$0.11859	(R)	\$0.10356	(R)
<b>Distribution**:</b>				
Summer (all usage)	\$0.12767	(I)	\$0.11767	(I)
Winter (all usage)	\$0.07935	(I)	\$0.07705	(I)
<b>Conservation Incentive Adjustment (Baseline Usage)</b>			(\$0.03294)	(I)
<b>Conservation Incentive Adjustment (Over Baseline Usage)</b>			\$0.05339	(I)
<b>Transmission* (all usage)</b>			\$0.03595	
<b>Transmission Rate Adjustments* (all usage)</b>			\$0.00314	
<b>Reliability Services* (all usage)</b>			(\$0.00088)	
<b>Public Purpose Programs (all usage)</b>			\$0.01296	(I)
<b>Nuclear Decommissioning (all usage)</b>			\$0.00101	(I)
<b>Competition Transition Charges (all usage)</b>			\$0.00096	(R)
<b>Energy Cost Recovery Amount (all usage)</b>			\$0.00005	(I)
<b>DWR Bond (all usage)</b>			\$0.00580	
<b>New System Generation Charge (all usage)**</b>			\$0.00571	(I)

\* Transmission, Transmission Rate Adjustments and Reliability Service charges are combined for presentation on customer bills.  
 \*\* Distribution and New System Generation Charges are combined for presentation on customer bills.

(Continued)

Advice Decision	5661-E-B	Issued by <b>Robert S. Kenney</b> Vice President, Regulatory Affairs	Submitted Effective Resolution	April 28, 2020 May 1, 2020
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**Pacific Gas and Electric Company**  
San Francisco, California

Cancelling Revised Cal. P.U.C. Sheet No. 46190-E  
Revised Cal. P.U.C. Sheet No. 43414-E

**ELECTRIC SCHEDULE E-TOU-C** Sheet 4 (T)  
RESIDENTIAL TIME-OF-USE (PEAK PRICING 4 - 9 p.m. EVERY DAY)

- SPECIAL CONDITIONS:** 1. **BASELINE (TIER 1) QUANTITIES:** The following quantities of electricity are to be used to define usage eligible for the baseline credit (also see Rule 19 for additional allowances for medical needs):

**BASELINE QUANTITIES (kWh PER DAY)**

Baseline Territory*	Code B - Basic Quantities		Code H - All-Electric Quantities	
	Summer	Winter	Summer	Winter
	Tier I	Tier I	Tier I	Tier I
P	14.2	12.0	16.0	27.4
Q	10.3	12.0	8.9	27.4
R	18.6	11.3	20.9	28.1
S	15.8	11.1	18.7	24.9
T	6.8	8.2	7.5	13.6
V	7.5	8.8	10.9	16.9
W	20.2	10.7	23.6	20.0
X	10.3	10.5	8.9	15.4
Y	11.0	12.1	12.6	25.3
Z	6.2	8.1	7.0	16.5

2. **TIME PERIODS FOR E-TOU-C:** Times of the year and times of the day are defined as follows: (T)

Summer (service from June 1 through September 30):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times

Winter (service from October 1 through May 31):

Peak: 4:00 p.m. to 9:00 p.m. All days

Off-Peak: All other times

\* The applicable baseline territory is described in Part A of the Preliminary Statement

(Continued)

<i>Advice</i>	5759-E	<i>Issued by</i>	<i>Submitted</i>
<i>Decision</i>	D.19-07-004	<b>Robert S. Kenney</b>	<u>February 14, 2020</u>
		<i>Vice President, Regulatory Affairs</i>	<i>Effective</i>
			<u>March 1, 2020</u>
			<i>Resolution</i>

**SCE**

The following pages provide details on are the SCE electricity tariffs applied in this study. Table 15 describes the baseline territories that were assumed for each climate zone.

**Table 15: SCE Baseline Territory by Climate Zone**

Climate Zone	Baseline Territory
6	6
8	8
9	9
10	10
14	14
15	15

Source: SCE.

Summer Daily Allocations (June through September)

Baseline Region Number	Daily kWh Allocation	All-Electric Allocation
5	17.2	17.9
6	11.4	8.8
8	12.6	9.8
9	16.5	12.4
10	18.9	15.8
13	22.0	24.6
14	18.7	18.3
15	46.4	24.1
16	14.4	13.5

Winter Daily Allocations (October through May)

Baseline Region Number	Daily kWh Allocation	All-Electric Allocation
5	18.7	29.1
6	11.3	13.0
8	10.6	12.7
9	12.3	14.3
10	12.5	17.0
13	12.6	24.3
14	12.0	21.3
15	9.9	18.2
16	12.6	23.1

Schedule TOU-D  
TIME-OF-USE  
DOMESTIC  
(Continued)

Sheet 12 (T)

**SPECIAL CONDITIONS**

- Applicable rate time periods are defined as follows:

Option 4-9 PM, Option 4-9 PM-CPP, Option PRIME, Option PRIME-CPP:

TOU Period	Weekdays		Weekends and Holidays	
	Summer	Winter	Summer	Winter
On-Peak	4 p.m. - 9 p.m.	N/A	N/A	N/A
Mid-Peak	N/A	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.
Off-Peak	All other hours	9 p.m. - 8 a.m.	All other hours	9 p.m. - 8 a.m.
Super-Off-Peak	N/A	8 a.m. - 4 p.m.	N/A	8 a.m. - 4 p.m.
CPP Event Period	4 p.m. - 9 p.m.	4 p.m. - 9 p.m.	N/A	N/A

(T)

Schedule TOU-D  
TIME-OF-USE  
DOMESTIC  
(Continued)

RATES

Customers receiving service under this Schedule will be charged the applicable rates under Option 4-9 PM, Option 4-9 PM-CPP, Option 5-8 PM, Option 5-8 PM-CPP, Option PRIME, Option PRIME-CPP Option A, Option A-CPP, Option B, or Option B-CPP, as listed below. CPP Event Charges will apply to all energy usage during CPP Event Energy Charge periods and CPP Non-Event Energy Credits will apply as a reduction on CPP Non-Event Energy Credit Periods during Summer Season weekdays, 4:00 p.m. to 9:00 p.m., as described in Special Conditions 1 and 3, below:

	Delivery Service		
	Total <sup>1</sup>	UG <sup>***</sup>	DWREC <sup>2</sup>
<b>Option 4-9 PM / Option 4-9 PM-CPP</b>			
Energy Charge - \$/kWh			
Summer Season - On-Peak	0.21574 (I)	0.17870 (I)	(0.00007)
Mid-Peak	0.21574 (I)	0.10434 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.07584 (R)	(0.00007)
Winter Season - Mid-Peak	0.21574 (I)	0.12676 (R)	(0.00007)
Off-Peak	0.17099 (I)	0.08874 (R)	(0.00007)
Super-Off-Peak	0.16567 (I)	0.07025 (R)	(0.00007)
Baseline Credit <sup>****</sup> - \$/kWh	(0.07456) (R)	0.00000	
Basic Charge - \$/day			
Single-Family Residence	0.031		
Multi-Family Residence	0.024		
Minimum Charge <sup>**</sup> - \$/day			
Single Family Residence	0.346		
Multi-Family Residence	0.346		
Minimum Charge (Medical Baseline) <sup>**</sup> - \$/day			
Single Family Residence	0.173		
Multi-Family Residence	0.173		
California Climate Credit <sup>4</sup>	(37.00) (I)		
California Alternate Rates for Energy Discount - %	100.00 <sup>*</sup>		
Family Electric Rate Assistance Discount - %	100.00		
<b>Option 4-9 PM-CPP</b>			
CPP Event Energy Charge - \$/kWh		0.80000	
Summer CPP Non-Event Credit			
On-Peak Energy Credit - \$/kWh		(0.15170)	
Maximum Available Credit - \$/kWh <sup>*****</sup>			
Summer Season		(0.58504) (R)	

- \* Represents 100% of the discount percentage as shown in the applicable Special Condition of this Schedule.
- \*\* The Minimum Charge is applicable when the Delivery Service Energy Charge, plus the applicable Basic Charge is less than the Minimum Charge.
- \*\*\* The ongoing Competition Transition Charge CTC of \$0.00089 per kWh is recovered in the UG component of Generation. (I)
- \*\*\*\* The Baseline Credit applies up to 100% of the Baseline Allocation, regardless of Time of Use. The Baseline Allocation is set forth in Preliminary Statement, Part H.
- \*\*\*\*\* The Maximum Available Credit is the capped credit amount for CPP Customers dual participating in other demand response programs.
- 1 Total = Total Delivery Service rates are applicable to Bundled Service, Direct Access (DA) and Community Choice Aggregation Service (CCA Service) Customers, except DA and CCA Service Customers are not subject to the DWRBC rate component of this Schedule but instead pay the DWRBC as provided by Schedule DA-CRS or Schedule CCA-CRS.
- 2 Generation = The Gen rates are applicable only to Bundled Service Customers.
- 3 DWREC = Department of Water Resources (DWR) Energy Credit – For more information on the DWR Energy Credit, see the Billing Calculation Special Condition of this Schedule.
- 4 Applied on an equal basis, per household, semi-annually. See the Special Conditions of this Schedule for more information.

## SoCalGas

Following are the SoCalGas natural gas tariffs applied in this study. Table 16 describes the baseline territories that were assumed for each climate zone.

**Table 16: SoCalGas Baseline Territory by Climate Zone**

Climate Zone	Baseline Territory
5	2
6	1
8	1
9	1
10	1
14	2
15	1

Source: SoCalGas.

The SoCalGas monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 17. Historical natural gas rate data were only available for SoCalGas' procurement charges.<sup>5</sup> To estimate total costs by month, the baseline and excess transmission charges were assumed to be consistent and applied for the entire year based on April 2020 costs.

**Table 17: SoCalGas Monthly Gas Rate (\$/therm)**

Month	Procurement Charge	Transmission Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.34730	\$0.81742	\$1.17186	\$1.16472	\$1.51916
Feb 2020	\$0.28008	\$0.81742	\$1.17186	\$1.09750	\$1.45194
Mar 2020	\$0.22108	\$0.81742	\$1.17186	\$1.03850	\$1.39294
Apr 2020	\$0.20307	\$0.81742	\$1.17186	\$1.02049	\$1.37493
May 2019	\$0.23790	\$0.81742	\$1.17186	\$1.05532	\$1.40976
June 2019	\$0.24822	\$0.81742	\$1.17186	\$1.06564	\$1.42008
July 2019	\$0.28475	\$0.81742	\$1.17186	\$1.10217	\$1.45661
Aug 2019	\$0.27223	\$0.81742	\$1.17186	\$1.08965	\$1.44409
Sept 2019	\$0.26162	\$0.81742	\$1.17186	\$1.07904	\$1.43348
Oct 2019	\$0.30091	\$0.81742	\$1.17186	\$1.11833	\$1.47277
Nov 2019	\$0.27563	\$0.81742	\$1.17186	\$1.09305	\$1.44749
Dec 2019	\$0.38067	\$0.81742	\$1.17186	\$1.19809	\$1.55253

Source: SoCalGas.

<sup>5</sup> The SoCalGas procurement and transmission charges were obtained from the following site: <https://www.socalgas.com/for-your-business/energy-market-services/gas-prices>

SOUTHERN CALIFORNIA GAS COMPANY Revised CAL. P.U.C. SHEET NO. 57458-G  
 LOS ANGELES, CALIFORNIA CANCELING Revised CAL. P.U.C. SHEET NO. 57432-G

Schedule No. GM		Sheet 2
<u>MULTI-FAMILY SERVICE</u>		
(Includes GM-E, GM-C, GM-EC, GM-CC, GT-ME, GT-MC and all GMB Rates)		
(Continued)		
<u>APPLICABILITY</u> (Continued)		
<p>Multi-family Accommodations built prior to December 15, 1981 and currently served under this schedule may also be eligible for service under Schedule No. GS. If an eligible Multi-family Accommodation served under this schedule converts to an applicable submetered tariff, the tenant rental charges shall be revised for the duration of the lease to reflect removal of the energy related charges.</p> <p>Eligibility for service hereunder is subject to verification by the Utility.</p>		
<u>TERRITORY</u>		
Applicable throughout the service territory.		
<u>RATES</u>		
	<u>GM/GT-M</u>	<u>GMB/GT-MB</u>
Customer Charge, per meter, per day: .....	16.438¢	\$16.357
For "Space Heating Only" customers, a daily Customer Charge applies during the winter period from November 1 through April 30 <sup>1/2</sup> : .....	33.149¢	

SOUTHERN CALIFORNIA GAS COMPANY Revised CAL P.U.C. SHEET NO. 57168-G  
 LOS ANGELES, CALIFORNIA CANCELING Revised CAL P.U.C. SHEET NO. 41015-G

Schedule No. GM		Sheet 5		
<u>MULTI-FAMILY SERVICE</u>				
(Includes GM-E, GM-C, GM-EC, GM-CC, GT-ME, GT-MC and all GMB Rates)				
(Continued)				
<u>SPECIAL CONDITIONS</u> (Continued)				
3. (Continued)				
Codes	Per Residence	Daily Therm Allowance for Climate Zones*		
		1	2	3
1	Space heating only			
	Summer	0.000	0.000	0.000
	Winter	1.210	1.343	2.470
2	Water heating and cooking	0.477	0.477	0.477
3	Cooking, water heating and space heating			
	Summer	0.473	0.473	0.473
	Winter	1.691	1.823	2.950
4	Cooking and space heating			
	Summer	0.088	0.088	0.088
	Winter	1.299	1.432	2.559
5	Cooking only	0.089	0.089	0.089
6	Water heating only	0.388	0.388	0.388
7	Water heating and space heating			
	Summer	0.385	0.385	0.385
	Winter	1.601	1.734	2.861
* Climate Zones are described in the Preliminary Statement.				
4. <u>Medical Baseline</u> : Upon completion of an application and verification by a state-licensed physician, nurse practitioner, physician's assistant, or osteopath (Form No. 4859-E), an additional Baseline allowance of 0.822 therms per day will be provided for paraplegic, quadriplegic, or hemiplegic persons, those afflicted with multiple sclerosis or scleroderma, or persons being treated for a life threatening illness or who have a compromised immune system.				
Where it is established that the energy required for a Life-Support Device, as defined in Rule No. 1, exceeds 0.822 therms per day, an additional uniform daily Baseline allowance will be provided. The amount of the additional allowance will be determined by the Utility from load and operating time data of the Life-Support Device.				
5. <u>Space Heating Only</u> : Applies to customers who are using gas primarily for space heating, as determined by survey or under the presumption that customers who use less than 11 Ccf per month during each of the regular billing periods ending in August and September qualify for Heat Only billing.				

T  
N

(TO BE INSERTED BY UTILITY)  
 ADVICE LETTER NO. 5576-A  
 DECISION NO. 02-04-026

ISSUED BY  
**Dan Skopec**  
 Vice President

(TO BE INSERTED BY CAL. PUC)  
 SUBMITTED Jan 31, 2020  
 EFFECTIVE Feb 27, 2020

**SDG&E**

Following are the SDG&E electricity and natural gas tariffs applied in this study. Table 18 describes the baseline territories that were assumed for each climate zone. All-Electric baseline allowances were applied.

**Table 18: SDG&E Baseline Territory by Climate Zone**

Climate Zone	Baseline Territory
7	Coastal
10	Inland
14	Mountain

Source: SDG&E.

The SDG&E monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending April 2020 according to the rates shown in Table 19. Historical natural gas rate data from SDG&E were reviewed to identify the procurement and transmission charges<sup>6</sup> used to calculate the monthly total gas rate.

**Table 19: SDG&E Monthly Gas Rate (\$/therm)**

Month	Procurement Charge	Transmission Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
Jan 2020	\$0.34761	\$1.36166	\$1.59166	\$1.70927	\$1.93927
Feb 2020	\$0.28035	\$1.36166	\$1.59166	\$1.64201	\$1.87201
Mar 2020	\$0.22130	\$1.36166	\$1.59166	\$1.58296	\$1.81296
Apr 2020	\$0.20327	\$1.35946	\$1.59125	\$1.56273	\$1.79452
May 2019	\$0.23804	\$1.06349	\$1.25253	\$1.30153	\$1.49057
June 2019	\$0.24838	\$1.06349	\$1.25253	\$1.31187	\$1.50091
July 2019	\$0.28491	\$1.06349	\$1.25253	\$1.34840	\$1.53744
Aug 2019	\$0.27239	\$1.06349	\$1.25253	\$1.33588	\$1.52492
Sept 2019	\$0.26178	\$1.06349	\$1.25253	\$1.32527	\$1.51431
Oct 2019	\$0.30109	\$1.06349	\$1.25253	\$1.36458	\$1.55362
Nov 2019	\$0.27580	\$1.06349	\$1.25253	\$1.33929	\$1.52833
Dec 2019	\$0.38090	\$1.06349	\$1.25253	\$1.44439	\$1.63343

Source: SDG&E.

<sup>6</sup> The SDG&E procurement and transmission charges were obtained from the following sets of documents:

[http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-SCHEDS\\_GM\\_2020.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-SCHEDS_GM_2020.pdf)

[http://regarchive.sdge.com/tm2/pdf/GAS\\_GAS-SCHEDS\\_GM\\_2019.pdf](http://regarchive.sdge.com/tm2/pdf/GAS_GAS-SCHEDS_GM_2019.pdf)

<u>RATES</u>	<u>GM</u>	<u>GM-C</u>	<u>GTC/GTCA<sup>1</sup></u>
Minimum Bill, per day <sup>3</sup>			
Non-CARE customers.....	\$0.09863	\$0.09863	\$0.09863
CARE customers.....	\$0.07890	\$0.07890	\$0.07890

Baseline Usage. The following quantities of gas are to be billed at the baseline rate for multi-family units. Usage in excess of applicable baseline usage will be billed at non-baseline rates.

	<u>Daily Therm Allowance Per Residential Unit</u>
Summer (May 1 to October 31, inclusive)	0.345
Winter (November 1 to April 30, inclusive)	1.082



Revised Cal. P.U.C. Sheet No. 33144-E  
 Canceling Revised Cal. P.U.C. Sheet No. 32930-E

<b>SCHEDULE TOU-DR1</b>		Sheet 2	
<u>RESIDENTIAL TIME-OF-USE</u>			
<u>RATES</u>			
<u>Total Rates:</u>			
Description – TOU DR1	UDC Total Rate	DWR-BC Rate	EECC Rate + DWR Credit
<b>Summer:</b>			
On-Peak	0.22374	I 0.00580	0.29042 R
Off-Peak	0.22374	I 0.00580	0.09305 R
Super Off-Peak	0.22374	I 0.00580	0.04743 R
<b>Winter:</b>			
On-Peak	0.25734	R 0.00580	0.07844 R
Off-Peak	0.25734	R 0.00580	0.06961 R
Super Off-Peak	0.25734	R 0.00580	0.05981 R
Summer Baseline Adjustment Credit up to 130% of Baseline	(0.07506)	I	(0.07506) I
Winter Baseline Adjustment Credit up to 130% of Baseline	(0.06833)	I	(0.06833) I
Minimum Bill (\$/day)	0.338		0.338

Time Periods

All time periods listed are applicable to local time. The definition of time will be based upon the date service is rendered.

TOU Periods – Weekdays	Summer	Winter
On-Peak	4:00 p.m. – 9:00 p.m.	4:00 p.m. – 9:00 p.m.
Off-Peak	6:00 a.m. – 4:00 p.m.; 9:00 p.m. - midnight	6:00 a.m. – 4:00 p.m. Excluding 10:00 a.m. – 2:00 p.m. in March and April; 9:00 p.m. - midnight
Super Off-Peak	Midnight – 6:00 a.m.	Midnight – 6:00 a.m. 10:00 a.m. – 2:00 p.m. in March and April
TOU Period – Weekends and Holidays	Summer	Winter
On-Peak	4:00 p.m. – 9:00 p.m.	4:00 p.m. – 9:00 p.m.
Off-Peak	2:00 p.m. – 4:00 p.m.; 9:00 p.m. - midnight	2:00 p.m. – 4:00 p.m.; 9:00 p.m. - midnight
Super Off-Peak	Midnight – 2:00 p.m.	Midnight – 2:00 p.m.

Seasons:        Summer        June 1 – October 31  
                   Winter         November 1 – May 31

Baseline Usage: The following quantities of electricity are used to calculate the baseline adjustment credit.

	Baseline Allowance For Climatic Zones*			
	Coastal	Inland	Mountain	Desert
<b>Basic Allowance</b>				
Summer (June 1 to October 31)	9.0	10.4	13.6	15.9
Winter (November 1 to May 31)	9.2	9.6	12.9	10.9
<b>All Electric**</b>				
Summer (June 1 to October 31)	6.8	9.2	15.6	17.5
Winter (November 1 to May 31)	10.4	13.4	23.4	18.1

\* Climatic Zones are shown on the Territory Served, Map No. 1.  
 \*\* All Electric allowances are available upon application to those customers who have permanently installed space heating or who have electric water heating and receive no energy from another source.

**SMUD**

Following are the SMUD electricity tariffs applied in this study.

RTOD Rate Schedule

**II. Firm Service Rates**

**A. Time-of-Day (5-8 p.m.) Rate** **Rate Category RT02**

**Non-Summer Prices\* – January 1 through May 31**

System Infrastructure Fixed Charge per month	\$21.05
<b>Electricity Usage Charge</b>	
Peak \$/kWh	\$0.1388
Off-Peak \$/kWh	\$0.1006

**Summer Prices - June 1 through September 30**

System Infrastructure Fixed Charge per month	\$21.05
<b>Electricity Usage Charge</b>	
Peak \$/kWh	\$0.2941
Mid-Peak \$/kWh	\$0.1671
Off-Peak \$/kWh	\$0.1209

**Non-Summer Prices\* – October 1 through December 31**

System Infrastructure Fixed Charge per month	\$21.70
<b>Electricity Usage Charge</b>	
Peak \$/kWh	\$0.1430
Off-Peak \$/kWh	\$0.1035

\* Non-Summer Season includes Fall (Oct 1 – Nov 30), Winter (Dec 1 – Mar 31) and Spring (Apr 1 – May 31) periods.

<b>Summer (Jun 1 - Sept 30)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Mid-Peak</b>	Weekdays between noon and midnight except during the Peak hours.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .
<b>Non-Summer (Oct 1 - May 31)</b>	<b>Peak</b>	Weekdays between 5:00 p.m. and 8:00 p.m.
	<b>Off-Peak</b>	All other hours, including weekends and holidays <sup>1</sup> .

GSN\_T Rate Schedule:

**II. Firm Service Rates**

Rate Category	Nondemand GSN_T	Flat GFN	Demand GSS_T
<b>Winter Season – January 1 through May 31</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.15	\$9.45	\$25.75
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$7.94
Electricity Usage Charge			
All day \$/kWh	\$0.1365	\$0.1381	\$0.1071
<b>Summer Season - June 1 through September 30</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.15	\$9.45	\$25.75
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$7.94
Electricity Usage Charge			
On-peak \$/kWh	\$0.3151	\$0.1381	\$0.2733
Off-peak \$/kWh	\$0.1152	\$0.1381	\$0.0948

Rate Category	Nondemand GSN_T	Flat GFN	Demand GSS_T
<b>Winter Season - October 1 through December 31</b>			
System Infrastructure Fixed Charge - per month per meter	\$21.80	\$9.70	\$26.50
Site Infrastructure Charge (per 12 months max kW or contract capacity)	n/a	n/a	\$8.18
Electricity Usage Charge			
All day \$/kWh	\$0.1406	\$0.1423	\$0.1103

**D. Billing Periods**

1. Winter (October 1 – May 31) All hours are off-peak.

2. Summer Time-of-Use Billing Periods (June 1 – September 30)

On-Peak	Summer weekdays between 3:00 p.m. and 6:00 p.m.
Off-Peak	All other hours, including holidays shown below

**CPAU**

Following are the CPAU electricity and natural gas tariffs applied in this study.

**E1 Rate Schedule:**

**RESIDENTIAL ELECTRIC SERVICE**

UTILITY RATE SCHEDULE E-1

**A. APPLICABILITY:**

This Rate Schedule applies to separately metered single-family residential dwellings receiving Electric Service from the City of Palo Alto Utilities.

**B. TERRITORY:**

This rate schedule applies everywhere the City of Palo Alto provides Electric Service.

**C. UNBUNDLED RATES:**

<u>Per kilowatt-hour (kWh)</u>	<u>Commodity</u>	<u>Distribution</u>	<u>Public Benefits</u>	<u>Total</u>
Tier 1 usage	\$0.08339	\$0.04971	\$0.00447	\$0.13757
Tier 2 usage Any usage over Tier 1	0.11569	0.07351	0.00447	0.19367
<u>Minimum Bill (\$/day)</u>				0.3283

**E2 Rate Schedule:**

**RESIDENTIAL MASTER-METERED AND SMALL NON-RESIDENTIAL ELECTRIC SERVICE**

UTILITY RATE SCHEDULE E-2

**A. APPLICABILITY:**

This Rate Schedule applies to the following Customers receiving Electric Service from the City of Palo Alto Utilities:

1. Small non-residential Customers receiving Non-Demand Metered Electric Service; and
2. Customers with Accounts at Master-Metered multi-family facilities.

**B. TERRITORY:**

This rate schedule applies everywhere the City of Palo Alto provides Electric Service.

**C. UNBUNDLED RATES:**

<u>Per kilowatt-hour (kWh)</u>	<u>Commodity</u>	<u>Distribution</u>	<u>Public Benefits</u>	<u>Total</u>
Summer Period	\$0.11855	\$0.08551	\$0.00447	\$0.20853
Winter Period	0.08502	0.05675	0.00447	0.14624
<u>Minimum Bill (\$/day)</u>				0.8359

The CPAU monthly gas rate in \$/therm was applied on a monthly basis for the 12-month period ending June 2020 according to the rates shown in Table 20.

**Table 20: CPAU Monthly Gas Rate (\$/therm)**

Effective Date	Commodity Rate	Cap and Trade Compliance Charge	Transportation Charge	Carbon Offset Charge	G2 Total Volumetric Rate
1/1/20	\$0.3289	0.033	0.09941	0.040	1.11151
2/1/20	0.2466	0.033	0.09941	0.040	1.02921
3/1/20	0.2416	0.033	0.09891	0.040	1.02371
4/1/20	0.2066	0.033	0.09891	0.040	0.98871
5/1/20	0.2258	0.033	0.09891	0.040	1.00791
6/1/20	0.2279	0.033	0.09891	0.040	1.01001
7/1/19	0.2471	0.033	0.11757	0.040	1.04787
8/1/19	0.2507	0.033	0.10066	0.040	1.03456
9/1/19	0.2461	0.033	0.10066	0.040	1.02996
10/1/19	0.2811	0.033	0.10288	0.040	1.06718
11/1/19	0.2923	0.033	0.10288	0.040	1.07838
12/1/19	0.3781	0.033	0.10288	0.040	1.16418

Source: CPAU.

**RESIDENTIAL MASTER-METERED AND COMMERCIAL GAS SERVICE**

UTILITY RATE SCHEDULE G-2

**A. APPLICABILITY:**

This schedule applies to the following Customers receiving Gas Service from the City of Palo Alto Utilities:

1. Commercial Customers who use less than 250,000 therms per year at one site.
2. Master-metered residential Customers in multi-family residential facilities.

**B. TERRITORY:**

This schedule applies anywhere the City of Palo Alto provides Gas Service.

**C. UNBUNDLED RATES:**

Per Service

Monthly Service Charge: .....\$104.95

Per Therm

Supply Charges:

1. Commodity (Monthly Market Based) ..... \$0.10-\$2.00
2. Cap and Trade Compliance Charges ..... \$0.00-0.25
3. Transportation Charge.....\$0.00-\$0.15
4. Carbon Offset Charge .....\$0.00-\$0.10

Distribution Charge: ..... \$0.6102

**Escalation Assumptions**

The average annual escalation rates in Table 21 were used in this study and are from E3’s 2019 study Residential Building Electrification in California (Energy & Environmental Economics, 2019). These rates are applied to the 2019 rate schedules over a 30-year period beginning in 2020. SDG&E was not covered in the E3 study. The Statewide Reach Codes Team reviewed SDG&E’s GRC filing and applied the same approach that E3 applied for PG&E and SoCalGas to arrive at average escalation rates between 2020 and 2022. The statewide electricity escalation rates were also applied to the analysis for SMUD and CPAU. PG&E gas escalation rates were applied to CPAU as the best available estimate since CPAU uses PG&E gas infrastructure.

**Table 21: Real Utility Rate Escalation Rate Assumptions**

Year	Statewide Electric Residential Average Rate Escalation (%/year, real)	Natural Gas Residential Core Rate Escalation (%/year, real)		
		PG&E	SoCalGas	SDG&E
2020	2.0%	1.48%	6.37%	5.00%
2021	2.0%	5.69%	4.12%	3.14%
2022	2.0%	1.11%	4.12%	2.94%
2023	2.0%	4.0%	4.0%	4.0%
2024	2.0%	4.0%	4.0%	4.0%
2025	2.0%	4.0%	4.0%	4.0%
2026	1.0%	1.0%	1.0%	1.0%
2027	1.0%	1.0%	1.0%	1.0%
2028	1.0%	1.0%	1.0%	1.0%
2029	1.0%	1.0%	1.0%	1.0%
2030	1.0%	1.0%	1.0%	1.0%
2031	1.0%	1.0%	1.0%	1.0%
2032	1.0%	1.0%	1.0%	1.0%
2033	1.0%	1.0%	1.0%	1.0%
2034	1.0%	1.0%	1.0%	1.0%
2035	1.0%	1.0%	1.0%	1.0%
2036	1.0%	1.0%	1.0%	1.0%
2037	1.0%	1.0%	1.0%	1.0%
2038	1.0%	1.0%	1.0%	1.0%
2039	1.0%	1.0%	1.0%	1.0%
2040	1.0%	1.0%	1.0%	1.0%
2041	1.0%	1.0%	1.0%	1.0%
2042	1.0%	1.0%	1.0%	1.0%
2043	1.0%	1.0%	1.0%	1.0%
2044	1.0%	1.0%	1.0%	1.0%
2045	1.0%	1.0%	1.0%	1.0%
2046	1.0%	1.0%	1.0%	1.0%
2047	1.0%	1.0%	1.0%	1.0%
2048	1.0%	1.0%	1.0%	1.0%
2049	1.0%	1.0%	1.0%	1.0%

Source: Energy & Environmental Economics, 2019.

## 6.3 Appendix C – PG&E Gas Infrastructure Cost Memo



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December 5, 2019

Energy Commission Staff:

On March 2, 2018, PG&E provided gas extension cost estimates for residential existing and new subdivisions (see attached memo). We have recently updated our estimates and are therefore providing an updated memo.

In addition to mainline and service extension costs, we are also providing estimates of the cost of gas meters for different building types including both residential and commercial customers. These estimates are based on PG&E historical jobs.

Developing gas extension cost estimates is complex and the actual costs are project dependent. Costs vary widely with location, terrain, distance to the nearest main, joint trenching, materials, number of dwellings per development, and several other site and job-specific conditions. For these reasons, it is not practical to come up with estimates that represent every case. Instead we are including estimates based on historical averages taken from projects within PG&E's territory. It is not recommended to compare specific project costs to these estimates as any number of factors could lead to higher or lower costs than these averages are representing.

We are also including estimates for in-house gas infrastructure costs and specific plan review costs. These estimates are from external sources, and are not based on PG&E data, but have been provided for the sake of completeness and for use in energy efficiency analysis.

To further anchor the estimates, several assumptions have been made:

1. It is assumed that during new construction, gas infrastructure will likely be joint trenched with electric infrastructure. As a result, the incremental cost of trenching associated with the gas infrastructure alone is minimal. Therefore, all mainline cost estimates exclude trench costs. Service extension cost estimates include both estimates with and without trench costs. In the case where new construction would require overhead electric and underground gas infrastructure, the estimates with trench costs included for service extensions should be utilized.
2. It is assumed that new construction in an existing subdivision would not generally require a mainline extension. In cases where a mainline extension would be required to an existing subdivision, the costs are highly dependent on the location, terrain, and distance to the nearest main.



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- These estimates are for total costs. The cost estimates have not been reduced to account for the portion of the costs paid by all customers due to application of Rule 15<sup>1</sup> and Rule 16<sup>2</sup> allowances. Hence, costs to the specific customer may be lower than the estimates below, as the specific customer benefits from the Rule 15 and Rule 16 allowances.

Table 1: PG&E Gas Infrastructure Cost Estimates

	Existing Subdivision/Development	New Greenfield Subdivision/Development
Mainline Extension	N/A <sup>3</sup>	<u>Single-Family</u> \$17/ft <sup>4</sup>  <u>Multi-Family</u> \$11/ft <sup>4</sup>
Service Extension (Typically 1" pipe from mainline to the meter)	\$6750 per service/building <sup>4</sup> (excludes trench costs)  \$9200 per service/building <sup>4</sup> (includes trench costs)	\$1300 per service/building <sup>4</sup> (includes mainline extension costs within the subdivision; excludes trench costs)  \$1850 per service/building <sup>4</sup> (includes mainline extension costs within the subdivision; includes trench costs)
Meter	<u>Residential Single Family</u> \$300 per meter <sup>5</sup>  <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet <sup>5</sup>  <u>Small/Medium Commercial</u> \$3600 per meter <sup>6</sup>	<u>Residential Single Family</u> \$300 per meter <sup>5</sup>  <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet <sup>5</sup>  <u>Small/Medium Commercial</u> \$3600 per meter <sup>6</sup>

<sup>1</sup> [https://www.pge.com/tariffs/tm2/pdf/ELEC\\_RULES\\_15.pdf](https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_15.pdf)

<sup>2</sup> [https://www.pge.com/tariffs/tm2/pdf/ELEC\\_RULES\\_16.pdf](https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_16.pdf)

<sup>3</sup> It is assumed that new construction in an existing subdivision would not require a main extension.

<sup>4</sup> Estimates based on PG&E jobs from Jan 2016 - Dec 2017 from PG&E's Service Planning team.

<sup>5</sup> Estimates from PG&E's Dedicated Estimating Team. For Multi-Family units, the costs of \$300 per meter and \$300 per meter manifold outlet should be combined for a total of \$600 per meter.

<sup>6</sup> PG&E Marginal Customer Access Cost Estimates presented in the 2018 Gas Cost Allocation Proceedings (GCAP), A.17-09-006, Exhibit PG&E-2, Appendix A, Section A, Table A-1. The Average Connection Cost per Customer values were included in the MCAC workpaper that accompanied the GCAP testimony



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	<u>Large Commercial</u> \$32,000 per meter <sup>6</sup>	<u>Large Commercial</u> \$32,000 per meter <sup>6</sup>
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Note: Service extension cost estimates for New Greenfield Subdivisions include mainline extension costs as well. Therefore, mainline cost estimates can be ignored for the purpose of estimating total project costs.

Table 2: Gas Infrastructure Cost Estimates from Other Sources

	Existing Subdivision/Development	New Greenfield Subdivision/Development
In-House Infrastructure	<u>Single-Family</u> \$800 <sup>7</sup>	<u>Single-Family</u> \$800 <sup>7</sup>
	<u>Multi-Family</u> \$600 per unit <sup>7</sup>	<u>Multi-Family</u> \$600 per unit <sup>7</sup>
	<u>Medium Office</u> \$600-4500 <sup>7,8</sup>	<u>Medium Office</u> \$600-4500 <sup>7,8</sup>
	<u>Medium Retail</u> \$10,000 <sup>8</sup>	<u>Medium Retail</u> \$10,000 <sup>8</sup>
Plan Review (Will vary by city and often not a fixed fee)	<u>Residential</u> Palo Alto - \$850 <sup>9</sup>	<u>Residential</u> Palo Alto - \$850 <sup>9</sup>
	<u>Nonresidential</u> Palo Alto - \$2316 <sup>9</sup>	<u>Nonresidential</u> Palo Alto - \$2316 <sup>9</sup>

Please let us know if there are any follow-up questions or clarifications.

Best regards,

<sup>7</sup> Frontier Energy, Inc., Misti Bruceri & Associates, LLC. 2019. "2019 Cost-effectiveness Study: Low Rise Residential New Construction." Available at: <https://localenergycodes.com/content/performance-ordinances>

<sup>8</sup> TRC, EnergySoft. 2019. "2019 Nonresidential New Construction Reach Code Cost Effectiveness Study." Available at: <https://localenergycodes.com/content/performance-ordinances>

<sup>9</sup> TRC. 2018. "City of Palo Alto 2019 Title 24 Energy Reach Code Cost Effectiveness Analysis Draft." Available at: <http://cityofpaloalto.org/civicax/filebank/documents/66742>

## 6.4 Appendix D – Detailed Results - Mixed Fuel

Table 22: Mixed-Fuel Efficiency Only Package Results (Savings/Cost Per Dwelling Unit)<sup>a</sup>

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total On-Bill Utility Inc. Cost			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	(2020 PV\$)	(2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	39	\$8	0.0	0	\$0	26	\$199	\$216	0.9	(\$17)	0.6	(\$83)	0.8	(\$42)
2	PGE	PGE	79	\$24	0.0	0	\$0	45	\$570	\$144	4.0	\$426	3.0	\$289	2.7	\$247
3	PGE	PGE	60	\$18	0.0	0	\$0	33	\$420	\$144	2.9	\$276	2.3	\$184	1.9	\$131
4	PGE	PGE	95	\$29	0.0	0	\$0	54	\$678	\$144	4.7	\$534	3.2	\$321	3.2	\$313
4	CPAU	CPAU	95	\$17	0.0	0	\$0	54	\$394	\$144	2.7	\$250	3.2	\$321	3.2	\$313
5	PGE	PGE	71	\$20	0.0	0	\$0	39	\$484	\$144	3.4	\$340	2.3	\$180	1.9	\$122
5	PGE	SCG	71	\$20	0.0	0	\$0	39	\$484	\$144	3.4	\$340	2.3	\$180	1.9	\$122
6	SCE	SCG	113	\$26	0.0	0	\$0	62	\$619	\$144	4.3	\$475	3.4	\$344	3.2	\$315
7	SDGE	SDGE	105	\$33	0.0	0	\$0	59	\$789	\$144	5.5	\$645	3.4	\$339	2.8	\$264
8	SCE	SCG	128	\$31	0.0	0	\$0	72	\$728	\$144	5.1	\$585	3.9	\$413	3.9	\$421
9	SCE	SCG	125	\$29	0.0	0	\$0	70	\$695	\$144	4.8	\$551	4.2	\$461	3.9	\$413
10	SCE	SCG	130	\$26	0.0	0	\$0	73	\$623	\$144	4.3	\$479	4.2	\$457	3.9	\$415
10	SDGE	SDGE	130	\$41	0.0	0	\$0	73	\$972	\$144	6.8	\$828	4.2	\$457	3.9	\$415
11	PGE	PGE	148	\$38	0.0	0	\$0	91	\$897	\$216	4.1	\$681	3.7	\$584	3.4	\$523
12	PGE	PGE	122	\$31	0.0	0	\$0	74	\$736	\$216	3.4	\$519	3.1	\$448	2.8	\$397
12	SMUD	PGE	122	\$17	0.0	0	\$0	74	\$401	\$216	1.9	\$185	3.1	\$448	2.8	\$397
13	PGE	PGE	152	\$39	0.0	0	\$0	93	\$923	\$216	4.3	\$706	3.4	\$523	3.5	\$534
14	SCE	SCG	152	\$31	0.0	0	\$0	91	\$735	\$216	3.4	\$518	3.6	\$556	3.5	\$532
14	SDGE	SDGE	152	\$45	0.0	0	\$0	91	\$1,055	\$216	4.9	\$838	3.6	\$556	3.5	\$532
15	SCE	SCG	213	\$43	0.0	0	\$0	124	\$1,021	\$216	4.7	\$804	4.5	\$768	4.4	\$725
16	PGE	PGE	115	\$29	0.0	0	\$0	73	\$679	\$216	3.1	\$463	2.3	\$279	2.1	\$244

<sup>a</sup> Values in red indicate B/C ratios less than 1.

**Table 23: Mixed-Fuel Efficiency + 0.1 kW<sub>DC</sub> PV per Dwelling Unit Results (Savings/Cost Per Dwelling Unit)<sup>a</sup>**

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	On-Bill Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	172	\$40	0.0	0	\$0	81	\$955	\$533	1.8	\$422	1.2	\$93	1.0	\$21
2	PGE	PGE	236	\$67	0.0	0	\$0	112	\$1,597	\$460	3.5	\$1,137	2.2	\$574	1.9	\$417
3	PGE	PGE	222	\$62	0.0	0	\$0	102	\$1,472	\$460	3.2	\$1,011	2.0	\$455	1.6	\$290
4	PGE	PGE	261	\$74	0.0	0	\$0	125	\$1,762	\$460	3.8	\$1,302	2.4	\$628	2.2	\$538
4	CPAU	CPAU	261	\$43	0.0	0	\$0	125	\$1,025	\$460	2.2	\$565	2.4	\$628	2.2	\$538
5	PGE	PGE	245	\$67	0.0	0	\$0	113	\$1,596	\$460	3.5	\$1,136	2.1	\$498	1.7	\$312
5	PGE	SCG	245	\$67	0.0	0	\$0	113	\$1,596	\$460	3.5	\$1,136	2.1	\$498	1.7	\$312
6	SCE	SCG	290	\$63	0.0	0	\$0	138	\$1,489	\$460	3.2	\$1,029	2.4	\$650	2.2	\$558
7	SDGE	SDGE	270	\$81	0.0	0	\$0	130	\$1,918	\$460	4.2	\$1,458	2.4	\$664	2.0	\$441
8	SCE	SCG	299	\$66	0.0	0	\$0	146	\$1,573	\$460	3.4	\$1,113	2.6	\$750	2.5	\$712
9	SCE	SCG	303	\$63	0.0	0	\$0	147	\$1,502	\$460	3.3	\$1,042	2.8	\$807	2.5	\$697
10	SCE	SCG	308	\$58	0.0	0	\$0	150	\$1,376	\$460	3.0	\$916	2.7	\$779	2.5	\$682
10	SDGE	SDGE	308	\$90	0.0	0	\$0	150	\$2,132	\$460	4.6	\$1,671	2.7	\$779	2.5	\$682
11	PGE	PGE	307	\$76	0.0	0	\$0	160	\$1,800	\$533	3.4	\$1,267	2.7	\$903	2.3	\$695
12	PGE	PGE	286	\$70	0.0	0	\$0	144	\$1,663	\$533	3.1	\$1,130	2.4	\$755	2.1	\$579
12	SMUD	PGE	286	\$37	0.0	0	\$0	144	\$874	\$533	1.6	\$341	2.4	\$755	2.1	\$579
13	PGE	PGE	317	\$78	0.0	0	\$0	164	\$1,858	\$533	3.5	\$1,325	2.5	\$811	2.4	\$729
14	SCE	SCG	343	\$65	0.0	0	\$0	172	\$1,542	\$533	2.9	\$1,009	2.8	\$980	2.6	\$854
14	SDGE	SDGE	343	\$95	0.0	0	\$0	172	\$2,247	\$533	4.2	\$1,714	2.8	\$980	2.6	\$854
15	SCE	SCG	390	\$75	0.0	0	\$0	199	\$1,768	\$533	3.3	\$1,235	3.1	\$1,123	2.8	\$981
16	PGE	PGE	284	\$69	0.0	0	\$0	147	\$1,641	\$533	3.1	\$1,108	2.1	\$595	1.8	\$428

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values.

## 6.5 Appendix E – Detailed Results - All-Electric

Table 24: All-Electric Central Recirculating HPWH Efficiency Package Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	39	\$8	95.7	(710)	(\$38)	838	(\$493)	\$775	0.0	(\$1,268)	0.0	(\$744)	2.1	\$850
2	PGE	PGE	78	\$24	86.9	(635)	(\$32)	785	\$5	\$702	0.0	(\$697)	0.5	(\$371)	2.5	\$1,067
3	PGE	PGE	70	\$20	86.7	(618)	(\$29)	788	(\$33)	\$888	0.0	(\$921)	0.3	(\$635)	1.9	\$763
4	PGE	PGE	95	\$29	81.4	(590)	(\$29)	750	\$174	\$702	0.2	(\$528)	0.5	(\$317)	2.5	\$1,084
4	CPAU	CPAU	95	\$17	81.4	(590)	(\$5)	750	\$447	\$702	0.6	(\$255)	0.5	(\$317)	2.5	\$1,084
5	PGE	PGE	80	\$22	86.7	(616)	(\$29)	792	\$30	\$888	0.0	(\$858)	0.3	(\$608)	1.7	\$656
5	PGE	SCG	80	\$22	86.7	(616)	(\$49)	792	(\$324)	\$888	0.0	(\$1,212)	0.3	(\$608)	1.7	\$656
6	SCE	SCG	113	\$26	78.3	(560)	(\$21)	732	\$399	\$702	0.6	(\$303)	0.7	(\$214)	2.4	\$960
7	SDGE	SDGE	105	\$33	78.0	(558)	(\$37)	727	\$174	\$702	0.2	(\$528)	0.7	(\$237)	2.2	\$810
8	SCE	SCG	128	\$31	75.5	(544)	(\$21)	715	\$501	\$702	0.7	(\$201)	0.9	(\$65)	2.7	\$1,174
9	SCE	SCG	125	\$29	76.3	(552)	(\$21)	721	\$463	\$702	0.7	(\$239)	0.9	(\$64)	2.7	\$1,217
10	SCE	SCG	130	\$26	63.2	(552)	(\$36)	555	\$10	\$484	0.0	(\$474)	0.4	(\$279)	2.5	\$745
10	SDGE	SDGE	130	\$41	63.2	(552)	(\$55)	555	(\$116)	\$484	0.0	(\$600)	0.4	(\$279)	2.5	\$745
11	PGE	PGE	147	\$38	64.8	(582)	(\$47)	580	(\$66)	\$557	0.0	(\$623)	0.7	(\$150)	2.4	\$767
12	PGE	PGE	122	\$31	67.7	(596)	(\$48)	589	(\$238)	\$557	0.0	(\$795)	0.5	(\$254)	2.2	\$682
12	SMUD	PGE	122	\$17	67.7	(596)	\$12	589	\$849	\$557	1.5	\$292	0.5	(\$254)	2.2	\$682
13	PGE	PGE	152	\$39	62.8	(562)	(\$45)	566	(\$9)	\$557	0.0	(\$566)	0.6	(\$200)	2.4	\$801
14	SCE	SCG	152	\$31	65.3	(585)	(\$39)	581	\$53	\$557	0.1	(\$503)	0.8	(\$126)	2.6	\$892
14	SDGE	SDGE	152	\$44	65.3	(585)	(\$59)	581	(\$121)	\$557	0.0	(\$678)	0.8	(\$126)	2.6	\$892
15	SCE	SCG	213	\$43	51.2	(465)	(\$31)	507	\$481	\$557	0.9	(\$76)	1.4	\$239	2.7	\$950
16	PGE	PGE	115	\$29	77.8	(737)	(\$66)	642	(\$696)	\$557	0.0	(\$1,252)	0.0	(\$997)	1.3	\$170

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> “>1” indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 25: All-Electric Central Recirculating HPWH + 0.1 kW<sub>DC</sub> PV per Dwelling Unit Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total On-Bill			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	171	\$40	95.7	(710)	(\$38)	894	\$262	\$1,091	0.2	(\$829)	0.5	(\$569)	1.8	\$914
2	PGE	PGE	236	\$67	86.9	(635)	(\$32)	852	\$1,032	\$1,018	1.0	\$14	0.9	(\$87)	2.2	\$1,237
3	PGE	PGE	232	\$64	86.7	(618)	(\$29)	857	\$1,019	\$1,205	0.8	(\$185)	0.7	(\$364)	1.8	\$922
4	PGE	PGE	261	\$74	81.4	(590)	(\$29)	821	\$1,258	\$1,018	1.2	\$239	1.0	(\$10)	2.3	\$1,309
4	CPAU	CPAU	261	\$43	81.4	(590)	(\$5)	821	\$1,079	\$1,018	1.1	\$60	1.0	(\$10)	2.3	\$1,309
5	PGE	PGE	254	\$69	86.7	(616)	(\$29)	867	\$1,142	\$1,205	0.9	(\$62)	0.8	(\$290)	1.7	\$847
5	PGE	SCG	254	\$69	86.7	(616)	(\$49)	867	\$789	\$1,205	0.7	(\$416)	0.8	(\$290)	1.7	\$847
6	SCE	SCG	290	\$63	78.3	(560)	(\$21)	808	\$1,269	\$1,018	1.2	\$251	1.1	\$92	2.2	\$1,203
7	SDGE	SDGE	270	\$81	78.0	(558)	(\$37)	798	\$1,303	\$1,018	1.3	\$284	1.1	\$88	2.0	\$987
8	SCE	SCG	299	\$66	75.5	(544)	(\$21)	789	\$1,345	\$1,018	1.3	\$327	1.3	\$272	2.4	\$1,465
9	SCE	SCG	303	\$63	76.3	(552)	(\$21)	797	\$1,270	\$1,018	1.2	\$251	1.3	\$281	2.5	\$1,501
10	SCE	SCG	308	\$58	63.2	(552)	(\$36)	632	\$763	\$801	1.0	(\$37)	1.1	\$43	2.3	\$1,013
10	SDGE	SDGE	308	\$90	63.2	(552)	(\$55)	632	\$1,044	\$801	1.3	\$243	1.1	\$43	2.3	\$1,013
11	PGE	PGE	307	\$76	64.8	(582)	(\$47)	648	\$837	\$873	1.0	(\$36)	1.2	\$169	2.1	\$939
12	PGE	PGE	285	\$70	67.7	(596)	(\$48)	659	\$690	\$873	0.8	(\$184)	1.1	\$53	2.0	\$864
12	SMUD	PGE	285	\$37	67.7	(596)	\$12	659	\$1,321	\$873	1.5	\$448	1.1	\$53	2.0	\$864
13	PGE	PGE	317	\$78	62.8	(562)	(\$45)	637	\$926	\$873	1.1	\$52	1.1	\$87	2.1	\$997
14	SCE	SCG	343	\$65	65.3	(585)	(\$39)	663	\$861	\$873	1.0	(\$13)	1.3	\$299	2.4	\$1,214
14	SDGE	SDGE	343	\$95	65.3	(585)	(\$59)	663	\$1,071	\$873	1.2	\$198	1.3	\$299	2.4	\$1,214
15	SCE	SCG	390	\$75	51.2	(465)	(\$31)	582	\$1,228	\$873	1.4	\$354	1.7	\$594	2.4	\$1,206
16	PGE	PGE	284	\$69	77.8	(737)	(\$66)	716	\$266	\$873	0.3	(\$607)	0.2	(\$681)	1.4	\$353

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 26: All-Electric Central Recirculating HPWH + 0.2 kW<sub>DC</sub> PV per Dwelling Unit Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total On-Bill GHG Savings (lb CO <sub>2</sub> )	Total On-Bill Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings				B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	304	\$72	95.7	(710)	(\$38)	949	\$1,018	\$1,408	0.72	(\$390)	0.7	(\$393)	1.7	\$977
2	PGE	PGE	393	\$111	86.9	(635)	(\$32)	920	\$2,060	\$1,335	1.54	\$725	1.1	\$197	2.1	\$1,407
3	PGE	PGE	395	\$109	86.7	(618)	(\$29)	926	\$2,071	\$1,521	1.36	\$550	0.9	(\$93)	1.7	\$1,080
4	PGE	PGE	427	\$120	81.4	(590)	(\$29)	892	\$2,342	\$1,335	1.75	\$1,007	1.2	\$297	2.1	\$1,534
4	CPAU	CPAU	427	\$68	81.4	(590)	(\$5)	892	\$1,669	\$1,335	1.25	\$334	1.2	\$297	2.1	\$1,534
5	PGE	PGE	428	\$116	86.7	(616)	(\$29)	941	\$2,255	\$1,521	1.48	\$734	1.0	\$27	1.7	\$1,037
5	PGE	SCG	428	\$116	86.7	(616)	(\$49)	941	\$1,901	\$1,521	1.25	\$380	1.0	\$27	1.7	\$1,037
6	SCE	SCG	466	\$100	78.3	(560)	(\$21)	884	\$2,140	\$1,335	1.60	\$805	1.3	\$397	2.1	\$1,446
7	SDGE	SDGE	435	\$127	78.0	(558)	(\$37)	869	\$2,404	\$1,335	1.80	\$1,069	1.3	\$414	1.9	\$1,164
8	SCE	SCG	470	\$102	75.5	(544)	(\$21)	863	\$2,190	\$1,335	1.64	\$855	1.5	\$609	2.3	\$1,755
9	SCE	SCG	480	\$95	76.3	(552)	(\$21)	874	\$2,027	\$1,335	1.52	\$692	1.5	\$627	2.3	\$1,785
10	SCE	SCG	485	\$90	63.2	(552)	(\$36)	708	\$1,517	\$1,117	1.36	\$400	1.3	\$365	2.1	\$1,280
10	SDGE	SDGE	485	\$138	63.2	(552)	(\$55)	708	\$2,184	\$1,117	1.96	\$1,067	1.3	\$365	2.1	\$1,280
11	PGE	PGE	466	\$114	64.8	(582)	(\$47)	717	\$1,740	\$1,190	1.46	\$550	1.4	\$488	1.9	\$1,111
12	PGE	PGE	449	\$109	67.7	(596)	(\$48)	729	\$1,617	\$1,190	1.36	\$427	1.3	\$361	1.9	\$1,046
12	SMUD	PGE	449	\$57	67.7	(596)	\$12	729	\$1,793	\$1,190	1.51	\$604	1.3	\$361	1.9	\$1,046
13	PGE	PGE	482	\$118	62.8	(562)	(\$45)	708	\$1,861	\$1,190	1.56	\$671	1.3	\$375	2.0	\$1,192
14	SCE	SCG	534	\$99	65.3	(585)	(\$39)	744	\$1,668	\$1,190	1.40	\$478	1.6	\$723	2.3	\$1,537
14	SDGE	SDGE	534	\$145	65.3	(585)	(\$59)	744	\$2,263	\$1,190	1.90	\$1,073	1.6	\$723	2.3	\$1,537
15	SCE	SCG	567	\$106	51.2	(465)	(\$31)	657	\$1,975	\$1,190	1.66	\$785	1.8	\$949	2.2	\$1,463
16	PGE	PGE	454	\$110	77.8	(737)	(\$66)	789	\$1,228	\$1,190	1.03	\$38	0.7	(\$366)	1.5	\$537

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 27: All-Electric Clustered HPWH Efficiency Only Package Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	On-Bill Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	39	\$8	95.7	(809)	(\$64)	838	(\$1,096)	(\$643)	0.6	(\$453)	1.9	\$297	>1	\$1,793
2	PGE	PGE	78	\$24	86.9	(726)	(\$55)	785	(\$535)	(\$715)	1.3	\$180	>1	\$843	>1	\$2,069
3	PGE	PGE	70	\$20	86.7	(711)	(\$53)	788	(\$583)	(\$529)	0.9	(\$54)	>1	\$542	>1	\$1,786
4	PGE	PGE	95	\$29	81.4	(673)	(\$50)	750	(\$317)	(\$715)	2.3	\$399	>1	\$908	>1	\$2,025
4	CPAU	CPAU	95	\$17	81.4	(673)	(\$19)	750	\$97	(\$715)	>1	\$813	>1	\$908	>1	\$2,025
5	PGE	PGE	80	\$22	86.7	(711)	(\$53)	792	(\$527)	(\$529)	1.0	\$2	>1	\$539	>1	\$1,782
5	PGE	SCG	80	\$22	86.7	(711)	(\$73)	792	(\$881)	(\$529)	0.6	(\$352)	>1	\$539	>1	\$1,782
6	SCE	SCG	113	\$26	78.3	(645)	(\$41)	732	(\$67)	(\$715)	10.7	\$649	>1	\$928	>1	\$2,042
7	SDGE	SDGE	105	\$33	78.0	(642)	(\$61)	727	(\$388)	(\$715)	1.8	\$328	>1	\$947	>1	\$2,080
8	SCE	SCG	128	\$31	75.5	(620)	(\$39)	715	\$71	(\$715)	>1	\$786	>1	\$994	>1	\$2,123
9	SCE	SCG	125	\$29	76.3	(628)	(\$40)	721	\$26	(\$715)	>1	\$742	>1	\$1,062	>1	\$2,202
10	SCE	SCG	130	\$26	63.2	(624)	(\$53)	555	(\$415)	(\$933)	2.2	\$518	>1	\$936	>1	\$1,832
10	SDGE	SDGE	130	\$41	63.2	(624)	(\$77)	555	(\$621)	(\$933)	1.5	\$313	>1	\$936	>1	\$1,832
11	PGE	PGE	147	\$38	64.8	(643)	(\$63)	580	(\$439)	(\$861)	2.0	\$421	>1	\$884	>1	\$1,926
12	PGE	PGE	122	\$31	67.7	(672)	(\$67)	589	(\$691)	(\$861)	1.2	\$170	10.9	\$781	>1	\$1,896
12	SMUD	PGE	122	\$17	67.7	(672)	(\$2)	589	\$515	(\$861)	>1	\$1,375	10.9	\$781	>1	\$1,896
13	PGE	PGE	152	\$39	62.8	(618)	(\$60)	566	(\$354)	(\$861)	2.4	\$506	7.1	\$740	>1	\$1,954
14	SCE	SCG	152	\$31	65.3	(650)	(\$56)	581	(\$363)	(\$861)	2.4	\$498	>1	\$942	>1	\$1,863
14	SDGE	SDGE	152	\$44	65.3	(650)	(\$80)	581	(\$610)	(\$861)	1.4	\$250	>1	\$942	>1	\$1,863
15	SCE	SCG	213	\$43	51.2	(492)	(\$42)	507	\$201	(\$861)	>1	\$1,062	>1	\$1,288	>1	\$2,068
16	PGE	PGE	115	\$29	77.8	(813)	(\$85)	642	(\$1,163)	(\$861)	0.7	(\$302)	1.3	\$189	>1	\$1,462

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 28: All-Electric Clustered HPWH + 0.1 kW<sub>DC</sub> PV per Dwelling Unit Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

			Dwelling Units	Central Water Heating	Total	On-Bill	2019 TDV	2022 TDV
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High-Rise Residential New Construction Cost-Effectiveness Study

Climate Zone	Elec Utility	Gas Utility	Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	On-Bill Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	171	\$32	95.7	(809)	(\$64)	894	-\$341	(\$326)	0.96	(\$14)	>1	\$472	>1	\$1,856
2	PGE	PGE	236	\$43	86.9	(726)	(\$55)	852	\$492	(\$399)	>1	\$891	>1	\$1,127	>1	\$2,239
3	PGE	PGE	232	\$46	86.7	(711)	(\$53)	857	\$469	(\$213)	>1	\$682	>1	\$814	>1	\$1,945
4	PGE	PGE	261	\$46	81.4	(673)	(\$50)	821	\$768	(\$399)	>1	\$1,166	>1	\$1,215	>1	\$2,250
4	CPAU	CPAU	261	\$27	81.4	(673)	(\$19)	821	\$729	(\$399)	>1	\$1,128	>1	\$1,215	>1	\$2,250
5	PGE	PGE	254	\$49	86.7	(711)	(\$53)	867	\$585	(\$213)	>1	\$798	>1	\$856	>1	\$1,973
5	PGE	SCG	254	\$49	86.7	(711)	(\$73)	867	\$232	(\$213)	>1	\$445	>1	\$856	>1	\$1,973
6	SCE	SCG	290	\$37	78.3	(645)	(\$41)	808	\$803	(\$399)	>1	\$1,202	>1	\$1,233	>1	\$2,285
7	SDGE	SDGE	270	\$48	78.0	(642)	(\$61)	798	\$742	(\$399)	>1	\$1,141	>1	\$1,273	>1	\$2,256
8	SCE	SCG	299	\$36	75.5	(620)	(\$39)	789	\$915	(\$399)	>1	\$1,314	>1	\$1,331	>1	\$2,414
9	SCE	SCG	303	\$34	76.3	(628)	(\$40)	797	\$833	(\$399)	>1	\$1,232	>1	\$1,407	>1	\$2,486
10	SCE	SCG	308	\$32	63.2	(624)	(\$53)	632	\$338	(\$617)	>1	\$955	>1	\$1,258	>1	\$2,100
10	SDGE	SDGE	308	\$49	63.2	(624)	(\$77)	632	\$539	(\$617)	>1	\$1,156	>1	\$1,258	>1	\$2,100
11	PGE	PGE	307	\$38	64.8	(643)	(\$63)	648	\$464	(\$544)	>1	\$1,008	>1	\$1,203	>1	\$2,098
12	PGE	PGE	285	\$39	67.7	(672)	(\$67)	659	\$237	(\$544)	>1	\$781	>1	\$1,089	>1	\$2,078
12	SMUD	PGE	285	\$20	67.7	(672)	(\$2)	659	\$987	(\$544)	>1	\$1,531	>1	\$1,089	>1	\$2,078
13	PGE	PGE	317	\$39	62.8	(618)	(\$60)	637	\$581	(\$544)	>1	\$1,125	>1	\$1,027	>1	\$2,149
14	SCE	SCG	343	\$34	65.3	(650)	(\$56)	663	\$445	(\$544)	>1	\$989	>1	\$1,366	>1	\$2,185
14	SDGE	SDGE	343	\$50	65.3	(650)	(\$80)	663	\$582	(\$544)	>1	\$1,126	>1	\$1,366	>1	\$2,185
15	SCE	SCG	390	\$32	51.2	(492)	(\$42)	582	\$948	(\$544)	>1	\$1,492	>1	\$1,643	>1	\$2,324
16	PGE	PGE	284	\$41	77.8	(813)	(\$85)	716	-\$201	(\$544)	2.7	\$343	13.6	\$504	>1	\$1,645

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.

**Table 29: All-Electric Clustered HPWH + 0.2 kW<sub>DC</sub> PV per Dwelling Unit Results (Savings/Cost Per Dwelling Unit)<sup>a, b</sup>**

Climate Zone	Elec Utility	Gas Utility	Dwelling Units		Central Water Heating			Total			On-Bill		2019 TDV		2022 TDV	
			Elec Savings (kWh)	Year 1 Utility Cost Savings	Gas Savings (therm)	Elec Savings (kWh)	Year 1 Utility Cost Savings	GHG Savings (lb CO <sub>2</sub> )	On-Bill Utility Savings (2020 PV\$)	Inc. Cost (2020 PV\$)	B/C Ratio	NPV	B/C Ratio	NPV	B/C Ratio	NPV
1	PGE	PGE	304	\$64	95.7	(809)	(\$64)	949	\$415	(\$10)	>1	\$425	>1	\$648	>1	\$1,919
2	PGE	PGE	393	\$87	86.9	(726)	(\$55)	920	\$1,520	(\$82)	>1	\$1,602	>1	\$1,411	>1	\$2,410
3	PGE	PGE	395	\$91	86.7	(711)	(\$53)	926	\$1,521	\$104	14.7	\$1,417	11.5	\$1,085	21.3	\$2,104
4	PGE	PGE	427	\$92	81.4	(673)	(\$50)	892	\$1,852	(\$82)	>1	\$1,934	>1	\$1,523	>1	\$2,474
4	CPAU	CPAU	427	\$52	81.4	(673)	(\$19)	892	\$1,319	(\$82)	>1	\$1,401	>1	\$1,523	>1	\$2,474
5	PGE	PGE	428	\$96	86.7	(711)	(\$53)	941	\$1,698	\$104	16.4	\$1,594	12.3	\$1,173	21.9	\$2,163
5	PGE	SCG	428	\$96	86.7	(711)	(\$73)	941	\$1,344	\$104	13.0	\$1,241	12.3	\$1,173	21.9	\$2,163
6	SCE	SCG	466	\$74	78.3	(645)	(\$41)	884	\$1,674	(\$82)	>1	\$1,756	>1	\$1,539	>1	\$2,528
7	SDGE	SDGE	435	\$94	78.0	(642)	(\$61)	869	\$1,842	(\$82)	>1	\$1,925	>1	\$1,598	>1	\$2,433
8	SCE	SCG	470	\$71	75.5	(620)	(\$39)	863	\$1,760	(\$82)	>1	\$1,842	>1	\$1,668	>1	\$2,705
9	SCE	SCG	480	\$66	76.3	(628)	(\$40)	874	\$1,590	(\$82)	>1	\$1,673	>1	\$1,752	>1	\$2,771
10	SCE	SCG	485	\$64	63.2	(624)	(\$53)	708	\$1,092	(\$300)	>1	\$1,392	>1	\$1,580	>1	\$2,368
10	SDGE	SDGE	485	\$97	63.2	(624)	(\$77)	708	\$1,680	(\$300)	>1	\$1,980	>1	\$1,580	>1	\$2,368
11	PGE	PGE	466	\$76	64.8	(643)	(\$63)	717	\$1,367	(\$228)	>1	\$1,594	>1	\$1,521	>1	\$2,270
12	PGE	PGE	449	\$78	67.7	(672)	(\$67)	729	\$1,164	(\$228)	>1	\$1,392	>1	\$1,396	>1	\$2,260
12	SMUD	PGE	449	\$40	67.7	(672)	(\$2)	729	\$1,459	(\$228)	>1	\$1,687	>1	\$1,396	>1	\$2,260
13	PGE	PGE	482	\$79	62.8	(618)	(\$60)	708	\$1,516	(\$228)	>1	\$1,743	>1	\$1,315	>1	\$2,344
14	SCE	SCG	534	\$68	65.3	(650)	(\$56)	744	\$1,252	(\$228)	>1	\$1,480	>1	\$1,791	>1	\$2,507
14	SDGE	SDGE	534	\$101	65.3	(650)	(\$80)	744	\$1,774	(\$228)	>1	\$2,002	>1	\$1,791	>1	\$2,507
15	SCE	SCG	567	\$63	51.2	(492)	(\$42)	657	\$1,695	(\$228)	>1	\$1,923	>1	\$1,998	>1	\$2,580
16	PGE	PGE	454	\$81	77.8	(813)	(\$85)	789	\$760	(\$228)	>1	\$988	>1	\$820	>1	\$1,829

<sup>a</sup> Values in red indicate B/C ratios less than 1 or negative values. Values in grey indicate cases which are cost-effective but are not code compliant and cannot be used to support a reach code.

<sup>b</sup> ">1" indicates cases where there are both incremental measure cost savings and energy cost savings.



A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11  
Local Energy Efficiency Ordinances

## 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study

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Last Modified: July 25, 2019



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# 1 Introduction

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (CEC, 2019) is maintained and updated every three years by two state agencies: the California Energy Commission (the Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances—or reach codes—that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable. This report was developed in coordination with the California Statewide Investor Owned Utilities (IOUs) Codes and Standards Program, key consultants, and engaged cities—collectively known as the Reach Code Team.

This report documents cost-effective combinations of measures that exceed the minimum state requirements for design in newly-constructed nonresidential buildings. Buildings specifically examined include medium office, medium retail, and small hotels. Measures include energy efficiency, solar photovoltaics (PV), and battery storage. In addition, the report includes a comparison between a baseline mixed-fuel design and all-electric design for each occupancy type.

The Reach Code team analyzed the following seven packages as compared to 2019 code compliant mixed-fuel design baseline:

- ◆ **Package 1A – Mixed-Fuel + Energy Efficiency (EE):** Mixed-fuel design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 1B – Mixed-Fuel + EE + PV + Battery (B):** Same as Package 1A, plus solar PV and batteries.
- ◆ **Package 1C – Mixed-fuel + High Efficiency (HE):** Baseline code-minimum building with high efficiency appliances, triggering federal preemption. The intent of this package is to assess the standalone contribution that high efficiency appliances would make toward achieving high performance thresholds.
- ◆ **Package 2 – All-Electric Federal Code-Minimum Reference:** All-electric design with federal code minimum appliance efficiency. No solar PV or battery.
- ◆ **Package 3A – All-Electric + EE:** Package 2 all-electric design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 3B – All-Electric + EE + PV + B:** Same as Package 3A, plus solar PV and batteries.
- ◆ **Package 3C – All-Electric + HE:** All-electric design with high efficiency appliances, triggering federal preemption.

Figure 1 summarizes the baseline and measure packages. Please refer to *Section 3* for more details on the measure descriptions.

**Figure 1. Measure Category and Package Overview**

Measure Category	Report Section	Mixed Fuel				All-Electric			
		Baseline	1A	1B	1C	2	3A	3B	3C
		Fed Code Minimum Efficiency	EE	EE+ PV + B	HE	Fed Code Minimum Efficiency	EE	EE+ PV + B	HE
Energy Efficiency Measures	3.1		X	X			X	X	
Solar PV + Battery	3.2			X				X	
All-Electric Measures	3.3					X	X	X	X
Preemptive Appliance Measures	3.4				X				X

The team separately developed cost effectiveness results for PV-only and PV+Battery packages, excluding any efficiency measures. For these packages, the PV is modeled as a “minimal” size of 3 kW and a larger size based on the available roof area and electric load of the building. PV sizes are combined with two sizes of battery storage for both mixed fuel and all electric buildings to form eight different package combinations as outlined below:

- ◆ **Mixed-Fuel + 3 kW PV Only**
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery**
- ◆ **Mixed-Fuel + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery
- ◆ **All-Electric + 3 kW PV Only**
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery**
- ◆ **All-Electric + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **All-Electric + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery.

Each of the eight packages are evaluated against a baseline model designed as per 2019 Title 24 Part 6 requirements. The Standards baseline for all occupancies in this report is a mixed-fuel design.

The Department of Energy (DOE) sets minimum efficiency standards for equipment and appliances that are federally regulated under the National Appliance Energy Conservation Act (NAECA), including heating, cooling, and water heating equipment.<sup>1</sup> Since state and local governments are prohibited from adopting

<sup>1</sup> [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431\\_197](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197)



higher minimum efficiencies than the federal standards require, the focus of this study is to identify and evaluate cost-effective packages that do not include high efficiency equipment. However, because high efficiency appliances are often the easiest and most affordable measures to increase energy performance, this study provides an analysis of high efficiency appliances for informational purposes. While federal preemption would limit a reach code, in practice, builders may install any package of compliant measures to achieve the performance requirements, including higher efficiency appliances that are federally regulated.

## 2 Methodology and Assumptions

With input from several stakeholders, the Reach Codes team selected three building types—medium office, medium retail, and small hotel—to represent a predominant segment of nonresidential new construction in the state.

This analysis used both on-bill and time dependent valuation of energy (TDV) based approaches to evaluate cost-effectiveness. Both methodologies require estimating and quantifying the energy savings associated with energy efficiency measures, as well as quantifying the costs associated with the measures. The main difference between the methodologies is the valuation of energy and thus the cost savings of reduced or avoided energy use. TDV was developed by the Energy Commission to reflect the time dependent value of energy including long-term projected costs of energy such as the cost of providing energy during peak periods of demand and other societal costs including projected costs for carbon emissions. With the TDV approach, electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods.<sup>2</sup>

The Reach Code Team performed energy simulations using EnergyPro 8.0 software for 2019 Title 24 code compliance analysis, which uses CBECC-Com 2019.1.0 for the calculation engine. The baseline prototype models in all climate zones have been designed to have compliance margins as close as possible to 0 to reflect a prescriptively-built building.<sup>3</sup>

### 2.1 Building Prototypes

The DOE provides building prototype models which, when modified to comply with 2019 Title 24 requirements, can be used to evaluate the cost effectiveness of efficiency measures. These prototypes have historically been used by the California Energy Commission to assess potential code enhancements. The Reach Code Team performed analysis on a medium office, a medium retail, and a small hotel prototype.

Water heating includes both service water heating (SWH) for office and retail buildings and domestic hot water for hotels. In this report, water heating or SWH is used to refer to both. The Standard Design HVAC and SWH systems are based on the system maps included in the 2019 Nonresidential Alternate

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<sup>2</sup> Horii, B., E. Cutter, N. Kapur, J. Arent, and D. Conotyannis. 2014. "Time Dependent Valuation of Energy for Developing Building Energy Efficiency Standards." Available at: [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09\\_workshop/2017\\_TDV\\_Documents](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-09_workshop/2017_TDV_Documents)

<sup>3</sup> EnergySoft and TRC were able to develop most baseline prototypes to achieve a compliance margin of less than +/-1 percent except for few models that were at +/- 6 percent. This indicates these prototypes are not exactly prescriptive according to compliance software calculations. To calculate incremental impacts, TRC conservatively compared the package results to that of the proposed design of baseline prototypes (not the standard design).

Calculation Method Reference Manual.<sup>4</sup> The Standard Design is the baseline for all nonresidential projects and assumes a mixed-fuel design using natural gas as the space heating source in all cases. Baseline HVAC and SWH system characteristics are described below and in Figure 2:

- ◆ The baseline medium office HVAC design package includes two gas hot water boilers, three packaged rooftop units (one for each floor), and variable air volume (VAV) terminal boxes with hot water reheat coils. The SWH design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.
- ◆ The baseline medium retail HVAC design includes five single zone packaged rooftop units (variable flow and constant flow depending on the zone) with gas furnaces for heating. The SWH design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.
- ◆ The small hotel has two baseline equipment systems, one for the nonresidential spaces and one for the guest rooms.
  - ◆ The nonresidential HVAC design includes two gas hot water boilers, four packaged rooftop units and twelve VAV terminal boxes with hot water reheat coils. The SWH design include a small electric resistance water heater with 30-gallon storage tank.
  - ◆ The residential HVAC design includes one single zone air conditioner (AC) unit with gas furnace for each guest room and the water heating design includes one central gas water heater with a recirculation pump for all guest rooms.

**Figure 2. Prototype Characteristics Summary**

	Medium Office	Medium Retail	Small Hotel
<b>Conditioned Floor Area</b>	53,628	24,691	42,552
<b>Number of Stories</b>	3	1	4
<b>Number of Guest Rooms</b>	0	0	78
<b>Window-to-Wall Area Ratio</b>	0.33	0.07	0.11
<b>Baseline HVAC System</b>	Packaged DX VAV with gas furnaces + VAV terminal units with hot water reheat. Central gas hot water boilers	Single zone packaged DX units with gas furnaces	<u>Nonresidential:</u> Packaged DX VAV with hot water coil + VAV terminal units with hot water reheat. Central gas hot water boilers. <u>Residential:</u> Single zone DX AC unit with gas furnaces
<b>Baseline Water Heating System</b>	30-gallon electric resistance water heater	30-gallon electric resistance water heater	<u>Nonresidential:</u> 30-gallon electric resistance water heater <u>Residential:</u> Central gas water heater with recirculation loop

<sup>4</sup> Nonresidential Alternative Calculation Method Reference Manual For the 2019 Building Energy Efficiency Standards. Available at: <https://www.energy.ca.gov/2019publications/CEC-400-2019-006/CEC-400-2019-006-CMF.pdf>



## 2.2 Cost Effectiveness

The Reach Code Team analyzed the cost effectiveness of the packages by applying them to building prototypes (as applicable) using the life cycle cost methodology, which is approved and used by the Energy Commission to establish cost effective building energy standards (Title 24, Part 6).<sup>5</sup>

Per Energy Commission's methodology, the Reach Code Team assessed the incremental costs of the energy efficiency measure packages and compared them to the energy cost savings over the measure life of 15 years. Incremental costs represent the equipment, installation, replacements, and maintenance costs of the proposed measure relative to the 2019 Title 24 Standards minimum requirements. The energy savings benefits are estimated using both TDV of energy and typical utility rates for each building type:

- ◆ **Time Dependent Valuation:** TDV is a normalized monetary format developed and used by the Energy Commission for comparing electricity and natural gas savings, and it considers the cost of electricity and natural gas consumed during different times of the day and year. Simulation outputs are translated to TDV savings benefits using 2019 TDV multipliers and 15-year discounted costs for the nonresidential measure packages.
- ◆ **Utility bill impacts (On-bill):** Utility energy costs are estimated by applying appropriate IOU rates to estimated annual electricity and natural gas consumption. The energy bill savings are calculated as the difference in utility costs between the baseline and proposed package over a 15-year duration accounting for discount rate and energy cost escalation.

In coordination with the IOU rate team, and rate experts at a few electric publicly owned utilities (POUs), the Reach Code Team used the current nonresidential utility rates publicly available at the time of analysis to analyze the cost effectiveness for each proposed package. The utility tariffs, summarized in Figure 3, were determined based on the annual load profile of each prototype, and the most prevalent rate in each territory. For some prototypes there are multiple options for rates because of the varying load profiles of mixed-fuel buildings versus all-electric buildings. Tariffs were integrated in EnergyPro software to be applied to the hourly electricity and gas outputs. The Reach Code Team did not attempt to compare or test a variety of tariffs to determine their impact on cost effectiveness.

The currently available and applicable time-of-use (TOU) nonresidential rates are applied to both the base and proposed cases with PV systems.<sup>6</sup> Any annual electricity production in excess of annual electricity consumption is credited at the applicable wholesale rate based on the approved NEM tariffs for that utility. For a more detailed breakdown of the rates selected refer to *Appendix 6.4 Utility Rate Schedules*. Note that most utility time-of-use rates will be updated in the near future, which can affect cost effectiveness results. For example, Pacific Gas and Electric Company (PG&E) will introduce new rates for new service connections in late 2019, and existing accounts will be automatically rolled over to new rates in November 2020.

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<sup>5</sup> Architectural Energy Corporation (January 2011) Life-Cycle Cost Methodology. California Energy Commission. Available at: [http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/general\\_cec\\_documents/2011-01-14\\_LCC\\_Methodology\\_2013.pdf](http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/general_cec_documents/2011-01-14_LCC_Methodology_2013.pdf)

<sup>6</sup> Under NEM rulings by the CPUC (D-16-01-144, 1/28/16), all new PV customers shall be in an approved TOU rate structure. As of March 2016, all new PG&E net energy metering (NEM) customers are enrolled in a time-of-use rate. (<http://www.pge.com/en/myhome/saveenergymoney/plans/tou/index.page?>).

**Figure 3. Utility Tariffs used based on Climate Zone**

Climate Zones	Electric / Gas Utility	Electricity (Time-of-use)	Natural Gas
<b>IOUs</b>			
1-5,11-13,16	PG&E	A-1/A-10	G-NR1
5	PG&E / Southern California Gas Company	A-1/A-10	G-10 (GN-10)
6,8-10,14,15	SCE / Southern California Gas Company	TOU-GS-1/TOU-GS-2/TOU-GS-3	G-10 (GN-10)
7,10,14	San Diego Gas and Electric Company (SDG&E)	A-1/A-10	GN-3
<b>Electric POUs</b>			
4	City of Palo Alto (CPAU)	E-2	n/a
12	Sacramento Municipal Utility District (SMUD)	GS	n/a
6,7,8,16	Los Angeles Department of Water and Power (LADWP)	A-2 (B)	n/a

The Reach Code Team obtained measure costs through interviews with contractors and California distributors and review of online sources, such as Home Depot and RS Means. Taxes and contractor markups were added as appropriate. Maintenance costs were not included because there is no assumed maintenance on the envelope measures. For HVAC and SWH measures the study assumes there are no additional maintenance cost for a more efficient version of the same system type as the baseline. Replacement costs for inverters were included for PV systems, but the useful life all other equipment exceeds the study period.

The Reach Code Team compared the energy benefits with incremental measure cost data to determine cost effectiveness for each measure package. The calculation is performed for a duration of 15 years for all nonresidential prototypes with a 3 percent discount rate and fuel escalation rates based on the most recent General Rate Case filings and historical escalation rates.<sup>7</sup> Cost effectiveness is presented using net present value and benefit-to-cost ratio metrics.

- ◆ **Net Present Value (NPV):** The Reach Code Team uses net savings (NPV benefits *minus* NPV costs) as the cost effectiveness metric. If the net savings of a measure or package is positive, it is considered cost effective. Negative savings represent net costs. A measure that has negative energy cost benefits (energy cost increase) can still be cost effective if the costs to implement the measure are more negative (i.e., material and maintenance cost savings).
- ◆ **Benefit-to-Cost Ratio (B/C):** Ratio of the present value of all benefits to the present value of all costs over 15 years (NPV benefits *divided by* NPV costs). The criteria for cost effectiveness is a B/C greater than 1.0. A value of one indicates the savings over the life of the measure are equivalent to the incremental cost of that measure.

<sup>7</sup> 2019 TDV Methodology Report, California Energy Commission, Docket number: 16-BSTD-06  
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=216062>

There are several special circumstances to consider when reviewing these results:

- ◆ Improving the efficiency of a project often requires an initial incremental investment. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). Typically, utility bill savings are categorized as a ‘benefit’ while incremental construction costs are treated as ‘costs.’ In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the ‘benefit’ while the utility bill negative savings are the ‘cost.’
- ◆ In cases where a measure package is cost effective immediately (i.e., there are upfront cost savings and lifetime energy cost savings), cost effectiveness is represented by “>1”.
- ◆ The B/C ratios sometimes appear very high even though the cost numbers are not very high (for example, an upfront cost of \$1 but on-bill savings of \$200 over 30 years would equate to a B/C ratio of 200). NPV is also displayed to clarify these potentially confusing conclusions – in the example, the NPV would be equal to a modest \$199.

### 3 Measure Description and Cost

Using the 2019 Title 24 code baseline as the starting point, The Reach Code Team identified potential measure packages to determine the projected energy (therm and kWh) and compliance impacts. The Reach Code Team developed an initial measure list based on experience with designers and contractors along with general knowledge of the relative acceptance and preferences of many measures, as well as their incremental costs.

The measures are categorized into energy efficiency, solar PV and battery, all-electric, and preempted high efficiency measures in subsections below.

#### 3.1 Energy Efficiency Measures

This section describes all the energy efficiency measures considered for this analysis to develop a non-preempted, cost-effective efficiency measure package. The Reach Code Team assessed the cost-effectiveness of measures for all climate zones individually and found that the packages did not need to vary by climate zone, with the exception of a solar heat gain coefficient measure in hotels, as described in more detail below. The measures were developed based on reviews of proposed 2022 Title 24 codes and standards enhancement measures, as well as ASHRAE 90.1 and ASHRAE 189.1 Standards. Please refer to *Appendix Section 6.86.7* for a list of efficiency measures that were considered but not implemented.

Figure 4 provides a summary of the cost of each measure and the applicability of each measure to the prototype buildings.

### 3.1.1 Envelope

- ◆ **Modify Solar Heat Gain Coefficient (SHGC) fenestration**
  - ◆ Office and Retail - All Climate Zones: reduce window SHGC from the prescriptive value of 0.25 to 0.22
  - ◆ Hotel
    - ◆ Climate zones 1, 2, 3, 5, and 16: Increase the SHGC for all nonresidential spaces from the prescriptive value of 0.25 to 0.45 in both common and guest room spaces.
    - ◆ Climate zones 4, and 6-15: Reduce window SHGC from the prescriptive value of 0.25 to 0.22, only for common spaces.

In all cases, the fenestration visible transmittance and U-factor remain at prescriptive values.

- ◆ **Fenestration as a function of orientation:** Limit the amount of fenestration area as a function of orientation. East-facing and west-facing windows are each limited to one-half of the average amount of north-facing and south-facing windows.

### 3.1.2 HVAC and SWH

- ◆ **Drain water heat recovery (DWHR):** Add shower drain heat recovery in hotel guest rooms. DWHR captures waste heat from a shower drain line and uses it to preheat hot water. Note that this measure cannot currently be modeled on hotel/motel spaces, and the Reach Code Team integrated estimated savings outside of modeling software based on SWH savings in residential scenarios. Please see *Appendix Section 6.3* for details on energy savings analysis.
- ◆ **VAV box minimum flow:** Reduce VAV box minimum airflows from the current T24 prescriptive requirement of 20 percent of maximum (design) airflow to the T24 zone ventilation minimums.
- ◆ **Economizers on small capacity systems:** Require economizers and staged fan control in units with cooling capacity  $\geq 33,000$  Btu/hr and  $\leq 54,000$  Btu/hr, which matches the requirement in the 2018 International Green Construction Code and adopts ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1. This measure reduces the T24 prescriptive threshold on air handling units that are required to have economizers, which is  $> 54,000$  Btu/hr.
- ◆ **Solar thermal hot water:** For all-electric hotel only, add solar thermal water heating to supply the following portions of the water heating load, measured in solar savings fraction (SSF):
  - ◆ 20 percent SSF in CZs 2, 3, and 5-9
  - ◆ 25 percent in CZ4
  - ◆ 35 percent SSF in CZs 1 and 10-16.



### 3.1.3 Lighting

- ◆ **Interior lighting reduced lighting power density (LPD):** Reduce LPD by 15 percent for Medium Office, 10 percent for Medium Retail and by 10 percent for the nonresidential areas of the Small Hotel.
- ◆ **Institutional tuning:** Limit the maximum output or maximum power draw of lighting to 85 percent of full light output or full power draw.
- ◆ **Daylight dimming plus off:** Turn daylight-controlled lights completely off when the daylight available in the daylit zone is greater than 150 percent of the illuminance received from the general lighting system at full power. There is no associated cost with this measure, as the 2019 T24 Standards already require multilevel lighting and daylight sensors in primary and secondary daylit spaces. This measure is simply a revised control strategy and does not increase the number of sensors required or labor to install and program a sensor.
- ◆ **Occupant sensing in open plan offices:** In an open plan office area greater than 250 ft<sup>2</sup>, control lighting based on occupant sensing controls. Two workstations per occupancy sensor.

Details on the applicability and impact of each measure by building type and by space function can be found in *Appendices 6.2*. The appendix also includes the resulting LPD that is modeled as the proposed by building type and by space function.



**Figure 4. Energy Efficiency Measures - Specification and Cost**

Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
<b>Envelope</b>							
Modify SHGC Fenestration	SHGC of 0.25	•	•	•	•	\$1.60 /ft <sup>2</sup> window for SHGC decreases, \$0/ft <sup>2</sup> for SHGC increases	Costs from one manufacturer.
Fenestration as a Function of Orientation	Limit on total window area and west-facing window area as a function of wall area.	•	–	–	–	\$0	No additional cost associated with the measure which is a design consideration not an equipment cost.
<b>HVAC and SHW</b>							
Drain Water Heat Recovery	No heat recovery required	–	–	•	–	\$841 /unit	Assume 1 heat recovery unit for every 3 guestrooms. Costs from three manufacturers.
VAV Box Minimum Flow	20 percent of maximum (design) airflow	•	–	–	•	\$0	No additional cost associated with the measure which is a design consideration not an equipment cost.
Economizers on Small Capacity Systems	Economizers required for units > 54,000 Btu/hr	–	•	–	–	\$2,857 /unit	Costs from one manufacturer's representative and one mechanical contractor.



Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
Solar Thermal Hot Water	For central heat pump water heaters, there is no prescriptive baseline requirement.	–	–	• (electric only)	–	\$33/therm-yr	Installed costs reported in the California Solar Initiative Thermal Program Database, 2015-present. <sup>8</sup> Costs include tank and were only available for gas backup systems. Costs are reduced by 19 percent per federal income tax credit average through 2022.
<b>Lighting</b>							
Interior Lighting Reduced LPD	Per Area Category Method, varies by Primary Function Area. Office area 0.60 – 0.70 W/ft <sup>2</sup> depending on area of space. Hotel function area 0.85 W/ft <sup>2</sup> . Retail Merchandise Sales 1.00 W/ft <sup>2</sup>	•	•	–	•	\$0	Industry report on LED pricing analysis shows that costs are not correlated with efficacy. <sup>9</sup>

<sup>8</sup> <http://www.csithermalstats.org/download.html>

<sup>9</sup> [http://calmac.org/publications/LED\\_Pricing\\_Analysis\\_Report\\_-\\_Revised\\_1.19.2018\\_Final.pdf](http://calmac.org/publications/LED_Pricing_Analysis_Report_-_Revised_1.19.2018_Final.pdf)



Measure	Baseline T24 Requirement	Measure Applicability				Incremental Cost	Sources & Notes
		• Included in Packages 1A, 1B, 3A, 3C – Not applicable					
		Med Office	Med Retail	Small Hotel			
Guest rooms	Comm Spaces						
Institutional Tuning	No requirement, but Power Adjustment Factor (PAF) credit of 0.10 available for luminaires in non-daylit areas and 0.05 for luminaires in daylit areas <sup>10</sup>	•	•	–	•	\$0.06/ft <sup>2</sup>	Industry report on institutional tuning <sup>11</sup>
Daylight Dimming Plus Off	No requirement, but PAF credit of 0.10 available.	•	–	–	–	\$0	Given the amount of lighting controls already required, this measure is no additional cost.
Occupant Sensing in Open Plan Offices	No requirement, but PAF credit of 0.30 available.	•	–	–	–	\$189 /sensor; \$74 /powered relay; \$108 /secondary relay	2 workstations per sensor; 1 fixture per workstation; 4 workstations per master relay; 120 ft <sup>2</sup> /workstation in open office area, which is 53% of total floor area of the medium office

<sup>10</sup> Power Adjustment Factors allow designers to tradeoff increased lighting power densities for more efficient designs. In this study, PAF-related measures assume that the more efficient design is incorporated without a tradeoff for increased lighting power density.

<sup>11</sup> <https://slipstreaminc.org/sites/default/files/2018-12/task-tuning-report-mndoc-2015.pdf>



### 3.2 Solar Photovoltaics and Battery Measures

This section describes the PV and battery measures considered for this analysis. The Reach Code Team estimated the required PV sizes for each building prototype for the efficiency measure packages and the stand alone PV and battery options.

#### 3.2.1 Solar Photovoltaics

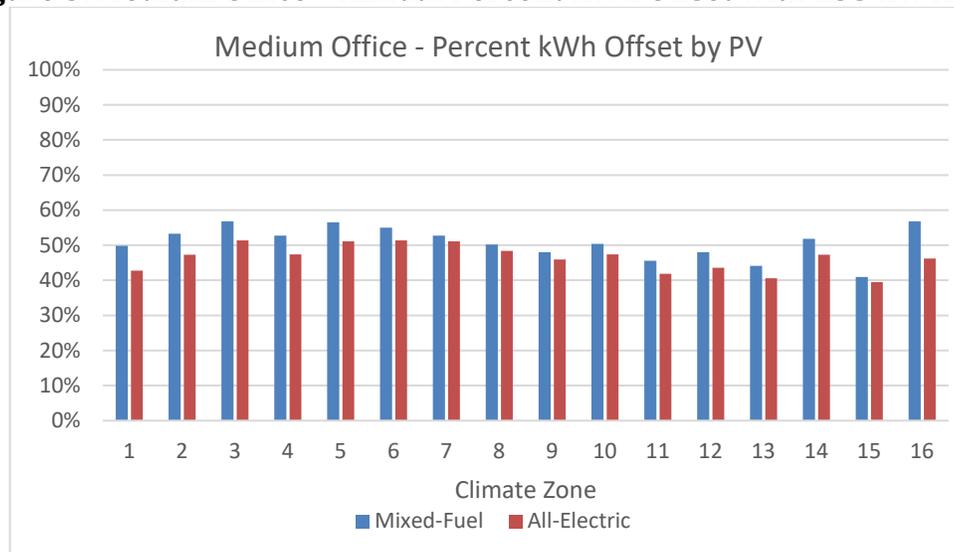
2019 Title 24 requires nonresidential buildings to reserve at least 15 percent of the roof area as a “solar zone,” but does not include any requirements or compliance credits for the installation of photovoltaic systems. The Reach Code Team analyzed a range of PV system sizes to determine cost effectiveness. To determine upper end of potential PV system size, the Reach Code Team assumed a PV generation capacity of either

- ◆ 15 W/ft<sup>2</sup> covering 50 percent of the roof area, or
- ◆ Enough to nearly offset the annual energy consumption.

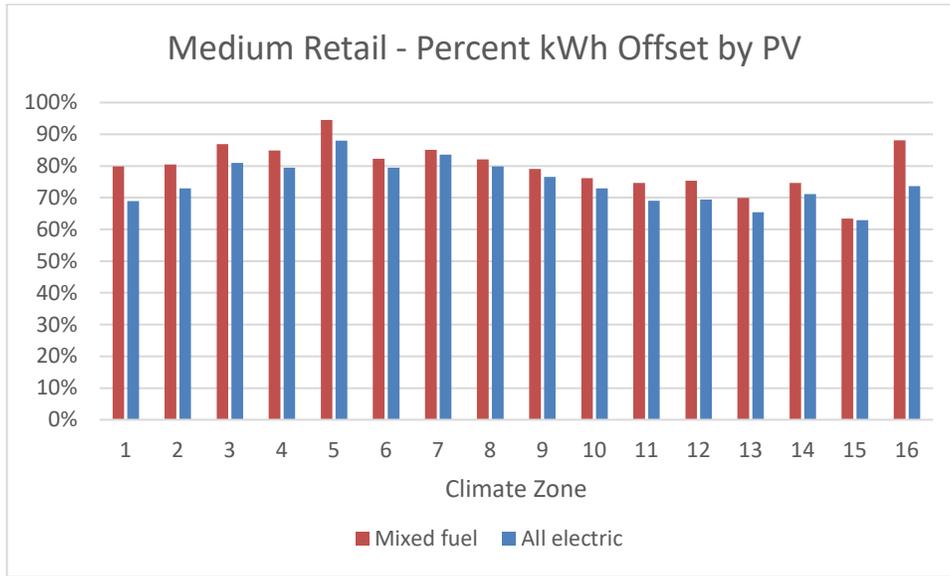
The medium office and small hotel prototypes had small roof areas compared to their annual electricity demand, thus the PV system capacity at 50 percent of the roof area was less than the estimated annual usage. The medium office and small hotel had a 135 kW and 80 kW array, respectively. The medium retail building has a substantially large roof area that would accommodate a PV array that generates more than the annual electricity load of the building. The PV array for the medium retail building was sized at 110 kW to not exceed the annual electricity consumption of the building when accounting for the minimum annual energy demand across climate zones with efficiency packages.

The modeling software for nonresidential buildings does not allow auto-sizing of PV based on a desired percent offset of electricity use. Moreover, the PV size is also constrained by the availability of roof area. Hence, a common size of PV is modeled for all the packages including all electric design. Figure 5 through Figure 7 below demonstrate the percent of electricity offset by PV for both mixed fuel and all electric buildings over their respective federal minimum design package.

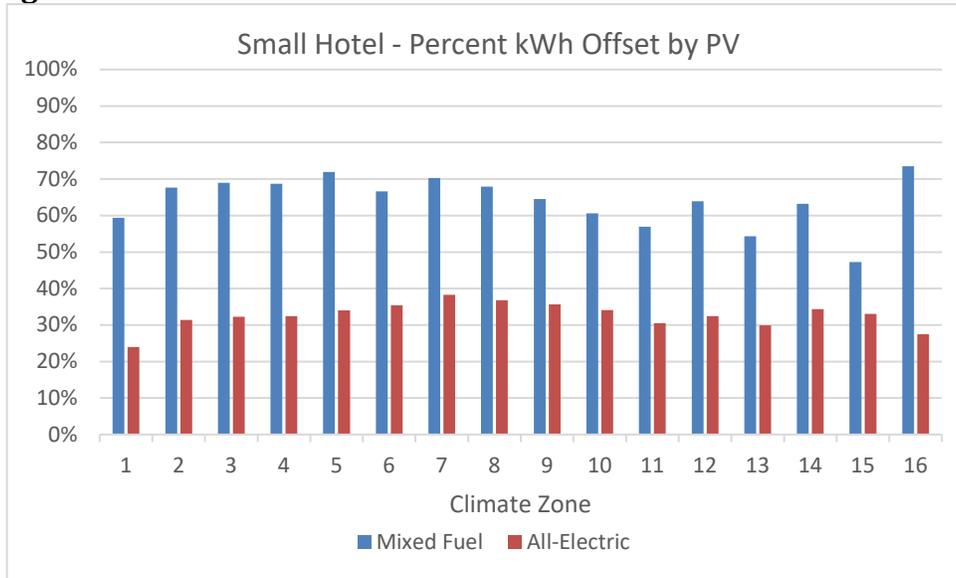
**Figure 5. Medium Office – Annual Percent kWh Offset with 135 kW Array**



**Figure 6. Medium Retail – Annual Percent kWh Offset with 110 kW Array**



**Figure 7. Small Hotel – Annual Percent kWh Offset with 80 kW Array**



The costs for PV include first cost to purchase and install the system, inverter replacement costs, and annual maintenance costs. A summary of the medium office costs and sources is given in Figure 8. Upfront solar PV system costs are reduced by the federal income tax credit (ITC), approximately 19 percent due to a phased reduction in the credit through the year 2022.<sup>12</sup>

<sup>12</sup> The federal credit drops to 26% in 2020, and 22% in 2021 before dropping permanently to 10% for commercial projects and 0% for residential projects in 2022. More information on federal Investment Tax Credits available at: <https://www.seia.org/initiatives/solar-investment-tax-credit-itc>



**Figure 8. Medium Office Upfront PV Costs**

	Unit Cost	Cost	Useful Life (yrs.)	Source
Solar PV System	\$2.30 / Wdc	\$310,500	30	National Renewable Energy Laboratory (NREL) Q1 2016 <sup>13</sup>
Inverter Replacement	\$0.15 / Wdc	\$20,250	10	E3 Rooftop Solar PV System Report <sup>14</sup>
Maintenance Costs	\$0.02 / Wdc	\$2,700	1	

PV energy output is built into CBECC-Com and is based on NREL's PVWatts calculator, which includes long term performance degradation estimates.<sup>15</sup>

### 3.2.2 Battery Storage

This measure includes installation of batteries to allow energy generated through PV to be stored and used later, providing additional energy cost benefits. This report does not focus on optimizing battery sizes or controls for each prototype and climate zone, though the Reach Code Team ran test simulations to assess the impact of battery sizes on TDV savings and found diminishing returns as the battery size increased.

The team set battery control to the Time of Use Control (TOU) method, which assumes batteries are charged anytime PV generation is greater than the building load but discharges to the electric grid beginning during the highest priced hours of the day (the "First Hour of the Summer Peak"). Because there is no default hour available in CBECC-Com, the team applied the default hour available in CBECC-Res to start discharging (hour 19 in CZs 2, 4, and 8-15, and hour 20 in other CZs). This control option is most reflective of the current products on the market. While this control strategy is being used in the analysis, there would be no mandate on the control strategy used in practice.

The current simulation software has approximations of how performance characteristics change with environmental conditions, charge/discharge rates, and degradation with age and use. More information is on the software battery control capabilities and associated qualification requirements are available in the Residential Alternative Calculation Method Reference Manual and the 2019 Reference Appendices for the 2019 Title 24 Standards.<sup>16,17</sup>

The Reach Code Team used costs of \$558 kWh based on a 2018 IOU Codes and Standards Program report, assuming a replacement is necessary in year 15.<sup>18</sup> Batteries are also eligible for the ITC if they are installed at the same time as the renewable generation source and at least 75 percent of the energy used to charge

<sup>13</sup> Available at: <https://www.nrel.gov/docs/fy16osti/66532.pdf>

<sup>14</sup> Available at: <https://efiling.energy.ca.gov/getdocument.aspx?tn=221366>

<sup>15</sup> More information available at: <https://pvwatts.nrel.gov/downloads/pvwattsv5.pdf>

<sup>16</sup> Battery controls are discussed in Sections 2.1.5.4 and Appendix D of the Residential Alternative Calculation Method Reference Manual, available here: <https://ww2.energy.ca.gov/2019publications/CEC-400-2019-005/CEC-400-2019-005-CMF.pdf>

<sup>17</sup> Qualification Requirements for Battery Storage Systems are available in JA12 of the 2019 Reference Appendices: <https://ww2.energy.ca.gov/2018publications/CEC-400-2018-021/CEC-400-2018-021-CMF.pdf>

<sup>18</sup> Available at: [http://localenergycodes.com/download/430/file\\_path/fieldList/PV%20Plus%20Battery%20Storage%20Report](http://localenergycodes.com/download/430/file_path/fieldList/PV%20Plus%20Battery%20Storage%20Report)



the battery comes from a renewable source. Thus, the Reach Code Team also applied a 19 percent cost reduction to battery costs.

### **3.2.3 PV-only and PV+Battery Packages**

The Reach Code Team analyzed solar PV and battery storage only, without other efficiency measures in both mixed-fuel and all-electric building designs. Two different sizes of solar PV and battery storage were analyzed.

- ◆ **Small PV Size:** 3 kW, assumed to be the minimal PV system considered for installation in a nonresidential building.
- ◆ **Large PV Size:** PV capacity equal to 15 W/ft<sup>2</sup> over 50 percent of the roof area, or sized to nearly offset annual electricity consumption, as described in Section 3.2.1.
- ◆ **Small Battery Size:** 5 kWh, assumed to be the minimal battery system considered for installation in a nonresidential building, and representative of smaller products currently available on the market.
- ◆ **Large Battery Size:** 50 kWh, assumed to be a substantially large size for a nonresidential setting. Generally, the reach code team found diminishing on-bill and TDV benefits as the battery size increased.

As described in Section 1 and Section 4.4, each PV size was run as a standalone measure. When packaged with a battery measure, the small PV size was paired with the small battery size, and the large PV size was paired with the large battery size.

## ***3.3 All Electric Measures***

The Reach Code Team investigated the cost and performance impacts and associated infrastructure costs associated with changing the baseline HVAC and water heating systems to all-electric equipment. This includes heat pump space heating, electric resistance reheat coils, electric water heater with storage tank, heat pump water heating, increasing electrical capacity, and eliminating natural gas connections that would have been present in mixed-fuel new construction. The Reach Code Team selected electric systems that would be installed instead of gas-fueled systems in each prototype.

### **3.3.1 HVAC and Water Heating**

The nonresidential standards use a mixed-fuel baseline for the Standard Design systems. In most nonresidential occupancies, the baseline is natural gas space heating. Hotel/motels and high-rise residential occupancies also assume natural gas baseline water heating systems for the guest rooms and dwelling units. In the all-electric scenario, gas equipment serving these end-uses is replaced with electric equipment, as described in Figure 9.



**Figure 9. All-Electric HVAC and Water Heating Characteristics Summary.**

		Medium Office	Medium Retail	Small Hotel
<b>HVAC System</b>	Baseline	Packaged DX + VAV with HW reheat. Central <b>gas</b> boilers.	Single zone packaged DX with <b>gas</b> furnaces	<u>NonRes</u> : Packaged DX + VAV with HW reheat. Central <b>gas</b> boilers. <u>Res</u> : Single zone DX AC unit with <b>gas</b> furnaces
	Proposed All-Electric	Packaged DX + VAV with electric <b>resistance</b> reheat.	Single zone packaged <b>heat pumps</b>	<u>NonRes</u> : Packaged DX + VAV with electric <b>resistance</b> reheat <u>Res</u> : Single zone <b>heat pumps</b>
<b>Water Heating System</b>	Baseline	Electric <b>resistance</b> with storage	Electric <b>resistance</b> with storage	<u>NonRes</u> : <b>Electric</b> resistance storage <u>Res</u> : Central <b>gas</b> storage with recirculation
	Proposed All-Electric	Electric <b>resistance</b> with storage	Electric <b>resistance</b> with storage	<u>NonRes</u> : Electric <b>resistance</b> storage <u>Res</u> : Individual <b>heat pumps</b>

The Reach Code Team received cost data for baseline mixed-fuel equipment as well as electric equipment from an experienced mechanical contractor in the San Francisco Bay Area. The total construction cost includes equipment and material, labor, subcontractors (for example, HVAC and SHW control systems), and contractor overhead.

### 3.3.1.1 Medium Office

The baseline HVAC system includes two gas hot water boilers, three packaged rooftop units, and VAV hot water reheat boxes. The SHW design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.

For the medium office all-electric HVAC design, the Reach Code Team investigated several potential all-electric design options, including variable refrigerant flow, packaged heat pumps, and variable volume and temperature systems. After seeking feedback from the design community, the Reach Code Team determined that the most feasible all-electric HVAC system, given the software modeling constraints is a VAV system with an electric resistance reheat instead of hot water reheat coil. A parallel fan-powered box (PFPB) implementation of electric resistance reheat would further improve efficiency due to reducing ventilation requirements, but an accurate implementation of PFPBs is not currently available in compliance software.

Note that the actual natural gas consumption for the VAV hot water reheat baseline may be higher than the current simulation results due to a combination of boiler and hot water distribution losses. A recent research study shows that the total losses can account for as high as 80 percent of the boiler energy use.<sup>19</sup>

<sup>19</sup> Raftery, P., A. Geronazzo, H. Cheng, and G. Paliaga. 2018. Quantifying energy losses in hot water reheat systems. *Energy and Buildings*, 179: 183-199. November. <https://doi.org/10.1016/j.enbuild.2018.09.020>. Retrieved from <https://escholarship.org/uc/item/3qs8f8qx>



If these losses are considered savings for the electric resistance reheat (which has zero associated distribution loss) may be higher.

The all-electric SHW system remains the same electric resistance water heater as the baseline and has no associated incremental costs.

Cost data for medium office designs are presented in Figure 10. The all-electric HVAC system presents cost savings compared to the hot water reheat system from elimination of the hot water boiler and associated hot water piping distribution. CZ10 and CZ15 all-electric design costs are slightly higher because they require larger size rooftop heat pumps than the other climate zones.

**Figure 10. Medium Office HVAC System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
<b>CZ01</b>	\$1,202,538	\$1,106,432	\$(96,106)
<b>CZ02</b>	\$1,261,531	\$1,178,983	\$(82,548)
<b>CZ03</b>	\$1,205,172	\$1,113,989	\$(91,183)
<b>CZ04</b>	\$1,283,300	\$1,205,434	\$(77,865)
<b>CZ05</b>	\$1,207,345	\$1,113,989	\$(93,356)
<b>CZ06</b>	\$1,216,377	\$1,131,371	\$(85,006)
<b>CZ07</b>	\$1,227,932	\$1,148,754	\$(79,178)
<b>CZ08</b>	\$1,250,564	\$1,172,937	\$(77,626)
<b>CZ09</b>	\$1,268,320	\$1,196,365	\$(71,955)
<b>CZ10</b>	\$1,313,580	\$1,256,825	\$(56,755)
<b>CZ11</b>	\$1,294,145	\$1,221,305	\$(72,840)
<b>CZ12</b>	\$1,274,317	\$1,197,121	\$(77,196)
<b>CZ13</b>	\$1,292,884	\$1,221,305	\$(71,579)
<b>CZ14</b>	\$1,286,245	\$1,212,236	\$(74,009)
<b>CZ15</b>	\$1,357,023	\$1,311,994	\$(45,029)
<b>CZ16</b>	\$1,295,766	\$1,222,817	\$(72,949)

### 3.3.1.2 Medium Retail

The baseline HVAC system includes five packaged single zone rooftop ACs with gas furnaces. Based on fan control requirements in section 140.4(m), units with cooling capacity  $\geq 65,000$  Btu/h have variable air volume fans, while smaller units have constant volume fans. The SHW design includes one 8.75 kW electric resistance hot water heater with a 30-gallon storage tank.

For the medium retail all-electric HVAC design, the Reach Code Team assumed packaged heat pumps instead of the packaged ACs. The all-electric SHW system remains the same electric resistance water heater as the baseline and has no associated incremental costs.

Cost data for medium retail designs are presented in Figure 11. Costs for rooftop air-conditioning systems are very similar to rooftop heat pump systems.

**Figure 11. Medium Retail HVAC System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
CZ01	\$328,312	\$333,291	\$4,978
CZ02	\$373,139	\$373,702	\$563
CZ03	\$322,849	\$326,764	\$3,915
CZ04	\$329,900	\$335,031	\$5,131
CZ05	\$359,888	\$362,408	\$2,520
CZ06	\$335,728	\$341,992	\$6,265
CZ07	\$345,544	\$349,808	\$4,265
CZ08	\$368,687	\$369,792	\$1,104
CZ09	\$415,155	\$411,069	\$(4,087)
CZ10	\$345,993	\$346,748	\$755
CZ11	\$418,721	\$414,546	\$(4,175)
CZ12	\$405,110	\$400,632	\$(4,477)
CZ13	\$376,003	\$375,872	\$(131)
CZ14	\$405,381	\$406,752	\$1,371
CZ15	\$429,123	\$427,606	\$(1,517)
CZ16	\$401,892	\$404,147	\$2,256

### 3.3.1.3 Small Hotel

The small hotel has two different baseline equipment systems, one for the nonresidential spaces and one for the guest rooms. The nonresidential HVAC system includes two gas hot water boilers, four packaged rooftop units and twelve VAV terminal boxes with hot water reheat coil. The SHW design includes a small electric water heater with storage tank. The residential HVAC design includes one single zone AC unit with gas furnace for each guest room and the water heating design includes one central gas storage water heater with a recirculation pump for all guest rooms.

For the small hotel all-electric design, the Reach Code Team assumed the nonresidential HVAC system to be packaged heat pumps with electric resistance VAV terminal units, and the SHW system to remain a small electric resistance water heater.

For the guest room all-electric HVAC system, the analysis used a single zone (packaged terminal) heat pump and a central heat pump water heater serving all guest rooms. Central heat pump water heating with recirculation serving guest rooms cannot yet be modeled in CBECC-Com, and energy impacts were modeled by simulating individual heat pump water heaters in each guest room. The reach code team believes this is a conservative assumption, since individual heat pump water heaters will have much higher tank standby losses. The Reach Code Team attained costs for central heat pump water heating installation including storage tanks and controls and used these costs in the study.

Cost data for small hotel designs are presented in Figure 12. The all-electric design presents substantial cost savings because there is no hot water plant or piping distribution system serving the nonresidential spaces, as well as the lower cost of packaged terminal heat pumps serving the residential spaces compared to split DX/furnace systems with individual flues.



**Figure 12. Small Hotel HVAC and Water Heating System Costs**

Climate Zone	Mixed Fuel Baseline	All Electric System	Incremental cost for All-Electric
CZ01	\$2,337,531	\$1,057,178	\$(1,280,353)
CZ02	\$2,328,121	\$1,046,795	\$(1,281,326)
CZ03	\$2,294,053	\$1,010,455	\$(1,283,598)
CZ04	\$2,302,108	\$1,018,675	\$(1,283,433)
CZ05	\$2,298,700	\$1,015,214	\$(1,283,486)
CZ06	\$2,295,380	\$1,011,753	\$(1,283,627)
CZ07	\$2,308,004	\$1,026,029	\$(1,281,975)
CZ08	\$2,333,662	\$1,053,717	\$(1,279,946)
CZ09	\$2,312,099	\$1,030,355	\$(1,281,744)
CZ10	\$2,354,093	\$1,075,348	\$(1,278,745)
CZ11	\$2,347,980	\$1,068,426	\$(1,279,554)
CZ12	\$2,328,654	\$1,047,660	\$(1,280,994)
CZ13	\$2,348,225	\$1,068,858	\$(1,279,367)
CZ14	\$2,345,988	\$1,066,263	\$(1,279,725)
CZ15	\$2,357,086	\$1,079,241	\$(1,277,845)
CZ16	\$2,304,094	\$1,019,973	\$(1,284,121)

### 3.3.2 *Infrastructure Impacts*

Electric heating appliances and equipment often require a larger electrical connection than an equivalent natural gas appliance because of the higher voltage and amperage necessary to electrically generate heat. Thus, many buildings may require larger electrical capacity than a comparable building with natural gas appliances. This includes:

- ◆ Electric resistance VAV space heating in the medium office and common area spaces of the small hotel.
- ◆ Heat pump water heating for the guest room spaces of the small hotel.

#### 3.3.2.1 *Electrical Panel Sizing and Wiring*

This section details the additional electrical panel sizing and wiring required for all-electric measures. In an all-electric new construction scenario, heat pumps replace packaged DX units which are paired with either a gas furnace or a hot water coil (supplied by a gas boiler). The electrical requirements of the replacement heat pump would be the same as the packaged DX unit it replaces, as the electrical requirements would be driven by the cooling capacity, which would remain the same between the two units.

VAV terminal units with hot water reheat coils that are replaced with electric resistance reheat coils require additional electrical infrastructure. In the case of electric resistance coils, the Reach Code Team assumed that on average, a VAV terminal unit serves around 900 ft<sup>2</sup> of conditioned space and has a heating capacity of 5 kW (15 kBtu/hr/ft<sup>2</sup>). The incremental electrical infrastructure costs were determined based on RS Means. Calculations for the medium office shown in Figure 13 include the cost to add electrical panels as well as the cost to add electrical lines to each VAV terminal unit electric resistance coil in the medium office prototype. Additionally, the Reach Code Team subtracted the electrical infrastructure costs associated with hot water pumps required in the mixed fuel baseline, which are not required in the all-electric measures.



The Reach Code Team calculated costs to increase electrical capacity for heat pump water heaters in the small hotel similarly.

**Figure 13. Medium Office Electrical Infrastructure Costs for All-Electric Design**

A	-	No. VAV Boxes	60
B	-	VAV box heating capacity (watts)	4,748
C	-	No. hot water pumps	2
D	-	Hot water pump power (watts)	398
E	-	Voltage	208
F	$(A \times B - C \times D) / E$	Panel ampacity required	1,366
G	$F / 400$	Number of 400-amp panels required	4
H	-	Cost per 400-amp panel	\$3,100
I	$G \times H$	Total panel cost	\$12,400
J	-	Total electrical line length required (ft)	4,320
K	-	Cost per linear foot of electrical line	\$3.62
L	$J \times K$	Total electrical line cost	\$15,402
	<b>I + L</b>	<b>Total electrical infrastructure incremental cost</b>	<b>\$27,802</b>

### 3.3.2.2 Natural Gas

This analysis assumes that in an all-electric new construction scenario natural gas would not be supplied to the site. Eliminating natural gas in new construction would save costs associated with connecting a service line from the street main to the building, piping distribution within the building, and monthly connection charges by the utility.

The Reach Code Team determined that for a new construction building with natural gas piping, there is a service line (branch connection) from the natural gas main to the building meter. In the medium office prototype, natural gas piping is routed to the boiler. The Reach Code Team assumed that the boiler is on the first floor, and that 30 feet of piping is required from the connection to the main to the boiler. The Reach Code Team assumed 1" corrugated stainless steel tubing (CSST) material is used for the plumbing distribution. The Reach Code Team included costs for a natural gas plan review, service extension, and a gas meter, as shown in Figure 14 below. The natural gas plan review cost is based on information received from the City of Palo Alto Utilities. The meter costs are from PG&E and include both material and labor. The service extension costs are based on guidance from PG&E, who noted that the cost range is highly varied and that there is no "typical" cost, with costs being highly dependent on length of extension, terrain, whether the building is in a developed or undeveloped area, and number of buildings to be served. While an actual service extension cost is highly uncertain, the team believes the costs assumed in this analysis are within a reasonable range based on a sample range of costs provided by PG&E. These costs assume development in a previously developed area.

**Figure 14. Natural Gas Infrastructure Cost Savings for All-Electric Prototypes**

Cost Type	Medium Office	Medium Retail	Small Hotel
Natural Gas Plan Review	\$2,316	\$2,316	\$2,316
Service Extension	\$13,000	\$13,000	\$13,000
Meter	\$3,000	\$3,000	\$3,000
Plumbing Distribution	\$633	\$9,711	\$37,704
<b>Total Cost</b>	<b>\$18,949</b>	<b>\$28,027</b>	<b>\$56,020</b>

### 3.4 Preempted High Efficiency Appliances

The Reach Code Team developed a package of high efficiency (HE) space and water heating appliances based on commonly available products for both the mixed-fuel and all-electric scenarios. This package assesses the standalone contribution that high efficiency measures would make toward achieving high performance thresholds. The Reach Code Team reviewed the Air Conditioning, Heating, and Refrigeration Institute (AHRI) certified product database to estimate appropriate efficiencies.<sup>20</sup>

The Reach Code Team determined the efficiency increases to be appropriate based on equipment type, summarized in Figure 15, with cost premiums attained from a Bay Area mechanical contractor. The ranges in efficiency are indicative of varying federal standard requirements based on equipment size.

**Figure 15. High Efficiency Appliance Assumptions**

	Federal Minimum Efficiency	Preempted Efficiency	Cost Premium for HE Appliance
Gas space heating and water heating	80-82%	90-95%	10-15%
Large packaged rooftop cooling	9.8-12 EER 11.4-12.9 IEER	10.5-13 EER 15-15.5 IEER	10-15%
Single zone heat pump space heating	7.7 HSPF 3.2 COP	10 HSPF 3.5 COP	6-15%
Heat pump water heating	2.0 UEF	3.3 UEF	None (market does not carry 2.0 UEF)

### 3.5 Greenhouse Gas Emissions

The analysis uses the greenhouse gas (GHG) emissions estimates from Zero Code reports available in CBECC-Com.<sup>21</sup> Zero Code uses 8760 hourly multipliers accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard projections. Fugitive

<sup>20</sup> Available at: <https://www.ahridirectory.org/Search/SearchHome?ReturnUrl=%2f>

<sup>21</sup> More information available at: <https://zero-code.org/wp-content/uploads/2018/11/ZERO-Code-TSD-California.pdf>



emissions are not included. There are two strings of multipliers – one for Northern California climate zones, and another for Southern California climate zones.<sup>22</sup>

## 4 Results

The Reach Code Team evaluated cost effectiveness of the following measure packages over a 2019 mixed-fuel code compliant baseline for all climate zones, as detailed in Sections 4.1 -- 4.3 and reiterated in Figure 16:

- ◆ **Package 1A – Mixed-Fuel + EE:** Mixed-fuel design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 1B – Mixed-Fuel + EE + PV + B:** Same as Package 1A, plus solar PV and batteries.
- ◆ **Package 1C – Mixed-fuel + HE:** Alternative design with high efficiency appliances, triggering federal preemption.
- ◆ **Package 2 – All-Electric Federal Code-Minimum Reference:** All-electric design with federal code minimum appliance efficiency. No solar PV or battery.
- ◆ **Package 3A – All-Electric + EE:** All-electric design with energy efficiency measures and federal minimum appliance efficiencies.
- ◆ **Package 3B – All-Electric + EE + PV + B:** Same as Package 3A, plus solar PV and batteries.
- ◆ **Package 3C – All-Electric + HE:** All-electric design with high efficiency appliances, triggering federal preemption.

**Figure 16. Package Summary**

Package	Fuel Type		Energy Efficiency Measures	PV & Battery (PV + B)	High Efficiency Appliances (HE)
	Mixed Fuel	All-Electric			
Mixed-Fuel Code Minimum Baseline	X				
1A – Mixed-Fuel + EE	X		X		
1B – Mixed-Fuel + EE + PV + B	X		X	X	
1C – Mixed-fuel + HE	X				X
2 – All-Electric Federal Code-Minimum Reference		X			
3A – All-Electric + EE		X	X		
3B – All-Electric + EE + PV + B		X	X	X	
3C – All-Electric + HE		X			X

<sup>22</sup> CBECC-Com documentation does not state which climate zones fall under which region. CBECC-Res multipliers are the same for CZs 1-5 and 11-13 (presumed to be Northern California), while there is another set of multipliers for CZs 6-10 and 14-16 (assumed to be Southern California).



Section 4.4 presents the results of the PV-only and PV+Battery analysis.

The TDV and on-bill based cost effectiveness results are presented in terms of B/C ratio and NPV in this section. What constitutes a ‘benefit’ or a ‘cost’ varies with the scenarios because both energy savings and incremental construction costs may be negative depending on the package. Typically, utility bill savings are categorized as a ‘benefit’ while incremental construction costs are treated as ‘costs.’ In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the ‘benefit’ while the utility bill negative savings are as the ‘cost.’

Overarching factors to keep in mind when reviewing the results include:

- ◆ To pass the Energy Commission’s application process, local reach codes must both be cost effective and exceed the energy performance budget using TDV (i.e., have a positive compliance margin). To emphasize these two important factors, the figures in this Section highlight in green the modeling results that have **either** a positive compliance margin or are cost effective. This will allow readers to identify whether a scenario is fully or partially supportive of a reach code, and the opportunities/challenges that the scenario presents. Conversely, Section 4.4 only highlights results that **both** have a positive compliance margin and are cost effective, to allow readers to identify reach code-ready scenarios.
- ◆ **Note:** Compliance margin represents the proportion of energy usage that is saved compared to the baseline, measured on a TDV basis.
- ◆ The Energy Commission does not currently allow compliance credit for either solar PV or battery storage. Thus, the compliance margins in Packages 1A are the same as 1B, and Package 3A is the same as 3B. However, The Reach Code Team did include the impact of solar PV and battery when calculating TDV cost-effectiveness.
- ◆ When performance modeling residential buildings, the Energy Commission allows the Standard Design to be electric if the Proposed Design is electric, which removes TDV-related penalties and associated negative compliance margins. This essentially allows for a compliance pathway for all-electric residential buildings. Nonresidential buildings are not treated in the same way and are compared to a mixed-fuel standard design.
- ◆ Results do not include an analysis and comparison of utility rates. As mentioned in *Section 2.2*, The Reach Code Team coordinated with utilities to select tariffs for each prototype given the annual energy demand profile and the most prevalent rates in each utility territory. The Reach Code Team did not compare a variety of tariffs to determine their impact on cost effectiveness. Note that most utility time-of-use rates are continuously updated, which can affect cost effectiveness results.
- ◆ As a point of comparison, mixed-fuel baseline energy figures are provided in *Appendix 6.5*.

#### **4.1 Cost Effectiveness Results – Medium Office**

Figure 17 through Figure 23 contain the cost-effectiveness findings for the Medium Office packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:** Packages achieve +12 to +20 percent compliance margins depending on climate zone. All packages are cost effective in all climate zones using the TDV approach. All packages are cost effective using the On-Bill approach except for LADWP territory.



- ◆ **1B – Mixed-Fuel + EE + PV + B:** All packages are cost effective using the On-Bill and TDV approaches, except On-Bill in LADWP territory. When compared to 1A, the B/C ratio changes depending on the utility and climate zone (some increase while others decrease). However, NPV savings are increased across the board, suggesting that larger investments yield larger returns.
- ◆ **1C – Mixed-Fuel + HE:** Packages achieve +3 to +5 percent compliance margins depending on climate zone, but no packages were cost effective. The incremental costs of a high efficiency condensing boiler compared to a non-condensing boiler contributes to 26-47% of total incremental cost depending on boiler size. Benefits of condensing boiler efficiency come from resetting hot water return temperature as boiler efficiency increases at lower hot water temperature. However, hot water temperature reset control cannot currently be implemented in the software. In addition, the natural gas energy cost constitutes no more than 5% of total cost for 15 climate zones, so improving boiler efficiency has limited contribution to reduction of total energy cost.
- ◆ **2 – All-Electric Federal Code-Minimum Reference:**
  - ◆ Packages achieve between -27 percent and +1 percent compliance margins depending on climate zone. This is likely because the modeled system is electric resistance, and TDV values electricity consumption more heavily than natural gas. This all-electric design without other efficiency measures does not comply with the Energy Commission’s TDV performance budget.
  - ◆ All incremental costs are negative due to the elimination of natural gas infrastructure.
  - ◆ Packages achieve utility cost savings and are cost effective using the On-Bill approach in CZs 6-10 and 14-15. Packages do not achieve savings and are not cost effective using the On-Bill approach in most of PG&E territory (CZs 1,2,4, 11-13, and 16). Packages achieve savings and are cost effective using TDV in all climate zones except CZ16.
- ◆ **3A – All-Electric + EE:** Packages achieve positive compliance margins except -15 percent in CZ16, which has a higher space heating load than other climate zones. All packages are cost effective in all climate zones except CZ16.
- ◆ **3B – All-Electric + EE + PV + B:** Packages achieve positive compliance margins except -15 percent in CZ16. All packages are cost-effective from a TDV perspective in all climate zones. All packages are cost effective from an On-Bill perspective in all climate zones except in CZ 2 and CZ 16 in LADWP territory.
- ◆ **3C – All-Electric + HE:** Packages achieve between -26 percent and +2 percent compliance margins depending on climate zone. The only packages that are cost effective and with a positive compliance margin are in CZs 7-9 and 15. As described in Package 1C results, space heating is a relatively low proportion of energy costs in most climate zones, limiting the costs gains for higher efficiency equipment.



**Figure 17. Cost Effectiveness for Medium Office Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	34,421	-808	4.5	18%	\$66,649	\$125,902	\$71,307	1.9	1.1	\$59,253	\$4,658
CZ02	PG&E	40,985	-505	8.1	17%	\$66,649	\$163,655	\$99,181	2.5	1.5	\$97,005	\$32,532
CZ03	PG&E	36,266	-463	7.0	20%	\$66,649	\$141,897	\$84,051	2.1	1.3	\$75,248	\$17,401
CZ04	PG&E	40,590	-547	7.7	14%	\$66,649	\$162,139	\$95,410	2.4	1.4	\$95,489	\$28,761
CZ04-2	CPAU	40,590	-547	7.7	14%	\$66,649	\$85,537	\$95,410	1.3	1.4	\$18,887	\$28,761
CZ05	PG&E	38,888	-499	7.4	18%	\$66,649	\$154,044	\$91,115	2.3	1.4	\$87,395	\$24,465
CZ05-2	SCG	38,888	-499	7.4	18%	\$66,649	\$156,315	\$91,115	2.3	1.4	\$89,665	\$24,465
CZ06	SCE	39,579	-305	8.7	20%	\$66,649	\$86,390	\$100,469	1.3	1.5	\$19,741	\$33,820
CZ06-2	LADWP	39,579	-305	8.7	20%	\$66,649	\$51,828	\$100,469	0.8	1.5	(\$14,821)	\$33,820
CZ07	SDG&E	41,817	-6	11.3	20%	\$66,649	\$204,394	\$112,497	3.1	1.7	\$137,745	\$45,848
CZ08	SCE	41,637	-60	10.8	18%	\$66,649	\$89,783	\$113,786	1.3	1.7	\$23,134	\$47,137
CZ08-2	LADWP	41,637	-60	10.8	18%	\$66,649	\$54,876	\$113,786	0.8	1.7	(\$11,773)	\$47,137
CZ09	SCE	42,539	-210	10.1	16%	\$66,649	\$95,636	\$115,647	1.4	1.7	\$28,987	\$48,998
CZ09-2	LADWP	42,539	-210	10.1	16%	\$66,649	\$58,168	\$115,647	0.9	1.7	(\$8,481)	\$48,998
CZ10	SDG&E	41,857	-216	9.8	17%	\$66,649	\$210,303	\$108,726	3.2	1.6	\$143,654	\$42,077
CZ10-2	SCE	41,857	-216	9.8	17%	\$66,649	\$92,736	\$108,726	1.4	1.6	\$26,087	\$42,077
CZ11	PG&E	42,523	-390	9.1	13%	\$66,649	\$166,951	\$104,001	2.5	1.6	\$100,301	\$37,352
CZ12	PG&E	41,521	-466	8.4	14%	\$66,649	\$161,594	\$100,135	2.4	1.5	\$94,945	\$33,486
CZ12-2	SMUD	41,521	-466	8.4	14%	\$66,649	\$71,734	\$100,135	1.1	1.5	\$5,085	\$33,486
CZ13	PG&E	42,898	-434	9.0	13%	\$66,649	\$169,107	\$99,992	2.5	1.5	\$102,457	\$33,343
CZ14	SDG&E	42,224	-441	8.6	14%	\$66,649	\$211,529	\$106,913	3.2	1.6	\$144,880	\$40,264
CZ14-2	SCE	42,224	-441	8.6	14%	\$66,649	\$95,809	\$106,913	1.4	1.6	\$29,160	\$40,264
CZ15	SCE	45,723	-147	11.2	12%	\$66,649	\$102,714	\$118,034	1.5	1.8	\$36,065	\$51,384
CZ16	PG&E	37,758	-736	5.8	14%	\$66,649	\$145,947	\$79,755	2.2	1.2	\$79,297	\$13,106
CZ16-2	LADWP	37,758	-736	5.8	14%	\$66,649	\$40,115	\$79,755	0.6	1.2	(\$26,534)	\$13,106



**Figure 18. Cost Effectiveness for Medium Office Package 1B – Mixed-Fuel + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (mtons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + PV + Battery</b>												
CZ01	PG&E	211,225	-808	39.9	18%	\$397,405	\$645,010	\$454,284	1.6	1.1	\$247,605	\$56,879
CZ02	PG&E	255,787	-505	50.6	17%	\$397,405	\$819,307	\$573,033	2.1	1.4	\$421,902	\$175,628
CZ03	PG&E	245,421	-463	48.8	20%	\$397,405	\$777,156	\$536,330	2.0	1.3	\$379,751	\$138,925
CZ04	PG&E	267,612	-547	52.7	14%	\$397,405	\$836,221	\$597,471	2.1	1.5	\$438,816	\$200,066
CZ04-2	CPAU	267,612	-547	52.7	14%	\$397,405	\$621,879	\$597,471	1.6	1.5	\$224,474	\$200,066
CZ05	PG&E	264,581	-499	52.5	18%	\$397,405	\$897,216	\$578,856	2.3	1.5	\$499,811	\$181,451
CZ05-2	SCG	264,581	-499	52.5	18%	\$397,405	\$899,487	\$578,856	2.3	1.5	\$502,082	\$181,451
CZ06	SCE	257,474	-305	52.1	20%	\$397,405	\$484,229	\$594,416	1.2	1.5	\$86,824	\$197,011
CZ06-2	LA	257,474	-305	52.1	20%	\$397,405	\$282,360	\$594,416	0.7	1.5	(\$115,045)	\$197,011
CZ07	SDG&E	264,530	-6	55.7	20%	\$397,405	\$817,528	\$610,548	2.1	1.5	\$420,123	\$213,143
CZ08	SCE	258,348	-60	54.0	18%	\$397,405	\$479,073	\$625,249	1.2	1.6	\$81,668	\$227,844
CZ08-2	LA	258,348	-60	54.0	18%	\$397,405	\$275,704	\$625,249	0.7	1.6	(\$121,701)	\$227,844
CZ09	SCE	262,085	-210	54.3	16%	\$397,405	\$480,241	\$622,528	1.2	1.6	\$82,836	\$225,123
CZ09-2	LA	262,085	-210	54.3	16%	\$397,405	\$282,209	\$622,528	0.7	1.6	(\$115,196)	\$225,123
CZ10	SDG&E	258,548	-216	53.4	17%	\$397,405	\$839,931	\$595,323	2.1	1.5	\$442,526	\$197,918
CZ10-2	SCE	258,548	-216	53.4	17%	\$397,405	\$485,523	\$595,323	1.2	1.5	\$88,118	\$197,918
CZ11	PG&E	253,623	-390	50.9	13%	\$397,405	\$826,076	\$585,682	2.1	1.5	\$428,671	\$188,277
CZ12	PG&E	252,868	-466	50.3	14%	\$397,405	\$802,715	\$582,866	2.0	1.5	\$405,310	\$185,461
CZ12-2	SMUD	252,868	-466	50.3	14%	\$397,405	\$415,597	\$582,866	1.0	1.5	\$18,192	\$185,461
CZ13	PG&E	250,915	-434	50.4	13%	\$397,405	\$806,401	\$573,606	2.0	1.4	\$408,996	\$176,201
CZ14	SDG&E	283,684	-441	56.4	14%	\$397,405	\$874,753	\$676,271	2.2	1.7	\$477,348	\$278,866
CZ14-2	SCE	283,684	-441	56.4	14%	\$397,405	\$493,888	\$676,271	1.2	1.7	\$96,483	\$278,866
CZ15	SCE	274,771	-147	56.0	12%	\$397,405	\$476,327	\$640,379	1.2	1.6	\$78,922	\$242,974
CZ16	PG&E	266,490	-736	51.8	14%	\$397,405	\$842,205	\$575,563	2.1	1.4	\$444,800	\$178,158
CZ16-2	LA	266,490	-736	51.8	14%	\$397,405	\$260,372	\$575,563	0.7	1.4	(\$137,033)	\$178,158



**Figure 19. Cost Effectiveness for Medium Office Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	288	688	4.1	3%	\$61,253	\$18,656	\$12,314	0.3	0.2	(\$42,597)	(\$48,939)
CZ02	PG&E	3,795	550	4.3	4%	\$68,937	\$36,683	\$24,676	0.5	0.4	(\$32,254)	(\$44,261)
CZ03	PG&E	1,241	439	2.9	3%	\$57,529	\$20,150	\$11,885	0.4	0.2	(\$37,379)	(\$45,644)
CZ04	PG&E	5,599	529	4.7	5%	\$72,074	\$44,915	\$30,928	0.6	0.4	(\$27,158)	(\$41,145)
CZ04-2	CPAU	5,599	529	4.7	5%	\$72,074	\$24,175	\$30,928	0.3	0.4	(\$47,898)	(\$41,145)
CZ05	PG&E	3,470	453	3.6	4%	\$60,330	\$35,072	\$18,232	0.6	0.3	(\$25,258)	(\$42,097)
CZ05-2	SCG	3,470	453	3.6	4%	\$60,330	\$32,777	\$18,232	0.5	0.3	(\$27,553)	(\$42,097)
CZ06	SCE	3,374	298	2.6	3%	\$55,594	\$19,446	\$16,132	0.3	0.3	(\$36,148)	(\$39,462)
CZ06-2	LADWP	3,374	298	2.6	3%	\$55,594	\$13,450	\$16,132	0.2	0.3	(\$42,145)	(\$39,462)
CZ07	SDG&E	5,257	140	2.3	4%	\$54,111	\$41,086	\$19,903	0.8	0.4	(\$13,025)	(\$34,208)
CZ08	SCE	5,921	176	2.7	4%	\$60,497	\$22,210	\$24,055	0.4	0.4	(\$38,287)	(\$36,442)
CZ08-2	LADWP	5,921	176	2.7	4%	\$60,497	\$14,064	\$24,055	0.2	0.4	(\$46,434)	(\$36,442)
CZ09	SCE	7,560	224	3.5	4%	\$61,311	\$28,576	\$31,835	0.5	0.5	(\$32,735)	(\$29,476)
CZ09-2	LADWP	7,560	224	3.5	4%	\$61,311	\$18,262	\$31,835	0.3	0.5	(\$43,049)	(\$29,476)
CZ10	SDG&E	5,786	288	3.2	4%	\$62,685	\$50,717	\$24,628	0.8	0.4	(\$11,968)	(\$38,057)
CZ10-2	SCE	5,786	288	3.2	4%	\$62,685	\$24,575	\$24,628	0.4	0.4	(\$38,110)	(\$38,057)
CZ11	PG&E	8,128	441	4.9	5%	\$71,101	\$54,188	\$37,849	0.8	0.5	(\$16,912)	(\$33,252)
CZ12	PG&E	6,503	478	4.7	5%	\$68,329	\$47,329	\$34,556	0.7	0.5	(\$20,999)	(\$33,773)
CZ12-2	SMUD	6,503	478	4.7	5%	\$68,329	\$24,003	\$34,556	0.4	0.5	(\$44,325)	(\$33,773)
CZ13	PG&E	8,398	432	5.0	5%	\$69,474	\$51,347	\$37,229	0.7	0.5	(\$18,128)	(\$32,246)
CZ14	SDG&E	7,927	470	5.0	5%	\$69,463	\$62,744	\$37,133	0.9	0.5	(\$6,718)	(\$32,329)
CZ14-2	SCE	7,927	470	5.0	5%	\$69,463	\$32,517	\$37,133	0.5	0.5	(\$36,946)	(\$32,329)
CZ15	SCE	15,140	219	5.5	5%	\$66,702	\$43,773	\$52,359	0.7	0.8	(\$22,929)	(\$14,344)
CZ16	PG&E	3,111	912	6.3	5%	\$71,765	\$36,002	\$24,914	0.5	0.3	(\$35,763)	(\$46,851)
CZ16-2	LADWP	3,111	912	6.3	5%	\$71,765	\$23,057	\$24,914	0.3	0.3	(\$48,708)	(\$46,851)



**Figure 20. Cost Effectiveness for Medium Office Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-53,657	4967	10.1	-15%	(\$87,253)	(\$98,237)	(\$58,420)	0.9	1.5	(\$10,984)	\$28,833
CZ02	PG&E	-49,684	3868	5.0	-7%	(\$73,695)	(\$101,605)	(\$41,429)	0.7	1.8	(\$27,910)	\$32,266
CZ03	PG&E	-35,886	3142	5.6	-7%	(\$82,330)	(\$57,345)	(\$29,592)	1.4	2.8	\$24,986	\$52,738
CZ04	PG&E	-48,829	3759	4.7	-6%	(\$69,012)	(\$90,527)	(\$40,570)	0.8	1.7	(\$21,515)	\$28,443
CZ04-2	CPAU	-48,829	3759	4.7	-6%	(\$69,012)	(\$19,995)	(\$40,570)	3.5	1.7	\$49,018	\$28,443
CZ05	PG&E	-40,531	3240	4.5	-8%	(\$84,503)	(\$63,663)	(\$39,997)	1.3	2.1	\$20,840	\$44,506
CZ06	SCE	-26,174	2117	3.1	-4%	(\$76,153)	\$24,908	(\$20,571)	>1	3.7	\$101,061	\$55,581
CZ06-2	LADWP	-26,174	2117	3.1	-4%	(\$76,153)	\$26,366	(\$20,571)	>1	3.7	\$102,518	\$55,581
CZ07	SDG&E	-12,902	950	0.9	-2%	(\$70,325)	\$46,879	(\$11,407)	>1	6.2	\$117,204	\$58,918
CZ08	SCE	-15,680	1219	1.5	-2%	(\$68,774)	\$17,859	(\$12,648)	>1	5.4	\$86,633	\$56,125
CZ08-2	LADWP	-15,680	1219	1.5	-2%	(\$68,774)	\$18,603	(\$12,648)	>1	5.4	\$87,376	\$56,125
CZ09	SCE	-19,767	1605	2.4	-2%	(\$63,102)	\$20,920	(\$14,462)	>1	4.4	\$84,022	\$48,640
CZ09-2	LADWP	-19,767	1605	2.4	-2%	(\$63,102)	\$21,929	(\$14,462)	>1	4.4	\$85,030	\$48,640
CZ10	SDG&E	-27,414	2053	2.2	-4%	(\$47,902)	\$38,918	(\$23,339)	>1	2.1	\$86,820	\$24,562
CZ10-2	SCE	-27,414	2053	2.2	-4%	(\$47,902)	\$20,765	(\$23,339)	>1	2.1	\$68,666	\$24,562
CZ11	PG&E	-40,156	3062	3.6	-4%	(\$63,987)	(\$72,791)	(\$32,837)	0.9	1.9	(\$8,804)	\$31,150
CZ12	PG&E	-43,411	3327	4.1	-5%	(\$68,343)	(\$85,856)	(\$35,463)	0.8	1.9	(\$17,512)	\$32,880
CZ12-2	SMUD	-43,411	3327	4.1	-5%	(\$68,343)	(\$5,109)	(\$35,463)	13.4	1.9	\$63,234	\$32,880
CZ13	PG&E	-39,649	3063	3.8	-4%	(\$62,726)	(\$70,705)	(\$32,408)	0.9	1.9	(\$7,980)	\$30,318
CZ14	SDG&E	-44,322	3266	3.4	-5%	(\$65,156)	\$6,043	(\$38,422)	>1	1.7	\$71,199	\$26,735
CZ14-2	SCE	-44,322	3266	3.4	-5%	(\$65,156)	\$4,798	(\$38,422)	>1	1.7	\$69,954	\$26,735
CZ15	SCE	-19,917	1537	1.8	-2%	(\$36,176)	\$12,822	(\$15,464)	>1	2.3	\$48,998	\$20,711
CZ16	PG&E	-94,062	6185	5.6	-27%	(\$64,096)	(\$212,158)	(\$150,871)	0.3	0.4	(\$148,062)	(\$86,775)
CZ16-2	LADWP	-94,062	6185	5.6	-27%	(\$64,096)	\$1,493	(\$150,871)	>1	0.4	\$65,589	(\$86,775)

\*The Incremental Package Cost is equal to the sum of the incremental HVAC and water heating equipment costs from

Figure 10, the electrical infrastructure incremental cost of \$27,802 (see section 3.3.2.1), and the natural gas infrastructure incremental costs of \$(18,949) (see section 3.3.2.2).



**Figure 21. Cost Effectiveness for Medium Office Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-19,115	4967	19.4	7%	(\$20,604)	\$20,630	\$28,112	>1	>1	\$41,234	\$48,716
CZ02	PG&E	-11,811	3868	15.2	10%	(\$7,046)	\$39,260	\$58,563	>1	>1	\$46,306	\$65,609
CZ03	PG&E	2,530	3142	16.2	16%	(\$15,681)	\$85,241	\$68,682	>1	>1	\$100,922	\$84,363
CZ04	PG&E	-10,839	3759	14.8	9%	(\$2,363)	\$59,432	\$58,420	>1	>1	\$61,795	\$60,783
CZ04-2	CPAU	-10,839	3759	14.8	9%	(\$2,363)	\$70,680	\$58,420	>1	>1	\$73,043	\$60,783
CZ05	PG&E	-2,316	3240	14.6	12%	(\$17,854)	\$85,380	\$58,802	>1	>1	\$103,234	\$76,656
CZ06	SCE	15,399	2117	14.3	18%	(\$9,503)	\$114,962	\$89,921	>1	>1	\$124,466	\$99,425
CZ06-2	LADWP	15,399	2117	14.3	18%	(\$9,503)	\$82,389	\$89,921	>1	>1	\$91,893	\$99,425
CZ07	SDG&E	33,318	950	13.8	20%	(\$3,676)	\$256,704	\$111,399	>1	>1	\$260,380	\$115,076
CZ08	SCE	30,231	1219	14.2	18%	(\$2,124)	\$110,144	\$111,781	>1	>1	\$112,268	\$113,906
CZ08-2	LADWP	30,231	1219	14.2	18%	(\$2,124)	\$76,069	\$111,781	>1	>1	\$78,194	\$113,906
CZ09	SCE	24,283	1605	14.3	15%	\$3,547	\$119,824	\$108,249	33.8	30.5	\$116,277	\$104,702
CZ09-2	LADWP	24,283	1605	14.3	15%	\$3,547	\$83,549	\$108,249	23.6	30.5	\$80,001	\$104,702
CZ10	SDG&E	12,344	2053	12.6	13%	\$18,748	\$230,553	\$82,905	12.3	4.4	\$211,806	\$64,158
CZ10-2	SCE	12,344	2053	12.6	13%	\$18,748	\$105,898	\$82,905	5.6	4.4	\$87,150	\$64,158
CZ11	PG&E	929	3062	14.5	10%	\$2,662	\$85,988	\$75,030	32.3	28.2	\$83,326	\$72,368
CZ12	PG&E	-3,419	3327	14.8	10%	(\$1,694)	\$68,866	\$69,589	>1	>1	\$70,560	\$71,283
CZ12-2	SMUD	-3,419	3327	14.8	10%	(\$1,694)	\$71,761	\$69,589	>1	>1	\$73,455	\$71,283
CZ13	PG&E	1,398	3063	14.8	9%	\$3,923	\$89,799	\$71,307	22.9	18.2	\$85,875	\$67,384
CZ14	SDG&E	-5,469	3266	13.5	9%	\$1,493	\$206,840	\$69,016	138.6	46.2	\$205,347	\$67,523
CZ14-2	SCE	-5,469	3266	13.5	9%	\$1,493	\$94,143	\$69,016	63.1	46.2	\$92,650	\$67,523
CZ15	SCE	25,375	1537	13.7	10%	\$30,474	\$114,909	\$104,335	3.8	3.4	\$84,435	\$73,862
CZ16	PG&E	-65,877	6185	12.7	-15%	\$2,553	(\$91,477)	(\$85,673)	-35.8	-33.6	(\$94,030)	(\$88,226)
CZ16-2	LADWP	-65,877	6185	12.7	-15%	\$2,553	\$72,780	(\$85,673)	28.5	-33.6	\$70,227	(\$88,226)



**Figure 22. Cost Effectiveness for Medium Office Package 3B – All-Electric + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (mtons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + PV + B</b>												
CZ01	PG&E	157,733	4967	54.9	7%	\$310,152	\$518,421	\$410,946	1.7	1.3	\$208,269	\$100,794
CZ02	PG&E	203,026	3868	57.8	10%	\$323,710	\$692,336	\$532,273	2.1	1.6	\$368,626	\$208,563
CZ03	PG&E	211,706	3142	58.0	16%	\$315,075	\$708,235	\$520,866	2.2	1.7	\$393,160	\$205,791
CZ04	PG&E	216,204	3759	59.9	9%	\$328,393	\$741,382	\$560,576	2.3	1.7	\$412,989	\$232,183
CZ04-2	CPAU	216,204	3759	59.9	9%	\$328,393	\$607,074	\$560,576	1.8	1.7	\$278,681	\$232,183
CZ05	PG&E	223,399	3240	59.8	12%	\$312,902	\$799,992	\$546,592	2.6	1.7	\$487,090	\$233,690
CZ06	SCE	233,299	2117	57.7	18%	\$321,252	\$509,969	\$583,963	1.6	1.8	\$188,716	\$262,711
CZ06-2	LA	233,299	2117	57.7	18%	\$321,252	\$311,931	\$583,963	1.0	1.8	(\$9,322)	\$262,711
CZ07	SDG&E	256,034	950	58.3	20%	\$327,079	\$870,156	\$609,498	2.7	1.9	\$543,076	\$282,419
CZ08	SCE	246,944	1219	57.4	18%	\$328,631	\$499,506	\$623,292	1.5	1.9	\$170,874	\$294,661
CZ08-2	LA	246,944	1219	57.4	18%	\$328,631	\$296,991	\$623,292	0.9	1.9	(\$31,640)	\$294,661
CZ09	SCE	243,838	1605	58.5	15%	\$334,303	\$504,498	\$615,178	1.5	1.8	\$170,195	\$280,875
CZ09-2	LA	243,838	1605	58.5	15%	\$334,303	\$307,626	\$615,178	0.9	1.8	(\$26,677)	\$280,875
CZ10	SDG&E	229,044	2053	56.2	13%	\$349,503	\$851,810	\$569,549	2.4	1.6	\$502,306	\$220,046
CZ10-2	SCE	229,044	2053	56.2	13%	\$349,503	\$491,383	\$569,549	1.4	1.6	\$141,880	\$220,046
CZ11	PG&E	212,047	3062	56.4	10%	\$333,418	\$743,403	\$556,758	2.2	1.7	\$409,985	\$223,340
CZ12	PG&E	207,955	3327	56.7	10%	\$329,062	\$713,054	\$552,415	2.2	1.7	\$383,993	\$223,353
CZ12-2	SMUD	207,955	3327	56.7	10%	\$329,062	\$414,371	\$552,415	1.3	1.7	\$85,310	\$223,353
CZ13	PG&E	209,431	3063	56.3	9%	\$334,679	\$728,822	\$544,969	2.2	1.6	\$394,143	\$210,289
CZ14	SDG&E	236,002	3266	61.3	9%	\$332,249	\$865,181	\$638,517	2.6	1.9	\$532,933	\$306,269
CZ14-2	SCE	236,002	3266	61.3	9%	\$332,249	\$488,163	\$638,517	1.5	1.9	\$155,914	\$306,269
CZ15	SCE	254,426	1537	58.5	10%	\$361,229	\$487,715	\$626,728	1.4	1.7	\$126,486	\$265,499
CZ16	PG&E	162,915	6185	58.6	-15%	\$333,309	\$580,353	\$406,746	1.7	1.2	\$247,044	\$73,437
CZ16-2	LA	162,915	6185	58.6	-15%	\$333,309	\$290,566	\$406,746	0.9	1.2	(\$42,742)	\$73,437



Figure 23. Cost Effectiveness for Medium Office Package 3C – All-Electric + HE

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-53,390	4967	10.2	-14%	(\$43,987)	(\$93,740)	(\$57,752)	0.5	0.8	(\$49,753)	(\$13,765)
CZ02	PG&E	-45,916	3868	6.1	-5%	(\$22,722)	(\$77,212)	(\$26,394)	0.3	0.9	(\$54,490)	(\$3,672)
CZ03	PG&E	-34,656	3142	6.0	-6%	(\$38,261)	(\$45,796)	(\$25,153)	0.8	1.5	(\$7,535)	\$13,108
CZ04	PG&E	-43,248	3759	6.3	-3%	(\$15,229)	(\$56,932)	(\$18,996)	0.3	0.8	(\$41,703)	(\$3,767)
CZ04-2	CPAU	-43,248	3759	6.3	-3%	(\$15,229)	(\$5,298)	(\$18,996)	2.9	0.8	\$9,932	(\$3,767)
CZ05	PG&E	-37,068	3240	5.4	-6%	(\$40,434)	(\$38,330)	(\$29,544)	1.1	1.4	\$2,104	\$10,890
CZ06	SCE	-22,805	2117	4.0	-2%	(\$30,237)	\$39,812	(\$9,594)	>1	3.2	\$70,050	\$20,644
CZ06-2	LADWP	-22,805	2117	4.0	-2%	(\$30,237)	\$35,414	(\$9,594)	>1	3.2	\$65,651	\$20,644
CZ07	SDG&E	-7,646	950	2.5	1%	(\$22,564)	\$86,159	\$6,062	>1	>1	\$108,722	\$28,625
CZ08	SCE	-9,761	1219	3.2	1%	(\$18,443)	\$37,375	\$8,305	>1	>1	\$55,818	\$26,748
CZ08-2	LADWP	-9,761	1219	3.2	1%	(\$18,443)	\$29,973	\$8,305	>1	>1	\$48,416	\$26,748
CZ09	SCE	-12,211	1605	4.5	2%	(\$10,282)	\$46,335	\$13,364	>1	>1	\$56,617	\$23,646
CZ09-2	LADWP	-12,211	1605	4.5	2%	(\$10,282)	\$37,030	\$13,364	>1	>1	\$47,313	\$23,646
CZ10	SDG&E	-21,642	2053	3.7	-1%	\$11,340	\$84,901	(\$3,818)	7.5	-0.3	\$73,561	(\$15,158)
CZ10-2	SCE	-21,642	2053	3.7	-1%	\$11,340	\$40,659	(\$3,818)	3.6	-0.3	\$29,319	(\$15,158)
CZ11	PG&E	-32,052	3062	5.9	0%	(\$8,519)	(\$29,013)	(\$3,007)	0.3	2.8	(\$20,495)	\$5,512
CZ12	PG&E	-36,926	3327	6.0	-1%	(\$15,443)	(\$48,955)	(\$9,546)	0.3	1.6	(\$33,511)	\$5,898
CZ12-2	SMUD	-36,926	3327	6.0	-1%	(\$15,443)	\$9,916	(\$9,546)	>1	1.6	\$25,359	\$5,898
CZ13	PG&E	-31,253	3063	6.3	0%	(\$7,257)	(\$27,782)	(\$3,055)	0.3	2.4	(\$20,525)	\$4,202
CZ14	SDG&E	-36,402	3266	5.7	-1%	(\$10,651)	\$61,605	(\$9,832)	>1	1.1	\$72,256	\$819
CZ14-2	SCE	-36,402	3266	5.7	-1%	(\$10,651)	\$30,625	(\$9,832)	>1	1.1	\$41,276	\$819
CZ15	SCE	-4,775	1537	6.0	3%	\$28,927	\$52,955	\$32,790	1.8	1.1	\$24,028	\$3,863
CZ16	PG&E	-90,949	6185	6.5	-26%	(\$8,467)	(\$194,115)	(\$142,041)	0.0	0.1	(\$185,648)	(\$133,574)
CZ16-2	LADWP	-90,949	6185	6.5	-26%	(\$8,467)	\$37,127	(\$142,041)	>1	0.1	\$45,594	(\$133,574)



## 4.2 Cost Effectiveness Results – Medium Retail

Figure 24 through Figure 30 contain the cost-effectiveness findings for the Medium Retail packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:**
  - ◆ Packages achieve +9% to +18% compliance margins depending on climate zone, and all packages are cost effective in all climate zones.
  - ◆ Incremental package costs vary across climate zones because of the HVAC system size in some climate zones are small enough (<54 kBtu/h) to have the economizers measure applied.
  - ◆ B/C ratios are high compared to other prototypes because the measures applied are primarily low-cost lighting measures. This suggests room for the inclusion of other energy efficiency measures with lower cost-effectiveness to achieve even higher compliance margins for a cost effective package.
- ◆ **1B – Mixed-Fuel + EE + PV + B:** All packages are cost effective using both the On-Bill and TDV approach, except On-Bill in LADWP territory. Adding PV and battery to the efficiency packages reduces the B/C ratio but increases overall NPV savings.
- ◆ **1C – Mixed-fuel + HE:** Packages achieve +1 to +4% compliance margins depending on climate zone, and packages are cost effective in all climate zones except CZs 1, 3 and 5 using the TDV approach.
- ◆ **2 – All-Electric Federal Code-Minimum Reference:**
  - ◆ Packages achieve between -12% and +1% compliance margins depending on climate zone.
  - ◆ Packages achieve positive savings using both the On-Bill and TDV approaches in CZs 6-10 and 14-15. Packages do not achieve On-Bill or TDV savings in most of PG&E territory (CZs 1, 2, 4, 5, 12-13, and 16).
  - ◆ Packages are cost effective in all climate zones except CZ16.
  - ◆ All incremental costs are negative primarily due to elimination of natural gas infrastructure.
- ◆ **3A – All-Electric + EE:** Packages achieve between +3% and +16% compliance margins depending on climate zone. All packages are cost effective in all climate zones.
- ◆ **3B – All-Electric + EE + PV + B:** All packages are cost effective using both the On-Bill and TDV approaches, except On-Bill in LADWP territory. Adding PV and Battery to the efficiency package reduces the B/C ratio but increases overall NPV savings.
- ◆ **3C – All-Electric + HE:** Packages achieve between -8% and +5% compliance margins depending on climate zone, and packages are cost effective using both On-Bill and TDV approaches in all CZs except CZs 1 and 16.



**Figure 24. Cost Effectiveness for Medium Retail Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	15,210	1209	11.10	18%	\$2,712	\$68,358	\$60,189	25.2	22.2	\$65,646	\$57,478
CZ02	PG&E	18,885	613	8.73	13%	\$5,569	\$76,260	\$59,135	13.7	10.6	\$70,691	\$53,566
CZ03	PG&E	18,772	462	7.87	16%	\$5,569	\$66,813	\$57,135	12.0	10.3	\$61,244	\$51,566
CZ04	PG&E	19,100	439	7.84	14%	\$5,569	\$75,989	\$58,036	13.6	10.4	\$70,420	\$52,467
CZ04-2	CPAU	19,100	439	7.84	14%	\$5,569	\$51,556	\$58,036	9.3	10.4	\$45,987	\$52,467
CZ05	PG&E	17,955	415	7.41	16%	\$5,569	\$63,182	\$55,003	11.3	9.9	\$57,613	\$49,435
CZ05-2	SCG	17,955	415	7.41	16%	\$5,569	\$61,810	\$55,003	11.1	9.9	\$56,241	\$49,435
CZ06	SCE	12,375	347	5.54	10%	\$2,712	\$31,990	\$41,401	11.8	15.3	\$29,278	\$38,689
CZ06-2	LADWP	12,375	347	5.54	10%	\$2,712	\$21,667	\$41,401	8.0	15.3	\$18,956	\$38,689
CZ07	SDG&E	17,170	136	5.65	13%	\$5,569	\$73,479	\$49,883	13.2	9.0	\$67,910	\$44,314
CZ08	SCE	12,284	283	5.15	10%	\$2,712	\$30,130	\$41,115	11.1	15.2	\$27,419	\$38,403
CZ08-2	LADWP	12,284	283	5.15	10%	\$2,712	\$20,243	\$41,115	7.5	15.2	\$17,531	\$38,403
CZ09	SCE	13,473	302	5.51	10%	\$5,569	\$32,663	\$46,126	5.9	8.3	\$27,094	\$40,557
CZ09-2	LADWP	13,473	302	5.51	10%	\$5,569	\$22,435	\$46,126	4.0	8.3	\$16,866	\$40,557
CZ10	SDG&E	19,873	267	6.99	12%	\$5,569	\$83,319	\$58,322	15.0	10.5	\$77,751	\$52,753
CZ10-2	SCE	19,873	267	6.99	12%	\$5,569	\$39,917	\$58,322	7.2	10.5	\$34,348	\$52,753
CZ11	PG&E	21,120	578	9.14	13%	\$5,569	\$86,663	\$67,485	15.6	12.1	\$81,095	\$61,916
CZ12	PG&E	20,370	562	8.85	13%	\$5,569	\$81,028	\$64,409	14.6	11.6	\$75,459	\$58,840
CZ12-2	SMUD	20,370	562	8.85	13%	\$5,569	\$44,991	\$64,409	8.1	11.6	\$39,422	\$58,840
CZ13	PG&E	22,115	620	9.98	15%	\$2,712	\$109,484	\$83,109	40.4	30.6	\$106,772	\$80,398
CZ14	SDG&E	25,579	406	9.38	13%	\$2,712	\$116,354	\$80,055	42.9	29.5	\$113,643	\$77,343
CZ14-2	SCE	26,327	383	9.42	13%	\$2,712	\$57,290	\$83,065	21.1	30.6	\$54,578	\$80,354
CZ15	SCE	26,433	169	8.35	12%	\$2,712	\$57,152	\$79,506	21.1	29.3	\$54,440	\$76,794
CZ16	PG&E	15,975	752	8.72	13%	\$2,712	\$72,427	\$55,025	26.7	20.3	\$69,715	\$52,314
CZ16-2	LADWP	15,975	752	8.72	13%	\$2,712	\$31,906	\$55,025	11.8	20.3	\$29,194	\$52,314



**Figure 25. Cost Effectiveness for Medium Retail Package 1B – Mixed-Fuel + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + PV + Battery</b>												
CZ01	PG&E	158,584	1209	40.79	18%	\$277,383	\$509,092	\$383,683	1.8	1.4	\$231,709	\$106,300
CZ02	PG&E	189,400	613	43.75	13%	\$280,240	\$590,043	\$465,474	2.1	1.7	\$309,803	\$185,234
CZ03	PG&E	191,016	462	43.52	16%	\$280,240	\$578,465	\$452,795	2.1	1.6	\$298,224	\$172,554
CZ04	PG&E	195,014	439	44.14	14%	\$280,240	\$605,369	\$480,989	2.2	1.7	\$325,129	\$200,748
CZ04-2	CPAU	195,014	439	44.14	14%	\$280,240	\$451,933	\$480,989	1.6	1.7	\$171,693	\$200,748
CZ05	PG&E	196,654	415	44.30	16%	\$280,240	\$589,771	\$464,749	2.1	1.7	\$309,530	\$184,509
CZ05-2	SCG	196,654	415	44.30	16%	\$280,240	\$588,407	\$464,749	2.1	1.7	\$308,167	\$184,509
CZ06	SCE	185,903	347	41.61	10%	\$277,383	\$322,495	\$456,596	1.2	1.6	\$45,111	\$179,213
CZ06-2	LA	185,903	347	41.61	10%	\$277,383	\$191,428	\$456,596	0.7	1.6	(\$85,955)	\$179,213
CZ07	SDG&E	197,650	136	43.24	13%	\$280,240	\$496,786	\$477,582	1.8	1.7	\$216,545	\$197,342
CZ08	SCE	187,869	283	41.48	10%	\$277,383	\$326,810	\$478,132	1.2	1.7	\$49,427	\$200,749
CZ08-2	LA	187,869	283	41.48	10%	\$277,383	\$190,379	\$478,132	0.7	1.7	(\$87,004)	\$200,749
CZ09	SCE	191,399	302	42.32	10%	\$280,240	\$334,869	\$472,770	1.2	1.7	\$54,629	\$192,530
CZ09-2	LA	191,399	302	42.32	10%	\$280,240	\$201,759	\$472,770	0.7	1.7	(\$78,481)	\$192,530
CZ10	SDG&E	200,033	267	44.01	12%	\$280,240	\$547,741	\$472,880	2.0	1.7	\$267,501	\$192,640
CZ10-2	SCE	200,033	267	44.01	12%	\$280,240	\$340,822	\$472,880	1.2	1.7	\$60,582	\$192,640
CZ11	PG&E	192,846	578	44.07	13%	\$280,240	\$582,969	\$490,855	2.1	1.8	\$302,728	\$210,615
CZ12	PG&E	191,720	562	43.70	13%	\$280,240	\$586,836	\$485,076	2.1	1.7	\$306,596	\$204,836
CZ12-2	SMUD	191,720	562	43.70	13%	\$280,240	\$319,513	\$485,076	1.1	1.7	\$39,273	\$204,836
CZ13	PG&E	195,031	620	45.19	15%	\$277,383	\$605,608	\$486,285	2.2	1.8	\$328,225	\$208,901
CZ14	SDG&E	217,183	406	47.86	13%	\$277,383	\$559,148	\$534,915	2.0	1.9	\$281,765	\$257,532
CZ14-2	SCE	217,927	383	47.91	14%	\$277,383	\$354,757	\$538,058	1.3	1.9	\$77,373	\$260,674
CZ15	SCE	208,662	169	44.51	12%	\$277,383	\$338,772	\$496,107	1.2	1.8	\$61,389	\$218,724
CZ16	PG&E	210,242	752	48.76	13%	\$277,383	\$608,779	\$490,262	2.2	1.8	\$331,395	\$212,879
CZ16-2	LA	210,242	752	48.76	13%	\$277,383	\$207,160	\$490,262	0.7	1.8	(\$70,223)	\$212,879



**Figure 26. Cost Effectiveness for Medium Retail Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	57	346	2.04	2%	\$9,006	\$6,301	\$6,065	0.7	0.7	(\$2,705)	(\$2,941)
CZ02	PG&E	2,288	229	2.01	3%	\$9,726	\$23,016	\$13,998	2.4	1.4	\$13,291	\$4,273
CZ03	PG&E	1,087	171	1.31	2%	\$9,063	\$6,782	\$7,186	0.7	0.8	(\$2,282)	(\$1,877)
CZ04	PG&E	1,862	159	1.46	3%	\$9,004	\$17,891	\$10,878	2.0	1.2	\$8,887	\$1,874
CZ04-2	CPAU	1,862	159	1.46	3%	\$9,004	\$7,821	\$10,878	0.9	1.2	(\$1,182)	\$1,874
CZ05	PG&E	664	162	1.11	1%	\$9,454	\$5,119	\$4,725	0.5	0.5	(\$4,335)	(\$4,729)
CZ05-2	SCG	664	162	1.11	1%	\$9,454	\$4,558	\$4,725	0.5	0.5	(\$4,896)	(\$4,729)
CZ06	SCE	2,648	90	1.24	3%	\$8,943	\$11,646	\$11,427	1.3	1.3	\$2,703	\$2,484
CZ06-2	LADWP	2,648	90	1.24	3%	\$8,943	\$7,329	\$11,427	0.8	1.3	(\$1,614)	\$2,484
CZ07	SDG&E	2,376	49	0.95	2%	\$9,194	\$20,103	\$9,779	2.2	1.1	\$10,909	\$585
CZ08	SCE	2,822	72	1.20	3%	\$9,645	\$11,989	\$12,877	1.2	1.3	\$2,344	\$3,233
CZ08-2	LADWP	2,822	72	1.20	3%	\$9,645	\$7,427	\$12,877	0.8	1.3	(\$2,218)	\$3,233
CZ09	SCE	4,206	88	1.73	4%	\$10,446	\$16,856	\$18,745	1.6	1.8	\$6,410	\$8,299
CZ09-2	LADWP	4,206	88	1.73	4%	\$10,446	\$10,604	\$18,745	1.0	1.8	\$158	\$8,299
CZ10	SDG&E	4,226	119	1.88	4%	\$9,514	\$36,412	\$19,008	3.8	2.0	\$26,898	\$9,494
CZ10-2	SCE	4,226	119	1.88	4%	\$9,514	\$17,094	\$19,008	1.8	2.0	\$7,580	\$9,494
CZ11	PG&E	4,188	225	2.56	4%	\$10,479	\$31,872	\$22,393	3.0	2.1	\$21,392	\$11,913
CZ12	PG&E	3,675	214	2.34	4%	\$10,409	\$29,653	\$20,525	2.8	2.0	\$19,243	\$10,115
CZ12-2	SMUD	3,675	214	2.34	4%	\$10,409	\$12,823	\$20,525	1.2	2.0	\$2,414	\$10,115
CZ13	PG&E	4,818	180	2.46	4%	\$9,809	\$34,149	\$23,623	3.5	2.4	\$24,340	\$13,814
CZ14	SDG&E	6,439	153	2.71	4%	\$12,103	\$44,705	\$26,348	3.7	2.2	\$32,601	\$14,245
CZ14-2	SCE	6,439	153	2.71	4%	\$12,103	\$22,032	\$26,348	1.8	2.2	\$9,929	\$14,245
CZ15	SCE	8,802	48	2.76	5%	\$12,534	\$25,706	\$31,402	2.1	2.5	\$13,171	\$18,868
CZ16	PG&E	2,316	390	2.97	3%	\$11,999	\$22,663	\$13,888	1.9	1.2	\$10,665	\$1,890
CZ16-2	LADWP	2,316	390	2.97	3%	\$11,999	\$11,921	\$13,888	1.0	1.2	(\$78)	\$1,890



**Figure 27. Cost Effectiveness for Medium Retail Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-29,155	3893	13.85	-4.1%	(\$23,048)	(\$8,333)	(\$13,910)	2.8	1.7	\$14,715	\$9,138
CZ02	PG&E	-21,786	2448	7.49	-1.0%	(\$27,464)	(\$16,476)	(\$4,483)	1.7	6.1	\$10,987	\$22,981
CZ03	PG&E	-14,583	1868	6.26	-0.4%	(\$24,111)	\$263	(\$1,450)	>1	16.6	\$24,374	\$22,661
CZ04	PG&E	-14,186	1706	5.30	-0.1%	(\$22,896)	(\$8,753)	(\$220)	2.6	104.2	\$14,143	\$22,676
CZ04-2	CPAU	-14,186	1706	5.30	-0.1%	(\$22,896)	\$12,493	(\$220)	>1	104.2	\$35,389	\$22,676
CZ05	PG&E	-14,334	1746	5.47	-1.2%	(\$25,507)	(\$1,567)	(\$4,197)	16.3	6.1	\$23,940	\$21,309
CZ06	SCE	-7,527	1002	3.32	0.5%	(\$21,762)	\$18,590	\$1,868	>1	>1	\$40,351	\$23,630
CZ06-2	LADWP	-7,527	1002	3.32	0.5%	(\$21,762)	\$19,309	\$1,868	>1	>1	\$41,071	\$23,630
CZ07	SDG&E	-3,812	522	1.76	0.3%	(\$23,762)	\$54,345	\$1,318	>1	>1	\$78,107	\$25,080
CZ08	SCE	-5,805	793	2.70	0.4%	(\$26,922)	\$16,735	\$1,846	>1	>1	\$43,658	\$28,768
CZ08-2	LADWP	-5,805	793	2.70	0.4%	(\$26,922)	\$17,130	\$1,846	>1	>1	\$44,052	\$28,768
CZ09	SCE	-7,241	970	3.32	0.4%	(\$32,113)	\$18,582	\$1,978	>1	>1	\$50,695	\$34,091
CZ09-2	LADWP	-7,241	970	3.32	0.4%	(\$32,113)	\$19,089	\$1,978	>1	>1	\$51,202	\$34,091
CZ10	SDG&E	-10,336	1262	3.99	0.1%	(\$27,272)	\$54,453	\$505	>1	>1	\$81,724	\$27,777
CZ10-2	SCE	-10,336	1262	3.99	0.1%	(\$27,272)	\$20,996	\$505	>1	>1	\$48,268	\$27,777
CZ11	PG&E	-19,251	2415	7.95	0.5%	(\$32,202)	(\$7,951)	\$2,615	4.1	>1	\$24,251	\$34,817
CZ12	PG&E	-19,471	2309	7.28	-0.1%	(\$32,504)	(\$14,153)	(\$461)	2.3	70.4	\$18,351	\$32,042
CZ12-2	SMUD	-19,471	2309	7.28	-0.1%	(\$32,504)	\$12,939	(\$461)	>1	70.4	\$45,443	\$32,042
CZ13	PG&E	-16,819	1983	6.15	-0.4%	(\$28,158)	(\$10,575)	(\$2,022)	2.7	13.9	\$17,582	\$26,136
CZ14	SDG&E	-13,208	1672	5.44	0.7%	(\$26,656)	\$41,117	\$4,461	>1	>1	\$67,772	\$31,117
CZ14-2	SCE	-13,208	1672	5.44	0.7%	(\$26,656)	\$18,467	\$4,461	>1	>1	\$45,123	\$31,117
CZ15	SCE	-2,463	518	2.14	0.9%	(\$29,544)	\$16,796	\$5,823	>1	>1	\$46,339	\$35,367
CZ16	PG&E	-41,418	4304	13.23	-12.2%	(\$25,771)	(\$49,862)	(\$52,542)	0.5	0.5	(\$24,091)	(\$26,771)
CZ16-2	LADWP	-41,418	4304	13.23	-12.2%	(\$25,771)	\$39,319	(\$52,542)	>1	0.5	\$65,090	(\$26,771)

\*The Incremental Package Cost is the addition of the incremental HVAC and water heating equipment costs from Figure 11 and the natural gas infrastructure incremental cost savings of \$28,027 (see section 3.3.2.2).



**Figure 28. Cost Effectiveness for Medium Retail Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-5,478	3893	20.64	15%	(\$20,336)	\$63,593	\$51,224	>1	>1	\$83,929	\$71,560
CZ02	PG&E	2,843	2448	14.58	13%	(\$21,895)	\$74,997	\$56,893	>1	>1	\$96,892	\$78,788
CZ03	PG&E	7,791	1868	12.73	16%	(\$18,542)	\$68,968	\$56,586	>1	>1	\$87,511	\$75,128
CZ04	PG&E	8,572	1706	11.89	14%	(\$17,327)	\$81,957	\$57,904	>1	>1	\$99,284	\$75,231
CZ04-2	CPAU	8,572	1706	11.89	14%	(\$17,327)	\$63,082	\$57,904	>1	>1	\$80,408	\$75,231
CZ05	PG&E	6,973	1746	11.68	15%	(\$19,938)	\$63,677	\$51,949	>1	>1	\$83,615	\$71,887
CZ06	SCE	7,431	1002	7.72	11%	(\$19,050)	\$47,072	\$42,610	>1	>1	\$66,122	\$61,660
CZ06-2	LADWP	7,431	1002	7.72	11%	(\$19,050)	\$37,078	\$42,610	>1	>1	\$56,128	\$61,660
CZ07	SDG&E	14,350	522	6.98	13%	(\$18,193)	\$127,461	\$50,828	>1	>1	\$145,654	\$69,021
CZ08	SCE	8,524	793	6.90	10%	(\$24,210)	\$43,679	\$42,258	>1	>1	\$67,890	\$66,468
CZ08-2	LADWP	8,524	793	6.90	10%	(\$24,210)	\$34,038	\$42,258	>1	>1	\$58,248	\$66,468
CZ09	SCE	8,403	970	7.81	10%	(\$26,545)	\$47,819	\$47,356	>1	>1	\$74,364	\$73,901
CZ09-2	LADWP	8,403	970	7.81	10%	(\$26,545)	\$37,934	\$47,356	>1	>1	\$64,478	\$73,901
CZ10	SDG&E	11,737	1262	10.23	12%	(\$21,703)	\$137,436	\$58,761	>1	>1	\$159,139	\$80,464
CZ10-2	SCE	11,737	1262	10.23	12%	(\$21,703)	\$58,257	\$58,761	>1	>1	\$79,959	\$80,464
CZ11	PG&E	5,892	2415	15.13	12%	(\$26,633)	\$85,256	\$65,859	>1	>1	\$111,889	\$92,492
CZ12	PG&E	5,548	2309	14.46	12%	(\$26,935)	\$80,631	\$63,903	>1	>1	\$107,566	\$90,838
CZ12-2	SMUD	5,548	2309	14.46	12%	(\$26,935)	\$59,311	\$63,903	>1	>1	\$86,246	\$90,838
CZ13	PG&E	10,184	1983	14.15	14%	(\$25,446)	\$110,105	\$80,604	>1	>1	\$135,551	\$106,050
CZ14	SDG&E	16,583	1672	13.83	15%	(\$23,944)	\$171,200	\$88,471	>1	>1	\$195,145	\$112,415
CZ14-2	SCE	16,583	1672	13.83	15%	(\$23,944)	\$656,178	\$159,604	>1	>1	\$680,122	\$183,548
CZ15	SCE	23,642	518	9.44	12%	(\$26,832)	\$65,573	\$76,781	>1	>1	\$92,404	\$103,612
CZ16	PG&E	-18,232	4304	19.80	3%	(\$23,059)	\$38,796	\$14,152	>1	>1	\$61,855	\$37,211
CZ16-2	LADWP	-18,232	4304	19.80	3%	(\$23,059)	\$67,793	\$14,152	>1	>1	\$90,852	\$37,211



**Figure 29. Cost Effectiveness for Medium Retail Package 3B – All-Electric + EE + PV + B**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + PV + B</b>												
CZ01	PG&E	137,956	3893	50.51	15%	\$254,335	\$510,831	\$374,432	2.0	1.5	\$256,496	\$120,097
CZ02	PG&E	173,387	2448	49.87	13%	\$252,777	\$590,112	\$463,431	2.3	1.8	\$337,336	\$210,654
CZ03	PG&E	180,055	1868	48.55	16%	\$256,129	\$585,861	\$452,399	2.3	1.8	\$329,732	\$196,270
CZ04	PG&E	184,499	1706	48.38	14%	\$257,345	\$608,814	\$481,011	2.4	1.9	\$351,470	\$223,666
CZ04-2	CPAU	184,499	1706	48.38	14%	\$257,345	\$465,690	\$481,011	1.8	1.9	\$208,345	\$223,666
CZ05	PG&E	185,690	1746	48.84	15%	\$254,734	\$600,933	\$461,804	2.4	1.8	\$346,199	\$207,071
CZ06	SCE	180,968	1002	43.91	11%	\$255,621	\$335,909	\$457,959	1.3	1.8	\$80,288	\$202,337
CZ06-2	LADWP	180,968	1002	43.91	11%	\$255,621	\$206,021	\$457,959	0.8	1.8	(\$49,601)	\$202,337
CZ07	SDG&E	194,837	522	44.67	13%	\$256,478	\$550,714	\$478,637	2.1	1.9	\$294,236	\$222,159
CZ08	SCE	184,120	793	43.32	10%	\$250,461	\$340,301	\$479,406	1.4	1.9	\$89,840	\$228,945
CZ08-2	LADWP	184,120	793	43.32	10%	\$250,461	\$203,813	\$479,406	0.8	1.9	(\$46,648)	\$228,945
CZ09	SCE	186,346	970	44.77	10%	\$248,127	\$349,524	\$474,176	1.4	1.9	\$101,397	\$226,049
CZ09-2	LADWP	186,346	970	44.77	10%	\$248,127	\$216,654	\$474,176	0.9	1.9	(\$31,473)	\$226,049
CZ10	SDG&E	191,923	1262	47.46	12%	\$252,969	\$593,514	\$473,605	2.3	1.9	\$340,545	\$220,636
CZ10-2	SCE	191,923	1262	47.46	12%	\$252,969	\$356,958	\$473,605	1.4	1.9	\$103,989	\$220,636
CZ11	PG&E	177,639	2415	50.26	12%	\$248,039	\$585,689	\$489,317	2.4	2.0	\$337,650	\$241,278
CZ12	PG&E	176,919	2309	49.46	12%	\$247,736	\$591,104	\$484,702	2.4	2.0	\$343,368	\$236,966
CZ12-2	SMUD	176,919	2309	49.46	12%	\$247,736	\$335,286	\$484,702	1.4	2.0	\$87,550	\$236,966
CZ13	PG&E	183,129	1983	49.48	14%	\$249,226	\$608,560	\$483,670	2.4	1.9	\$359,334	\$234,444
CZ14	SDG&E	208,183	1672	52.54	15%	\$250,727	\$593,232	\$544,079	2.4	2.2	\$342,505	\$293,351
CZ14-2	SCE	264,589	1672	80.97	15%	\$250,727	\$656,178	\$580,403	2.6	2.3	\$405,450	\$329,676
CZ15	SCE	205,869	518	45.67	12%	\$247,840	\$347,125	\$493,339	1.4	2.0	\$99,285	\$245,499
CZ16	PG&E	176,114	4304	60.13	3%	\$251,612	\$567,822	\$446,795	2.3	1.8	\$316,210	\$195,183
CZ16-2	LADWP	176,114	4304	60.13	3%	\$251,612	\$241,757	\$446,795	1.0	1.8	(\$9,856)	\$195,183



**Figure 30. Cost Effectiveness for Medium Retail Package 3C – All-Electric + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-26,199	3893	14.76	-2%	(\$587)	\$369	(\$5,757)	>1	0.1	\$956	(\$5,170)
CZ02	PG&E	-16,989	2448	8.95	3%	(\$4,211)	\$12,323	\$11,251	>1	>1	\$16,534	\$15,463
CZ03	PG&E	-11,703	1868	7.15	2%	(\$2,213)	\$9,159	\$6,944	>1	>1	\$11,372	\$9,157
CZ04	PG&E	-10,675	1706	6.37	3%	(\$316)	\$14,317	\$11,383	>1	>1	\$14,633	\$11,700
CZ04-2	CPAU	-10,675	1706	6.37	3%	(\$316)	\$20,599	\$11,383	>1	>1	\$20,915	\$11,700
CZ05	PG&E	-11,969	1746	6.19	1%	(\$2,298)	\$5,592	\$1,824	>1	>1	\$7,890	\$4,122
CZ06	SCE	-3,919	1002	4.35	3%	\$1,418	\$29,751	\$13,734	21.0	9.7	\$28,333	\$12,316
CZ06-2	LADWP	-3,919	1002	4.35	3%	\$1,418	\$25,891	\$13,734	18.3	9.7	\$24,473	\$12,316
CZ07	SDG&E	-955	522	2.59	3%	(\$710)	\$74,518	\$11,229	>1	>1	\$75,227	\$11,939
CZ08	SCE	-2,224	793	3.74	4%	(\$3,719)	\$28,067	\$15,075	>1	>1	\$31,785	\$18,793
CZ08-2	LADWP	-2,224	793	3.74	4%	(\$3,719)	\$23,848	\$15,075	>1	>1	\$27,566	\$18,793
CZ09	SCE	-2,089	970	4.84	4%	(\$8,268)	\$34,648	\$21,162	>1	>1	\$42,916	\$29,430
CZ09-2	LADWP	-2,089	970	4.84	4%	(\$8,268)	\$28,837	\$21,162	>1	>1	\$37,105	\$29,430
CZ10	SDG&E	-4,868	1262	5.58	4%	(\$5,222)	\$91,136	\$20,041	>1	>1	\$96,358	\$25,263
CZ10-2	SCE	-4,868	1262	5.58	4%	(\$5,222)	\$37,200	\$20,041	>1	>1	\$42,422	\$25,263
CZ11	PG&E	-12,651	2415	9.95	5%	(\$8,217)	\$29,015	\$26,172	>1	>1	\$37,232	\$34,389
CZ12	PG&E	-13,479	2309	9.10	4%	(\$9,239)	\$20,839	\$21,228	>1	>1	\$30,078	\$30,466
CZ12-2	SMUD	-13,479	2309	9.10	4%	(\$9,239)	\$26,507	\$21,228	>1	>1	\$35,746	\$30,466
CZ13	PG&E	-9,935	1983	8.23	4%	(\$4,975)	\$30,123	\$24,063	>1	>1	\$35,097	\$29,037
CZ14	SDG&E	-5,407	1672	7.71	5%	\$121	\$88,669	\$31,029	732.5	256.3	\$88,547	\$30,908
CZ14-2	SCE	-5,407	1672	7.71	5%	\$121	\$40,709	\$31,029	336.3	256.3	\$40,588	\$30,908
CZ15	SCE	6,782	518	4.77	6%	(\$2,508)	\$42,238	\$37,379	>1	>1	\$44,745	\$39,887
CZ16	PG&E	-35,297	4304	15.03	-8%	\$1,102	(\$21,384)	(\$33,754)	-19.4	-30.6	(\$22,486)	(\$34,856)
CZ16-2	LADWP	-35,297	4304	15.03	-8%	\$1,102	\$48,625	(\$33,754)	44.1	-30.6	\$47,523	(\$34,856)



### 4.3 Cost Effectiveness Results – Small Hotel

The following issues must be considered when reviewing the Small Hotel results:

- ◆ The Small Hotel is a mix of residential and nonresidential space types, which results in different occupancy and load profiles than the office and retail prototypes.
- ◆ A potential laundry load has not been examined for the Small Hotel. The Reach Code Team attempted to characterize and apply the energy use intensity of laundry loads in hotels but did not find readily available data for use. Thus, cost effectiveness including laundry systems has not been examined.
- ◆ Contrary to the office and retail prototypes, the Small Hotel baseline water heater is a central gas storage type. Current compliance software cannot model central heat pump water heater systems with recirculation serving guest rooms.<sup>23</sup> The only modeling option for heat pump water heating is individual water heaters at each guest room even though this is a very uncommon configuration. TRC modeled individual heat pump water heaters but as a proxy for central heat pump water heating performance, but integrated costs associated with tank and controls for central heat pump water heating into cost effectiveness calculations.
- ◆ Assuming central heat pump water heating also enabled the inclusion of a solar hot water thermal collection system, which was a key efficiency measure to achieving compliance in nearly all climate zones.

Figure 31 through Figure 37 contain the cost-effectiveness findings for the Small Hotel packages. Notable findings for each package include:

- ◆ **1A – Mixed-Fuel + EE:**
  - ◆ Packages achieve +3 to +10% compliance margins depending on climate zone.
  - ◆ Packages are cost effective using either the On-Bill or TDV approach in all CZs except 12 (using SMUD rates), 14 (using SCE rates), and 15 (with SCE rates).
  - ◆ The hotel is primarily guest rooms with a smaller proportion of nonresidential space. Thus, the inexpensive VAV minimum flow measure and lighting measures that have been applied to the entirety of the Medium Office and Medium Retail prototypes have a relatively small impact in the Small Hotel.<sup>24</sup>
- ◆ **1B – Mixed-Fuel + EE + PV + B:** Packages are cost effective using either the On-Bill or TDV approach in all CZs. Solar PV generally increases cost effectiveness compared to efficiency-only, particularly when using an NPV metric.
- ◆ **1C – Mixed-Fuel + HE:** Packages achieve +2 to +5% compliance margins depending on climate zone. The package is cost effective using the On-Bill approach in a minority of climate zones, and cost effective using TDV approach only in CZ15.

<sup>23</sup> The IOUs and CEC are actively working on including central heat pump water heater modeling with recirculation systems in early 2020.

<sup>24</sup> Title 24 requires that hotel/motel guest room lighting design comply with the residential lighting standards, which are all mandatory and are not awarded compliance credit for improved efficacy.



◆ **2 – All-Electric Federal Code-Minimum Reference:**

◆ This all-electric design does not comply with the Energy Commission’s TDV performance budget. Packages achieve between -50% and -4% compliance margins depending on climate zone. This may be because the modeled HW system is constrained to having an artificially low efficiency to avoid triggering federal pre-emption, and the heat pump space heating systems must operate overnight when operation is less efficient.

◆ All packages are cost effective in all climate zones.

◆ **3A – All-Electric + EE:** Packages achieve positive compliance margins in all CZs ranging from 0% to +17%, except CZ16 which had a -18% compliance margin. All packages are cost effective in all climate zones. The improved degree of cost effectiveness outcomes in Package 3A compared to Package 1A appear to be due to the significant incremental package cost savings.

◆ **3B – All-Electric + EE + PV + B:** All packages are cost effective. Packages improve in B/C ratio when compared to 3A and increase in magnitude of overall NPV savings. PV appears to be more cost-effective with higher building electricity loads.

◆ **3C – All-Electric + HE:**

◆ Packages do not comply with Title 24 in all CZs except CZ15 which resulted in a +0.04% compliance margin.

◆ All packages are cost effective.



**Figure 31. Cost Effectiveness for Small Hotel Package 1A – Mixed-Fuel + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1A: Mixed Fuel + EE</b>												
CZ01	PG&E	3,855	1288	5.65	9%	\$20,971	\$34,339	\$36,874	1.6	1.8	\$13,368	\$15,903
CZ02	PG&E	3,802	976	3.91	7%	\$20,971	\$26,312	\$29,353	1.3	1.4	\$5,341	\$8,381
CZ03	PG&E	4,153	1046	4.48	10%	\$20,971	\$31,172	\$35,915	1.5	1.7	\$10,201	\$14,944
CZ04	PG&E	5,007	395	0.85	6%	\$21,824	\$24,449	\$24,270	1.1	1.1	\$2,625	\$2,446
CZ04-2	CPAU	4,916	422	0.98	6%	\$21,824	\$18,713	\$24,306	0.9	1.1	(\$3,111)	\$2,483
CZ05	PG&E	3,530	1018	4.13	9%	\$20,971	\$28,782	\$34,448	1.4	1.6	\$7,810	\$13,477
CZ05-2	SCG	3,530	1018	4.13	9%	\$20,971	\$23,028	\$34,448	1.1	1.6	\$2,057	\$13,477
CZ06	SCE	5,137	418	1.16	8%	\$21,824	\$16,001	\$26,934	0.7	1.2	(\$5,823)	\$5,110
CZ06-2	LADWP	5,137	418	1.16	8%	\$21,824	\$11,706	\$26,934	0.5	1.2	(\$10,118)	\$5,110
CZ07	SDG&E	5,352	424	1.31	8%	\$21,824	\$26,699	\$27,975	1.2	1.3	\$4,876	\$6,152
CZ08	SCE	5,151	419	1.21	7%	\$21,824	\$15,931	\$23,576	0.7	1.1	(\$5,893)	\$1,752
CZ08-2	LADWP	5,151	419	1.21	7%	\$21,824	\$11,643	\$23,576	0.5	1.1	(\$10,180)	\$1,752
CZ09	SCE	5,229	406	1.16	6%	\$21,824	\$15,837	\$22,365	0.7	1.0	(\$5,987)	\$541
CZ09-2	LADWP	5,229	406	1.16	6%	\$21,824	\$11,632	\$22,365	0.5	1.0	(\$10,192)	\$541
CZ10	SDG&E	4,607	342	0.92	5%	\$21,824	\$25,506	\$22,219	1.2	1.0	\$3,683	\$396
CZ10-2	SCE	4,607	342	0.92	5%	\$21,824	\$13,868	\$22,219	0.6	1.0	(\$7,956)	\$396
CZ11	PG&E	4,801	325	0.87	4%	\$21,824	\$22,936	\$19,503	1.1	0.9	\$1,112	(\$2,321)
CZ12	PG&E	5,276	327	0.90	5%	\$21,824	\$22,356	\$21,305	1.0	0.98	\$532	(\$519)
CZ12-2	SMUD	5,276	327	0.90	5%	\$21,824	\$15,106	\$21,305	0.7	0.98	(\$6,717)	(\$519)
CZ13	PG&E	4,975	310	0.87	4%	\$21,824	\$23,594	\$19,378	1.1	0.9	\$1,770	(\$2,445)
CZ14	SDG&E	4,884	370	0.82	4%	\$21,824	\$24,894	\$21,035	1.1	0.96	\$3,070	(\$789)
CZ14-2	SCE	4,884	370	0.82	4%	\$21,824	\$14,351	\$21,035	0.7	0.96	(\$7,473)	(\$789)
CZ15	SCE	5,187	278	1.23	3%	\$21,824	\$13,645	\$18,089	0.6	0.8	(\$8,178)	(\$3,735)
CZ16	PG&E	2,992	1197	4.95	6%	\$20,971	\$27,813	\$30,869	1.3	1.5	\$6,842	\$9,898
CZ16-2	LADWP	2,992	1197	4.95	6%	\$20,971	\$19,782	\$30,869	0.9	1.5	(\$1,190)	\$9,898



**Figure 32. Cost Effectiveness for Small Hotel Package 1B – Mixed-Fuel + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1B: Mixed Fuel + EE + PV + B</b>												
CZ01	PG&E	107,694	1288	28.73	9%	\$228,341	\$366,509	\$295,731	1.6	1.3	\$138,168	\$67,390
CZ02	PG&E	130,144	976	31.14	7%	\$228,341	\$359,248	\$336,575	1.6	1.5	\$130,907	\$108,233
CZ03	PG&E	129,107	1046	31.57	10%	\$228,341	\$430,737	\$335,758	1.9	1.5	\$202,396	\$107,416
CZ04	PG&E	132,648	395	28.46	6%	\$229,194	\$355,406	\$338,455	1.6	1.5	\$126,212	\$109,262
CZ04-2	CPAU	132,556	422	28.59	6%	\$229,194	\$322,698	\$338,492	1.4	1.5	\$93,504	\$109,298
CZ05	PG&E	136,318	1018	32.73	9%	\$228,341	\$452,611	\$352,342	2.0	1.5	\$224,269	\$124,001
CZ05-2	SCG	136,318	1018	32.73	9%	\$228,341	\$446,858	\$352,342	2.0	1.5	\$218,516	\$124,001
CZ06	SCE	131,051	418	28.47	8%	\$229,194	\$217,728	\$336,843	0.9	1.5	(\$11,466)	\$107,649
CZ06-2	LADWP	131,051	418	28.47	8%	\$229,194	\$131,052	\$336,843	0.6	1.5	(\$98,142)	\$107,649
CZ07	SDG&E	136,359	424	29.63	8%	\$229,194	\$306,088	\$345,378	1.3	1.5	\$76,894	\$116,184
CZ08	SCE	132,539	419	28.85	7%	\$229,194	\$227,297	\$353,013	1.0	1.5	(\$1,897)	\$123,819
CZ08-2	LADWP	132,539	419	28.85	7%	\$229,194	\$134,739	\$353,013	0.6	1.5	(\$94,455)	\$123,819
CZ09	SCE	131,422	406	28.82	6%	\$229,194	\$230,791	\$343,665	1.0	1.5	\$1,597	\$114,471
CZ09-2	LADWP	131,422	406	28.82	6%	\$229,194	\$136,024	\$343,665	0.6	1.5	(\$93,170)	\$114,471
CZ10	SDG&E	134,146	342	29.05	5%	\$229,194	\$339,612	\$342,574	1.5	1.5	\$110,418	\$113,380
CZ10-2	SCE	134,146	342	29.05	5%	\$229,194	\$226,244	\$342,574	1.0	1.5	(\$2,949)	\$113,380
CZ11	PG&E	128,916	325	27.62	4%	\$229,194	\$352,831	\$337,208	1.5	1.5	\$123,637	\$108,014
CZ12	PG&E	131,226	327	28.04	5%	\$229,194	\$425,029	\$338,026	1.9	1.5	\$195,835	\$108,832
CZ12-2	SMUD	131,226	327	28.04	5%	\$229,194	\$213,176	\$338,026	0.9	1.5	(\$16,018)	\$108,832
CZ13	PG&E	127,258	310	27.33	4%	\$229,194	\$351,244	\$324,217	1.5	1.4	\$122,050	\$95,023
CZ14	SDG&E	147,017	370	30.96	4%	\$229,194	\$861,445	\$217,675	3.8	0.9	\$632,251	(\$11,518)
CZ14-2	SCE	147,017	370	30.96	4%	\$229,194	\$244,100	\$381,164	1.1	1.7	\$14,906	\$151,970
CZ15	SCE	137,180	278	29.12	3%	\$229,194	\$225,054	\$348,320	1.0	1.5	(\$4,140)	\$119,127
CZ16	PG&E	141,478	1197	34.60	6%	\$228,341	\$377,465	\$357,241	1.7	1.6	\$149,124	\$128,899
CZ16-2	LADWP	141,478	1197	34.60	6%	\$228,341	\$136,563	\$357,241	0.6	1.6	(\$91,778)	\$128,899



**Figure 33. Cost Effectiveness for Small Hotel Package 1C – Mixed-Fuel + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 1C: Mixed Fuel + HE</b>												
CZ01	PG&E	10	632	3.76	2%	\$22,839	\$11,015	\$10,218	0.5	0.4	(\$11,823)	(\$12,621)
CZ02	PG&E	981	402	2.69	3%	\$23,092	\$16,255	\$11,808	0.7	0.5	(\$6,837)	(\$11,284)
CZ03	PG&E	81	383	2.30	2%	\$20,510	\$7,066	\$6,850	0.3	0.3	(\$13,444)	(\$13,660)
CZ04	PG&E	161	373	2.26	2%	\$22,164	\$8,593	\$7,645	0.4	0.3	(\$13,571)	(\$14,519)
CZ04-2	CPAU	161	373	2.26	2%	\$22,164	\$7,097	\$7,645	0.3	0.3	(\$15,067)	(\$14,519)
CZ05	PG&E	154	361	2.19	2%	\$21,418	\$6,897	\$6,585	0.3	0.3	(\$14,521)	(\$14,833)
CZ05-2	SCG	154	361	2.19	2%	\$21,418	\$4,786	\$6,585	0.2	0.3	(\$16,632)	(\$14,833)
CZ06	SCE	237	201	1.27	2%	\$20,941	\$3,789	\$4,882	0.2	0.2	(\$17,152)	(\$16,059)
CZ06-2	LADWP	237	201	1.27	2%	\$20,941	\$3,219	\$4,882	0.2	0.2	(\$17,722)	(\$16,059)
CZ07	SDG&E	1,117	158	1.28	2%	\$19,625	\$13,771	\$7,342	0.7	0.4	(\$5,854)	(\$12,283)
CZ08	SCE	1,302	169	1.39	2%	\$20,678	\$8,378	\$8,591	0.4	0.4	(\$12,300)	(\$12,088)
CZ08-2	LADWP	1,302	169	1.39	2%	\$20,678	\$5,802	\$8,591	0.3	0.4	(\$14,877)	(\$12,088)
CZ09	SCE	1,733	178	1.56	3%	\$20,052	\$10,489	\$11,164	0.5	0.6	(\$9,563)	(\$8,888)
CZ09-2	LADWP	1,733	178	1.56	3%	\$20,052	\$7,307	\$11,164	0.4	0.6	(\$12,745)	(\$8,888)
CZ10	SDG&E	3,170	220	2.29	4%	\$22,682	\$35,195	\$19,149	1.6	0.8	\$12,513	(\$3,533)
CZ10-2	SCE	3,170	220	2.29	4%	\$22,682	\$16,701	\$19,149	0.7	0.8	(\$5,981)	(\$3,533)
CZ11	PG&E	3,343	323	2.96	4%	\$23,344	\$27,633	\$20,966	1.2	0.9	\$4,288	(\$2,379)
CZ12	PG&E	1,724	320	2.44	4%	\$22,302	\$11,597	\$15,592	0.5	0.7	(\$10,705)	(\$6,710)
CZ12-2	SMUD	1,724	320	2.44	4%	\$22,302	\$11,156	\$15,592	0.5	0.7	(\$11,146)	(\$6,710)
CZ13	PG&E	3,083	316	2.81	3%	\$22,882	\$23,950	\$17,068	1.0	0.7	\$1,068	(\$5,814)
CZ14	SDG&E	3,714	312	2.99	4%	\$23,299	\$35,301	\$21,155	1.5	0.9	\$12,002	(\$2,144)
CZ14-2	SCE	3,714	312	2.99	4%	\$23,299	\$18,460	\$21,155	0.8	0.9	(\$4,839)	(\$2,144)
CZ15	SCE	8,684	97	3.21	5%	\$20,945	\$26,738	\$31,600	1.3	1.5	\$5,792	\$10,655
CZ16	PG&E	836	700	4.42	3%	\$24,616	\$18,608	\$14,494	0.8	0.6	(\$6,007)	(\$10,121)
CZ16-2	LADWP	836	700	4.42	3%	\$24,616	\$15,237	\$14,494	0.6	0.6	(\$9,378)	(\$10,121)



**Figure 34. Cost Effectiveness for Small Hotel Package 2 – All-Electric Federal Code Minimum**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost*	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 2: All-Electric Federal Code Minimum</b>												
CZ01	PG&E	-159,802	16917	53.92	-28%	(\$1,296,784)	(\$582,762)	(\$115,161)	2.2	11.3	\$714,022	\$1,181,623
CZ02	PG&E	-118,739	12677	40.00	-12%	(\$1,297,757)	(\$245,434)	(\$51,620)	5.3	25.1	\$1,052,322	\$1,246,137
CZ03	PG&E	-110,595	12322	40.48	-14%	(\$1,300,029)	(\$326,633)	(\$51,166)	4.0	25.4	\$973,396	\$1,248,863
CZ04	PG&E	-113,404	11927	36.59	-13%	(\$1,299,864)	(\$225,307)	(\$53,134)	5.8	24.5	\$1,074,556	\$1,246,730
CZ04-2	CPAU	-113,404	11927	36.59	-13%	(\$1,299,864)	(\$17,768)	(\$53,134)	73.2	24.5	\$1,282,096	\$1,246,730
CZ05	PG&E	-108,605	11960	38.34	-15%	(\$1,299,917)	(\$350,585)	(\$54,685)	3.7	23.8	\$949,332	\$1,245,232
CZ06	SCE	-78,293	8912	29.36	-5%	(\$1,300,058)	(\$61,534)	(\$28,043)	21.1	46.4	\$1,238,524	\$1,272,015
CZ06-2	LA	-78,293	8912	29.36	-5%	(\$1,300,058)	\$43,200	(\$28,043)	>1	46.4	\$1,343,258	\$1,272,015
CZ07	SDG&E	-69,819	8188	28.04	-7%	(\$1,298,406)	(\$137,638)	(\$23,199)	9.4	56.0	\$1,160,768	\$1,275,207
CZ08	SCE	-71,914	8353	28.21	-6%	(\$1,296,376)	(\$53,524)	(\$22,820)	24.2	56.8	\$1,242,852	\$1,273,556
CZ08-2	LA	-71,914	8353	28.21	-6%	(\$1,296,376)	\$42,841	(\$22,820)	>1	56.8	\$1,339,217	\$1,273,556
CZ09	SCE	-72,262	8402	28.38	-6%	(\$1,298,174)	(\$44,979)	(\$21,950)	28.9	59.1	\$1,253,196	\$1,276,224
CZ09-2	LA	-72,262	8402	28.38	-6%	(\$1,298,174)	\$46,679	(\$21,950)	>1	59.1	\$1,344,853	\$1,276,224
CZ10	SDG&E	-80,062	8418	26.22	-8%	(\$1,295,176)	(\$172,513)	(\$36,179)	7.5	35.8	\$1,122,663	\$1,258,997
CZ10-2	SCE	-80,062	8418	26.22	-8%	(\$1,295,176)	(\$63,974)	(\$36,179)	20.2	35.8	\$1,231,202	\$1,258,997
CZ11	PG&E	-99,484	10252	30.99	-10%	(\$1,295,985)	(\$186,037)	(\$49,387)	7.0	26.2	\$1,109,948	\$1,246,598
CZ12	PG&E	-99,472	10403	32.08	-10%	(\$1,297,425)	(\$340,801)	(\$45,565)	3.8	28.5	\$956,624	\$1,251,860
CZ12-2	SMUD	-99,067	10403	32.21	-10%	(\$1,297,425)	\$5,794	(\$44,354)	>1	29.3	\$1,303,219	\$1,253,071
CZ13	PG&E	-96,829	10029	30.60	-10%	(\$1,295,797)	(\$184,332)	(\$50,333)	7.0	25.7	\$1,111,465	\$1,245,464
CZ14	SDG&E	-101,398	10056	29.68	-11%	(\$1,296,156)	(\$325,928)	(\$56,578)	4.0	22.9	\$970,228	\$1,239,578
CZ14-2	SCE	-101,398	10056	29.68	-11%	(\$1,296,156)	(\$121,662)	(\$56,578)	10.7	22.9	\$1,174,494	\$1,239,578
CZ15	SCE	-49,853	5579	18.07	-4%	(\$1,294,276)	\$209	(\$21,420)	>1	60.4	\$1,294,485	\$1,272,856
CZ16	PG&E	-216,708	17599	41.89	-50%	(\$1,300,552)	(\$645,705)	(\$239,178)	2.0	5.4	\$654,847	\$1,061,374
CZ16-2	LA	-216,708	17599	41.89	-50%	(\$1,300,552)	\$30,974	(\$239,178)	>1	5.4	\$1,331,526	\$1,061,374

\*The Incremental Package Cost is the addition of the incremental HVAC and water heating equipment costs from Figure 12, the electrical infrastructure incremental cost of \$26,800 (see section 3.3.2.1), and the natural gas infrastructure incremental cost savings of \$56,020 (see section 3.3.2.2).



**Figure 35. Cost Effectiveness for Small Hotel Package 3A – All-Electric + EE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3A: All-Electric + EE</b>												
CZ01	PG&E	-113,259	16917	62.38	1.3%	(\$1,251,544)	(\$200,367)	\$5,460	6.2	>1	\$1,051,177	\$1,257,005
CZ02	PG&E	-90,033	12677	45.46	4%	(\$1,265,064)	(\$108,075)	\$15,685	11.7	>1	\$1,156,989	\$1,280,749
CZ03	PG&E	-83,892	12322	45.93	6%	(\$1,267,509)	(\$198,234)	\$20,729	6.4	>1	\$1,069,274	\$1,288,237
CZ04	PG&E	-91,197	11927	40.36	0.2%	(\$1,263,932)	(\$112,892)	\$703	11.2	>1	\$1,151,041	\$1,264,635
CZ04-2	CPAU	-90,981	11927	40.42	0.2%	(\$1,263,932)	\$32,557	\$918	>1	>1	\$1,296,489	\$1,264,850
CZ05	PG&E	-82,491	11960	43.62	5%	(\$1,267,355)	(\$221,492)	\$18,488	5.7	>1	\$1,045,863	\$1,285,843
CZ06	SCE	-61,523	8912	32.45	7%	(\$1,267,916)	(\$33,475)	\$15,142	37.9	>1	\$1,234,441	\$1,283,057
CZ06-2	LADWP	-61,523	8912	32.45	7%	(\$1,267,916)	\$57,215	\$15,142	>1	>1	\$1,325,130	\$1,283,057
CZ07	SDG&E	-53,308	8188	31.22	7%	(\$1,266,354)	(\$81,338)	\$22,516	15.6	>1	\$1,185,015	\$1,288,870
CZ08	SCE	-55,452	8353	31.33	3%	(\$1,264,408)	(\$23,893)	\$9,391	52.9	>1	\$1,240,515	\$1,273,800
CZ08-2	LADWP	-55,452	8353	31.33	3%	(\$1,264,408)	\$57,058	\$9,391	>1	>1	\$1,321,466	\$1,273,800
CZ09	SCE	-55,887	8402	31.40	2%	(\$1,266,302)	(\$19,887)	\$9,110	63.7	>1	\$1,246,415	\$1,275,412
CZ09-2	LADWP	-55,887	8402	31.40	2%	(\$1,266,302)	\$60,441	\$9,110	>1	>1	\$1,326,743	\$1,275,412
CZ10	SDG&E	-60,239	8418	29.96	2%	(\$1,256,002)	(\$126,072)	\$7,365	10.0	>1	\$1,129,930	\$1,263,367
CZ10-2	SCE	-60,239	8418	29.96	2%	(\$1,256,002)	(\$33,061)	\$7,365	38.0	>1	\$1,222,940	\$1,263,367
CZ11	PG&E	-77,307	10252	35.12	1%	(\$1,256,149)	(\$80,187)	\$3,114	15.7	>1	\$1,175,962	\$1,259,263
CZ12	PG&E	-75,098	10403	36.73	2%	(\$1,256,824)	(\$234,275)	\$9,048	5.4	>1	\$1,022,550	\$1,265,872
CZ12-2	SMUD	-75,098	10403	36.73	2%	(\$1,256,824)	\$54,941	\$9,048	>1	>1	\$1,311,765	\$1,265,872
CZ13	PG&E	-75,052	10029	34.72	0.3%	(\$1,256,109)	(\$79,378)	\$1,260	15.8	>1	\$1,176,731	\$1,257,369
CZ14	SDG&E	-76,375	10056	34.28	0.1%	(\$1,255,704)	(\$170,975)	\$543	7.3	>1	\$1,084,729	\$1,256,247
CZ14-2	SCE	-76,375	10056	34.28	0.1%	(\$1,255,704)	(\$34,418)	\$543	36.5	>1	\$1,221,286	\$1,256,247
CZ15	SCE	-33,722	5579	21.43	2%	(\$1,257,835)	\$26,030	\$12,262	>1	>1	\$1,283,864	\$1,270,097
CZ16	PG&E	-139,676	17599	55.25	-14%	(\$1,255,364)	(\$197,174)	(\$66,650)	6.4	18.8	\$1,058,190	\$1,188,714
CZ16-2	LADWP	-139,676	17599	55.25	-14%	(\$1,255,364)	\$165,789	(\$66,650)	>1	18.8	\$1,421,153	\$1,188,714



**Figure 36. Cost Effectiveness for Small Hotel Package 3B – All-Electric + EE + PV + B**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3B: All-Electric + EE + PV + B</b>												
CZ01	PG&E	-8,900	16917	87.15	1%	(\$1,044,174)	\$90,964	\$324,376	>1	>1	\$1,135,139	\$1,368,551
CZ02	PG&E	36,491	12677	73.03	4%	(\$1,057,694)	\$242,514	\$313,711	>1	>1	\$1,300,208	\$1,371,405
CZ03	PG&E	41,239	12322	73.43	6%	(\$1,060,139)	\$155,868	\$308,385	>1	>1	\$1,216,007	\$1,368,524
CZ04	PG&E	36,628	11927	69.70	0.2%	(\$1,056,562)	\$240,799	\$308,682	>1	>1	\$1,297,361	\$1,365,244
CZ04-2	CPAU	36,844	11927	69.76	0.2%	(\$1,056,562)	\$336,813	\$418,836	>1	>1	\$1,393,375	\$1,475,398
CZ05	PG&E	36,365	11960	73.11	5%	(\$1,059,985)	\$119,173	\$317,952	>1	>1	\$1,179,158	\$1,377,937
CZ06	SCE	64,476	8912	60.47	7%	(\$1,060,545)	\$156,327	\$311,730	>1	>1	\$1,216,872	\$1,372,275
CZ06-2	LADWP	64,476	8912	60.47	7%	(\$1,060,545)	\$180,648	\$311,730	>1	>1	\$1,241,193	\$1,372,275
CZ07	SDG&E	77,715	8188	60.45	7%	(\$1,058,983)	\$197,711	\$330,458	>1	>1	\$1,256,694	\$1,389,441
CZ08	SCE	71,990	8353	59.49	3%	(\$1,057,038)	\$165,393	\$320,814	>1	>1	\$1,222,432	\$1,377,852
CZ08-2	LADWP	71,990	8353	60.24	3%	(\$1,057,038)	\$180,367	\$443,809	>1	>1	\$1,237,405	\$1,500,847
CZ09	SCE	70,465	8402	59.29	2%	(\$1,058,932)	\$175,602	\$301,459	>1	>1	\$1,234,534	\$1,360,391
CZ09-2	LADWP	70,465	8402	59.29	2%	(\$1,058,932)	\$183,220	\$301,459	>1	>1	\$1,242,152	\$1,360,391
CZ10	SDG&E	69,581	8418	58.04	2%	(\$1,048,632)	\$161,513	\$294,530	>1	>1	\$1,210,145	\$1,343,162
CZ10-2	SCE	69,581	8418	58.04	2%	(\$1,048,632)	\$164,837	\$294,530	>1	>1	\$1,213,469	\$1,343,162
CZ11	PG&E	47,260	10252	61.57	1%	(\$1,048,779)	\$253,717	\$286,797	>1	>1	\$1,302,496	\$1,335,576
CZ12	PG&E	51,115	10403	64.07	2%	(\$1,049,454)	\$104,523	\$305,446	>1	>1	\$1,153,977	\$1,354,900
CZ12-2	SMUD	51,115	10403	64.99	2%	(\$1,049,454)	\$253,197	\$430,977	>1	>1	\$1,302,651	\$1,480,431
CZ13	PG&E	47,757	10029	60.77	0.3%	(\$1,048,739)	\$251,663	\$281,877	>1	>1	\$1,300,402	\$1,330,616
CZ14	SDG&E	66,084	10056	64.54	0.1%	(\$1,048,334)	\$148,510	\$334,938	>1	>1	\$1,196,844	\$1,383,272
CZ14-2	SCE	66,084	10056	64.54	0.1%	(\$1,048,334)	\$185,018	\$334,938	>1	>1	\$1,233,352	\$1,383,272
CZ15	SCE	98,755	5579	49.04	2.1%	(\$1,050,465)	\$233,308	\$311,121	>1	>1	\$1,283,772	\$1,361,585
CZ16	PG&E	-873	17599	84.99	-14%	(\$1,047,994)	\$191,994	\$240,724	>1	>1	\$1,239,987	\$1,288,718
CZ16-2	LADWP	-873	17599	84.99	-14%	(\$1,047,994)	\$291,279	\$240,724	>1	>1	\$1,339,273	\$1,288,718



**Figure 37. Cost Effectiveness for Small Hotel Package 3C – All-Electric + HE**

CZ	Utility	Elec Savings (kWh)	Gas Savings (therms)	GHG Reductions (mtons)	Compliance Margin	Incremental Package Cost	Lifecycle Utility Cost Savings	\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Package 3C: All-Electric + HE</b>												
CZ01	PG&E	-154,840	16917	56.24	-24%	(\$1,281,338)	(\$606,619)	(\$101,272)	2.1	12.7	\$674,719	\$1,180,066
CZ02	PG&E	-118,284	12677	41.18	-11%	(\$1,283,243)	(\$395,641)	(\$44,505)	3.2	28.8	\$887,602	\$1,238,738
CZ03	PG&E	-113,413	12322	40.80	-14%	(\$1,288,782)	(\$522,458)	(\$51,582)	2.5	25.0	\$766,324	\$1,237,200
CZ04	PG&E	-115,928	11927	37.09	-13%	(\$1,287,878)	(\$383,177)	(\$53,285)	3.4	24.2	\$904,701	\$1,234,593
CZ04-2	CPAU	-115,928	11927	37.09	-13%	(\$1,287,878)	(\$24,170)	(\$53,285)	53.3	24.2	\$1,263,708	\$1,234,593
CZ05	PG&E	-111,075	11960	38.75	-15%	(\$1,288,242)	(\$530,740)	(\$56,124)	2.4	23.0	\$757,502	\$1,232,119
CZ06	SCE	-83,000	8912	29.41	-15%	(\$1,288,695)	(\$154,625)	(\$32,244)	8.3	40.0	\$1,134,069	\$1,256,451
CZ06-2	LADWP	-83,000	8912	29.41	-15%	(\$1,288,695)	(\$17,626)	(\$32,244)	73.1	40.0	\$1,271,068	\$1,256,451
CZ07	SDG&E	-73,823	8188	28.32	-7%	(\$1,285,759)	(\$268,207)	(\$24,069)	4.8	53.4	\$1,017,552	\$1,261,690
CZ08	SCE	-75,573	8353	28.56	-6%	(\$1,281,241)	(\$157,393)	(\$21,912)	8.1	58.5	\$1,123,848	\$1,259,329
CZ08-2	LADWP	-75,573	8353	28.56	-6%	(\$1,281,241)	(\$18,502)	(\$21,912)	69.2	58.5	\$1,262,739	\$1,259,329
CZ09	SCE	-74,790	8402	29.04	-4%	(\$1,285,139)	(\$138,746)	(\$16,992)	9.3	75.6	\$1,146,393	\$1,268,147
CZ09-2	LADWP	-74,790	8402	29.04	-4%	(\$1,285,139)	(\$6,344)	(\$16,992)	202.6	75.6	\$1,278,794	\$1,268,147
CZ10	SDG&E	-80,248	8418	27.57	-5%	(\$1,278,097)	(\$235,479)	(\$24,107)	5.4	53.0	\$1,042,617	\$1,253,990
CZ10-2	SCE	-80,248	8418	27.57	-5%	(\$1,278,097)	(\$123,371)	(\$24,107)	10.4	53.0	\$1,154,726	\$1,253,990
CZ11	PG&E	-98,041	10252	32.73	-7%	(\$1,279,528)	(\$278,242)	(\$35,158)	4.6	36.4	\$1,001,286	\$1,244,370
CZ12	PG&E	-100,080	10403	33.24	-9%	(\$1,282,834)	(\$480,347)	(\$38,715)	2.7	33.1	\$802,487	\$1,244,119
CZ12-2	SMUD	-100,080	10403	33.24	-9%	(\$1,282,834)	(\$23,362)	(\$38,715)	54.9	33.1	\$1,259,472	\$1,244,119
CZ13	PG&E	-94,607	10029	32.47	-7%	(\$1,279,301)	(\$276,944)	\$244,552	4.6	>1	\$1,002,357	\$1,523,853
CZ14	SDG&E	-97,959	10056	31.91	-7%	(\$1,279,893)	(\$302,123)	(\$37,769)	4.2	33.9	\$977,770	\$1,242,124
CZ14-2	SCE	-97,959	10056	31.91	-7%	(\$1,279,893)	(\$129,082)	(\$37,769)	9.9	33.9	\$1,150,811	\$1,242,124
CZ15	SCE	-45,226	5579	20.17	0.04%	(\$1,276,847)	(\$6,533)	\$227	195.4	>1	\$1,270,314	\$1,277,074
CZ16	PG&E	-198,840	17599	47.73	-39%	(\$1,288,450)	(\$605,601)	(\$185,438)	2.1	6.9	\$682,848	\$1,103,011
CZ16-2	LADWP	-198,840	17599	47.73	-39%	(\$1,288,450)	\$40,268	(\$185,438)	>1	6.9	\$1,328,718	\$1,103,011



#### 4.4 Cost Effectiveness Results – PV-only and PV+Battery

The Reach Code Team ran packages of PV-only and PV+Battery measures, without any additional efficiency measures, to assess cost effectiveness on top of the mixed-fuel baseline building and the all-electric federal code minimum reference (Package 2 in Sections 4.1 – 4.3).

Jurisdictions interested in adopting PV-only reach codes should reference the mixed-fuel cost effectiveness results because a mixed-fuel building is the baseline for the nonresidential prototypes analyzed in this study. PV or PV+Battery packages are added to all-electric federal code minimum reference which (in many scenarios) do not have a positive compliance margin compared to the mixed-fuel baseline model, and are solely provided for informational purposes. Jurisdictions interested in reach codes requiring all-electric+PV or all-electric+PV+battery should reference package 3B results in Sections 4.1 – 4.3.<sup>25</sup>

Each of the following eight packages were evaluated against a mixed fuel baseline designed as per 2019 Title 24 Part 6 requirements.

- ◆ **Mixed-Fuel + 3 kW PV Only:**
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh battery**
- ◆ **Mixed-Fuel + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery
- ◆ **All-Electric + 3 kW PV Only**
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery**
- ◆ **All-Electric + PV Only:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller
- ◆ **All-Electric + PV + 50 kWh Battery:** PV sized per the roof size of the building, or to offset the annual electricity consumption, whichever is smaller, along with 50 kWh battery

Figure 38 through Figure 40 summarize the on-bill and TDV B/C ratios for each prototype for the two PV only packages and the two PV plus battery packages. Compliance margins are 0 percent for all mixed-fuel packages. For all-electric packages, compliance margins are equal to those found in Package 2 for each prototype in Sections 4.1 – 4.3. The compliance margins are not impacted by renewables and battery storage measures and hence not shown in the tables. These figures are formatted in the following way:

- ◆ Cells highlighted in green have a B/C ratio greater than 1 and are cost-effective. The shade of green gets darker as cost effectiveness increases.
- ◆ Cells not highlighted have a B/C ratio less than one and are not cost effective.

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<sup>25</sup> Because this study shows that the addition of battery generally reduces cost effectiveness, removing a battery measure would only increase cost effectiveness. Thus, a jurisdiction can apply the EE+PV+Battery cost effectiveness findings to support EE+PV reach codes, because EE+PV would still remain cost effective without a battery.

Please see Appendix 6.7 for results in full detail. Generally, for mixed-fuel packages across all prototypes, all climate zones were proven to have cost effective outcomes using TDV except in CZ1 with a 3 kW PV + 5 kWh Battery scenario. Most climate zones also had On-Bill cost effectiveness. The addition of a battery slightly reduces cost effectiveness.

In all-electric packages, the results for most climate zones were found cost effective using both TDV and On-Bill approaches with larger PV systems or PV+Battery systems. Most 3 kW PV systems were also found to be cost effective except in some scenarios analyzing the Medium Office using the On-Bill method. CZ16 results continue to show challenges being cost effective with all electric buildings, likely due to the high heating loads in this climate. The addition of a battery slightly reduces the cost effectiveness for all-electric buildings with PV.



**Figure 38. Cost Effectiveness for Medium Office - PV and Battery**

CZ	PV Battery Utility	Mixed Fuel								All-Electric							
		3kW		3kW		135kW		135kW		3kW		3kW		135kW		135kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.8	1.5	1.7	0.9	1.7	1.3	1.6	1.2	0.9	1.6	0.9	1.6	2.5	2.0	2.1	1.7
CZ02	PG&E	3.7	1.9	2.1	1.1	2.2	1.6	2.0	1.4	0.8	2.2	0.9	2.6	3.2	2.4	2.7	2.1
CZ03	PG&E	3.7	1.8	2.2	1.0	2.1	1.5	1.9	1.4	1.9	3.9	2.0	4.0	3.4	2.5	2.9	2.2
CZ04	PG&E	3.6	2.0	2.1	1.2	2.3	1.6	2.1	1.5	0.9	2.1	1.1	2.7	3.3	2.5	2.9	2.2
CZ04-2	CPAU	2.1	2.0	1.3	1.2	1.8	1.6	1.6	1.5	7.7	2.1	9.8	2.7	2.9	2.5	2.5	2.2
CZ05	PG&E	4.2	1.9	2.4	1.1	2.5	1.6	2.3	1.5	1.8	2.7	1.9	2.7	4.0	2.7	3.4	2.3
CZ05-2	SCG	4.2	1.9	2.4	1.1	2.5	1.6	2.3	1.5	>1	>1	>1	>1	>1	3.0	9.4	2.6
CZ06	SCE	2.0	2.0	1.2	1.1	1.3	1.6	1.2	1.5	>1	7.2	>1	8.2	2.4	2.7	2.1	2.3
CZ06-2	LA	1.2	2.0	0.7	1.1	0.8	1.6	0.7	1.5	>1	7.2	>1	8.2	1.5	2.7	1.3	2.3
CZ07	SDG&E	3.2	2.0	1.9	1.2	2.1	1.6	1.9	1.5	>1	>1	>1	>1	3.7	2.7	3.2	2.3
CZ08	SCE	1.9	2.0	1.1	1.2	1.3	1.7	1.2	1.5	>1	>1	>1	>1	2.2	2.7	1.9	2.4
CZ08-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.3	2.7	1.1	2.4
CZ09	SCE	1.9	2.0	1.1	1.2	1.3	1.7	1.2	1.5	>1	>1	>1	>1	2.2	2.6	1.9	2.3
CZ09-2	LA	1.1	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.3	2.6	1.2	2.3
CZ10	SDG&E	3.8	1.9	2.2	1.1	2.1	1.6	1.9	1.5	>1	3.3	>1	6.3	3.3	2.3	2.9	2.0
CZ10-2	SCE	2.1	1.9	1.2	1.1	1.3	1.6	1.2	1.5	>1	3.3	>1	6.3	2.0	2.3	1.8	2.0
CZ11	PG&E	3.6	1.9	2.1	1.1	2.2	1.6	2.0	1.5	1.1	2.6	1.5	3.6	3.2	2.4	2.8	2.1
CZ12	PG&E	3.5	1.9	2.1	1.1	2.2	1.6	2.0	1.5	0.9	2.5	1.2	3.2	3.1	2.4	2.7	2.1
CZ12-2	SMUD	1.4	1.9	0.8	1.1	1.1	1.6	1.04	1.5	>1	2.5	>1	3.2	1.9	2.4	1.6	2.1
CZ13	PG&E	3.5	1.8	2.0	1.1	2.2	1.5	2.0	1.4	1.1	2.5	1.5	3.6	3.1	2.3	2.7	2.0
CZ14	SDG&E	3.4	2.3	2.0	1.3	2.2	1.9	2.0	1.7	>1	2.3	>1	3.1	3.6	2.8	3.2	2.5
CZ14-2	SCE	1.9	2.3	1.1	1.3	1.3	1.9	1.2	1.7	>1	2.3	>1	3.1	2.2	2.8	1.9	2.5
CZ15	SCE	1.8	2.1	1.1	1.2	1.2	1.7	1.1	1.6	>1	7.5	>1	>1	1.8	2.4	1.6	2.1
CZ16	PG&E	3.9	2.0	2.3	1.1	2.3	1.6	2.1	1.5	0.3	0.4	0.4	0.6	2.5	1.8	2.2	1.6
CZ16-2	LA	1.2	2.0	0.7	1.1	0.7	1.6	0.7	1.5	>1	0.4	>1	0.6	1.3	1.8	1.2	1.6



Figure 39. Cost Effectiveness for Medium Retail - PV and Battery

CZ	Utility	Mixed Fuel								All-Electric							
		3kW		3kW		90 kW		90 kW		3kW		3kW		90 kW		90 kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.3	1.5	1.3	0.9	1.8	1.3	1.6	1.2	>1	3.0	>1	2.7	2.5	1.6	2.2	1.5
CZ02	PG&E	3.2	1.8	1.9	1.1	1.9	1.5	1.8	1.5	>1	>1	>1	>1	2.7	2.1	2.3	1.9
CZ03	PG&E	2.7	1.8	1.6	1.1	2.2	1.5	2.0	1.4	>1	>1	>1	>1	3.0	2.1	2.6	1.9
CZ04	PG&E	3.3	1.9	1.9	1.1	2.0	1.6	1.9	1.5	>1	>1	>1	>1	2.7	2.1	2.5	2.0
CZ04-2	CPAU	2.1	1.9	1.2	1.1	1.7	1.6	1.5	1.5	>1	>1	>1	>1	2.4	2.1	2.1	2.0
CZ05	PG&E	2.8	1.9	1.6	1.1	2.3	1.6	2.0	1.5	>1	>1	>1	>1	3.2	2.1	2.7	2.0
CZ05-2	SCG	2.8	1.9	1.6	1.1	2.3	1.6	2.0	1.5	>1	>1	>1	>1	3.7	1.9	3.2	1.6
CZ06	SCE	2.0	1.9	1.2	1.1	1.2	1.6	1.1	1.5	>1	>1	>1	>1	1.7	2.2	1.5	2.0
CZ06-2	LA	1.3	1.9	0.7	1.1	0.7	1.6	0.6	1.5	>1	>1	>1	>1	1.01	2.2	0.9	2.0
CZ07	SDG&E	4.0	2.0	2.4	1.2	1.5	1.6	1.6	1.6	>1	>1	>1	>1	2.4	2.3	2.3	2.1
CZ08	SCE	2.1	2.0	1.2	1.2	1.2	1.7	1.1	1.6	>1	>1	>1	>1	1.7	2.4	1.5	2.1
CZ08-2	LA	1.3	2.0	0.8	1.2	0.7	1.7	0.6	1.6	>1	>1	>1	>1	1.01	2.4	0.9	2.1
CZ09	SCE	2.0	2.0	1.2	1.2	1.2	1.7	1.1	1.5	>1	>1	>1	>1	1.8	2.4	1.6	2.1
CZ09-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.7	1.5	>1	>1	>1	>1	1.1	2.4	0.99	2.1
CZ10	SDG&E	3.8	2.0	2.2	1.2	1.7	1.6	1.7	1.5	>1	>1	>1	>1	2.6	2.3	2.5	2.0
CZ10-2	SCE	2.0	2.0	1.2	1.2	1.2	1.6	1.1	1.5	>1	>1	>1	>1	1.8	2.3	1.6	2.0
CZ11	PG&E	2.8	1.9	1.6	1.1	1.9	1.6	1.8	1.5	>1	>1	>1	>1	2.7	2.3	2.5	2.1
CZ12	PG&E	3.0	1.9	1.7	1.1	1.9	1.6	1.8	1.5	>1	>1	>1	>1	2.7	2.3	2.5	2.1
CZ12-2	SMUD	1.5	1.9	0.9	1.1	1.1	1.6	0.997	1.5	>1	>1	>1	>1	1.7	2.3	1.4	2.1
CZ13	PG&E	3.0	1.9	1.7	1.1	1.9	1.6	1.8	1.4	>1	>1	>1	>1	2.7	2.2	2.4	1.9
CZ14	SDG&E	3.5	2.2	2.1	1.3	1.6	1.8	1.5	1.6	>1	>1	>1	>1	2.5	2.6	2.2	2.2
CZ14-2	SCE	1.8	2.2	1.1	1.3	1.2	1.8	1.1	1.6	>1	>1	>1	>1	1.7	2.6	1.5	2.2
CZ15	SCE	1.9	2.0	1.1	1.2	1.1	1.7	1.02	1.5	>1	>1	>1	>1	1.7	2.4	1.5	2.1
CZ16	PG&E	3.7	2.0	2.1	1.2	2.1	1.7	1.9	1.6	0.6	0.5	0.5	0.4	2.7	2.0	2.3	1.8
CZ16-2	LA	1.3	2.0	0.7	1.2	0.7	1.7	0.6	1.6	>1	0.5	>1	0.4	1.2	2.0	1.0	1.8



Figure 40. Cost Effectiveness for Small Hotel - PV and Battery

CZ	Utility	Mixed Fuel								All-Electric							
		3kW		3kW		80kW		80kW		3kW		3kW		80kW		80kW	
		0		5kWh		0		50kWh		0		5kWh		0		50kWh	
		On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV	On-Bill	TDV
CZ01	PG&E	2.3	1.5	1.3	0.9	1.9	1.2	1.6	1.1	2.3	>1	2.3	>1	4.8	>1	4.7	>1
CZ02	PG&E	2.3	1.9	1.3	1.1	1.8	1.5	1.6	1.4	5.6	>1	5.6	>1	>1	>1	>1	>1
CZ03	PG&E	2.7	1.8	1.6	1.05	2.3	1.5	1.9	1.4	4.2	>1	4.2	>1	>1	>1	>1	>1
CZ04	PG&E	2.4	1.9	1.4	1.1	1.8	1.6	1.6	1.5	6.2	>1	6.2	>1	>1	>1	>1	>1
CZ04-2	CPAU	2.1	1.9	1.2	1.1	1.7	1.6	1.5	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ05	PG&E	2.9	1.9	1.7	1.1	2.4	1.6	2.0	1.5	3.9	>1	3.9	>1	>1	>1	>1	>1
CZ05-2	SCG	2.9	1.9	1.7	1.1	2.4	1.6	2.0	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ06	SCE	1.8	1.9	1.1	1.1	1.1	1.6	0.9	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ06-2	LA	1.1	1.9	0.7	1.1	0.7	1.6	0.6	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ07	SDG&E	2.6	2.0	1.5	1.1	1.4	1.6	1.3	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ08	SCE	1.9	2.0	1.1	1.2	1.2	1.7	1.0	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ08-2	LA	1.2	2.0	0.7	1.2	0.7	1.7	0.6	1.5	>1	>1	>1	>1	>1	>1	>1	>1
CZ09	SCE	1.9	1.9	1.1	1.1	1.2	1.6	0.997	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ09-2	LA	1.1	1.9	0.7	1.1	0.7	1.6	0.6	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ10	SDG&E	2.9	1.9	1.7	1.1	1.5	1.6	1.4	1.4	8.2	>1	8.2	>1	>1	>1	>1	>1
CZ10-2	SCE	1.7	1.9	0.99	1.1	1.2	1.6	0.99	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ11	PG&E	2.6	1.9	1.5	1.1	1.8	1.6	1.5	1.4	7.6	>1	7.6	>1	>1	>1	>1	>1
CZ12	PG&E	2.7	1.9	1.6	1.1	2.3	1.6	1.9	1.4	4.0	>1	4.0	>1	>1	>1	>1	>1
CZ12-2	SMUD	1.4	1.9	0.8	1.1	1.1	1.6	0.95	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ13	PG&E	2.6	1.8	1.5	1.1	1.8	1.5	1.5	1.4	7.7	>1	7.7	>1	>1	>1	>1	>1
CZ14	SDG&E	3.0	2.2	1.7	1.3	1.7	1.8	1.5	1.6	4.2	>1	4.2	>1	>1	>1	>1	>1
CZ14-2	SCE	1.8	2.2	1.1	1.3	1.3	1.8	1.1	1.6	>1	>1	>1	>1	>1	>1	>1	>1
CZ15	SCE	1.7	2.0	1.002	1.2	1.2	1.7	1.003	1.4	>1	>1	>1	>1	>1	>1	>1	>1
CZ16	PG&E	2.7	2.0	1.6	1.2	1.9	1.6	1.7	1.5	2.1	5.7	2.1	5.6	5.8	>1	5.8	>1
CZ16-2	LA	1.02	2.0	0.6	1.2	0.6	1.6	0.6	1.5	>1	5.7	>1	5.6	>1	>1	>1	>1



## 5 Summary, Conclusions, and Further Considerations

The Reach Codes Team developed packages of energy efficiency measures as well as packages combining energy efficiency with PV generation and battery storage systems, simulated them in building modeling software, and gathered costs to determine the cost effectiveness of multiple scenarios. The Reach Codes team coordinated assumptions with multiple utilities, cities, and building community experts to develop a set of assumptions considered reasonable in the current market. Changing assumptions, such as the period of analysis, measure selection, cost assumptions, energy escalation rates, or utility tariffs are likely to change results.

### 5.1 Summary

Figure 41 through Figure 43 summarize results for each prototype and depict the compliance margins achieved for each climate zone and package. Because local reach codes must both exceed the Energy Commission performance budget (i.e., have a positive compliance margin) and be cost-effective, the Reach Code Team highlighted cells meeting these two requirements to help clarify the upper boundary for potential reach code policies:

- ◆ Cells highlighted in green depict a positive compliance margin and cost-effective results using both On-Bill and TDV approaches.
- ◆ Cells highlighted in yellow depict a positive compliance and cost-effective results using either the On-Bill or TDV approach.
- ◆ Cells not highlighted either depict a negative compliance margin or a package that was not cost effective using either the On-Bill or TDV approach.

For more detail on the results in the Figures, please refer to *Section 4 Results*. As described in Section 4.4, PV-only and PV+Battery packages in the mixed-fuel building were found to be cost effective across all prototypes, climate zones, and packages using the TDV approach, and results are not reiterated in the following figures.

**Figure 41. Medium Office Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	18%	18%	3%	-15%	7%	7%	-14%
CZ02	PG&E	17%	17%	4%	-7%	10%	10%	-5%
CZ03	PG&E	20%	20%	3%	-7%	16%	16%	-6%
CZ04	PG&E	14%	14%	5%	-6%	9%	9%	-3%
CZ04-2	CPAU	14%	14%	5%	-6%	9%	9%	-3%
CZ05	PG&E	18%	18%	4%	-8%	12%	12%	-6%
CZ05-2	SCG	18%	18%	4%	NA	NA	NA	NA
CZ06	SCE	20%	20%	3%	-4%	18%	18%	-2%
CZ06-2	LADWP	20%	20%	3%	-4%	18%	18%	-2%
CZ07	SDG&E	20%	20%	4%	-2%	20%	20%	1%
CZ08	SCE	18%	18%	4%	-2%	18%	18%	1%
CZ08-2	LADWP	18%	18%	4%	-2%	18%	18%	1%
CZ09	SCE	16%	16%	4%	-2%	15%	15%	2%
CZ09-2	LADWP	16%	16%	4%	-2%	15%	15%	2%
CZ10	SDG&E	17%	17%	4%	-4%	13%	13%	-1%
CZ10-2	SCE	17%	17%	4%	-4%	13%	13%	-1%
CZ11	PG&E	13%	13%	5%	-4%	10%	10%	0%
CZ12	PG&E	14%	14%	5%	-5%	10%	10%	-1%
CZ12-2	SMUD	14%	14%	5%	-5%	10%	10%	-1%
CZ13	PG&E	13%	13%	5%	-4%	9%	9%	0%
CZ14	SDG&E	14%	14%	5%	-5%	9%	9%	-1%
CZ14-2	SCE	14%	14%	5%	-5%	9%	9%	-1%
CZ15	SCE	12%	12%	5%	-2%	10%	10%	3%
CZ16	PG&E	14%	14%	5%	-27%	-15%	-15%	-26%
CZ16-2	LADWP	14%	14%	5%	-27%	-15%	-15%	-26%



**Figure 42. Medium Retail Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	18%	18%	2%	-4.1%	15%	15%	-2%
CZ02	PG&E	13%	13%	3%	-1.0%	13%	13%	3%
CZ03	PG&E	16%	16%	2%	-0.4%	16%	16%	2%
CZ04	PG&E	14%	14%	3%	-0.1%	14%	14%	3%
CZ04-2	CPAU	14%	14%	3%	-0.1%	14%	14%	3%
CZ05	PG&E	16%	16%	1%	-1.2%	15%	15%	1%
CZ05-2	SCG	16%	16%	1%	NA	NA	NA	NA
CZ06	SCE	10%	10%	3%	0.5%	11%	11%	3%
CZ06-2	LADWP	10%	10%	3%	0.5%	11%	11%	3%
CZ07	SDG&E	13%	13%	2%	0.3%	13%	13%	3%
CZ08	SCE	10%	10%	3%	0.4%	10%	10%	4%
CZ08-2	LADWP	10%	10%	3%	0.4%	10%	10%	4%
CZ09	SCE	10%	10%	4%	0.4%	10%	10%	4%
CZ09-2	LADWP	10%	10%	4%	0.4%	10%	10%	4%
CZ10	SDG&E	12%	12%	4%	0.1%	12%	12%	4%
CZ10-2	SCE	12%	12%	4%	0.1%	12%	12%	4%
CZ11	PG&E	13%	13%	4%	0.5%	12%	12%	5%
CZ12	PG&E	13%	13%	4%	-0.1%	12%	12%	4%
CZ12-2	SMUD	13%	13%	4%	-0.1%	12%	12%	4%
CZ13	PG&E	15%	15%	4%	-0.4%	14%	14%	4%
CZ14	SDG&E	13%	13%	4%	0.7%	15%	15%	5%
CZ14-2	SCE	13%	13%	4%	0.7%	15%	15%	5%
CZ15	SCE	12%	12%	5%	0.9%	12%	12%	6%
CZ16	PG&E	13%	13%	3%	-12.2%	3%	3%	-8%
CZ16-2	LADWP	13%	13%	3%	-12.2%	3%	3%	-8%



**Figure 43. Small Hotel Summary of Compliance Margin and Cost Effectiveness**

CZ	Utility	Mixed Fuel			All Electric			
		EE	EE + PV + B	HE	Fed Code	EE	EE + PV + B	HE
CZ01	PG&E	9%	9%	2%	-28%	1%	1%	-24%
CZ02	PG&E	7%	7%	3%	-12%	4%	4%	-11%
CZ03	PG&E	10%	10%	2%	-14%	6%	6%	-14%
CZ04	PG&E	6%	6%	2%	-13%	0.2%	0.2%	-13%
CZ04-2	CPAU	6%	6%	2%	-13%	0.2%	0.2%	-13%
CZ05	PG&E	9%	9%	2%	-15%	5%	5%	-15%
CZ05-2	SCG	9%	9%	2%	NA	NA	NA	NA
CZ06	SCE	8%	8%	2%	-5%	7%	7%	-15%
CZ06-2	LADWP	8%	8%	2%	-5%	7%	7%	-15%
CZ07	SDG&E	8%	8%	2%	-7%	7%	7%	-7%
CZ08	SCE	7%	7%	2%	-6%	3%	3%	-6%
CZ08-2	LADWP	7%	7%	2%	-6%	3%	3%	-6%
CZ09	SCE	6%	6%	3%	-6%	2%	2%	-4%
CZ09-2	LADWP	6%	6%	3%	-6%	2%	2%	-4%
CZ10	SDG&E	5%	5%	4%	-8%	2%	2%	-5%
CZ10-2	SCE	5%	5%	4%	-8%	2%	2%	-5%
CZ11	PG&E	4%	4%	4%	-10%	1%	1%	-7%
CZ12	PG&E	5%	5%	4%	-10%	2%	2%	-9%
CZ12-2	SMUD	5%	5%	4%	-10%	2%	2%	-9%
CZ13	PG&E	4%	4%	3%	-10%	0.3%	0.3%	-7%
CZ14	SDG&E	4%	4%	4%	-11%	0.1%	0.1%	-7%
CZ14-2	SCE	4%	4%	4%	-11%	0.1%	0.1%	-7%
CZ15	SCE	3%	3%	5%	-4%	2%	2%	0.04%
CZ16	PG&E	6%	6%	3%	-50%	-14%	-14%	-39%
CZ16-2	LADWP	6%	6%	3%	-50%	-14%	-14%	-39%

## 5.2 Conclusions and Further Considerations

Findings are specific to the scenarios analyzed under this specific methodology, and largely pertain to office, retail, and hotel-type occupancies. Nonresidential buildings constitute a wide variety of occupancy profiles and process loads, making findings challenging to generalize across multiple building types.

Findings indicate the following overall conclusions:

1. This study assumed that electrifying space heating and service water heating could eliminate natural gas infrastructure alone, because these were the only gas end-uses included the prototypes. Avoiding the installation of natural gas infrastructure results in significant cost savings and is a primary factor toward cost-effective outcomes in all-electric designs, even with necessary increases in electrical capacity.
2. There is ample opportunity for cost effective energy efficiency improvements, as demonstrated by the compliance margins achieved in many of the efficiency-only and efficiency + PV packages. Though much of the energy savings are attributable to lighting measures, efficiency measures selected for these prototypes are confined to the building systems that can be modeled. There is



likely further opportunity for energy savings through measures that cannot be currently demonstrated in compliance software, such as high-performance control sequences or variable speed parallel fan powered boxes.

3. High efficiency appliances triggering federal preemption do not achieve as high compliance margins as the other efficiency measures analyzed in this study. Cost effectiveness appears to be dependent on the system type and building type. Nonetheless, specifying high efficiency equipment will always be a key feature in integrated design.
4. Regarding the Small Hotel prototype:
  - a. The Small Hotel presents a challenging prototype to cost-effectively exceed the state's energy performance budget without efficiency measures. The Reach Code Team is uncertain of the precision of the results due to the inability to directly model either drain water heat recovery or a central heat pump water heater with a recirculation loop.
  - b. Hotel results may be applicable to high-rise (4 or more stories) multifamily buildings. Both hotel and multifamily buildings have the same or similar mandatory and prescriptive compliance options for hot water systems, lighting, and envelope. Furthermore, the Alternate Calculation Method Reference Manual specifies the same baseline HVAC system for both building types.
  - c. Hotel compliance margins were the lowest among the three building types analyzed, and thus the most conservative performance thresholds applicable to other nonresidential buildings not analyzed in this study. As stated previously, the varying occupancy and energy profiles of nonresidential buildings makes challenging to directly apply these results across all buildings.
5. Many all-electric and solar PV packages demonstrated greater GHG reductions than their mixed-fuel counterparts, contrary to TDV-based performance, suggesting a misalignment among the TDV metric and California's long-term GHG-reduction goals. The Energy Commission has indicated that they are aware of this issue and are seeking to address it.
6. Changes to the Nonresidential Alternative Calculation Method (ACM) Reference Manual can drastically impact results. Two examples include:
  - a. When performance modeling residential buildings, the Standard Design is electric if the Proposed Design is electric, which removes TDV-related penalties and associated negative compliance margins. This essentially allows for a compliance pathway for all-electric residential buildings. If nonresidential buildings were treated in the same way, all-electric cost effectiveness using the TDV approach would improve.
  - b. The baseline mixed-fuel system for a hotel includes a furnace in each guest room, which carries substantial plumbing costs and labor costs for assembly. A change in the baseline system would lead to different base case costs and different cost effectiveness outcomes.
7. All-electric federal code-minimum packages appear to be cost effective, largely due to avoided natural gas infrastructure, but in most cases do not comply with the Energy Commission's minimum performance budget (as described in item 7a above). For most cases it appears that adding cost-effective efficiency measures achieves compliance. All-electric nonresidential projects can leverage the initial cost savings of avoiding natural gas infrastructure by adding energy efficiency measures that would not be cost effective independently.

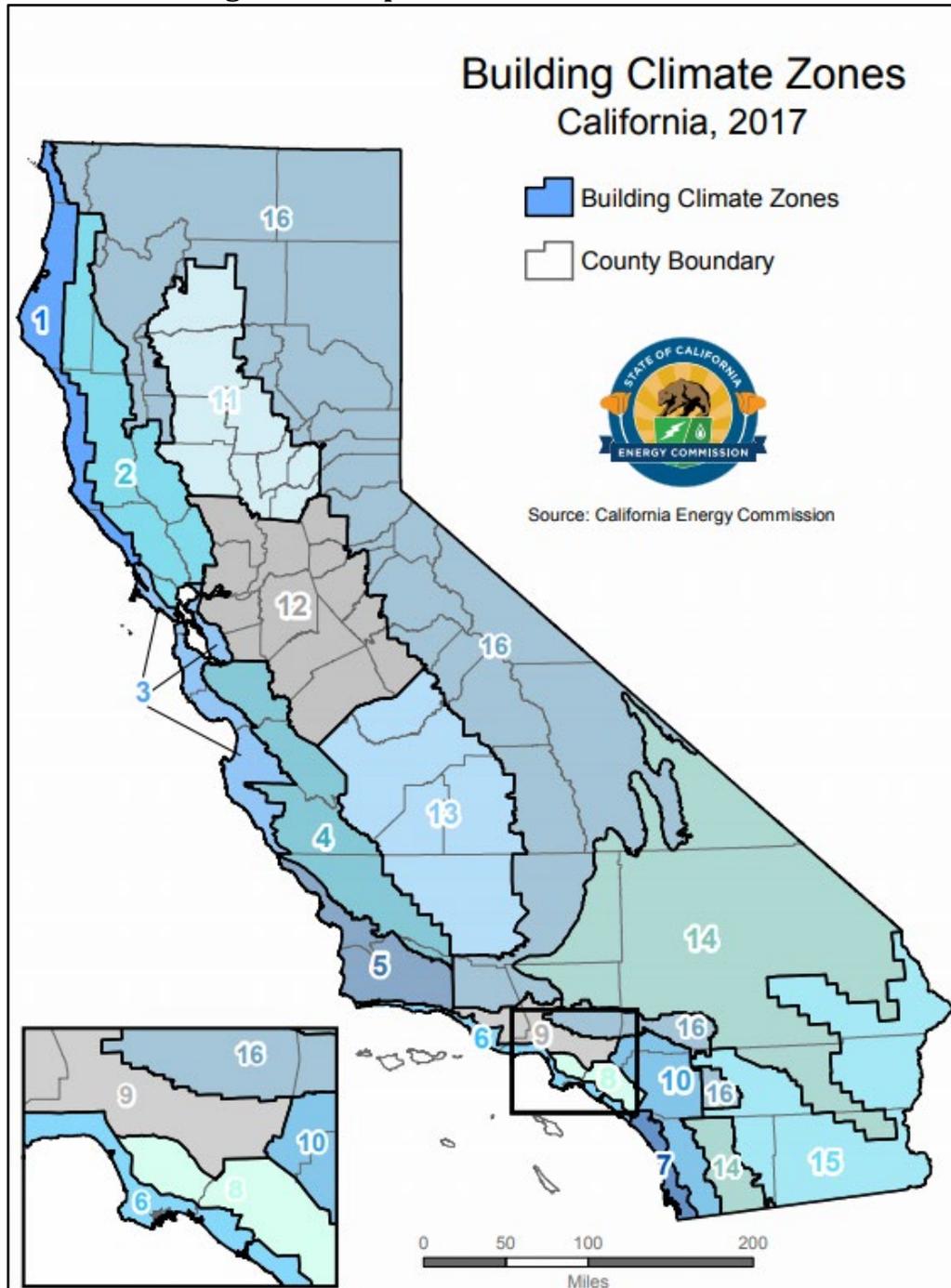
## 6 Appendices

### 6.1 Map of California Climate Zones

Climate zone geographical boundaries are depicted in Figure 44. The map in Figure 44 along with a zip-code search directory is available at:

[https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)

Figure 44. Map of California Climate Zones



## 6.2 Lighting Efficiency Measures

Figure 45 details the applicability and impact of each lighting efficiency measure by prototype and space function and includes the resulting LPD that is modeled as the proposed by building type and by space function.

**Figure 45. Impact of Lighting Measures on Proposed LPDs by Space Function**

Space Function	Baseline	Impact				Modeled Proposed
	LPD (W/ft <sup>2</sup> )	Interior Lighting Reduced LPD	Institutional Tuning	Daylight Dimming Plus OFF	Occupant Sensing in Open Office Plan	LPD (W/ft <sup>2</sup> )
Medium Office						
Office Area (Open plan office) - Interior	0.65	15%	10%	-	17%	0.429
Office Area (Open plan office) - Perimeter	0.65	15%	5%	10%	30%	0.368
Medium Retail						
Commercial/Industrial Storage (Warehouse)	0.45	10%	5%	-	-	0.386
Main Entry Lobby	0.85	10%	5%	-	-	0.729
Retail Sales Area (Retail Merchandise Sales)	0.95	5%	5%	-	-	0.857
Small Hotel						
Commercial/Industrial Storage (Warehouse)	0.45	10%	5%	-	-	0.386
Convention, Conference, Multipurpose, and Meeting	0.85	10%	5%	-	-	0.729
Corridor Area	0.60	10%	5%	-	-	0.514
Exercise/Fitness Center and Gymnasium Areas	0.50	10%	-	-	-	0.450
Laundry Area	0.45	10%	-	-	-	0.405
Lounge, Breakroom, or Waiting Area	0.65	10%	5%	-	-	0.557
Mechanical	0.40	10%	-	-	-	0.360
Office Area (>250 ft <sup>2</sup> )	0.65	10%	5%	-	-	0.557

## 6.3 Drain Water Heat Recovery Measure Analysis

To support potential DWHR savings in the Small Hotel prototype, the Reach Code Team modeled the drain water heat recovery measure in CBECC-Res 2019 in the all-electric and mixed fuel 6,960 ft<sup>2</sup> prototype residential buildings. The Reach Code Team assumed one heat recovery device for every three showers assuming unequal flow to the shower. Based on specifications from three different drain water heat recovery device manufacturers for device effectiveness in hotel applications, the team assumed a heat recovery efficiency of 50 percent.

The Reach Code Team modeled mixed fuel and all-electric residential prototype buildings both with and without heat recovery in each climate zone. Based on these model results, the Reach Code Team determined the percentage savings of domestic water heating energy in terms of gas, electricity, and TDV for mixed fuel and all-electric, in each climate zone. The Reach Code Team then applied the savings



percentages to the Small Hotel prototype domestic water heating energy in both the mixed-fuel and all-electric to determine energy savings for the drain water heat recovery measure in the Small Hotel. The Reach Code Team applied volumetric energy rates to estimate on-bill cost impacts from this measure.

### 6.4 Utility Rate Schedules

The Reach Codes Team used the IOU and POU rates depicted in Figure 46 to determine the On-Bill savings for each prototype.

**Figure 46. Utility Tariffs Analyzed Based on Climate Zone – Detailed View**

Climate Zones	Electric / Gas Utility	Electricity (Time-of-use)			Natural Gas
		Medium Office	Medium Retail	Small Hotel	All Prototypes
CZ01	PG&E	A-10	A-1	A-1 or A-10	G-NR1
CZ02	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ03	PG&E	A-10	A-1 or A-10	A-1 or A-10	G-NR1
CZ04	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ04-2	CPAU/PG&E	E-2	E-2	E-2	G-NR1
CZ05	PG&E	A-10	A-1	A-1 or A-10	G-NR1
CZ05-2	PG&E/SCG	A-10	A-1	A-1 or A-10	G-10 (GN-10)
CZ06	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ06	LADWP/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ07	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ08	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ08-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)
CZ09	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2 or TOU-GS-3	G-10 (GN-10)
CZ09-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)
CZ10	SCE/SCG	TOU-GS-2	TOU-GS-2	TOU-GS-2	G-10 (GN-10)
CZ10-2	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ11	PG&E	A-10	A-10	A-10	G-NR1
CZ12	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ12-2	SMUD/PG&E	GS	GS	GS	G-NR1
CZ13	PG&E	A-10	A-10	A-10	G-NR1
CZ14	SCE/SCG	TOU-GS-3	TOU-GS-3	TOU-GS-3	G-10 (GN-10)
CZ14-2	SDG&E	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	AL-TOU+EECC (AL-TOU)	GN-3
CZ15	SCE/SCG	TOU-GS-3	TOU-GS-2	TOU-GS-2	G-10 (GN-10)
CZ16	PG&E	A-10	A-10	A-1 or A-10	G-NR1
CZ16-2	LADWP/SCG	A-2 (B)	A-2 (B)	A-2 (B)	G-10 (GN-10)



## 6.5 Mixed Fuel Baseline Energy Figures

Figures 47 to 49 show the annual electricity and natural gas consumption and cost, compliance TDV, and GHG emissions for each prototype under the mixed fuel design baseline.

**Figure 47. Medium Office – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Medium Office Mixed Fuel Baseline</b>							
CZ01	PG&E	358,455	4,967	\$109,507	\$6,506	84	266,893
CZ02	PG&E	404,865	3,868	\$130,575	\$5,256	122	282,762
CZ03	PG&E	370,147	3,142	\$116,478	\$4,349	88	251,759
CZ04	PG&E	431,722	3,759	\$140,916	\$5,144	141	299,993
CZ04-2	CPAU	431,722	3,759	\$75,363	\$5,144	141	299,993
CZ05	PG&E	400,750	3,240	\$131,277	\$4,481	106	269,768
CZ05-2	SCG	400,750	3,240	\$131,277	\$3,683	106	269,768
CZ06	SCE	397,441	2,117	\$74,516	\$2,718	105	253,571
CZ06-2	LA	397,441	2,117	\$44,311	\$2,718	105	253,571
CZ07	SDG&E	422,130	950	\$164,991	\$4,429	118	257,324
CZ08	SCE	431,207	1,219	\$79,181	\$1,820	132	265,179
CZ08-2	LA	431,207	1,219	\$46,750	\$1,820	132	265,179
CZ09	SCE	456,487	1,605	\$86,190	\$2,196	155	287,269
CZ09-2	LA	456,487	1,605	\$51,111	\$2,196	155	287,269
CZ10	SDG&E	431,337	2,053	\$173,713	\$5,390	130	272,289
CZ10-2	SCE	431,337	2,053	\$80,636	\$2,603	130	272,289
CZ11	PG&E	464,676	3,062	\$150,520	\$4,333	163	310,307
CZ12	PG&E	441,720	3,327	\$142,902	\$4,647	152	299,824
CZ12-2	SMUD	441,720	3,327	\$65,707	\$4,647	152	299,824
CZ13	PG&E	471,540	3,063	\$150,919	\$4,345	161	316,228
CZ14	SDG&E	467,320	3,266	\$185,812	\$6,448	165	314,258
CZ14-2	SCE	467,320	3,266	\$92,071	\$3,579	165	314,258
CZ15	SCE	559,655	1,537	\$105,388	\$2,058	211	347,545
CZ16	PG&E	405,269	6,185	\$127,201	\$8,056	116	312,684
CZ16-2	LA	405,269	6,185	\$43,115	\$8,056	116	312,684



**Figure 48. Medium Retail – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Medium Retail Mixed Fuel Baseline</b>							
CZ01	PG&E	184,234	3,893	\$43,188	\$5,247	155	156,972
CZ02	PG&E	214,022	2,448	\$70,420	\$3,572	202	157,236
CZ03	PG&E	199,827	1,868	\$47,032	\$2,871	165	140,558
CZ04	PG&E	208,704	1,706	\$66,980	\$2,681	187	143,966
CZ04-2	CPAU	208,704	1,706	\$36,037	\$2,681	187	143,966
CZ05	PG&E	195,864	1,746	\$45,983	\$2,697	155	135,849
CZ05-2	SCG	195,864	1,746	\$45,983	\$2,342	155	135,849
CZ06	SCE	211,123	1,002	\$36,585	\$1,591	183	135,557
CZ06-2	LA	211,123	1,002	\$21,341	\$1,591	183	135,557
CZ07	SDG&E	211,808	522	\$75,486	\$4,055	178	130,436
CZ08	SCE	212,141	793	\$36,758	\$1,373	190	133,999
CZ08-2	LA	212,141	793	\$21,436	\$1,373	190	133,999
CZ09	SCE	227,340	970	\$40,083	\$1,560	218	146,680
CZ09-2	LA	227,340	970	\$23,487	\$1,560	218	146,680
CZ10	SDG&E	235,465	1,262	\$87,730	\$4,700	228	154,572
CZ10-2	SCE	235,465	1,262	\$41,000	\$1,853	228	154,572
CZ11	PG&E	234,560	2,415	\$76,670	\$3,547	244	170,232
CZ12	PG&E	228,958	2,309	\$75,084	\$3,426	234	165,133
CZ12-2	SMUD	228,958	2,309	\$32,300	\$3,426	234	165,133
CZ13	PG&E	242,927	1,983	\$81,995	\$3,034	258	170,345
CZ14	SDG&E	264,589	1,672	\$97,581	\$5,059	277	178,507
CZ14-2	SCE	264,589	1,672	\$46,217	\$2,172	277	178,507
CZ15	SCE	290,060	518	\$50,299	\$1,083	300	179,423
CZ16	PG&E	212,204	4,304	\$67,684	\$5,815	197	180,630
CZ16-2	LA	212,204	4,304	\$20,783	\$5,815	197	180,630



**Figure 49. Small Hotel – Mixed Fuel Baseline**

Climate Zone	Utility	Electricity Consumption (kWh)	Natural Gas Consumption (Therms)	Electricity Cost	Natural Gas Cost	Compliance TDV	GHG Emissions (lbs)
<b>Small Hotel Mixed Fuel Baseline</b>							
CZ01	PG&E	177,734	16,936	40,778	20,465	110	340,491
CZ02	PG&E	189,319	12,696	53,396	15,664	110	293,056
CZ03	PG&E	183,772	12,341	42,325	15,210	98	284,217
CZ04	PG&E	187,482	11,945	52,118	14,806	106	281,851
CZ04-2	CPAU	187,482	11,945	32,176	14,806	106	281,851
CZ05	PG&E	187,150	11,979	43,182	14,733	98	281,183
CZ05-2	SCG	187,150	11,979	43,182	10,869	98	281,183
CZ06	SCE	191,764	8,931	28,036	8,437	98	244,664
CZ06-2	LA	191,764	8,931	16,636	8,437	98	244,664
CZ07	SDG&E	189,174	8,207	58,203	10,752	90	233,884
CZ08	SCE	190,503	8,372	27,823	7,991	94	236,544
CZ08-2	LA	190,503	8,372	16,555	7,991	94	236,544
CZ09	SCE	198,204	8,421	30,262	8,030	103	242,296
CZ09-2	LA	198,204	8,421	17,951	8,030	103	242,296
CZ10	SDG&E	215,364	8,437	71,713	10,926	122	255,622
CZ10-2	SCE	215,364	8,437	33,736	8,043	122	255,622
CZ11	PG&E	219,852	10,271	63,724	12,882	131	282,232
CZ12	PG&E	199,499	10,422	46,245	13,022	115	270,262
CZ12-2	SMUD	199,499	10,422	26,872	13,022	115	270,262
CZ13	PG&E	226,925	10,048	65,559	12,629	132	284,007
CZ14	SDG&E	226,104	10,075	73,621	12,167	134	283,287
CZ14-2	SCE	226,104	10,075	35,187	9,350	134	283,287
CZ15	SCE	280,595	5,598	42,852	5,777	152	260,378
CZ16	PG&E	191,231	17,618	51,644	21,581	127	358,590
CZ16-2	LA	191,231	17,618	16,029	21,581	127	358,590

## 6.6 Hotel TDV Cost Effectiveness with Propane Baseline

The Reach Codes Team further analyzed TDV cost effectiveness of the all-electric packages with a mixed-fuel design baseline using propane instead of natural gas. Results for each package are shown in Figure 50. through Figure 53. below.

All electric models compared to a propane baseline have positive compliance margins in all climate zones when compared to results using a natural gas baseline. Compliance margin improvement is roughly 30 percent, which also leads to improved cost effectiveness for the all-electric packages. These outcomes are likely due to the TDV penalty associated with propane when compared to natural gas.



Across packages, TDV cost effectiveness with a propane baseline follows similar trends as the natural gas baseline. Adding efficiency measures increased compliance margins by 3 to 10 percent depending on climate zone, while adding high efficiency HVAC and SHW equipment alone increased compliance margins by smaller margins of about 2 to 4 percent compared to the All-Electric package.

**Figure 50. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 2 All-Electric Federal Code Minimum**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	-4%	(\$1,271,869)	(\$28,346)	44.9	\$1,243,523
CZ02	27%	(\$1,272,841)	\$170,263	>1	\$1,443,104
CZ03	-3%	(\$1,275,114)	(\$16,425)	77.6	\$1,258,689
CZ04	26%	(\$1,274,949)	\$155,466	>1	\$1,430,414
CZ05	27%	(\$1,275,002)	\$154,709	>1	\$1,429,710
CZ06	17%	(\$1,275,143)	\$126,212	>1	\$1,401,355
CZ07	25%	(\$1,273,490)	\$117,621	>1	\$1,391,111
CZ08	24%	(\$1,271,461)	\$122,087	>1	\$1,393,548
CZ09	23%	(\$1,273,259)	\$123,525	>1	\$1,396,784
CZ10	18%	(\$1,270,261)	\$109,522	>1	\$1,379,783
CZ11	19%	(\$1,271,070)	\$129,428	>1	\$1,400,498
CZ12	-4%	(\$1,272,510)	(\$26,302)	48.4	\$1,246,208
CZ13	18%	(\$1,270,882)	\$124,357	>1	\$1,395,239
CZ14	17%	(\$1,271,241)	\$117,621	>1	\$1,388,861
CZ15	-7%	(\$1,269,361)	(\$45,338)	28.0	\$1,224,023
CZ16	9%	(\$1,275,637)	\$68,272	>1	\$1,343,908



**Figure 51. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3A (All-Electric + EE)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	35%	(\$1,250,898)	\$252,831	>1	\$1,503,729
CZ02	34%	(\$1,251,870)	\$217,238	>1	\$1,469,108
CZ03	37%	(\$1,254,142)	\$218,642	>1	\$1,472,784
CZ04	31%	(\$1,250,769)	\$191,393	>1	\$1,442,162
CZ05	36%	(\$1,254,031)	\$208,773	>1	\$1,462,804
CZ06	25%	(\$1,250,964)	\$159,714	>1	\$1,410,677
CZ07	32%	(\$1,249,311)	\$154,111	>1	\$1,403,422
CZ08	29%	(\$1,247,282)	\$146,536	>1	\$1,393,818
CZ09	27%	(\$1,249,080)	\$146,671	>1	\$1,395,751
CZ10	22%	(\$1,246,081)	\$134,477	>1	\$1,380,559
CZ11	23%	(\$1,246,891)	\$157,138	>1	\$1,404,029
CZ12	27%	(\$1,248,330)	\$167,945	>1	\$1,416,276
CZ13	22%	(\$1,246,703)	\$149,270	>1	\$1,395,973
CZ14	21%	(\$1,247,061)	\$145,269	>1	\$1,392,331
CZ15	14%	(\$1,245,182)	\$93,647	>1	\$1,338,829
CZ16	20%	(\$1,254,665)	\$154,035	>1	\$1,408,701

**Figure 52. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3B (All-Electric + EE + PV)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	-\$TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	35%	(\$1,043,528)	\$511,688	>1	\$1,555,215
CZ02	34%	(\$1,044,500)	\$524,460	>1	\$1,568,960
CZ03	37%	(\$1,046,772)	\$518,485	>1	\$1,565,257
CZ04	31%	(\$1,043,399)	\$505,579	>1	\$1,548,978
CZ05	36%	(\$1,046,660)	\$526,668	>1	\$1,573,328
CZ06	25%	(\$1,043,594)	\$469,623	>1	\$1,513,216
CZ07	32%	(\$1,041,941)	\$471,513	>1	\$1,513,454
CZ08	29%	(\$1,039,912)	\$475,973	>1	\$1,515,885
CZ09	27%	(\$1,041,710)	\$467,971	>1	\$1,509,681
CZ10	22%	(\$1,038,711)	\$454,832	>1	\$1,493,543
CZ11	23%	(\$1,039,521)	\$474,844	>1	\$1,514,364
CZ12	27%	(\$1,040,960)	\$484,667	>1	\$1,525,627
CZ13	22%	(\$1,039,333)	\$454,108	>1	\$1,493,441
CZ14	21%	(\$1,039,691)	\$505,398	>1	\$1,545,090
CZ15	14%	(\$1,037,811)	\$423,879	>1	\$1,461,691
CZ16	20%	(\$1,047,295)	\$480,407	>1	\$1,527,702



**Figure 53. TDV Cost Effectiveness for Small Hotel, Propane Baseline – Package 3C (All Electric + HE)**

Climate Zone	Compliance Margin (%)	Incremental Package Cost	\$.TDV Savings	B/C Ratio (TDV)	NPV (TDV)
CZ01	27%	(\$1,256,423)	\$194,975	>1	\$1,451,398
CZ02	28%	(\$1,258,328)	\$177,378	>1	\$1,435,706
CZ03	28%	(\$1,263,867)	\$164,094	>1	\$1,427,961
CZ04	26%	(\$1,262,963)	\$155,314	>1	\$1,418,277
CZ05	26%	(\$1,263,327)	\$153,271	>1	\$1,416,598
CZ06	17%	(\$1,263,779)	\$122,011	>1	\$1,385,790
CZ07	24%	(\$1,260,844)	\$116,751	>1	\$1,377,594
CZ08	25%	(\$1,256,326)	\$122,995	>1	\$1,379,321
CZ09	24%	(\$1,260,223)	\$128,482	>1	\$1,388,706
CZ10	20%	(\$1,253,181)	\$121,595	>1	\$1,374,776
CZ11	21%	(\$1,254,613)	\$143,658	>1	\$1,398,271
CZ12	23%	(\$1,257,919)	\$142,901	>1	\$1,400,820
CZ13	21%	(\$1,254,386)	\$138,625	>1	\$1,393,011
CZ14	20%	(\$1,254,978)	\$136,430	>1	\$1,391,407
CZ15	14%	(\$1,251,932)	\$96,087	>1	\$1,348,019
CZ16	15%	(\$1,263,534)	\$122,011	>1	\$1,385,545



## 6.7 PV-only and PV+Battery-only Cost Effectiveness Results Details

The Reach Code Tea evaluated cost effectiveness of installing a PV system and battery storage in six different measure combinations over a 2019 code-compliant baseline for all climate zones. The baseline for all nonresidential buildings is a mixed-fuel design.

All mixed fuel models are compliant with 2019 Title24, whereas all electric models can show negative compliance. The compliance margin is the same as that of their respective federal minimum design and is not affected by addition of solar PV or battery. These scenarios evaluate the cost effectiveness of PV and/or battery measure individually. The climate zones where all-electric design is not compliant will have the flexibility to ramp up the efficiency of appliance or add another measure to be code compliant, as per package 1B and 3B in main body of the report. The large negative lifecycle costs in all electric packages are due to lower all-electric HVAC system costs and avoided natural gas infrastructure costs. This is commonly applied across all climate zones and packages over any additional costs for PV and battery.

### 6.7.1 Cost Effectiveness Results – Medium Office

Figure 54 through Figure 61 contain the cost-effectiveness findings for the Medium Office packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV Only:** All packages are cost effective using the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are mostly cost effective on a TDV basis except in CZ1. As compared to the 3 kW PV only package, battery reduces cost effectiveness. This package is not cost effective for LADWP and SMUD territories using an On-Bill approach.
- ◆ **Mixed-Fuel + PV only:** The packages are less cost effective as compared to 3 kW PV packages in most climate zones. In areas served by LADWP, the B/C ratio is narrowly less than 1 and not cost effective.
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** The packages are cost effective in all climate zones except for in the areas served by LADWP. On-Bill and TDV B/C ratios are slightly lower compared to the PV only package.
- ◆ **All-Electric + 3 kW PV:** Packages are on-bill cost effective in ten of sixteen climate zones. Climate zones 1,2,4,12, and 16 were not found to be cost-effective from an on-bill perspective. These zones are within PG&E’s service area. Packages are cost effective using TDV in all climate zones except CZ16.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Packages are slightly more cost effective than the previous minimal PV only package. Packages are on-bill cost effective in most climate zones except for 1,2 and 16 from an on-bill perspective. These zones are within PG&E’s service area. Packages are cost effective using TDV in all climate zones except CZ16.
- ◆ **All-Electric + PV only:** All packages are cost effective and achieve savings using the On-Bill and TDV approaches.



- ◆ **All-Electric + PV + 50 kWh Battery:** All packages are cost effective and achieve savings using the On-Bill and TDV approaches. On-Bill and TDV B/C ratios are slightly lower compared to the PV only package.



Figure 54. Cost Effectiveness for Medium Office - Mixed Fuel + 3kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle \$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.8	\$5,566	\$15,743	\$8,448	2.8	1.5	\$10,177	\$2,882
CZ02	PG&E	4,785	0	0.9	\$5,566	\$20,372	\$10,500	3.7	1.9	\$14,806	\$4,934
CZ03	PG&E	4,660	0	0.9	\$5,566	\$20,603	\$9,975	3.7	1.8	\$15,037	\$4,409
CZ04	PG&E	5,056	0	1.0	\$5,566	\$20,235	\$11,073	3.6	2.0	\$14,669	\$5,507
CZ04-2	CPAU	5,056	0	1.0	\$5,566	\$11,945	\$11,073	2.1	2.0	\$6,379	\$5,507
CZ05	PG&E	5,027	0	1.0	\$5,566	\$23,159	\$10,834	4.2	1.9	\$17,593	\$5,268
CZ06	SCE	4,853	0	0.9	\$5,566	\$10,968	\$10,930	2.0	2.0	\$5,402	\$5,364
CZ06-2	LADWP	4,853	0	0.9	\$5,566	\$6,575	\$10,930	1.2	2.0	\$1,009	\$5,364
CZ07	SDG&E	4,960	0	1.0	\$5,566	\$17,904	\$11,025	3.2	2.0	\$12,338	\$5,459
CZ08	SCE	4,826	0	0.9	\$5,566	\$10,768	\$11,359	1.9	2.0	\$5,202	\$5,793
CZ08-2	LADWP	4,826	0	0.9	\$5,566	\$6,503	\$11,359	1.2	2.0	\$937	\$5,793
CZ09	SCE	4,889	0	1.0	\$5,566	\$10,622	\$11,216	1.9	2.0	\$5,056	\$5,650
CZ09-2	LADWP	4,889	0	1.0	\$5,566	\$6,217	\$11,216	1.1	2.0	\$651	\$5,650
CZ10	SDG&E	4,826	0	0.9	\$5,566	\$21,280	\$10,787	3.8	1.9	\$15,714	\$5,221
CZ10-2	SCE	4,826	0	0.9	\$5,566	\$11,598	\$10,787	2.1	1.9	\$6,032	\$5,221
CZ11	PG&E	4,701	0	0.9	\$5,566	\$19,869	\$10,644	3.6	1.9	\$14,303	\$5,078
CZ12	PG&E	4,707	0	0.9	\$5,566	\$19,643	\$10,644	3.5	1.9	\$14,077	\$5,078
CZ12-2	SMUD	4,707	0	0.9	\$5,566	\$8,005	\$10,644	1.4	1.9	\$2,439	\$5,078
CZ13	PG&E	4,633	0	0.9	\$5,566	\$19,231	\$10,262	3.5	1.8	\$13,665	\$4,696
CZ14	SDG&E	5,377	0	1.0	\$5,566	\$18,789	\$12,600	3.4	2.3	\$13,223	\$7,034
CZ14-2	SCE	5,377	0	1.0	\$5,566	\$10,512	\$12,600	1.9	2.3	\$4,946	\$7,034
CZ15	SCE	5,099	0	1.0	\$5,566	\$10,109	\$11,550	1.8	2.1	\$4,543	\$5,984
CZ16	PG&E	5,096	0	1.0	\$5,566	\$21,836	\$10,882	3.9	2.0	\$16,270	\$5,316
CZ16-2	LADWP	5,096	0	1.0	\$5,566	\$6,501	\$10,882	1.2	2.0	\$935	\$5,316



Figure 55. Cost Effectiveness for Medium Office – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	3,941	0	0.8	\$9,520	\$15,743	\$8,448	1.7	0.9	\$6,223	(\$1,072)
CZ02	PG&E	4,785	0	0.9	\$9,520	\$20,372	\$10,500	2.1	1.1	\$10,852	\$980
CZ03	PG&E	4,660	0	0.9	\$9,520	\$20,603	\$9,975	2.2	1.0	\$11,083	\$455
CZ04	PG&E	5,056	0	1.0	\$9,520	\$20,235	\$11,073	2.1	1.2	\$10,714	\$1,553
CZ04-2	CPAU	5,056	0	1.0	\$9,520	\$11,945	\$11,073	1.3	1.2	\$2,425	\$1,553
CZ05	PG&E	5,027	0	1.0	\$9,520	\$23,159	\$10,834	2.4	1.1	\$13,639	\$1,314
CZ06	SCE	4,853	0	0.9	\$9,520	\$10,968	\$10,930	1.2	1.1	\$1,448	\$1,410
CZ06-2	LADWP	4,853	0	0.9	\$9,520	\$6,575	\$10,930	0.7	1.1	(\$2,945)	\$1,410
CZ07	SDG&E	4,960	0	1.0	\$9,520	\$17,904	\$11,025	1.9	1.2	\$8,384	\$1,505
CZ08	SCE	4,826	0	0.9	\$9,520	\$10,768	\$11,359	1.1	1.2	\$1,248	\$1,839
CZ08-2	LADWP	4,826	0	0.9	\$9,520	\$6,503	\$11,359	0.7	1.2	(\$3,017)	\$1,839
CZ09	SCE	4,889	0	1.0	\$9,520	\$10,622	\$11,216	1.1	1.2	\$1,102	\$1,696
CZ09-2	LADWP	4,889	0	1.0	\$9,520	\$6,217	\$11,216	0.7	1.2	(\$3,303)	\$1,696
CZ10	SDG&E	4,826	0	0.9	\$9,520	\$21,280	\$10,787	2.2	1.1	\$11,760	\$1,267
CZ10-2	SCE	4,826	0	0.9	\$9,520	\$11,598	\$10,787	1.2	1.1	\$2,078	\$1,267
CZ11	PG&E	4,701	0	0.9	\$9,520	\$19,869	\$10,644	2.1	1.1	\$10,349	\$1,123
CZ12	PG&E	4,707	0	0.9	\$9,520	\$19,643	\$10,644	2.1	1.1	\$10,123	\$1,123
CZ12-2	SMUD	4,707	0	0.9	\$9,520	\$8,005	\$10,644	0.8	1.1	(\$1,515)	\$1,123
CZ13	PG&E	4,633	0	0.9	\$9,520	\$19,231	\$10,262	2.0	1.1	\$9,711	\$742
CZ14	SDG&E	5,377	0	1.0	\$9,520	\$18,789	\$12,600	2.0	1.3	\$9,269	\$3,080
CZ14-2	SCE	5,377	0	1.0	\$9,520	\$10,512	\$12,600	1.1	1.3	\$992	\$3,080
CZ15	SCE	5,099	0	1.0	\$9,520	\$10,109	\$11,550	1.1	1.2	\$589	\$2,030
CZ16	PG&E	5,096	0	1.0	\$9,520	\$21,836	\$10,882	2.3	1.1	\$12,316	\$1,362
CZ16-2	LADWP	5,096	0	1.0	\$9,520	\$6,501	\$10,882	0.7	1.1	(\$3,019)	\$1,362



**Figure 56. Cost Effectiveness for Medium Office – Mixed Fuel + 135kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel +135kW PV</b>											
CZ01	PG&E	177,340	0	34.3	\$302,856	\$526,352	\$380,399	1.7	1.3	\$223,497	\$77,544
CZ02	PG&E	215,311	0	41.5	\$302,856	\$666,050	\$471,705	2.2	1.6	\$363,194	\$168,849
CZ03	PG&E	209,717	0	40.7	\$302,856	\$645,010	\$449,797	2.1	1.5	\$342,154	\$146,942
CZ04	PG&E	227,535	0	44.0	\$302,856	\$686,434	\$497,431	2.3	1.6	\$383,578	\$194,575
CZ04-2	CPAU	227,535	0	44.0	\$302,856	\$537,521	\$497,431	1.8	1.6	\$234,665	\$194,575
CZ05	PG&E	226,195	0	44.1	\$302,856	\$753,230	\$486,596	2.5	1.6	\$450,374	\$183,741
CZ06	SCE	218,387	0	42.3	\$302,856	\$401,645	\$492,515	1.3	1.6	\$98,789	\$189,659
CZ06-2	LADWP	218,387	0	42.3	\$302,856	\$233,909	\$492,515	0.8	1.6	(\$68,947)	\$189,659
CZ07	SDG&E	223,185	0	43.3	\$302,856	\$623,078	\$496,667	2.1	1.6	\$320,223	\$193,811
CZ08	SCE	217,171	0	42.0	\$302,856	\$389,435	\$510,270	1.3	1.7	\$86,579	\$207,414
CZ08-2	LADWP	217,171	0	42.0	\$302,856	\$222,066	\$510,270	0.7	1.7	(\$80,790)	\$207,414
CZ09	SCE	220,010	0	43.2	\$302,856	\$387,977	\$505,783	1.3	1.7	\$85,122	\$202,928
CZ09-2	LADWP	220,010	0	43.2	\$302,856	\$226,516	\$505,783	0.7	1.7	(\$76,340)	\$202,928
CZ10	SDG&E	217,148	0	42.5	\$302,856	\$632,726	\$485,451	2.1	1.6	\$329,870	\$182,595
CZ10-2	SCE	217,148	0	42.5	\$302,856	\$394,884	\$485,451	1.3	1.6	\$92,028	\$182,595
CZ11	PG&E	211,556	0	40.9	\$302,856	\$671,691	\$478,912	2.2	1.6	\$368,835	\$176,056
CZ12	PG&E	211,824	0	40.9	\$302,856	\$653,242	\$478,101	2.2	1.6	\$350,386	\$175,245
CZ12-2	SMUD	211,824	0	40.9	\$302,856	\$345,255	\$478,101	1.1	1.6	\$42,399	\$175,245
CZ13	PG&E	208,465	0	40.5	\$302,856	\$651,952	\$462,732	2.2	1.5	\$349,096	\$159,876
CZ14	SDG&E	241,965	0	46.7	\$302,856	\$659,487	\$566,351	2.2	1.9	\$356,632	\$263,496
CZ14-2	SCE	241,965	0	46.7	\$302,856	\$401,712	\$566,351	1.3	1.9	\$98,856	\$263,496
CZ15	SCE	229,456	0	43.9	\$302,856	\$378,095	\$520,102	1.2	1.7	\$75,239	\$217,246
CZ16	PG&E	229,317	0	44.8	\$302,856	\$707,095	\$489,508	2.3	1.6	\$404,239	\$186,652
CZ16-2	LADWP	229,317	0	44.8	\$302,856	\$223,057	\$489,508	0.7	1.6	(\$79,799)	\$186,652



Figure 57. Cost Effectiveness for Medium Office – Mixed Fuel + 135kW PV + 50 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 135kW PV + 50 kWh Battery</b>											
CZ01	PG&E	176,903	0	35.3	\$330,756	\$525,948	\$381,450	1.6	1.2	\$195,192	\$50,694
CZ02	PG&E	214,861	0	42.6	\$330,756	\$665,864	\$472,898	2.0	1.4	\$335,108	\$142,142
CZ03	PG&E	209,255	0	41.8	\$330,756	\$644,170	\$451,611	1.9	1.4	\$313,414	\$120,855
CZ04	PG&E	227,076	0	45.0	\$330,756	\$685,605	\$502,108	2.1	1.5	\$354,849	\$171,352
CZ04-2	CPAU	227,076	0	45.0	\$330,756	\$536,463	\$502,108	1.6	1.5	\$205,707	\$171,352
CZ05	PG&E	225,752	0	45.1	\$330,756	\$753,558	\$487,742	2.3	1.5	\$422,803	\$156,986
CZ06	SCE	217,939	0	43.4	\$330,756	\$401,356	\$494,042	1.2	1.5	\$70,601	\$163,286
CZ06-2	LADWP	217,939	0	43.4	\$330,756	\$233,673	\$494,042	0.7	1.5	(\$97,083)	\$163,286
CZ07	SDG&E	222,746	0	44.4	\$330,756	\$628,383	\$498,147	1.9	1.5	\$297,627	\$167,391
CZ08	SCE	216,724	0	43.1	\$330,756	\$389,184	\$511,511	1.2	1.5	\$58,428	\$180,755
CZ08-2	LADWP	216,724	0	43.1	\$330,756	\$221,839	\$511,511	0.7	1.5	(\$108,917)	\$180,755
CZ09	SCE	219,563	0	44.2	\$330,756	\$387,728	\$506,929	1.2	1.5	\$56,972	\$176,173
CZ09-2	LADWP	219,563	0	44.2	\$330,756	\$226,303	\$506,929	0.7	1.5	(\$104,453)	\$176,173
CZ10	SDG&E	216,700	0	43.5	\$330,756	\$638,040	\$486,644	1.9	1.5	\$307,284	\$155,888
CZ10-2	SCE	216,700	0	43.5	\$330,756	\$394,633	\$486,644	1.2	1.5	\$63,877	\$155,888
CZ11	PG&E	211,129	0	41.9	\$330,756	\$670,932	\$481,298	2.0	1.5	\$340,177	\$150,543
CZ12	PG&E	211,386	0	41.9	\$330,756	\$652,465	\$482,826	2.0	1.5	\$321,709	\$152,070
CZ12-2	SMUD	211,386	0	41.9	\$330,756	\$344,668	\$482,826	1.0	1.5	\$13,913	\$152,070
CZ13	PG&E	208,045	0	41.5	\$330,756	\$651,191	\$473,280	2.0	1.4	\$320,435	\$142,524
CZ14	SDG&E	241,502	0	47.7	\$330,756	\$672,601	\$569,454	2.0	1.7	\$341,846	\$238,698
CZ14-2	SCE	241,502	0	47.7	\$330,756	\$401,450	\$569,454	1.2	1.7	\$70,694	\$238,698
CZ15	SCE	229,062	0	44.8	\$330,756	\$377,827	\$521,963	1.1	1.6	\$47,071	\$191,208
CZ16	PG&E	228,825	0	45.9	\$330,756	\$706,201	\$496,190	2.1	1.5	\$375,445	\$165,434
CZ16-2	LADWP	228,825	0	45.9	\$330,756	\$222,802	\$496,190	0.7	1.5	(\$107,953)	\$165,434



**Figure 58. Cost Effectiveness for Medium Office– All-Electric + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-49,716	4967	10.9	(\$80,523)	(\$84,765)	(\$49,972)	0.9	1.6	(\$4,242)	\$30,551
CZ02	PG&E	-44,899	3868	6.0	(\$66,965)	(\$83,115)	(\$30,928)	0.8	2.2	(\$16,150)	\$36,037
CZ03	PG&E	-31,226	3142	6.5	(\$75,600)	(\$39,441)	(\$19,617)	1.9	3.9	\$36,159	\$55,983
CZ04	PG&E	-43,772	3759	5.7	(\$62,282)	(\$70,999)	(\$29,496)	0.9	2.1	(\$8,717)	\$32,786
CZ04-2	CPAU	-43,772	3759	5.7	(\$62,282)	(\$8,050)	(\$29,496)	7.7	2.1	\$54,232	\$32,786
CZ05	PG&E	-35,504	3240	5.5	(\$77,773)	(\$42,559)	(\$29,162)	1.8	2.7	\$35,214	\$48,611
CZ06	SCE	-21,321	2117	4.0	(\$69,422)	\$35,862	(\$9,641)	>1	7.2	\$105,284	\$59,781
CZ06-2	LADWP	-21,321	2117	4.0	(\$69,422)	\$32,936	(\$9,641)	>1	7.2	\$102,358	\$59,781
CZ07	SDG&E	-7,943	950	1.9	(\$63,595)	\$64,781	(\$382)	>1	166.6	\$128,376	\$63,214
CZ08	SCE	-10,854	1219	2.5	(\$62,043)	\$28,651	(\$1,289)	>1	48.1	\$90,694	\$60,755
CZ08-2	LADWP	-10,854	1219	2.5	(\$62,043)	\$25,122	(\$1,289)	>1	48.1	\$87,165	\$60,755
CZ09	SCE	-14,878	1605	3.3	(\$56,372)	\$31,542	(\$3,246)	>1	17.4	\$87,913	\$53,126
CZ09-2	LADWP	-14,878	1605	3.3	(\$56,372)	\$28,145	(\$3,246)	>1	17.4	\$84,517	\$53,126
CZ10	SDG&E	-22,588	2053	3.1	(\$41,171)	\$59,752	(\$12,553)	>1	3.3	\$100,924	\$28,619
CZ10-2	SCE	-22,588	2053	3.1	(\$41,171)	\$32,039	(\$12,553)	>1	3.3	\$73,211	\$28,619
CZ11	PG&E	-35,455	3062	4.5	(\$57,257)	(\$53,776)	(\$22,194)	1.1	2.6	\$3,481	\$35,063
CZ12	PG&E	-38,704	3327	5.0	(\$61,613)	(\$66,808)	(\$24,819)	0.9	2.5	(\$5,195)	\$36,794
CZ12-2	SMUD	-38,704	3327	5.0	(\$61,613)	\$2,897	(\$24,819)	>1	2.5	\$64,510	\$36,794
CZ13	PG&E	-35,016	3063	4.7	(\$55,996)	(\$52,159)	(\$22,146)	1.1	2.5	\$3,836	\$33,849
CZ14	SDG&E	-38,945	3266	4.5	(\$58,426)	\$24,867	(\$25,821)	>1	2.3	\$83,293	\$32,605
CZ14-2	SCE	-38,945	3266	4.5	(\$58,426)	\$15,338	(\$25,821)	>1	2.3	\$73,764	\$32,605
CZ15	SCE	-14,818	1537	2.8	(\$29,445)	\$22,852	(\$3,914)	>1	7.5	\$52,298	\$25,532
CZ16	PG&E	-88,966	6185	6.6	(\$57,366)	(\$193,368)	(\$139,989)	0.3	0.4	(\$136,002)	(\$82,623)
CZ16-2	LADWP	-88,966	6185	6.6	(\$57,366)	\$36,354	(\$139,989)	>1	0.4	\$93,720	(\$82,623)



Figure 59. Cost Effectiveness for Medium Office – All-Electric + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	-49,716	4967	10.9	(\$78,897)	(\$84,765)	(\$49,972)	0.9	1.6	(\$5,868)	\$28,925
CZ02	PG&E	-44,899	3868	6.0	(\$78,897)	(\$83,115)	(\$30,928)	0.9	2.6	(\$4,218)	\$47,969
CZ03	PG&E	-31,226	3142	6.5	(\$78,897)	(\$39,441)	(\$19,617)	2.0	4.0	\$39,456	\$59,280
CZ04	PG&E	-43,772	3759	5.7	(\$78,897)	(\$70,999)	(\$29,496)	1.1	2.7	\$7,898	\$49,400
CZ04-2	CPAU	-43,772	3759	5.7	(\$78,897)	(\$8,050)	(\$29,496)	9.8	2.7	\$70,847	\$49,400
CZ05	PG&E	-35,504	3240	5.5	(\$78,897)	(\$42,559)	(\$29,162)	1.9	2.7	\$36,338	\$49,735
CZ06	SCE	-21,321	2117	4.0	(\$78,897)	\$35,862	(\$9,641)	>1	8.2	\$114,759	\$69,256
CZ06-2	LADWP	-21,321	2117	4.0	(\$78,897)	\$32,936	(\$9,641)	>1	8.2	\$111,833	\$69,256
CZ07	SDG&E	-7,943	950	1.9	(\$78,897)	\$64,781	(\$382)	>1	206.6	\$143,678	\$78,515
CZ08	SCE	-10,854	1219	2.5	(\$78,897)	\$28,651	(\$1,289)	>1	61.2	\$107,548	\$77,608
CZ08-2	LADWP	-10,854	1219	2.5	(\$78,897)	\$25,122	(\$1,289)	>1	61.2	\$104,019	\$77,608
CZ09	SCE	-14,878	1605	3.3	(\$78,897)	\$31,542	(\$3,246)	>1	24.3	\$110,439	\$75,651
CZ09-2	LADWP	-14,878	1605	3.3	(\$78,897)	\$28,145	(\$3,246)	>1	24.3	\$107,042	\$75,651
CZ10	SDG&E	-22,588	2053	3.1	(\$78,897)	\$59,752	(\$12,553)	>1	6.3	\$138,649	\$66,344
CZ10-2	SCE	-22,588	2053	3.1	(\$78,897)	\$32,039	(\$12,553)	>1	6.3	\$110,936	\$66,344
CZ11	PG&E	-35,455	3062	4.5	(\$78,897)	(\$53,776)	(\$22,194)	1.5	3.6	\$25,121	\$56,703
CZ12	PG&E	-38,704	3327	5.0	(\$78,897)	(\$66,808)	(\$24,819)	1.2	3.2	\$12,089	\$54,078
CZ12-2	SMUD	-38,704	3327	5.0	(\$78,897)	\$2,897	(\$24,819)	>1	3.2	\$81,794	\$54,078
CZ13	PG&E	-35,016	3063	4.7	(\$78,897)	(\$52,159)	(\$22,146)	1.5	3.6	\$26,738	\$56,751
CZ14	SDG&E	-38,945	3266	4.5	(\$78,897)	\$24,867	(\$25,821)	>1	3.1	\$103,764	\$53,076
CZ14-2	SCE	-38,945	3266	4.5	(\$78,897)	\$15,338	(\$25,821)	>1	3.1	\$94,235	\$53,076
CZ15	SCE	-14,818	1537	2.8	(\$78,897)	\$22,852	(\$3,914)	>1	20.2	\$101,749	\$74,983
CZ16	PG&E	-88,966	6185	6.6	(\$78,897)	(\$193,368)	(\$139,989)	0.4	0.6	(\$114,472)	(\$61,092)
CZ16-2	LADWP	-88,966	6185	6.6	(\$78,897)	\$36,354	(\$139,989)	>1	0.6	\$115,250	(\$61,092)



Figure 60. Cost Effectiveness for Medium Office – All-Electric + 135kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 135kW PV</b>											
CZ01	PG&E	123,683	4967	44.5	\$163,217	\$405,731	\$321,979	2.5	2.0	\$242,514	\$158,762
CZ02	PG&E	165,627	3868	46.6	\$176,775	\$562,528	\$430,276	3.2	2.4	\$385,753	\$253,501
CZ03	PG&E	173,831	3142	46.3	\$168,140	\$575,864	\$420,205	3.4	2.5	\$407,725	\$252,066
CZ04	PG&E	178,706	3759	48.7	\$181,458	\$601,431	\$456,861	3.3	2.5	\$419,973	\$275,403
CZ04-2	CPAU	178,706	3759	48.7	\$181,458	\$517,526	\$456,861	2.9	2.5	\$336,069	\$275,403
CZ05	PG&E	185,664	3240	48.6	\$165,967	\$664,842	\$446,600	4.0	2.7	\$498,875	\$280,633
CZ06	SCE	192,214	2117	45.3	\$174,317	\$423,657	\$471,944	2.4	2.7	\$249,340	\$297,626
CZ06-2	LADWP	192,214	2117	45.3	\$174,317	\$259,270	\$471,944	1.5	2.7	\$84,953	\$297,626
CZ07	SDG&E	210,282	950	44.3	\$180,145	\$669,979	\$485,260	3.7	2.7	\$489,834	\$305,115
CZ08	SCE	201,491	1219	43.5	\$181,696	\$407,277	\$497,622	2.2	2.7	\$225,580	\$315,925
CZ08-2	LADWP	201,491	1219	43.5	\$181,696	\$240,657	\$497,622	1.3	2.7	\$58,960	\$315,925
CZ09	SCE	200,242	1605	45.6	\$187,368	\$408,922	\$491,322	2.2	2.6	\$221,554	\$303,953
CZ09-2	LADWP	200,242	1605	45.6	\$187,368	\$248,452	\$491,322	1.3	2.6	\$61,084	\$303,953
CZ10	SDG&E	189,734	2053	44.7	\$202,568	\$667,551	\$462,111	3.3	2.3	\$464,982	\$259,543
CZ10-2	SCE	189,734	2053	44.7	\$202,568	\$412,659	\$462,111	2.0	2.3	\$210,091	\$259,543
CZ11	PG&E	171,399	3062	44.5	\$186,483	\$597,807	\$446,074	3.2	2.4	\$411,324	\$259,592
CZ12	PG&E	168,413	3327	45.0	\$182,127	\$571,758	\$442,638	3.1	2.4	\$389,632	\$260,511
CZ12-2	SMUD	168,413	3327	45.0	\$182,127	\$343,602	\$442,638	1.9	2.4	\$161,475	\$260,511
CZ13	PG&E	168,817	3063	44.3	\$187,744	\$581,964	\$430,324	3.1	2.3	\$394,220	\$242,580
CZ14	SDG&E	197,643	3266	50.1	\$185,314	\$667,762	\$527,930	3.6	2.8	\$482,449	\$342,616
CZ14-2	SCE	197,643	3266	50.1	\$185,314	\$408,424	\$527,930	2.2	2.8	\$223,110	\$342,616
CZ15	SCE	209,539	1537	45.7	\$214,294	\$390,267	\$504,638	1.8	2.4	\$175,972	\$290,343
CZ16	PG&E	135,255	6185	50.4	\$186,374	\$470,199	\$338,637	2.5	1.8	\$283,825	\$152,263
CZ16-2	LADWP	135,255	6185	50.4	\$186,374	\$250,807	\$338,637	1.3	1.8	\$64,433	\$152,263



**Figure 61. Cost Effectiveness for Medium Office – All-Electric + 135kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 135kW PV + 50 kWh Battery</b>											
CZ01	PG&E	123,280	4967	45.4	\$191,117	\$404,994	\$323,077	2.1	1.7	\$213,877	\$131,960
CZ02	PG&E	165,200	3868	47.7	\$204,675	\$561,747	\$431,469	2.7	2.1	\$357,072	\$226,795
CZ03	PG&E	173,384	3142	47.4	\$196,040	\$575,043	\$422,019	2.9	2.2	\$379,003	\$225,979
CZ04	PG&E	178,259	3759	49.8	\$209,358	\$600,621	\$461,634	2.9	2.2	\$391,263	\$252,276
CZ04-2	CPAU	178,259	3759	49.8	\$209,358	\$516,495	\$461,634	2.5	2.2	\$307,137	\$252,276
CZ05	PG&E	185,229	3240	49.7	\$193,867	\$664,046	\$447,793	3.4	2.3	\$470,179	\$253,926
CZ06	SCE	191,767	2117	46.5	\$202,217	\$423,369	\$473,519	2.1	2.3	\$221,152	\$271,301
CZ06-2	LADWP	191,767	2117	46.5	\$202,217	\$259,033	\$473,519	1.3	2.3	\$56,816	\$271,301
CZ07	SDG&E	209,848	950	45.4	\$208,045	\$675,307	\$486,787	3.2	2.3	\$467,262	\$278,743
CZ08	SCE	201,047	1219	44.7	\$209,596	\$407,027	\$498,910	1.9	2.4	\$197,430	\$289,314
CZ08-2	LADWP	201,047	1219	44.7	\$209,596	\$240,432	\$498,910	1.1	2.4	\$30,835	\$289,314
CZ09	SCE	199,802	1605	46.6	\$215,268	\$408,676	\$492,515	1.9	2.3	\$193,408	\$277,246
CZ09-2	LADWP	199,802	1605	46.6	\$215,268	\$248,242	\$492,515	1.2	2.3	\$32,974	\$277,246
CZ10	SDG&E	189,293	2053	45.7	\$230,468	\$672,867	\$463,352	2.9	2.0	\$442,399	\$232,884
CZ10-2	SCE	189,293	2053	45.7	\$230,468	\$412,412	\$463,352	1.8	2.0	\$181,944	\$232,884
CZ11	PG&E	170,987	3062	45.5	\$214,383	\$597,062	\$448,509	2.8	2.1	\$382,680	\$234,126
CZ12	PG&E	167,995	3327	46.0	\$210,027	\$571,002	\$447,411	2.7	2.1	\$360,975	\$237,384
CZ12-2	SMUD	167,995	3327	46.0	\$210,027	\$343,043	\$447,411	1.6	2.1	\$133,017	\$237,384
CZ13	PG&E	168,408	3063	45.3	\$215,644	\$581,225	\$440,920	2.7	2.0	\$365,580	\$225,275
CZ14	SDG&E	197,188	3266	51.2	\$213,214	\$680,893	\$531,080	3.2	2.5	\$467,679	\$317,866
CZ14-2	SCE	197,188	3266	51.2	\$213,214	\$408,166	\$531,080	1.9	2.5	\$194,952	\$317,866
CZ15	SCE	209,148	1537	46.6	\$242,194	\$390,000	\$506,499	1.6	2.1	\$147,806	\$264,305
CZ16	PG&E	134,809	6185	51.4	\$214,274	\$469,378	\$341,978	2.2	1.6	\$255,105	\$127,704
CZ16-2	LADWP	134,809	6185	51.4	\$214,274	\$250,580	\$341,978	1.2	1.6	\$36,306	\$127,704



### 6.7.2 Cost Effectiveness Results – Medium Retail

Figure 62 through Figure 69 contain the cost-effectiveness findings for the Medium Retail packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV:** Packages are cost effective and achieve savings for all climate zones using the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are less cost effective as compared to the 3 kW PV only package and not cost effective for LADWP and SMUD service area.
- ◆ **Mixed-Fuel + PV only:** Packages achieve positive energy cost savings and are cost effective using the On-Bill approach for all climate zones except for LADWP territory (CZs 6, 8, 9 and 16). Packages achieve positive savings and are cost effective using the TDV approach for all climate zones.
- ◆ **Mixed Fuel + PV + 5 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios but is still cost effective for all climate zones except for LADWP territory. Packages achieve savings and cost effective using the TDV approach for all climate zones.
- ◆ **All-Electric + 3 kW PV:** Packages are cost effective using the On-Bill and TDV approach for all climate zones except for CZ16 under PG&E service.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Similar to minimal PV only package, adding battery is cost effective as well using the On-Bill and TDV approach for all climate zones except for CZ16 under PG&E service.
- ◆ **All-Electric + PV only:** Packages are cost effective and achieve savings in all climate zones for both the On-Bill and TDV approaches
- ◆ **All-Electric + PV + 50 kWh Battery:** Adding battery slightly reduces B/C ratios for both the On-Bill and TDV approaches. Packages are not cost effective for all climate zones except CZ6, CZ8 and CZ9 under LADWP service area.



**Figure 62. Cost Effectiveness for Medium Retail – Mixed-Fuel + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.76	\$5,566	\$12,616	\$8,460	2.3	1.5	\$7,050	\$2,894
CZ02	PG&E	4,685	0	0.91	\$5,566	\$17,635	\$10,262	3.2	1.8	\$12,069	\$4,696
CZ03	PG&E	4,733	0	0.92	\$5,566	\$15,146	\$10,152	2.7	1.8	\$9,580	\$4,586
CZ04	PG&E	4,834	0	0.94	\$5,566	\$18,519	\$10,614	3.3	1.9	\$12,953	\$5,048
CZ04-2	CPAU	4,834	0	0.94	\$5,566	\$11,507	\$10,614	2.1	1.9	\$5,941	\$5,048
CZ05	PG&E	4,910	0	0.95	\$5,566	\$15,641	\$10,548	2.8	1.9	\$10,075	\$4,982
CZ06	SCE	4,769	0	0.93	\$5,566	\$11,374	\$10,724	2.0	1.9	\$5,808	\$5,158
CZ06-2	LA	4,769	0	0.93	\$5,566	\$7,069	\$10,724	1.3	1.9	\$1,503	\$5,158
CZ07	SDG&E	4,960	0	0.96	\$5,566	\$22,452	\$11,031	4.0	2.0	\$16,886	\$5,465
CZ08	SCE	4,826	0	0.93	\$5,566	\$11,838	\$11,339	2.1	2.0	\$6,272	\$5,773
CZ08-2	LA	4,826	0	0.93	\$5,566	\$7,342	\$11,339	1.3	2.0	\$1,776	\$5,773
CZ09	SCE	4,889	0	0.96	\$5,566	\$11,187	\$11,229	2.0	2.0	\$5,621	\$5,663
CZ09-2	LA	4,889	0	0.96	\$5,566	\$6,728	\$11,229	1.2	2.0	\$1,162	\$5,663
CZ10	SDG&E	4,948	0	0.97	\$5,566	\$20,999	\$10,987	3.8	2.0	\$15,433	\$5,421
CZ10-2	SCE	4,948	0	0.97	\$5,566	\$11,384	\$10,987	2.0	2.0	\$5,818	\$5,421
CZ11	PG&E	4,718	0	0.91	\$5,566	\$15,381	\$10,680	2.8	1.9	\$9,815	\$5,114
CZ12	PG&E	4,707	0	0.91	\$5,566	\$16,442	\$10,614	3.0	1.9	\$10,876	\$5,048
CZ12-2	SMUD	4,707	0	0.91	\$5,566	\$8,247	\$10,614	1.5	1.9	\$2,681	\$5,048
CZ13	PG&E	4,750	0	0.92	\$5,566	\$16,638	\$10,592	3.0	1.9	\$11,072	\$5,026
CZ14	SDG&E	5,258	0	1.01	\$5,566	\$19,576	\$12,218	3.5	2.2	\$14,010	\$6,652
CZ14-2	SCE	5,258	0	1.01	\$5,566	\$10,227	\$12,218	1.8	2.2	\$4,661	\$6,652
CZ15	SCE	4,997	0	0.96	\$5,566	\$10,476	\$11,339	1.9	2.0	\$4,910	\$5,773
CZ16	PG&E	5,336	0	1.04	\$5,566	\$20,418	\$11,361	3.7	2.0	\$14,852	\$5,795
CZ16-2	LA	5,336	0	1.04	\$5,566	\$6,987	\$11,361	1.3	2.0	\$1,421	\$5,795



Figure 63. Cost Effectiveness for Medium Retail – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	3,941	0	0.76	\$9,520	\$12,616	\$8,460	1.3	0.9	\$3,096	(\$1,060)
CZ02	PG&E	4,685	0	0.91	\$9,520	\$17,635	\$10,262	1.9	1.1	\$8,115	\$742
CZ03	PG&E	4,733	0	0.92	\$9,520	\$15,146	\$10,152	1.6	1.1	\$5,626	\$632
CZ04	PG&E	4,834	0	0.94	\$9,520	\$18,519	\$10,614	1.9	1.1	\$8,999	\$1,094
CZ04-2	CPAU	4,834	0	0.94	\$9,520	\$11,507	\$10,614	1.2	1.1	\$1,987	\$1,094
CZ05	PG&E	4,910	0	0.95	\$9,520	\$15,641	\$10,548	1.6	1.1	\$6,120	\$1,028
CZ05-2	SCG	4,910	0	0.95	\$9,520	\$15,641	\$10,548	1.6	1.1	\$6,120	\$1,028
CZ06	SCE	4,769	0	0.93	\$9,520	\$11,374	\$10,724	1.2	1.1	\$1,854	\$1,204
CZ06-2	LA	4,769	0	0.93	\$9,520	\$7,069	\$10,724	0.7	1.1	(\$2,452)	\$1,204
CZ07	SDG&E	4,960	0	0.96	\$9,520	\$22,452	\$11,031	2.4	1.2	\$12,932	\$1,511
CZ08	SCE	4,826	0	0.93	\$9,520	\$11,838	\$11,339	1.2	1.2	\$2,317	\$1,819
CZ08-2	LA	4,826	0	0.93	\$9,520	\$7,342	\$11,339	0.8	1.2	(\$2,178)	\$1,819
CZ09	SCE	4,889	0	0.96	\$9,520	\$11,187	\$11,229	1.2	1.2	\$1,667	\$1,709
CZ09-2	LA	4,889	0	0.96	\$9,520	\$6,728	\$11,229	0.7	1.2	(\$2,792)	\$1,709
CZ10	SDG&E	4,948	0	0.97	\$9,520	\$20,999	\$10,987	2.2	1.2	\$11,479	\$1,467
CZ10-2	SCE	4,948	0	0.97	\$9,520	\$11,384	\$10,987	1.2	1.2	\$1,863	\$1,467
CZ11	PG&E	4,718	0	0.91	\$9,520	\$15,381	\$10,680	1.6	1.1	\$5,861	\$1,160
CZ12	PG&E	4,707	0	0.91	\$9,520	\$16,442	\$10,614	1.7	1.1	\$6,922	\$1,094
CZ12-2	SMUD	4,707	0	0.91	\$9,520	\$8,247	\$10,614	0.9	1.1	(\$1,273)	\$1,094
CZ13	PG&E	4,750	0	0.92	\$9,520	\$16,638	\$10,592	1.7	1.1	\$7,117	\$1,072
CZ14	SDG&E	5,258	0	1.01	\$9,520	\$19,576	\$12,218	2.1	1.3	\$10,056	\$2,698
CZ14-2	SCE	5,258	0	1.01	\$9,520	\$10,227	\$12,218	1.1	1.3	\$707	\$2,698
CZ15	SCE	4,997	0	0.96	\$9,520	\$10,476	\$11,339	1.1	1.2	\$956	\$1,819
CZ16	PG&E	5,336	0	1.04	\$9,520	\$20,418	\$11,361	2.1	1.2	\$10,898	\$1,841
CZ16-2	LA	5,336	0	1.04	\$9,520	\$6,987	\$11,361	0.7	1.2	(\$2,533)	\$1,841



**Figure 64. Cost Effectiveness for Medium Retail – Mixed-Fuel + 110kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 110kW PV</b>											
CZ01	PG&E	144,499	0	27.97	\$201,904	\$454,462	\$309,935	2.3	1.5	\$252,558	\$108,031
CZ02	PG&E	171,790	0	33.31	\$201,904	\$477,584	\$376,300	2.4	1.9	\$275,681	\$174,396
CZ03	PG&E	173,534	0	33.55	\$201,904	\$538,530	\$372,146	2.7	1.8	\$336,626	\$170,243
CZ04	PG&E	177,229	0	34.42	\$201,904	\$489,934	\$389,067	2.4	1.9	\$288,030	\$187,163
CZ04-2	CPAU	177,229	0	34.42	\$201,904	\$418,173	\$389,067	2.1	1.9	\$216,269	\$187,163
CZ05	PG&E	180,044	0	34.84	\$201,904	\$556,787	\$386,958	2.8	1.9	\$354,883	\$185,054
CZ06	SCE	174,855	0	33.92	\$201,904	\$288,188	\$393,198	1.4	1.9	\$86,284	\$191,295
CZ06-2	LA	174,855	0	33.92	\$201,904	\$165,538	\$393,198	0.8	1.9	(\$36,366)	\$191,295
CZ07	SDG&E	181,854	0	35.32	\$201,904	\$373,974	\$404,713	1.9	2.0	\$172,070	\$202,809
CZ08	SCE	176,954	0	34.23	\$201,904	\$284,481	\$415,789	1.4	2.1	\$82,577	\$213,885
CZ08-2	LA	176,954	0	34.23	\$201,904	\$161,366	\$415,789	0.8	2.1	(\$40,538)	\$213,885
CZ09	SCE	179,267	0	35.18	\$201,904	\$289,050	\$412,097	1.4	2.0	\$87,146	\$210,193
CZ09-2	LA	179,267	0	35.18	\$201,904	\$168,822	\$412,097	0.8	2.0	(\$33,082)	\$210,193
CZ10	SDG&E	181,443	0	35.41	\$201,904	\$410,310	\$402,999	2.0	2.0	\$208,406	\$201,095
CZ10-2	SCE	181,443	0	35.41	\$201,904	\$291,236	\$402,999	1.4	2.0	\$89,332	\$201,095
CZ11	PG&E	172,983	0	33.46	\$201,904	\$464,776	\$391,550	2.3	1.9	\$262,872	\$189,646
CZ12	PG&E	172,597	0	33.33	\$201,904	\$467,870	\$389,573	2.3	1.9	\$265,966	\$187,669
CZ12-2	SMUD	172,597	0	33.33	\$201,904	\$267,086	\$389,573	1.3	1.9	\$65,182	\$187,669
CZ13	PG&E	174,151	0	33.81	\$201,904	\$478,857	\$387,968	2.4	1.9	\$276,953	\$186,065
CZ14	SDG&E	192,789	0	36.97	\$201,904	\$396,181	\$448,268	2.0	2.2	\$194,277	\$246,364
CZ14-2	SCE	192,789	0	36.97	\$201,904	\$288,782	\$448,268	1.4	2.2	\$86,878	\$246,364
CZ15	SCE	183,214	0	35.12	\$201,904	\$277,867	\$415,789	1.4	2.1	\$75,963	\$213,885
CZ16	PG&E	195,665	0	37.97	\$201,904	\$522,352	\$416,558	2.6	2.1	\$320,448	\$214,654
CZ16-2	LA	195,665	0	37.97	\$201,904	\$171,802	\$416,558	0.9	2.1	(\$30,101)	\$214,654



**Figure 65. Cost Effectiveness for Medium Retail – Mixed-Fuel + 110 kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 110kW PV + 50 kWh Battery</b>											
CZ01	PG&E	143,423	0	29.48	\$229,804	\$452,119	\$324,373	2.0	1.4	\$222,315	\$94,569
CZ02	PG&E	170,542	0	35.14	\$229,804	\$486,704	\$398,363	2.1	1.7	\$256,900	\$168,559
CZ03	PG&E	172,266	0	35.66	\$229,804	\$535,974	\$395,374	2.3	1.7	\$306,170	\$165,570
CZ04	PG&E	175,940	0	36.32	\$229,804	\$525,788	\$422,579	2.3	1.8	\$295,984	\$192,775
CZ04-2	CPAU	175,940	0	36.32	\$229,804	\$416,019	\$422,579	1.8	1.8	\$186,216	\$192,775
CZ05	PG&E	178,728	0	36.91	\$229,804	\$554,968	\$409,086	2.4	1.8	\$325,164	\$179,283
CZ06	SCE	173,567	0	35.99	\$229,804	\$290,599	\$412,690	1.3	1.8	\$60,795	\$182,886
CZ06-2	LA	173,567	0	35.99	\$229,804	\$169,786	\$412,690	0.7	1.8	(\$60,018)	\$182,886
CZ07	SDG&E	180,508	0	37.61	\$229,804	\$425,793	\$427,040	1.9	1.9	\$195,989	\$197,236
CZ08	SCE	175,616	0	36.29	\$229,804	\$296,318	\$434,687	1.3	1.9	\$66,514	\$204,883
CZ08-2	LA	175,616	0	36.29	\$229,804	\$170,489	\$434,687	0.7	1.9	(\$59,315)	\$204,883
CZ09	SCE	177,966	0	36.74	\$229,804	\$300,540	\$421,195	1.3	1.8	\$70,736	\$191,391
CZ09-2	LA	177,966	0	36.74	\$229,804	\$178,852	\$421,195	0.8	1.8	(\$50,952)	\$191,391
CZ10	SDG&E	180,248	0	36.91	\$229,804	\$459,486	\$410,537	2.0	1.8	\$229,683	\$180,733
CZ10-2	SCE	180,248	0	36.91	\$229,804	\$301,219	\$410,537	1.3	1.8	\$71,415	\$180,733
CZ11	PG&E	171,779	0	34.85	\$229,804	\$490,245	\$417,679	2.1	1.8	\$260,442	\$187,875
CZ12	PG&E	171,392	0	34.77	\$229,804	\$497,363	\$417,371	2.2	1.8	\$267,559	\$187,567
CZ12-2	SMUD	171,392	0	34.77	\$229,804	\$273,783	\$417,371	1.2	1.8	\$43,979	\$187,567
CZ13	PG&E	173,052	0	34.97	\$229,804	\$488,196	\$397,791	2.1	1.7	\$258,392	\$167,987
CZ14	SDG&E	191,703	0	38.31	\$229,804	\$420,241	\$452,641	1.8	2.0	\$190,437	\$222,837
CZ14-2	SCE	191,703	0	38.31	\$229,804	\$294,010	\$452,641	1.3	2.0	\$64,206	\$222,837
CZ15	SCE	182,299	0	36.01	\$229,804	\$279,036	\$416,382	1.2	1.8	\$49,232	\$186,578
CZ16	PG&E	194,293	0	40.00	\$229,804	\$535,137	\$432,951	2.3	1.9	\$305,333	\$203,147
CZ16-2	LA	194,293	0	40.00	\$229,804	\$175,573	\$432,951	0.8	1.9	(\$54,231)	\$203,147



**Figure 66. Cost Effectiveness for Medium Retail – All-Electric + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-25,214	3893	14.61	(\$16,318)	\$4,288	(\$5,450)	>1	3.0	\$20,606	\$10,868
CZ02	PG&E	-17,101	2448	8.40	(\$20,734)	\$859	\$5,779	>1	>1	\$21,593	\$26,513
CZ03	PG&E	-9,851	1868	7.18	(\$17,381)	\$15,418	\$8,702	>1	>1	\$32,799	\$26,083
CZ04	PG&E	-9,353	1706	6.24	(\$16,166)	\$9,110	\$10,394	>1	>1	\$25,276	\$26,560
CZ04-2	CPAU	-9,353	1706	6.24	(\$16,166)	\$24,000	\$10,394	>1	>1	\$40,166	\$26,560
CZ05	PG&E	-9,423	1746	6.42	(\$18,776)	\$14,076	\$6,351	>1	>1	\$32,852	\$25,127
CZ06	SCE	-2,759	1002	4.24	(\$15,032)	\$29,710	\$12,592	>1	>1	\$44,741	\$27,623
CZ06-2	LA	-2,759	1002	4.24	(\$15,032)	\$26,292	\$12,592	>1	>1	\$41,324	\$27,623
CZ07	SDG&E	1,148	522	2.72	(\$17,032)	\$76,810	\$12,350	>1	>1	\$93,842	\$29,382
CZ08	SCE	-979	793	3.64	(\$20,192)	\$28,576	\$13,185	>1	>1	\$48,768	\$33,377
CZ08-2	LA	-979	793	3.64	(\$20,192)	\$24,475	\$13,185	>1	>1	\$44,667	\$33,377
CZ09	SCE	-2,352	970	4.28	(\$25,383)	\$29,776	\$13,207	>1	>1	\$55,159	\$38,590
CZ09-2	LA	-2,352	970	4.28	(\$25,383)	\$25,823	\$13,207	>1	>1	\$51,207	\$38,590
CZ10	SDG&E	-5,388	1262	4.95	(\$20,541)	\$75,458	\$11,493	>1	>1	\$95,999	\$32,034
CZ10-2	SCE	-5,388	1262	4.95	(\$20,541)	\$32,394	\$11,493	>1	>1	\$52,936	\$32,034
CZ11	PG&E	-14,533	2415	8.86	(\$25,471)	\$7,618	\$13,295	>1	>1	\$33,090	\$38,766
CZ12	PG&E	-14,764	2309	8.19	(\$25,774)	\$2,210	\$10,152	>1	>1	\$27,984	\$35,926
CZ12-2	SMUD	-14,764	2309	8.19	(\$25,774)	\$21,215	\$10,152	>1	>1	\$46,988	\$35,926
CZ13	PG&E	-12,069	1983	7.08	(\$21,428)	\$5,647	\$8,570	>1	>1	\$27,075	\$29,998
CZ14	SDG&E	-7,950	1672	6.45	(\$19,926)	\$60,412	\$16,679	>1	>1	\$80,338	\$36,605
CZ14-2	SCE	-7,950	1672	6.45	(\$19,926)	\$28,631	\$16,679	>1	>1	\$48,557	\$36,605
CZ15	SCE	2,534	518	3.10	(\$22,813)	\$27,271	\$17,162	>1	>1	\$50,084	\$39,976
CZ16	PG&E	-36,081	4304	14.26	(\$19,041)	(\$30,111)	(\$41,181)	0.6	0.5	(\$11,070)	(\$22,140)
CZ16-2	LA	-36,081	4304	14.26	(\$19,041)	\$45,706	(\$41,181)	>1	0.5	\$64,747	(\$22,140)



Figure 67. Cost Effectiveness for Medium Retail – All-Electric + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5 kWh Battery</b>											
CZ01	PG&E	-25,214	3893	14.61	(\$14,692)	\$4,288	(\$5,450)	>1	2.7	\$18,980	\$9,242
CZ02	PG&E	-17,101	2448	8.40	(\$14,692)	\$859	\$5,779	>1	>1	\$15,551	\$20,472
CZ03	PG&E	-9,851	1868	7.18	(\$14,692)	\$15,418	\$8,702	>1	>1	\$30,110	\$23,394
CZ04	PG&E	-9,353	1706	6.24	(\$14,692)	\$9,110	\$10,394	>1	>1	\$23,802	\$25,086
CZ04-2	CPAU	-9,353	1706	6.24	(\$14,692)	\$24,000	\$10,394	>1	>1	\$38,693	\$25,086
CZ05	PG&E	-9,423	1746	6.42	(\$14,692)	\$14,076	\$6,351	>1	>1	\$28,768	\$21,043
CZ06	SCE	-2,759	1002	4.24	(\$14,692)	\$29,710	\$12,592	>1	>1	\$44,402	\$27,284
CZ06-2	LA	-2,759	1002	4.24	(\$14,692)	\$26,292	\$12,592	>1	>1	\$40,984	\$27,284
CZ07	SDG&E	1,148	522	2.72	(\$14,692)	\$76,810	\$12,350	>1	>1	\$91,502	\$27,042
CZ08	SCE	-979	793	3.64	(\$14,692)	\$28,576	\$13,185	>1	>1	\$43,268	\$27,877
CZ08-2	LA	-979	793	3.64	(\$14,692)	\$24,475	\$13,185	>1	>1	\$39,167	\$27,877
CZ09	SCE	-2,352	970	4.28	(\$14,692)	\$29,776	\$13,207	>1	>1	\$44,468	\$27,899
CZ09-2	LA	-2,352	970	4.28	(\$14,692)	\$25,823	\$13,207	>1	>1	\$40,516	\$27,899
CZ10	SDG&E	-5,388	1262	4.95	(\$14,692)	\$75,458	\$11,493	>1	>1	\$90,150	\$26,185
CZ10-2	SCE	-5,388	1262	4.95	(\$14,692)	\$32,394	\$11,493	>1	>1	\$47,086	\$26,185
CZ11	PG&E	-14,533	2415	8.86	(\$14,692)	\$7,618	\$13,295	>1	>1	\$22,310	\$27,987
CZ12	PG&E	-14,764	2309	8.19	(\$14,692)	\$2,210	\$10,152	>1	>1	\$16,902	\$24,845
CZ12-2	SMUD	-14,764	2309	8.19	(\$14,692)	\$21,215	\$10,152	>1	>1	\$35,907	\$24,845
CZ13	PG&E	-12,069	1983	7.08	(\$14,692)	\$5,647	\$8,570	>1	>1	\$20,339	\$23,262
CZ14	SDG&E	-7,950	1672	6.45	(\$14,692)	\$60,412	\$16,679	>1	>1	\$75,104	\$31,371
CZ14-2	SCE	-7,950	1672	6.45	(\$14,692)	\$28,631	\$16,679	>1	>1	\$43,323	\$31,371
CZ15	SCE	2,534	518	3.10	(\$14,692)	\$27,271	\$17,162	>1	>1	\$41,963	\$31,855
CZ16	PG&E	-36,081	4304	14.26	(\$14,692)	(\$30,111)	(\$41,181)	0.5	0.4	(\$15,419)	(\$26,489)
CZ16-2	LA	-36,081	4304	14.26	(\$14,692)	\$45,706	(\$41,181)	>1	0.4	\$60,398	(\$26,489)



**Figure 68. Cost Effectiveness for Medium Retail – All-Electric + 110kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 110kW PV</b>											
CZ01	PG&E	115,344	3893	41.82	\$143,932	\$454,277	\$296,025	3.2	2.1	\$310,345	\$152,093
CZ02	PG&E	150,004	2448	40.80	\$139,516	\$470,236	\$371,817	3.4	2.7	\$330,720	\$232,301
CZ03	PG&E	158,951	1868	39.82	\$142,869	\$544,095	\$370,696	3.8	2.6	\$401,226	\$227,827
CZ04	PG&E	163,043	1706	39.73	\$144,084	\$488,619	\$388,847	3.4	2.7	\$344,534	\$244,763
CZ04-2	CPAU	163,043	1706	39.73	\$144,084	\$432,905	\$388,847	3.0	2.7	\$288,821	\$244,763
CZ05	PG&E	165,711	1746	40.30	\$141,473	\$565,525	\$382,760	4.0	2.7	\$424,051	\$241,287
CZ06	SCE	167,328	1002	37.24	\$145,218	\$306,670	\$395,066	2.1	2.7	\$161,452	\$249,848
CZ06-2	LA	167,328	1002	37.24	\$145,218	\$184,797	\$395,066	1.3	2.7	\$39,579	\$249,848
CZ07	SDG&E	178,042	522	37.07	\$143,218	\$428,332	\$406,032	3.0	2.8	\$285,114	\$262,814
CZ08	SCE	171,149	793	36.94	\$140,058	\$301,219	\$417,635	2.2	3.0	\$161,161	\$277,577
CZ08-2	LA	171,149	793	36.94	\$140,058	\$178,419	\$417,635	1.3	3.0	\$38,361	\$277,577
CZ09	SCE	172,027	970	38.50	\$134,867	\$307,640	\$414,075	2.3	3.1	\$172,773	\$279,208
CZ09-2	LA	172,027	970	38.50	\$134,867	\$187,813	\$414,075	1.4	3.1	\$52,946	\$279,208
CZ10	SDG&E	171,107	1262	39.40	\$139,708	\$463,692	\$403,505	3.3	2.9	\$323,984	\$263,796
CZ10-2	SCE	171,107	1262	39.40	\$139,708	\$311,464	\$403,505	2.2	2.9	\$171,755	\$263,796
CZ11	PG&E	153,732	2415	41.41	\$134,778	\$467,356	\$394,165	3.5	2.9	\$332,578	\$259,387
CZ12	PG&E	153,126	2309	40.61	\$134,476	\$467,106	\$389,111	3.5	2.9	\$332,630	\$254,635
CZ12-2	SMUD	153,126	2309	40.61	\$134,476	\$283,343	\$389,111	2.1	2.9	\$148,867	\$254,635
CZ13	PG&E	157,332	1983	39.97	\$138,822	\$477,831	\$385,947	3.4	2.8	\$339,008	\$247,124
CZ14	SDG&E	179,582	1672	42.42	\$140,324	\$437,575	\$452,729	3.1	3.2	\$297,251	\$312,405
CZ14-2	SCE	179,582	1672	42.42	\$140,324	\$309,064	\$452,729	2.2	3.2	\$168,740	\$312,405
CZ15	SCE	180,751	518	37.26	\$137,436	\$294,877	\$421,612	2.1	3.1	\$157,440	\$284,176
CZ16	PG&E	154,248	4304	51.20	\$141,209	\$473,892	\$364,016	3.4	2.6	\$332,682	\$222,807
CZ16-2	LA	154,248	4304	51.20	\$141,209	\$211,677	\$364,016	1.5	2.6	\$70,467	\$222,807



**Figure 69. Cost Effectiveness for Medium Retail – All-Electric + 110kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 90kW PV + 50 kWh Battery</b>											
CZ01	PG&E	114,356	3893	43.52	\$171,832	\$451,043	\$310,265	2.6	1.8	\$279,211	\$138,433
CZ02	PG&E	148,793	2448	42.89	\$167,416	\$475,081	\$394,099	2.8	2.4	\$307,664	\$226,683
CZ03	PG&E	157,707	1868	42.12	\$170,769	\$541,418	\$394,034	3.2	2.3	\$370,649	\$223,265
CZ04	PG&E	161,769	1706	41.82	\$171,984	\$523,603	\$422,535	3.0	2.5	\$351,618	\$250,551
CZ04-2	CPAU	161,769	1706	41.82	\$171,984	\$430,567	\$422,535	2.5	2.5	\$258,582	\$250,551
CZ05	PG&E	164,408	1746	42.68	\$169,373	\$561,966	\$405,087	3.3	2.4	\$392,592	\$235,714
CZ06	SCE	166,052	1002	39.48	\$173,118	\$306,697	\$414,756	1.8	2.4	\$133,579	\$241,638
CZ06-2	LA	166,052	1002	39.48	\$173,118	\$187,941	\$414,756	1.1	2.4	\$14,823	\$241,638
CZ07	SDG&E	176,705	522	39.47	\$171,118	\$479,038	\$428,490	2.8	2.5	\$307,920	\$257,372
CZ08	SCE	169,825	793	39.14	\$167,958	\$312,602	\$436,709	1.9	2.6	\$144,645	\$268,751
CZ08-2	LA	169,825	793	39.14	\$167,958	\$187,142	\$436,709	1.1	2.6	\$19,185	\$268,751
CZ09	SCE	170,747	970	40.23	\$162,767	\$318,113	\$423,370	2.0	2.6	\$155,346	\$260,604
CZ09-2	LA	170,747	970	40.23	\$162,767	\$197,006	\$423,370	1.2	2.6	\$34,240	\$260,604
CZ10	SDG&E	169,935	1262	41.08	\$167,608	\$503,504	\$411,284	3.0	2.5	\$335,896	\$243,675
CZ10-2	SCE	169,935	1262	41.08	\$167,608	\$317,927	\$411,284	1.9	2.5	\$150,319	\$243,675
CZ11	PG&E	152,559	2415	42.99	\$162,678	\$491,775	\$420,667	3.0	2.6	\$329,096	\$257,989
CZ12	PG&E	151,956	2309	42.21	\$162,376	\$494,703	\$417,063	3.0	2.6	\$332,327	\$254,687
CZ12-2	SMUD	151,956	2309	42.21	\$162,376	\$288,950	\$417,063	1.8	2.6	\$126,573	\$254,687
CZ13	PG&E	156,271	1983	41.25	\$166,722	\$485,422	\$395,770	2.9	2.4	\$318,699	\$229,047
CZ14	SDG&E	178,505	1672	43.94	\$168,224	\$452,456	\$457,387	2.7	2.7	\$284,232	\$289,163
CZ14-2	SCE	178,505	1672	43.94	\$168,224	\$311,520	\$457,387	1.9	2.7	\$143,296	\$289,163
CZ15	SCE	179,840	518	38.23	\$165,336	\$296,004	\$422,293	1.8	2.6	\$130,668	\$256,957
CZ16	PG&E	152,965	4304	53.53	\$169,109	\$483,205	\$378,299	2.9	2.2	\$314,096	\$209,190
CZ16-2	LA	152,965	4304	53.53	\$169,109	\$215,341	\$378,299	1.3	2.2	\$46,231	\$209,190



### 6.7.3 Cost Effectiveness Results – Small Hotel

Figure 70 through Figure 77 contain the cost-effectiveness findings for the Small Hotel packages. Notable findings for each package include:

- ◆ **Mixed-Fuel + 3 kW PV:** Packages are cost effective and achieve savings for all climate zones for both the On-Bill and TDV approaches.
- ◆ **Mixed-Fuel + 3 kW PV + 5 kWh Battery:** The packages are less cost effective as compared to the previous minimal PV only package and not cost effective for LADWP and SMUD service area. The addition of battery reduces the cost effectiveness of packages.
- ◆ **Mixed-Fuel + PV only:** Packages are cost effective and achieve savings for the On-Bill approach for all climate zones except for LADWP territory. Packages are cost effective and achieve savings for the TDV approach for all climate zones.
- ◆ **Mixed-Fuel + PV + 50 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios. Packages are not cost effective for LADWP territory, SMUD territory as well as for climate zones 6,8,9 under PG&E service area.
- ◆ **All-Electric + 3 kW PV:** All packages are cost effective using the On-Bill approach. All packages are cost effective using the TDV approach but do not achieve positive energy cost savings.
- ◆ **All-Electric + 3 kW PV + 5 kWh Battery:** Similar to minimal PV only package, all packages are cost effective using the On-Bill approach. All packages are cost effective using the TDV approach but do not achieve positive energy cost savings.
- ◆ **All-Electric + PV only:** All packages are cost effective for both On-Bill and TDV approaches. Packages achieve on-bill savings for all climate zones.
- ◆ **All-Electric + PV + 50 kWh Battery:** Adding battery slightly reduces On-Bill B/C ratios but is still cost effective for all climate zones.



Figure 70. Cost Effectiveness for Small Hotel – Mixed Fuel + 3kW PV

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle \$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV</b>											
CZ01	PG&E	3,941	0	0.8	\$5,566	\$12,616	\$8,326	2.3	1.5	\$7,050	\$2,760
CZ02	PG&E	4,785	0	0.9	\$5,566	\$12,639	\$10,332	2.3	1.9	\$7,073	\$4,766
CZ03	PG&E	4,733	0	0.9	\$5,566	\$15,146	\$9,991	2.7	1.8	\$9,580	\$4,425
CZ04	PG&E	4,834	0	1.0	\$5,566	\$13,266	\$10,445	2.4	1.9	\$7,700	\$4,879
CZ04-2	CPAU	4,834	0	1.0	\$5,566	\$11,507	\$10,445	2.1	1.9	\$5,941	\$4,879
CZ05	PG&E	5,027	0	1.0	\$5,566	\$16,048	\$10,634	2.9	1.9	\$10,482	\$5,068
CZ06	SCE	4,769	0	0.9	\$5,566	\$10,276	\$10,559	1.8	1.9	\$4,710	\$4,993
CZ06-2	LA	4,769	0	0.9	\$5,566	\$6,307	\$10,559	1.1	1.9	\$741	\$4,993
CZ07	SDG&E	4,960	0	1.0	\$5,566	\$14,576	\$10,861	2.6	2.0	\$9,010	\$5,295
CZ08	SCE	4,824	0	0.9	\$5,566	\$10,837	\$11,202	1.9	2.0	\$5,271	\$5,636
CZ08-2	LA	4,824	0	0.9	\$5,566	\$6,505	\$11,202	1.2	2.0	\$939	\$5,636
CZ09	SCE	4,779	0	0.9	\$5,566	\$10,298	\$10,824	1.9	1.9	\$4,732	\$5,258
CZ09-2	LA	4,779	0	0.9	\$5,566	\$6,201	\$10,824	1.1	1.9	\$635	\$5,258
CZ10	SDG&E	4,905	0	1.0	\$5,566	\$16,302	\$10,710	2.9	1.9	\$10,736	\$5,144
CZ10-2	SCE	4,905	0	1.0	\$5,566	\$9,468	\$10,710	1.7	1.9	\$3,902	\$5,144
CZ11	PG&E	4,701	0	0.9	\$5,566	\$14,193	\$10,483	2.6	1.9	\$8,627	\$4,917
CZ12	PG&E	4,770	0	0.9	\$5,566	\$15,262	\$10,596	2.7	1.9	\$9,696	\$5,030
CZ12-2	SMUD	4,770	0	0.9	\$5,566	\$7,848	\$10,596	1.4	1.9	\$2,282	\$5,030
CZ13	PG&E	4,633	0	0.9	\$5,566	\$14,674	\$10,105	2.6	1.8	\$9,108	\$4,539
CZ14	SDG&E	5,377	0	1.1	\$5,566	\$16,615	\$12,375	3.0	2.2	\$11,049	\$6,809
CZ14-2	SCE	5,377	0	1.1	\$5,566	\$10,021	\$12,375	1.8	2.2	\$4,455	\$6,809
CZ15	SCE	4,997	0	1.0	\$5,566	\$9,542	\$11,164	1.7	2.0	\$3,976	\$5,598
CZ16	PG&E	5,240	0	1.0	\$5,566	\$14,961	\$10,975	2.7	2.0	\$9,395	\$5,409
CZ16-2	LA	5,240	0	1.0	\$5,566	\$5,670	\$10,975	1.0	2.0	\$104	\$5,409



Figure 71. Cost Effectiveness for Small Hotel – Mixed Fuel + 3kW PV + 5 kWh Battery

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	3,941	0	0.8	\$9,520	\$12,616	\$8,326	1.3	0.9	\$3,096	(\$1,194)
CZ02	PG&E	4,785	0	0.9	\$9,520	\$12,639	\$10,332	1.3	1.1	\$3,119	\$811
CZ03	PG&E	4,733	0	0.9	\$9,520	\$15,146	\$9,991	1.6	1.0	\$5,626	\$471
CZ04	PG&E	4,834	0	1.0	\$9,520	\$13,266	\$10,445	1.4	1.1	\$3,746	\$925
CZ04-2	CPAU	4,834	0	1.0	\$9,520	\$11,507	\$10,445	1.2	1.1	\$1,987	\$925
CZ05	PG&E	5,027	0	1.0	\$9,520	\$16,048	\$10,634	1.7	1.1	\$6,528	\$1,114
CZ05-2	SCG	5,027	0	1.0	\$9,520	\$16,048	\$10,634	1.7	1.1	\$6,528	\$1,114
CZ06	SCE	4,769	0	0.9	\$9,520	\$10,276	\$10,559	1.1	1.1	\$756	\$1,039
CZ06-2	LA	4,769	0	0.9	\$9,520	\$6,307	\$10,559	0.7	1.1	(\$3,213)	\$1,039
CZ07	SDG&E	4,960	0	1.0	\$9,520	\$14,576	\$10,861	1.5	1.1	\$5,056	\$1,341
CZ08	SCE	4,824	0	0.9	\$9,520	\$10,837	\$11,202	1.1	1.2	\$1,317	\$1,682
CZ08-2	LA	4,824	0	0.9	\$9,520	\$6,505	\$11,202	0.7	1.2	(\$3,015)	\$1,682
CZ09	SCE	4,779	0	0.9	\$9,520	\$10,298	\$10,824	1.1	1.1	\$778	\$1,303
CZ09-2	LA	4,779	0	0.9	\$9,520	\$6,201	\$10,824	0.7	1.1	(\$3,319)	\$1,303
CZ10	SDG&E	4,905	0	1.0	\$9,520	\$16,302	\$10,710	1.7	1.1	\$6,782	\$1,190
CZ10-2	SCE	4,905	0	1.0	\$9,520	\$9,468	\$10,710	0.99	1.1	(\$52)	\$1,190
CZ11	PG&E	4,701	0	0.9	\$9,520	\$14,193	\$10,483	1.5	1.1	\$4,673	\$963
CZ12	PG&E	4,770	0	0.9	\$9,520	\$15,262	\$10,596	1.6	1.1	\$5,742	\$1,076
CZ12-2	SMUD	4,770	0	0.9	\$9,520	\$7,848	\$10,596	0.8	1.1	(\$1,672)	\$1,076
CZ13	PG&E	4,633	0	0.9	\$9,520	\$14,674	\$10,105	1.5	1.1	\$5,154	\$584
CZ14	SDG&E	5,377	0	1.1	\$9,520	\$16,615	\$12,375	1.7	1.3	\$7,095	\$2,855
CZ14-2	SCE	5,377	0	1.1	\$9,520	\$10,021	\$12,375	1.1	1.3	\$501	\$2,855
CZ15	SCE	4,997	0	1.0	\$9,520	\$9,542	\$11,164	1.0	1.2	\$22	\$1,644
CZ16	PG&E	5,240	0	1.0	\$9,520	\$14,961	\$10,975	1.6	1.2	\$5,441	\$1,455
CZ16-2	LA	5,240	0	1.0	\$9,520	\$5,670	\$10,975	0.6	1.2	(\$3,851)	\$1,455



**Figure 72. Cost Effectiveness for Small Hotel - Mixed Fuel +80kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 80kW PV</b>											
CZ01	PG&E	105,090	0	20.6	\$179,470	\$336,440	\$221,883	1.9	1.2	\$156,970	\$42,413
CZ02	PG&E	127,592	0	25.0	\$179,470	\$320,009	\$275,130	1.8	1.5	\$140,539	\$95,660
CZ03	PG&E	126,206	0	24.8	\$179,470	\$403,900	\$266,426	2.3	1.5	\$224,430	\$86,956
CZ04	PG&E	128,894	0	25.4	\$179,470	\$322,782	\$278,536	1.8	1.6	\$143,312	\$99,066
CZ04-2	CPAU	128,894	0	25.4	\$179,470	\$306,862	\$278,536	1.7	1.6	\$127,392	\$99,066
CZ05	PG&E	134,041	0	26.5	\$179,470	\$427,935	\$283,834	2.4	1.6	\$248,465	\$104,364
CZ06	SCE	127,168	0	25.0	\$179,470	\$200,425	\$281,488	1.1	1.6	\$20,955	\$102,018
CZ06-2	LA	127,168	0	25.0	\$179,470	\$119,357	\$281,488	0.7	1.6	(\$60,113)	\$102,018
CZ07	SDG&E	132,258	0	26.1	\$179,470	\$247,646	\$289,700	1.4	1.6	\$68,176	\$110,230
CZ08	SCE	128,641	0	25.3	\$179,470	\$207,993	\$298,594	1.2	1.7	\$28,523	\$119,124
CZ08-2	LA	128,641	0	25.3	\$179,470	\$122,591	\$298,594	0.7	1.7	(\$56,879)	\$119,124
CZ09	SCE	127,447	0	25.3	\$179,470	\$211,567	\$288,830	1.2	1.6	\$32,096	\$109,360
CZ09-2	LA	127,447	0	25.3	\$179,470	\$123,486	\$288,830	0.7	1.6	(\$55,984)	\$109,360
CZ10	SDG&E	130,792	0	25.8	\$179,470	\$274,832	\$285,386	1.5	1.6	\$95,361	\$105,916
CZ10-2	SCE	130,792	0	25.8	\$179,470	\$206,865	\$285,386	1.2	1.6	\$27,395	\$105,916
CZ11	PG&E	125,366	0	24.6	\$179,470	\$316,781	\$279,331	1.8	1.6	\$137,311	\$99,861
CZ12	PG&E	127,203	0	25.0	\$179,470	\$406,977	\$282,358	2.3	1.6	\$227,507	\$102,888
CZ12-2	SMUD	127,203	0	25.0	\$179,470	\$198,254	\$282,358	1.1	1.6	\$18,784	\$102,888
CZ13	PG&E	123,535	0	24.4	\$179,470	\$317,261	\$269,908	1.8	1.5	\$137,791	\$90,437
CZ14	SDG&E	143,387	0	28.1	\$179,470	\$309,521	\$330,345	1.7	1.8	\$130,051	\$150,875
CZ14-2	SCE	143,387	0	28.1	\$179,470	\$225,083	\$330,345	1.3	1.8	\$45,612	\$150,875
CZ15	SCE	133,246	0	25.9	\$179,470	\$207,277	\$297,648	1.2	1.7	\$27,807	\$118,177
CZ16	PG&E	139,738	0	27.3	\$179,470	\$341,724	\$292,728	1.9	1.6	\$162,254	\$113,258
CZ16-2	LA	139,738	0	27.3	\$179,470	\$114,215	\$292,728	0.6	1.6	(\$65,255)	\$113,258



**Figure 73. Cost Effectiveness for Small Hotel – Mixed Fuel + 80kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>Mixed Fuel + 80kW PV + 50kWh Battery</b>											
CZ01	PG&E	104,026	0	23.2	\$207,370	\$332,596	\$237,740	1.6	1.1	\$125,226	\$30,370
CZ02	PG&E	126,332	0	28.1	\$207,370	\$336,179	\$296,058	1.6	1.4	\$128,809	\$88,688
CZ03	PG&E	124,934	0	28.0	\$207,370	\$399,220	\$289,360	1.9	1.4	\$191,850	\$81,990
CZ04	PG&E	127,602	0	28.5	\$207,370	\$332,161	\$308,887	1.6	1.5	\$124,790	\$101,517
CZ04-2	CPAU	127,602	0	28.5	\$207,370	\$303,828	\$308,887	1.5	1.5	\$96,458	\$101,517
CZ05	PG&E	132,725	0	29.8	\$207,370	\$423,129	\$303,627	2.0	1.5	\$215,758	\$96,257
CZ06	SCE	125,880	0	28.4	\$207,370	\$193,814	\$297,950	0.9	1.4	(\$13,556)	\$90,580
CZ06-2	LA	125,880	0	28.4	\$207,370	\$123,083	\$297,950	0.6	1.4	(\$84,287)	\$90,580
CZ07	SDG&E	130,940	0	29.5	\$207,370	\$274,313	\$309,682	1.3	1.5	\$66,943	\$102,312
CZ08	SCE	127,332	0	28.5	\$207,370	\$199,786	\$312,899	1.0	1.5	(\$7,584)	\$105,529
CZ08-2	LA	127,332	0	28.5	\$207,370	\$124,651	\$312,899	0.6	1.5	(\$82,719)	\$105,529
CZ09	SCE	126,232	0	28.2	\$207,370	\$206,706	\$292,804	1.0	1.4	(\$664)	\$85,433
CZ09-2	LA	126,232	0	28.2	\$207,370	\$126,710	\$292,804	0.6	1.4	(\$80,660)	\$85,433
CZ10	SDG&E	129,683	0	28.4	\$207,370	\$292,202	\$287,278	1.4	1.4	\$84,832	\$79,908
CZ10-2	SCE	129,683	0	28.4	\$207,370	\$206,171	\$287,278	1.0	1.4	(\$1,199)	\$79,908
CZ11	PG&E	124,337	0	26.9	\$207,370	\$315,330	\$283,683	1.5	1.4	\$107,960	\$76,313
CZ12	PG&E	126,013	0	27.8	\$207,370	\$403,127	\$297,118	1.9	1.4	\$195,757	\$89,748
CZ12-2	SMUD	126,013	0	27.8	\$207,370	\$198,007	\$297,118	1.0	1.4	(\$9,363)	\$89,748
CZ13	PG&E	122,591	0	26.5	\$207,370	\$315,541	\$280,996	1.5	1.4	\$108,171	\$73,626
CZ14	SDG&E	142,257	0	30.7	\$207,370	\$317,565	\$334,697	1.5	1.6	\$110,195	\$127,327
CZ14-2	SCE	142,257	0	30.7	\$207,370	\$224,195	\$334,697	1.1	1.6	\$16,824	\$127,327
CZ15	SCE	132,418	0	27.8	\$207,370	\$208,044	\$299,199	1.0	1.4	\$674	\$91,829
CZ16	PG&E	138,402	0	30.7	\$207,370	\$358,582	\$315,699	1.7	1.5	\$151,212	\$108,329
CZ16-2	LA	138,402	0	30.7	\$207,370	\$118,770	\$315,699	0.6	1.5	(\$88,600)	\$108,329



**Figure 74. Cost Effectiveness for Small Hotel – All-Electric + 3kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost*	Lifecycle Energy Cost Savings	Lifecycle TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV</b>											
CZ01	PG&E	-155,861	16917	54.7	(\$1,265,139)	(\$568,892)	(\$106,835)	2.2	11.8	\$696,246	\$1,158,304
CZ02	PG&E	-113,954	12677	40.9	(\$1,266,111)	(\$229,433)	(\$41,288)	5.5	30.7	\$1,036,679	\$1,224,823
CZ03	PG&E	-105,862	12322	41.4	(\$1,268,383)	(\$309,874)	(\$41,175)	4.1	30.8	\$958,510	\$1,227,208
CZ04	PG&E	-108,570	11927	37.5	(\$1,268,218)	(\$208,239)	(\$42,689)	6.1	29.7	\$1,059,980	\$1,225,530
CZ04-2	CPAU	-108,570	11927	37.5	(\$1,268,218)	(\$6,261)	(\$42,689)	202.6	29.7	\$1,261,958	\$1,225,530
CZ05	PG&E	-103,579	11960	39.3	(\$1,268,272)	(\$332,879)	(\$44,051)	3.8	28.8	\$935,393	\$1,224,221
CZ06	SCE	-73,524	8912	30.3	(\$1,268,413)	\$48,898	(\$17,484)	>1	72.5	\$1,317,311	\$1,250,929
CZ06-2	LA	-64,859	8188	29.0	(\$1,266,760)	(\$120,842)	(\$12,337)	10.5	102.7	\$1,145,918	\$1,254,423
CZ07	SDG&E	-67,090	8353	29.2	(\$1,264,731)	(\$43,964)	(\$11,618)	28.8	108.9	\$1,220,767	\$1,253,113
CZ08	SCE	-67,090	8353	29.2	(\$1,264,731)	\$48,736	(\$11,618)	>1	108.9	\$1,313,467	\$1,253,113
CZ08-2	LA	-67,483	8402	29.3	(\$1,266,529)	(\$35,547)	(\$11,126)	35.6	113.8	\$1,230,982	\$1,255,403
CZ09	SCE	-67,483	8402	29.3	(\$1,266,529)	\$52,410	(\$11,126)	>1	113.8	\$1,318,939	\$1,255,403
CZ09-2	LA	-75,157	8418	27.2	(\$1,263,531)	(\$156,973)	(\$25,469)	8.0	49.6	\$1,106,558	\$1,238,061
CZ10	SDG&E	-75,157	8418	27.2	(\$1,263,531)	(\$54,711)	(\$25,469)	23.1	49.6	\$1,208,820	\$1,238,061
CZ10-2	SCE	-94,783	10252	31.9	(\$1,264,340)	(\$169,847)	(\$38,904)	7.4	32.5	\$1,094,493	\$1,225,436
CZ11	PG&E	-94,702	10403	33.0	(\$1,265,779)	(\$324,908)	(\$34,968)	3.9	36.2	\$940,872	\$1,230,811
CZ12	PG&E	-94,297	10403	33.1	(\$1,265,779)	\$13,603	(\$33,757)	>1	37.5	\$1,279,382	\$1,232,022
CZ12-2	SMUD	-92,196	10029	31.5	(\$1,264,152)	(\$168,358)	(\$40,229)	7.5	31.4	\$1,095,794	\$1,223,923
CZ13	PG&E	-96,021	10056	30.7	(\$1,264,510)	(\$308,542)	(\$44,202)	4.1	28.6	\$955,969	\$1,220,308
CZ14	SDG&E	-96,021	10056	30.7	(\$1,264,510)	(\$110,730)	(\$44,202)	11.4	28.6	\$1,153,780	\$1,220,308
CZ14-2	SCE	-44,856	5579	19.0	(\$1,262,631)	\$8,996	(\$10,256)	>1	123.1	\$1,271,627	\$1,252,375
CZ15	SCE	-211,468	17599	42.9	(\$1,268,907)	(\$625,671)	(\$228,203)	2.0	5.6	\$643,236	\$1,040,704
CZ16	PG&E	-211,468	17599	42.9	(\$1,268,907)	\$37,142	(\$228,203)	>1	5.6	\$1,306,049	\$1,040,704
CZ16-2	LA	-155,861	16917	54.7	(\$1,265,139)	(\$568,892)	(\$106,835)	2.2	11.8	\$696,246	\$1,158,304



**Figure 75. Cost Effectiveness for Small Hotel – All-Electric + 3kW PV + 5 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 3kW PV + 5kWh Battery</b>											
CZ01	PG&E	-155,861	16917	54.7	(\$1,288,428)	(\$568,892)	(\$106,835)	2.3	12.1	\$719,536	\$1,181,593
CZ02	PG&E	-113,954	12677	40.9	(\$1,288,428)	(\$229,433)	(\$41,288)	5.6	31.2	\$1,058,996	\$1,247,140
CZ03	PG&E	-105,862	12322	41.4	(\$1,288,428)	(\$309,874)	(\$41,175)	4.2	31.3	\$978,554	\$1,247,253
CZ04	PG&E	-108,570	11927	37.5	(\$1,288,428)	(\$208,239)	(\$42,689)	6.2	30.2	\$1,080,190	\$1,245,740
CZ04-2	CPAU	-108,570	11927	37.5	(\$1,288,428)	(\$6,261)	(\$42,689)	205.8	30.2	\$1,282,167	\$1,245,740
CZ05	PG&E	-103,579	11960	39.3	(\$1,288,428)	(\$332,879)	(\$44,051)	3.9	29.2	\$955,549	\$1,244,377
CZ06	SCE	-73,524	8912	30.3	(\$1,288,428)	(\$52,341)	(\$17,484)	24.6	73.7	\$1,236,087	\$1,270,944
CZ06-2	LA	-73,524	8912	30.3	(\$1,288,428)	\$48,898	(\$17,484)	>1	73.7	\$1,337,326	\$1,270,944
CZ07	SDG&E	-64,859	8188	29.0	(\$1,288,428)	(\$120,842)	(\$12,337)	10.7	104.4	\$1,167,586	\$1,276,091
CZ08	SCE	-67,090	8353	29.2	(\$1,288,428)	(\$43,964)	(\$11,618)	29.3	110.9	\$1,244,464	\$1,276,810
CZ08-2	LA	-67,090	8353	29.2	(\$1,288,428)	\$48,736	(\$11,618)	>1	110.9	\$1,337,164	\$1,276,810
CZ09	SCE	-67,483	8402	29.3	(\$1,288,428)	(\$35,547)	(\$11,126)	36.2	115.8	\$1,252,881	\$1,277,302
CZ09-2	LA	-67,483	8402	29.3	(\$1,288,428)	\$52,410	(\$11,126)	>1	115.8	\$1,340,838	\$1,277,302
CZ10	SDG&E	-75,157	8418	27.2	(\$1,288,428)	(\$156,973)	(\$25,469)	8.2	50.6	\$1,131,455	\$1,262,959
CZ10-2	SCE	-75,157	8418	27.2	(\$1,288,428)	(\$54,711)	(\$25,469)	23.5	50.6	\$1,233,718	\$1,262,959
CZ11	PG&E	-94,783	10252	31.9	(\$1,288,428)	(\$169,847)	(\$38,904)	7.6	33.1	\$1,118,582	\$1,249,524
CZ12	PG&E	-94,702	10403	33.0	(\$1,288,428)	(\$324,908)	(\$34,968)	4.0	36.8	\$963,520	\$1,253,460
CZ12-2	SMUD	-94,297	10403	33.1	(\$1,288,428)	\$13,603	(\$33,757)	>1	38.2	\$1,302,031	\$1,254,671
CZ13	PG&E	-92,196	10029	31.5	(\$1,288,428)	(\$168,358)	(\$40,229)	7.7	32.0	\$1,120,071	\$1,248,199
CZ14	SDG&E	-96,021	10056	30.7	(\$1,288,428)	(\$308,542)	(\$44,202)	4.2	29.1	\$979,887	\$1,244,226
CZ14-2	SCE	-96,021	10056	30.7	(\$1,288,428)	(\$110,730)	(\$44,202)	11.6	29.1	\$1,177,698	\$1,244,226
CZ15	SCE	-44,856	5579	19.0	(\$1,288,428)	\$8,996	(\$10,256)	>1	125.6	\$1,297,425	\$1,278,172
CZ16	PG&E	-211,468	17599	42.9	(\$1,288,428)	(\$625,671)	(\$228,203)	2.1	5.6	\$662,757	\$1,060,225
CZ16-2	LA	-211,468	17599	42.9	(\$1,288,428)	\$37,142	(\$228,203)	>1	5.6	\$1,325,570	\$1,060,225



**Figure 76. Cost Effectiveness for Small Hotel – All-Electric + 80kW PV**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 80kW PV</b>											
CZ01	PG&E	-54,712	16917	74.6	(\$1,123,442)	(\$240,170)	\$106,722	4.7	>1	\$883,272	\$1,230,164
CZ02	PG&E	8,853	12677	65.0	(\$1,124,415)	\$128,649	\$223,510	>1	>1	\$1,253,063	\$1,347,925
CZ03	PG&E	15,612	12322	65.3	(\$1,126,687)	\$44,532	\$215,260	>1	>1	\$1,171,219	\$1,341,947
CZ04	PG&E	15,490	11927	62.0	(\$1,126,522)	\$145,778	\$225,402	>1	>1	\$1,272,300	\$1,351,924
CZ04-2	CPAU	15,490	11927	62.0	(\$1,126,522)	\$289,094	\$225,402	>1	>1	\$1,415,616	\$1,351,924
CZ05	PG&E	25,436	11960	64.8	(\$1,126,575)	\$56,019	\$229,149	>1	>1	\$1,182,594	\$1,355,724
CZ06	SCE	48,875	8912	54.4	(\$1,126,716)	\$163,343	\$253,445	>1	>1	\$1,290,060	\$1,380,161
CZ06-2	LA	62,439	8188	54.1	(\$1,125,064)	\$115,822	\$266,502	>1	>1	\$1,240,886	\$1,391,565
CZ07	SDG&E	56,727	8353	53.5	(\$1,123,034)	\$147,987	\$275,773	>1	>1	\$1,271,022	\$1,398,808
CZ08	SCE	56,727	8353	53.5	(\$1,123,034)	\$163,971	\$275,773	>1	>1	\$1,287,005	\$1,398,808
CZ08-2	LA	55,185	8402	53.7	(\$1,124,832)	\$155,101	\$266,880	>1	>1	\$1,279,933	\$1,391,712
CZ09	SCE	55,185	8402	53.7	(\$1,124,832)	\$169,010	\$266,880	>1	>1	\$1,293,843	\$1,391,712
CZ09-2	LA	50,731	8418	52.0	(\$1,121,834)	\$113,936	\$249,207	>1	>1	\$1,235,770	\$1,371,041
CZ10	SDG&E	50,731	8418	52.0	(\$1,121,834)	\$138,265	\$249,207	>1	>1	\$1,260,099	\$1,371,041
CZ10-2	SCE	25,882	10252	55.6	(\$1,122,643)	\$162,626	\$229,944	>1	>1	\$1,285,269	\$1,352,587
CZ11	PG&E	27,731	10403	57.1	(\$1,124,083)	\$12,954	\$236,794	>1	>1	\$1,137,037	\$1,360,876
CZ12	PG&E	28,136	10403	57.2	(\$1,124,083)	\$206,756	\$238,005	>1	>1	\$1,330,839	\$1,362,087
CZ12-2	SMUD	26,706	10029	55.0	(\$1,122,455)	\$165,991	\$219,574	>1	>1	\$1,288,446	\$1,342,030
CZ13	PG&E	41,989	10056	57.8	(\$1,122,814)	\$22,333	\$273,768	>1	>1	\$1,145,147	\$1,396,582
CZ14	SDG&E	41,989	10056	57.8	(\$1,122,814)	\$120,943	\$273,768	>1	>1	\$1,243,757	\$1,396,582
CZ14-2	SCE	83,393	5579	44.0	(\$1,120,934)	\$210,511	\$276,228	>1	>1	\$1,331,445	\$1,397,162
CZ15	SCE	-76,971	17599	69.2	(\$1,127,210)	(\$199,308)	\$53,550	5.7	>1	\$927,902	\$1,180,760
CZ16	PG&E	-76,971	17599	69.2	(\$1,127,210)	\$172,787	\$53,550	>1	>1	\$1,299,997	\$1,180,760
CZ16-2	LA	-54,712	16917	74.6	(\$1,123,442)	(\$240,170)	\$106,722	4.7	>1	\$883,272	\$1,230,164



**Figure 77. Cost Effectiveness for Small Hotel – All-Electric + 80kW PV + 50 kWh Battery**

CZ	IOU territory	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
<b>All-Electric + 80kW PV + 50kWh Battery</b>											
CZ01	PG&E	-55,323	16917	75.7	(\$1,095,542)	(\$238,351)	\$118,605	4.6	>1	\$857,191	\$1,214,147
CZ02	PG&E	7,849	12677	67.4	(\$1,096,515)	\$129,794	\$239,632	>1	>1	\$1,226,309	\$1,336,146
CZ03	PG&E	14,594	12322	67.7	(\$1,098,787)	\$43,166	\$235,280	>1	>1	\$1,141,953	\$1,334,067
CZ04	PG&E	14,459	11927	64.4	(\$1,098,622)	\$148,698	\$249,244	>1	>1	\$1,247,320	\$1,347,866
CZ04-2	CPAU	14,459	11927	64.4	(\$1,098,622)	\$286,573	\$249,244	>1	>1	\$1,385,195	\$1,347,866
CZ05	PG&E	24,292	11960	67.6	(\$1,098,675)	\$53,719	\$244,514	>1	>1	\$1,152,394	\$1,343,189
CZ06	SCE	47,762	8912	57.2	(\$1,098,816)	\$165,763	\$267,221	>1	>1	\$1,264,579	\$1,366,037
CZ06-2	LA	61,252	8188	57.1	(\$1,097,164)	\$138,060	\$283,797	>1	>1	\$1,235,223	\$1,380,960
CZ07	SDG&E	55,588	8353	56.2	(\$1,095,134)	\$138,718	\$286,483	>1	>1	\$1,233,852	\$1,381,618
CZ08	SCE	55,588	8353	56.2	(\$1,095,134)	\$165,932	\$286,483	>1	>1	\$1,261,066	\$1,381,618
CZ08-2	LA	54,162	8402	56.1	(\$1,096,932)	\$149,615	\$269,453	>1	>1	\$1,246,548	\$1,366,386
CZ09	SCE	54,162	8402	56.1	(\$1,096,932)	\$171,168	\$269,453	>1	>1	\$1,268,101	\$1,366,386
CZ09-2	LA	49,832	8418	54.1	(\$1,093,934)	\$120,627	\$250,720	>1	>1	\$1,214,561	\$1,344,654
CZ10	SDG&E	49,832	8418	54.1	(\$1,093,934)	\$136,144	\$250,720	>1	>1	\$1,230,078	\$1,344,654
CZ10-2	SCE	25,148	10252	57.3	(\$1,094,743)	\$160,744	\$233,842	>1	>1	\$1,255,487	\$1,328,585
CZ11	PG&E	26,813	10403	59.2	(\$1,096,183)	\$10,314	\$247,504	>1	>1	\$1,106,497	\$1,343,686
CZ12	PG&E	27,217	10403	59.3	(\$1,096,183)	\$206,749	\$248,790	>1	>1	\$1,302,931	\$1,344,973
CZ12-2	SMUD	26,027	10029	56.5	(\$1,094,555)	\$164,506	\$229,300	>1	>1	\$1,259,061	\$1,323,856
CZ13	PG&E	41,123	10056	59.7	(\$1,094,914)	\$25,707	\$276,947	>1	>1	\$1,120,621	\$1,371,860
CZ14	SDG&E	41,123	10056	59.7	(\$1,094,914)	\$119,382	\$276,947	>1	>1	\$1,214,296	\$1,371,860
CZ14-2	SCE	82,697	5579	45.5	(\$1,093,034)	\$209,837	\$277,287	>1	>1	\$1,302,871	\$1,370,321
CZ15	SCE	-77,815	17599	71.1	(\$1,099,310)	(\$193,758)	\$65,850	5.7	>1	\$905,552	\$1,165,160
CZ16	PG&E	-77,815	17599	71.1	(\$1,099,310)	\$175,872	\$65,850	>1	>1	\$1,275,182	\$1,165,160
CZ16-2	LA	-55,323	16917	75.7	(\$1,095,542)	(\$238,351)	\$118,605	4.6	>1	\$857,191	\$1,214,147



## 6.8 List of Relevant Efficiency Measures Explored

The Reach Code Team started with a potential list of energy efficiency measures proposed for 2022 Title 24 codes and standards enhancement measures, as well as measures from the 2018 International Green Construction Code, which is based on ASHRAE Standard 189.1-2017. The team also developed new measures based on their experience. This original list was over 100 measures long. The measures were filtered based on applicability to the prototypes in this study, ability to model in simulation software, previously demonstrated energy savings potential, and market readiness. The list of 28 measures below represent the list of efficiency measures that meet these criteria and were investigated to some degree. The column to the far right indicates whether the measure was ultimately included in analysis or not.

**Figure 78. List of Relevant Efficiency Measures Explored**

Building Component	Measure Name	Measure Description	Notes	Include?
Water Heating	Drain water Heat Recovery	Add drain water heat recovery in hotel prototype	Requires calculations outside of modeling software.	Y
Envelope	High performance fenestration	Improved fenestration SHGC (reduce to 0.22).		Y
Envelope	High SHGC for cold climates	Raise prescriptive fenestration SHGC (to 0.45) in cold climates where additional heat is beneficial.		Y
Envelope	Allowable fenestration by orientation	Limit amount of fenestration as a function of orientation		Y
Envelope	High Thermal Mass Buildings	Increase building thermal mass. Thermal mass slows the change in internal temperature of buildings with respect to the outdoor temperature, allowing the peak cooling load during summer to be pushed to the evening, resulting in lower overall cooling loads.	Initial energy modeling results showed marginal cooling savings, negative heating savings.	N
Envelope	Opaque Insulation	Increases the insulation requirement for opaque envelopes (i.e., roof and above-grade wall).	Initial energy modeling results showed marginal energy savings at significant costs which would not meet c/e criteria.	N
Envelope	Triple pane windows	U-factor of 0.20 for all windows	Initial energy modeling results showed only marginal energy savings and, in some cases, increased energy use.	N



Building Component	Measure Name	Measure Description	Notes	Include?
Envelope	Duct Leakage Testing	Expand duct leakage testing requirements based on ASHRAE Standard 215-2018: Method of Test to Determine Leakage of Operating HVAC Air Distribution Systems (ANSI Approved).	More research needs to be done on current duct leakage and how it can be addressed.	N
Envelope	Fenestration area	Reduce maximum allowable fenestration area to 30%.	Instead of this measure, analyzed measure which looked at limiting fenestration based on wall orientation.	N
Envelope	Skinny triple pane windows	U-factor of 0.20 for all windows, with no changes to existing framing or building structure.	Market not ready. No commercially-available products for commercial buildings.	N
Envelope	Permanent projections	Detailed prescriptive requirements for shading based on ASHRAE 189. PF >0.50 for first story and >0.25 for other floors. Many exceptions. Corresponding SHGC multipliers to be used.	Title 24 already allows owner to trade off SHGC with permanent projections. Also, adding requirements for permanent projections would raise concerns.	N
Envelope	Reduced infiltration	Reduce infiltration rates by improving building sealing.	Infiltration rates are a fixed ACM input and cannot be changed. A workaround attempt would not be precise, and the practicality of implementation by developers is low given the modeling capabilities and the fact that in-field verification is challenging. Benefits would predominantly be for air quality rather than energy.	N



Building Component	Measure Name	Measure Description	Notes	Include?
HVAC	Heat recovery ventilation	For the hotel, recover and transfer heat from exhausted air to ventilation air.	<p>For small hotels, the ventilation requirement could be met by various approaches, and the most common ones are:</p> <ul style="list-style-type: none"> <li>a. Exhaust only system, and ventilation is met by infiltration or window operation.</li> <li>b. Through a Z-duct that connects the zone AC unit's intake to an outside air intake louver.</li> <li>c. Centralized ventilation system (DOAS)</li> </ul> <p>The prototype developed for the small hotel is using Type 2 above. The major consideration is that currently, HRV + PTACs cannot be modeled at each guest room, only at the rooftop system. Option 1 would require the same type of HRV implementation as Option 2. Option 3 may be pursuable, but would require a significant redesign of the system, with questionable impacts. Previous studies have found heat recovery as cost effective in California only in buildings with high loads or high air exchange rates, given the relatively mild climate.</p>	N
HVAC	Require Economizers in Smaller Capacity Systems	Lower the capacity trigger for air economizers. Previous studies have shown cost effectiveness for systems as low as 3 tons.		Y
HVAC	Reduce VAV minimum flow limit	Current T24 and 90.1 requirements limit VAV minimum flow rates to no more than 20% of maximum flow. Proposal based on ASHRAE Guideline 36 which includes sequences that remove technical barriers that previously existed. Also, most new DDC controllers are now capable of lower limits. The new limit may be as low as the required ventilation rate. A non-energy benefit of this measure is a reduction in over-cooling, thus improving comfort.		Y



Building Component	Measure Name	Measure Description	Notes	Include?
HVAC	Building Automation System (BAS) improvements	With adoption of ASHRAE Guideline 36 (GDL-36), there is now a national consensus standard for the description of high-performance sequences of operation. This measure will update BAS control requirements to improve usability and enforcement and to increase energy efficiency. BAS control requirement language will be improved either by adoption of similar language to GDL-36, or reference to GDL-36. Specific T24 BAS control topics that will be addressed include at a minimum: DCV, demand-based reset of SAT, demand-based reset of SP, dual-maximum zone sequences, and zone groups for scheduling.	In order to realize any savings in the difference, we would need a very detailed energy model with space-by-space load/occupant diversity, etc. We would also need more modeling capability than is currently available in CBECC-Com.	N
HVAC	Fault Detection Devices (FDD)	Expand FDD requirements to a wider range of AHU faults beyond the economizer. Fault requirements will be based on NIST field research, which has consequently been integrated into ASHRAE Guideline 36 Best in Class Sequences of Operations. Costs are solely to develop the sequences, which is likely minimal, and much of the hardware required for economizer FDD is also used to detect other faults.	Market not ready.	N
HVAC	Small circulator pumps ECM, trim to flow rate	Circulator pumps for industry and commercial.	Hot water pump energy use is small already (<1% building electricity usage) so not much savings potential. More savings for CHW pumps. Modeling limitations as well.	N
HVAC	High Performance Ducts to Reduce Static Pressure	Revise requirements for duct sizing to reduce static pressure.	Preliminary energy modeling results showed only marginal energy savings compared to measure cost.	N
HVAC	Parallel fan-powered boxes	Use of parallel fan-powered boxes	Unable to model PFPB with variable speed fans in modeling software.	N
Lighting	Daylight Dimming Plus OFF	Automatic daylight dimming controls requirements include the OFF step.		Y
Lighting	Occupant Sensing in Open Plan Offices	Take the PAF without allowing for increased design wattage		Y
Lighting	Institutional tuning	Take the PAF without allowing for increased design wattage		Y



Building Component	Measure Name	Measure Description	Notes	Include?
Lighting	Reduced Interior Lighting Power Density	Reduced interior LPD values.		Y
Lighting	Shift from general to task illumination	Low levels of general illumination with task and accent lighting added to locations where higher light levels are required. The shift from general to task illumination measure is based on the assumption that proper lighting of a desk surface with high efficacy lighting can allow for the significant reduction of ambient general lighting.	This is a tough measure to require as the LPDs decrease.	N
Lighting	Future-proof lighting controls	Fill any holes in the current code that could lead to the situations where TLEDS or LED fixtures that are not dimmable or upgradable in the future, or any other issues with code that make it hard to transition to ALCS/IoT lighting in the future	Major lighting controls already covered in other measures being considered	N
Lighting	Integrated control of lighting and HVAC systems	Formalize the definition of "lighting and HVAC control integration" by defining the level of data sharing required between systems and the mechanism needed to share such data. The highest savings potential would likely be generated from VAV HVAC systems by closing the damper in unoccupied zones based on the occupancy sensor information from the lighting systems.	Not market ready enough.	N
Other	NR Plug Load Controls	Energy savings opportunities for plug loads, which may include: energy efficient equipment, equipment power management, occupancy sensor control, and occupant awareness programs. The proposal could be extending controlled receptacles requirements in Section 130.5(d) to more occupancy types. It would also consider circuit-level controls.	Office equipment now all have their own standby power modes that use very little power, making plug load controls very difficult to be cost-effective.	N



## 6.9 Additional Rates Analysis - Healdsburg

After the final version of the report was released, the Reach Code Team provided additional cost effectiveness analysis in Climate Zone 2 using City of Healdsburg electric utility rates and PG&E gas rates. All aspects of the methodology remain the same, and the results for each package and prototype are aggregated below in Figure 79 through Figure 81. Results generally indicate:

- ◆ Mixed fuel prototypes achieve positive compliance margins for EE packages and are cost effective.
- ◆ All-electric prototypes achieve slightly lower compliance margins than mixed fuel for EE packages and are cost effective.
- ◆ All PV and PV+Battery packages are cost effective both using an on-bill and TDV approach.



**Figure 79. Healdsburg Utility Rates Analysis – Medium Office, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Medium Office	Mixed Fuel + EE	40,985	-505	8.1	17%	\$66,649	\$89,645	\$99,181	1.3	1.5	\$22,996	\$32,532
	Mixed Fuel + EE + PVB	255,787	-505	50.6	17%	\$359,648	\$510,922	\$573,033	1.4	1.6	\$151,274	\$213,385
	Mixed Fuel + HE	3,795	550	4.3	4%	\$68,937	\$24,204	\$24,676	0.4	0.4	-\$44,733	-\$44,261
	All-Electric	-49,684	3,868	5.0	-7%	-\$73,695	-\$7,042	-\$41,429	10.5	1.8	\$66,653	\$32,266
	All-Electric + EE	-11,811	3,868	15.2	10%	-\$7,046	\$83,285	\$58,563	>1	>1	\$90,331	\$65,609
	All-Electric + EE + PVB	203,026	3,868	57.8	10%	\$285,953	\$511,954	\$532,273	1.8	1.9	\$226,001	\$246,320
	All-Electric + HE	-45,916	3,868	6.1	-5%	-\$22,722	\$6,983	-\$26,394	>1	0.9	\$29,705	-\$3,672
	Mixed Fuel + 3kW	4,785	0	0.9	n/a	\$5,566	\$10,430	\$10,500	1.9	1.9	\$4,864	\$4,934
	Mixed Fuel + 3kW + 5kWh	4,785	0	0.9	n/a	\$8,356	\$10,430	\$10,500	1.2	1.3	\$2,074	\$2,144
	Mixed Fuel + 135kW	215,311	0	41.5	n/a	\$250,470	\$424,452	\$471,705	1.7	1.9	\$173,982	\$221,235
	Mixed Fuel + 135kW + 50kWh	214,861	0	42.6	n/a	\$278,370	\$423,721	\$472,898	1.5	1.7	\$145,351	\$194,528
	All-Electric + 3kW	-44,899	3,868	6.0	n/a	-\$68,129	\$3,299	-\$30,928	>1	2.2	\$71,429	\$37,201
	All-Electric + 3kW + 5kWh	-44,899	3,868	6.0	n/a	-\$65,339	\$3,299	-\$30,928	>1	2.1	\$68,639	\$34,411
	All-Electric + 135kW	165,627	3,868	46.6	n/a	\$176,775	\$424,146	\$430,276	2.4	2.4	\$247,371	\$253,501
	All-Electric + 135kW + 50kWh	165,200	3,868	47.7	n/a	\$204,675	\$423,466	\$431,469	2.1	2.1	\$218,792	\$226,795
	All-Electric + 80kW + 50kWh	40,985	-505	8.1	17%	\$66,649	\$89,645	\$99,181	1.3	1.5	\$22,996	\$32,532



**Figure 80. Healdsburg Utility Rates Analysis – Medium Retail, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	\$-TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Medium Retail	Mixed Fuel + EE	18,885	613	8.7	13%	\$5,569	\$49,546	\$59,135	8.9	10.6	\$43,977	\$53,566
	Mixed Fuel + EE + PVB	189,400	613	43.8	13%	\$249,475	\$376,219	\$465,474	1.5	1.9	\$126,744	\$215,999
	Mixed Fuel + HE	2,288	229	2.0	3%	\$9,726	\$13,143	\$13,998	1.4	1.4	\$3,417	\$4,273
	All-Electric	-21,786	2,448	7.5	-1%	-\$27,464	\$9,228	-\$4,483	>1	6.1	\$36,692	\$22,981
	All-Electric + EE	2,843	2,448	14.6	13%	-\$21,895	\$61,918	\$56,893	>1	>1	\$83,813	\$78,788
	All-Electric + EE + PVB	173,387	2,448	49.9	13%	\$222,012	\$391,257	\$463,431	1.8	2.1	\$169,245	\$241,419
	All-Electric + HE	-16,989	2,448	8.9	3%	-\$4,211	\$23,567	\$11,251	>1	>1	\$27,779	\$15,463
	Mixed Fuel + 3kW	4,685	0	0.9	n/a	\$5,566	\$10,256	\$10,262	1.8	1.8	\$4,690	\$4,696
	Mixed Fuel + 3kW + 5kWh	4,685	0	0.9	n/a	\$8,356	\$10,256	\$10,262	1.2	1.2	\$1,900	\$1,906
	Mixed Fuel + 110kW	171,790	0	33.3	n/a	\$204,087	\$316,293	\$376,300	1.5	1.8	\$112,206	\$172,213
	Mixed Fuel + 110kW + 50kWh	170,542	0	35.1	n/a	\$231,987	\$320,349	\$398,363	1.4	1.7	\$88,363	\$166,376
	All-Electric + 3kW	-17,101	2,448	8.4	n/a	-\$21,898	\$19,523	\$5,779	>1	>1	\$41,421	\$27,677
	All-Electric + 3kW + 5kWh	-17,101	2,448	8.4	n/a	-\$19,108	\$19,523	\$5,779	>1	>1	\$38,631	\$24,887
	All-Electric + 110kW	150,004	2,448	40.8	n/a	\$176,623	\$332,213	\$371,817	1.9	2.1	\$155,591	\$195,194
	All-Electric + 110kW + 50kWh	148,793	2,448	42.9	n/a	\$204,523	\$335,043	\$394,099	1.6	1.9	\$130,520	\$189,577



**Figure 81. Healdsburg Utility Rates Analysis – Small Hotel, All Packages Cost Effectiveness Summary**

Prototype	Package	Elec Savings (kWh)	Gas Savings (therms)	GHG savings (tons)	Compliance Margin (%)	Incremental Package Cost	Lifecycle Energy Cost Savings	-\$TDV Savings	B/C Ratio (On-bill)	B/C Ratio (TDV)	NPV (On-bill)	NPV (TDV)
Small Hotel	Mixed Fuel + EE	3,802	976	3.9	7%	\$20,971	\$22,829	\$29,353	1.1	1.4	\$1,857	\$8,381
	Mixed Fuel + EE + PVB	130,144	976	31.1	7%	\$205,967	\$254,577	\$336,575	1.2	1.6	\$48,610	\$130,608
	Mixed Fuel + HE	981	402	2.7	3%	\$23,092	\$12,291	\$11,808	0.5	0.5	-\$10,801	-\$11,284
	All-Electric	-	12,677	40.0	-12%	-\$1,297,757	-\$24,318	-\$51,620	53.4	25.1	\$1,273,439	\$1,246,137
	All-Electric + EE	-88,410	12,677	45.9	5%	-\$1,265,064	\$45,918	\$20,860	>1	>1	\$1,310,982	\$1,285,924
	All-Electric + EE + PVB	38,115	12,677	73.5	5%	-\$1,080,068	\$296,233	\$317,296	>1	>1	\$1,376,301	\$1,397,365
	All-Electric + HE	-	12,677	41.2	-11%	-\$1,283,243	-\$83,994	-\$44,505	15.3	28.8	\$1,199,249	\$1,238,738
	Mixed Fuel + 3kW	4,785	0	0.9	n/a	\$5,566	\$8,927	\$10,332	1.6	1.9	\$3,361	\$4,766
	Mixed Fuel + 3kW + 5kWh	4,785	0	0.9	n/a	\$8,356	\$8,927	\$10,332	1.1	1.2	\$571	\$1,976
	Mixed Fuel + 80kW	127,592	0	25.0	n/a	\$148,427	\$229,794	\$275,130	1.5	1.9	\$81,367	\$126,703
	Mixed Fuel + 80kW + 50kWh	126,332	0	28.1	n/a	\$176,327	\$236,570	\$296,058	1.3	1.7	\$60,243	\$119,731
	All-Electric + 3kW	-	12,677	40.9	n/a	-\$1,292,191	-\$14,447	-\$41,288	89.4	31.3	\$1,277,744	\$1,250,902
	All-Electric + 3kW + 5kWh	-	12,677	40.9	n/a	-\$1,289,401	-\$14,447	-\$41,288	89.3	31.2	\$1,274,954	\$1,248,112
	All-Electric + 80kW	8,853	12,677	65.0	n/a	-\$1,149,330	\$222,070	\$223,510	>1	>1	\$1,371,400	\$1,372,840
	All-Electric + 80kW + 50kWh	7,849	12,677	67.4	n/a	-\$1,121,430	\$223,812	\$239,632	>1	>1	\$1,345,241	\$1,361,062





DATE: July 28, 2021

TO: Demian Hardman-Saldana, Senior Planner, Contra Costa County Conservation & Development Dept.  
Jason Crapo, Deputy Director, Building Division, Contra Costa County Conservation & Development Dept.

FROM: Lisa Vorderbrueggen, East Bay Executive Director for Governmental Affairs, BIA|Bay Area

RE: Proposed Contra Costa County All-Electric Ordinance

Dear Jason & Demian,

Thank you for the opportunity to participate in Contra Costa County's recent building electrification reach code outreach. As we discussed, I would like to summarize my comments in writing.

Broadly speaking, localized reach codes are problematic for builders. We prefer to see code changes enacted at the state level where they are rolled into the new requirements at predictable intervals that allow the industry adequate time to respond. Given the considerable discussions at the state level about banning the use of natural gas in new construction, it is highly likely that such a requirement will materialize in the state building code sooner rather than later.

The shift also raises a number of questions.

Will California's aging electric grid hold up under the increased demands associated with an all-electric design? The state is already anticipating major demand increases from electric vehicle charging needs.

Will the shift put more Californians at greater risk during public safety power shutdowns made necessary by extreme weather and fire danger? In order to cook during shut-downs, all-electric homeowners would need expensive battery storage devices or gas-powered generators.

Lastly, is a new all-electric home truly cost-effective, as state law requires? As justification for the all-electric reach code, Contra Costa County is citing a 2019 California Energy Codes and Standards study prepared for PG&E.

But further analysis commissioned by the California Building Industry Association (CBIA) found that homebuilders' real-world experiences fail to match the official study findings. For example, the study shows that an all-electric home is \$421 cheaper to build (including the cost of appliances) but estimates from homebuilders show increased costs of more than \$2,200 per home. The study also concluded that builders would save \$5,750 per home in avoided natural gas infrastructure but sample costs from builders put that figure at \$1,425 per home on average.

Thirdly, the CBIA analysis found that it an all-electric home will cost nearly \$300 more per household each year to operate than a mixed-fuel house. [PG&E customers already pay about 80 percent more per kilowatt-hour than the national average, according to a study by the energy institute at UC Berkeley's Haas Business School with the nonprofit think tank Next 10.](#) All this translates into higher costs to build, purchase and operate an all-electric home in California at a time when the state is already experiencing a major housing affordability and supply crisis.

That said, many Bay Area cities and counties have or will soon restrict the use of natural gas in new construction based on anticipated greenhouse gas emission reductions.

In order to mitigate the impacts of the anticipated all-electric mandate on much-needed housing currently in the development pipeline, we would ask that Contra Costa County grandfather existing projects. Converting a housing project already in the planning process to all-electric could add tens of thousands of dollars in unplanned costs associated with redesign, construction changes and delays.

Again, I thank you for the opportunity to participate in the county's all-electric outreach effort. Please don't hesitate to contact me if you have any questions.

Sincerely yours,



Lisa A. Vorderbrueggen  
BIA|Bay Area  
1350 Treat Blvd., Ste. 140  
Walnut Creek, CA 94598  
925-348-1956  
[lvorderbrueggen@biabayarea.org](mailto:lvorderbrueggen@biabayarea.org)

# Building Electrification Ordinance for New Construction

## Sustainability Committee Recommendation

**Demian Hardman-Saldana**

Department of Conservation and Development

Contra Costa County

925-655-2816 · [Demian.Hardman@dcd.cccounty.us](mailto:Demian.Hardman@dcd.cccounty.us)



# Background

September 22, 2020 – County adopted Climate Emergency Resolution

“Contra Costa County should develop policies to require all new construction to be fully electric through the adoption of reach building codes”



May 24, 2021 – Sustainability Committee received report on requirements for an all-electric building code for new construction

Building code requirements more stringent than State

Expected State Building Code Updates

Jurisdictions that have adopted reach codes

Building types to consider in reach code

Building Code requirements more stringent than State & Future State Building Code Requirements

Building code requirements more stringent than State ( or “reach code”)

- Proposed reach code is cost-effective, meaning improvements pay for themselves over time.
- Consume less energy than the statewide code.

Future State Building Code Requirements

- January 1, 2023
  - **Mixed fuel buildings (natural gas) be designed to be electric ready**, such as cooktops, clothes dryers, and electric panel upgrades.
- January 1, 2026
  - Most building types would be required to be built **all-electric**.

# Sustainability Committee Recommendation

<b><i>- Cost-Effectiveness Studies Completed - Building Types Recommended for New Construction to be Fully Electric</i></b>
<b><i>Residential</i></b>
<i>Low-Rise Residential (Single-Family or Multi-Family, 3 stories or less)</i>
<i>Detached Accessory Dwelling Units (ADUs)*</i>
<i>Mid-Rise Residential (4 to 7 stories) *</i>
<i>High-Rise Residential (8 stories or higher) *</i>
<b><i>Non-Residential</i></b>
<i>Hotel</i>
<i>Office</i>
<i>Retail</i>
<i>* Cost-effectiveness studies obtained from the CEC that were not included in the report to the Sustainability Committee on May 24, 2021.</i>

*Staff recommends referral to Sustainability Committee on whether newly constructed restaurants and industrial buildings be all-electric in a future amendment to the Building Code.*



Contra  
Costa  
County

To: Board of Supervisors  
From: Monica Nino, County Administrator  
Date: August 3, 2021

Subject: AMERICAN RESCUE PLAN WORKSHOP

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**RECOMMENDATION(S):**

1. CONVENE a workshop on the American Rescue Plan Act and its impact on Contra Costa County.
  - a. Introductions and Opening Remarks - *Monica Nino, County Administrator*
  - b. Overview & Major American Rescue Plan Revenue Streams - *Timothy Ewell, Chief Assistant County Administrator and Dennis Bozanich, Senior Deputy County Administrator*
  - c. Health Services Department Update - *Anna Roth, Director and Pat Godley, Chief Financial and Operating Officer*
  - d. Employment and Human Services Department Update - *Kathy Gallagher, Director*
  - e. Closing Comments - *Monica Nino, County Administrator*
  - f. Board Questions and Public Comment
  - g. Board Discussion of Priority for Use of Funds
  
2. ACKNOWLEDGE that on April 21, 2021, the Board acknowledged the intended use of approximately \$110 million from American Rescue Plan Year 1 funds for Health Services COVID-19 expenses, pending future discussion with the Board of Supervisors and final guidelines released by the U.S. Treasury;

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Timothy Ewell, (925)  
655-2043

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

RECOMMENDATION(S): (CONTD)

3. ACKNOWLEDGE that on May 11, 2021, the Board directed the County Administrator to return to the Board with recommendations regarding American Rescue Plan Act funding once definitive guidance is available;
4. ACKNOWLEDGE that the Health Services Department estimates FY 2021/22 COVID-19 response costs in the amount of \$135,311,296, which exceeds the Year 1 Coronavirus State and Local Fiscal Recovery Funds (CSLFRF) revenue allocation of \$112,029,451 from the U.S. Treasury;
5. ACKNOWLEDGE that County departments have identified \$16,882,139 in unreimbursed COVID-19 cost expenditures through June 30, 2021;
6. ACKNOWLEDGE that County departments have identified \$71,655,531 in one-time needs essential for the provision of County services to residents and reflect projects that could be obligated prior to December 31, 2024;
7. ACKNOWLEDGE that it is the intent of the Board to use one-time American Rescue Plan dollars to fund short term requirements and other one-time uses in compliance with Section 6 of the County Budget Policy;
8. DIRECT the Year 1 allocation of American Rescue Plan – CSLFRF funds in the amount of \$112,029,451 to the Health Services department to defray the cost impacts of COVID-19 response activities to the County;
9. DIRECT the County Administrator to return to the Board of Supervisors with an appropriations and revenue adjustment to formally allocate the Year 1 allocation of American Rescue Plan – CSLFRF funds in the amount of \$112,029,451 to the Health Services department to the FY 2021/22 County Budget;
10. POSTPONE decisions related to the Year 2 allocation of American Rescue Plan - CSLFRF funds until more information is known about other American Rescue Plan revenue sources and the status of the COVID-19 pandemic response and related impacts on Contra Costa County; and
11. DIRECT the County Administrator to return to the Board of Supervisors quarterly, commencing in November 2021, with updates on use of American Rescue Plan funding by County departments responsible for administration of funds.

FISCAL IMPACT:

The County has identified known American Rescue Plan revenues of \$317,327,304, including \$224,058,903 of Coronavirus State and Local Fiscal Recovery Fund (CSLFRF) allocation, \$71,605,012 of Emergency Rental Assistance Program 2 (ERAP 2) allocation, \$12,000,000 of HOME Investment Partnerships allocation, \$3,355,250 of ARPA Funding for Health Centers allocation, \$2,508,139 of Substance Abuse Prevention and Treatment Block Grant (SABG) allocation, \$2,300,000 of ARPA Headstart allocation and \$1,500,000 of ARPA Public Health workforce grant funds.

Of the the \$317,327,304 summary total figure above, \$127,606,232 has been received by the County, including \$112,029,452 of CSLFRF allocation and \$15,576,780 of the federal ERAP 2 allocation. These figures will increase as the federal and state governments release additional allocation information related to different funding segments of the American Rescue Plan, primarily in the Health Services and Employment and Human Services departments. The County Administrator's Office will provide

quarterly updates to the Board commencing in November 2021.

### **BACKGROUND:**

The American Rescue Plan Act (ARPA) was signed into law on March 11, 2021 by President Biden. The ARPA is a broad and far-reaching funding package totaling \$1.9 Trillion, which provides direct stimulus to taxpayers, advances on child tax credit payments, direct allocations to State and Local governments as well as a myriad of competitive grant programs administered by federal agencies. A summary of the ARPA, including national funding figures, is included as Attachment A for reference.

### **Countywide Impacts of the American Rescue Plan Act**

During the FY 2021/22 budget development process, the County Administrator's Office requested information from specific departments about known impacts from the ARPA for context in assembling the FY 2021/22 Recommended Budget. Because the passage of the ARPA occurred late in the County's budget process, there was very little information to share in subsequent budget presentations, with the exception of the Coronavirus State and Local Fiscal Recovery Fund (CSLFRF), which was widely being tracked throughout the legislative process by state and local government professional organizations such as the National Association of Counties (NACo). At that time, the County was estimated to receive slightly more than \$220 million over a two-year period.

On June 28, 2021, the County Administrator sent correspondence to department heads establishing guidance for reporting impacts of the ARPA on their respective departments. This included an initial assessment of ARPA impacts by program area, a request for information about COVID-19 costs, a survey of one-time needs and templates of required quarterly reporting documents. In summary, departments reported the following information:

- **Known ARPA Revenue:** \$317,327,304, of which \$127,606,232 has been received by the County
- **Unreimbursed COVID-19 Costs:** \$16,882,139, including \$7,368,000 of unrealized gas tax revenue due to Shelter in Place orders
- **One-Time Needs:** \$71,655,531, including \$4,120,000 that could be leveraged from non ARPA funding sources

It is important to note that the One-Time Needs figure above reflects projects that could be obligated prior to December 21, 2024 consistent with CSLFRF guidelines discussed further below. Line-item details of the Known ARPA Revenue, Unreimbursed COVID-19 Costs and One-Time Needs figures above can be found in Attachments B, C.1 and C.2, respectively. A copy of the County Administrator's memorandum to department heads, including the template of quarterly reporting documents, can be found in Attachment D.

### **Primary ARPA Revenue Drivers**

Of the \$317,327,304 in known ARPA revenue allocated to the County so far, the County has received \$127,606,232, which is composed of two of the largest funding streams that will impact the County; specifically, the Coronavirus State and Local Fiscal Recovery Fund (CSLFRF) and a second allocation of Emergency Rental Assistance Program (ERAP) funds. Below are additional details about both revenue streams.

### ***Coronavirus State and Local Fiscal Recovery Fund - \$224,058,903***

Contra Costa County has been allocated \$224,058,903 of CSLFRF funds directly from the U.S.

Treasury. The funding is allocated in two, 50% tranches the first of which was received by the County on May 18, 2021 in the amount of \$112,029,451. The second tranche will be distributed to the County in May 2022. The ARPA outlines four specific eligible uses for CSLFRF funding:

- COVID-19 response activities or its negative economic impacts;
- Premium pay to eligible workers performing essential work during COVID-19;
- Government services to the extent of the reduction in revenue due to COVID-19; and
- Infrastructure investments specifically for water, sewer and broadband.

Each category above has several nuances associated with it, which we intend to present in more detailed during today's Workshop. The ARPA requires CSLFRF recipients with populations over 250,000 residents to submit an annual Recovery Plan Performance Report, including descriptions of projects and information on performance indicators and objective of each award. CSLFRF expenditures must be incurred by December 31, 2024 and ultimately spent by December 31, 2026.

### ***Emergency Rental Assistance Program 2 - \$71,605,012 (\$38,941,950 Federal + \$32,663,062 State)***

Contra Costa County has been allocated an additional \$71,605,012 in ERAP 2 funds directly from the U.S. Treasury and via the State of California through the State's ARPA funding allocation. This funding complements ERAP 1 funding previously received both from the U.S. Treasury and via from the State in the amount of \$75,822,311 making a total of \$147,427,324 rental and utility assistance funding available to Contra Costa residents, landlords and utility providers. The State of California requested letters of intent from counties and cities slated to receive State allocations of ERAP 2 funds, subject to final approval by governing boards, to secure funding allocations. The County Administrator's Office filed the letter of intent with the State on July 27, 2021 and will bring the issue back to the full Board when more information on next steps is provided.

ERAP 2 funds are to be used largely in a similar fashion to ERAP 1, but also allow for relocation cost and security deposit assistance to eligible residents. ERAP 1 funds must be expended by September 30, 2022 and ERAP 2 funds must be expended by September 30, 2025.

### **County Department Presentations**

In addition to the County Administrator's report, the Health Services and Employment and Human Services departments will provide presentations to the Board today regarding known and still to be determined impacts on their respective departments. Based on the analysis conducted by departments in response to the County Administrator's June 28, 2021 memorandum, the Health Services and Employment and Human Services departments will receive the vast majority of still to be determined ARPA program allocations and will provide the Board with additional context about those potential funding streams.

Copies of the PowerPoint presentations from the County Administrator's Office, Health Services Department and Employment and Human Services Department are attached to this staff report for reference.

### **CONSEQUENCE OF NEGATIVE ACTION:**

The current and anticipated expenses related to COVID-19 and the timeliness of financial reporting would be absent direction from the Board of Supervisors.

### **ATTACHMENTS**

PowerPoint Presentation - County Administrator's Office

PowerPoint Presentation - Health Services Department

PowerPoint Presentation - Employment & Human Services Department

Attachment A - American Rescue Plan Act Summary

Attachment B - American Rescue Plan Act Funding Impacts to Departments

Attachment C.1 - Unfunded COVID Impacts on Departments

Attachment C.2 - One-Time Needs Survey of Departments

Attachment D - Memorandum to Department Heads re: American Rescue Plan Act, June 28, 2021



# AMERICAN RESCUE PLAN ACT WORKSHOP

August 3, 2021



# Agenda

- ▶ **Introductions and Opening Remarks** - *Monica Nino, County Administrator*
- ▶ **Overview & Major American Rescue Plan Revenue Streams** - *Timothy Ewell, Chief Assistant County Administrator and Dennis Bozanich, Senior Deputy County Administrator*
- ▶ **Health Services Department Update** - *Anna Roth, Director and Pat Godley, Chief Financial and Operating Officer*
- ▶ **Employment and Human Services Department Update** - *Kathy Gallagher, Director*
- ▶ **Closing Comments** - *Monica Nino, County Administrator*
- ▶ **Board Questions and Public Comment**
- ▶ **Board Discussion of Priority for Use of Funds**



# Approach to Cost Recovery

## ➤ **Primary Financial Goals During Pandemic**

- Keeping County financial position stable (avoid layoffs, keep CBO contracts funded)
- Maximizing cost recovery from all eligible revenue sources (CARES Act, FEMA, American Rescue Plan Act, etc.)

## ➤ **Contract with Cost Recovery Consultant**

- Board approved contract with Ernst & Young LLP on June 2, 2020
- Cost Recovery Working Group has been meeting bi-weekly
- Primarily concentrating on FEMA claims, but also assists with overall cost recovery strategy

## ➤ **Achievements During Emergency Response**

- County finances have remained stable (specifically social safety net functions)
- Minimal layoffs of County employees (all impacted employees offered employment in other areas of the County)
- CBOs remained fully funded during shelter in place
- County upgraded by Moody's during pandemic, in part, due to strong financial position



# Context is Key

## ➤ Comparison of Congressional Spending Packages

- \$2.2 Trillion - CARES Act (March 2020)
- \$1.9 Trillion - American Rescue Plan Act (ARPA) (March 2021)
- \$0.9 Trillion - Consolidated Appropriations Act, 2021 (December 2020 Stimulus)
- \$0.8 Trillion - American Recovery and Reinvestment Act (2009)
- \$0.7 Trillion - Emergency Economic Stabilization Act (aka TARP, 2008)

## ➤ Unprecedented levels of funding over the last 16 months

- Federal agencies slow to put out guidance regarding funding streams
- Most of the revenue sources flow through the States causing further bottlenecks in getting resources to local government

## ➤ Challenge is lining up funding to maximize cost recovery

- Requires constant coordination between departments
- Will continue for at least the next 3-5 years as funds from above legislation is spent down (e.g., certain ARPA revenue must be obligated by 2024 & spent by 2026)
- CAO will provide quarterly reports to the Board going forward commencing in November 2021





# Recap of Major Funding Sources

Program	Allocation
Coronavirus Relief Fund	\$227,827,652
ARPA Fiscal Recovery Fund	\$224,058,903
Emergency Rental Assistance Program	\$147,427,324
FEMA Public Assistance Program (Estimate)	\$39,648,430
<b>Total</b>	<b>\$638,962,309</b>

## ➤ Key Takeaways:

- Four revenue drivers impact vast majority the County's cost recovery
- Contra Costa receiving significant Federal assistance, including the cities!
- County responsible for pandemic response, including associated costs
- All COVID-19 revenue sources are one-time only funds!

CSLFRF Allocations Contra Costa County, By City		
	Population*	Allocation
Antioch	112,236	\$ 21,550,900
Brentwood	66,097	\$ 6,923,339
Clayton	11,268	\$ 2,934,049
Concord	129,273	\$ 27,040,883
Danville	43,906	\$ 10,647,738
El Cerrito	24,846	\$ 6,102,056
Hercules	25,864	\$ 6,285,778
Lafayette	25,358	\$ 6,372,376
Martinez	36,827	\$ 9,161,456
Moraga	16,820	\$ 4,254,072
Oakley	42,895	\$ 10,177,190
Orinda	19,078	\$ 4,766,723
Pinole	19,369	\$ 4,605,009
Pittsburg	74,498	\$ 16,290,477
Pleasant Hill	34,133	\$ 8,334,229
Richmond	110,130	\$ 27,740,723
San Pablo	31,041	\$ 7,416,467
San Ramon	83,863	\$ 8,115,425
Walnut Creek	71,317	\$ 8,327,653
<b>Total</b>		<b>\$ 197,046,543</b>

\* Population figures based on 2021 Estimates from the CA Department of Finance.



# Rental Assistance Update

➤ **\$147,427,324 for Contra Costa**

- ERAP 1: \$75,822,311
- ERAP 2: \$71,605,012

➤ **as of July 29, 2021**

- 7,141 active cases
- \$77,968,110 in relief requested
- \$28,259,948 in relief approved
- \$21,356,262 in relief paid

➤ **Broader Use Categories (ERAP 2)**

- Security Deposits
- Tenant Relocation Costs
- Potential to braid revenue with other federal and state housing dollars

	Contra Costa	Los Angeles	Ventura	San Mateo	Santa Cruz
Population	1,142,251	10,081,570	847,263	767,423	273,962
ERAP 1 Allocation	\$ 75,822,311	\$ 353,890,211	\$ 41,878,802	\$ 50,387,537	\$ 17,958,537
Active Cases	7,141	33,141	3,018	3,348	959
Relief Requested	\$ 77,968,110	\$ 374,101,528	\$ 33,248,529	\$ 44,111,342	\$ 9,366,439
Relief Approved	\$ 28,259,948	\$ 129,756,347	\$ 12,184,148	\$ 14,342,366	\$ 2,440,852
Relief Paid	\$ 21,356,262	\$ 99,106,512	\$ 9,802,961	\$ 11,439,144	\$ 1,769,294
% Cases/Population	<b>0.6%</b>	0.3%	0.4%	0.4%	0.4%
% Requested/Allocation	102.8%	<b>105.7%</b>	79.4%	87.5%	52.2%
% Approved/Allocation	<b>37.3%</b>	36.7%	29.1%	28.5%	13.6%
% Paid/Allocation	<b>28.2%</b>	28.0%	23.4%	22.7%	9.9%

*as of July 29, 2021*



# FEMA Cost Recovery Update

Claim Category	Estimate	Claimed	Obligated	Received
Non-Congregate Shelter (thru 5/15/2021)	26,265,517	4,052,865	0	0
Cleaning, Materials, PPE (thru 6/11/2021)	6,180,303	0	0	0
Great Plates (thru 6/13/2021)	5,982,610	3,609,873	3,229,499	0
Vaccination (Fire Mutual Aid)	820,000	0	0	0
Consultant Costs	400,000	0	0	0
<b>Total</b>	<b>39,648,430</b>	<b>7,662,738</b>	<b>3,229,499</b>	<b>0</b>

➤ **Reminders:**

- FEMA reimburses 100% of eligible costs, which does not mean 100% of actual costs (Salary and Benefit costs of permanent staff not eligible!)
- FEMA is the reimbursement source of last resort (after applying cascading funding)

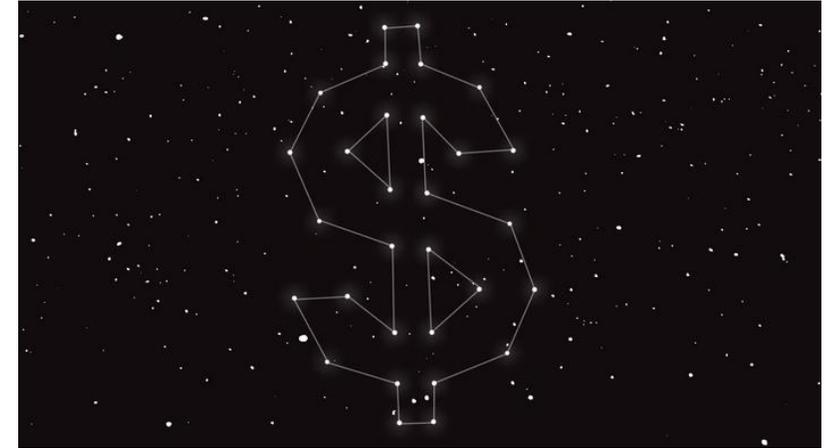
➤ **What's it mean?:**

- FEMA reimbursement process cumbersome and could take years before reimbursement is received (typically 24-36 months)
- The County General Fund is fronting \$38,828,430 (does not include Fire Mutual Aid figure above) in FEMA eligible costs until reimbursement is received - this figure will continue to grow



# American Rescue Plan Act

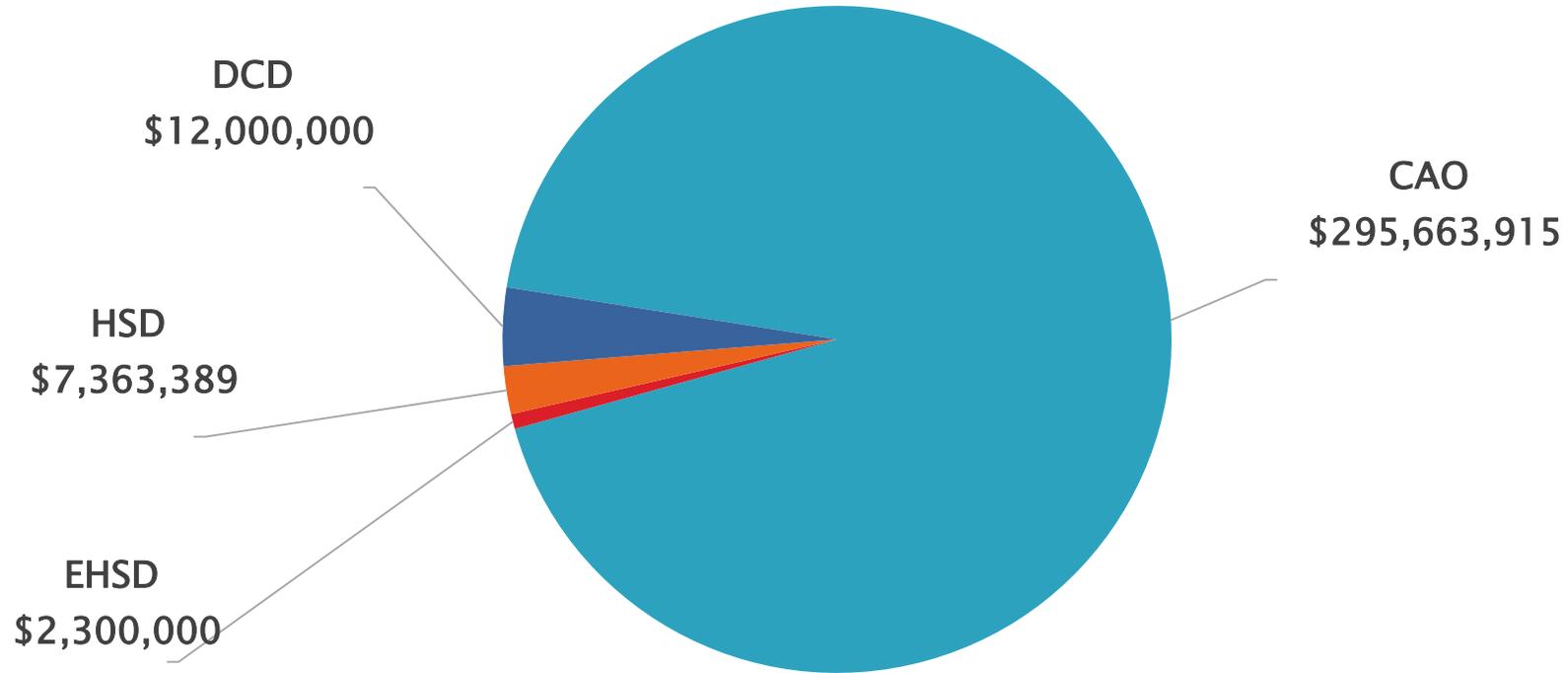
- *“A constellation of funding sources”*
- On June 28th the County Administrator directed Department Heads to analyze the ARPA for department revenue impacts as well as report unfunded COVID 19 costs and one-time needs
- **Departments have identified...**
  - \$317,327,304 in known ARPA allocations coming into the County
  - \$16,882,139 in previously unfunded COVID-19 costs or underrealized revenues
  - \$71,655,531 in one-time needs





# Known ARPA Revenue Allocations

**Countywide  
\$317,327,304**

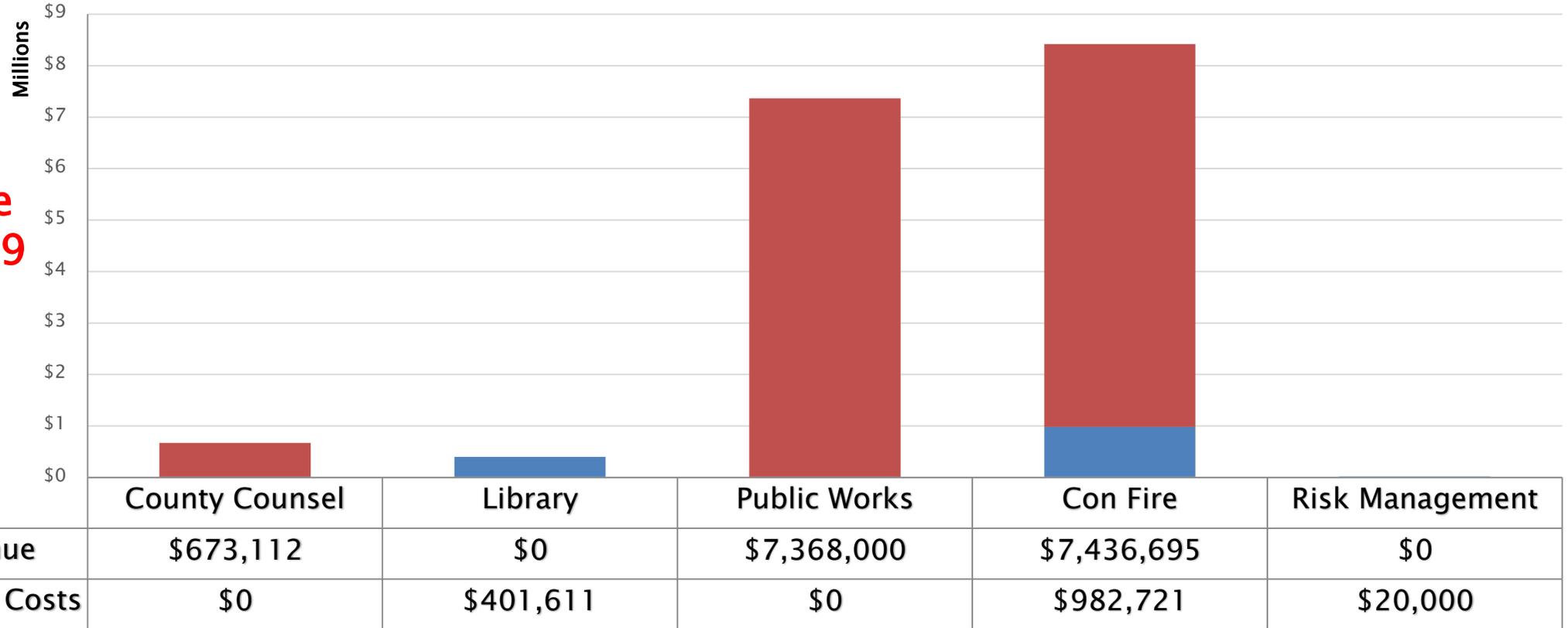


➤ Detailed analysis is available as Attachment B



# Unfunded COVID-19 Impacts

**Countywide  
\$16,882,139**

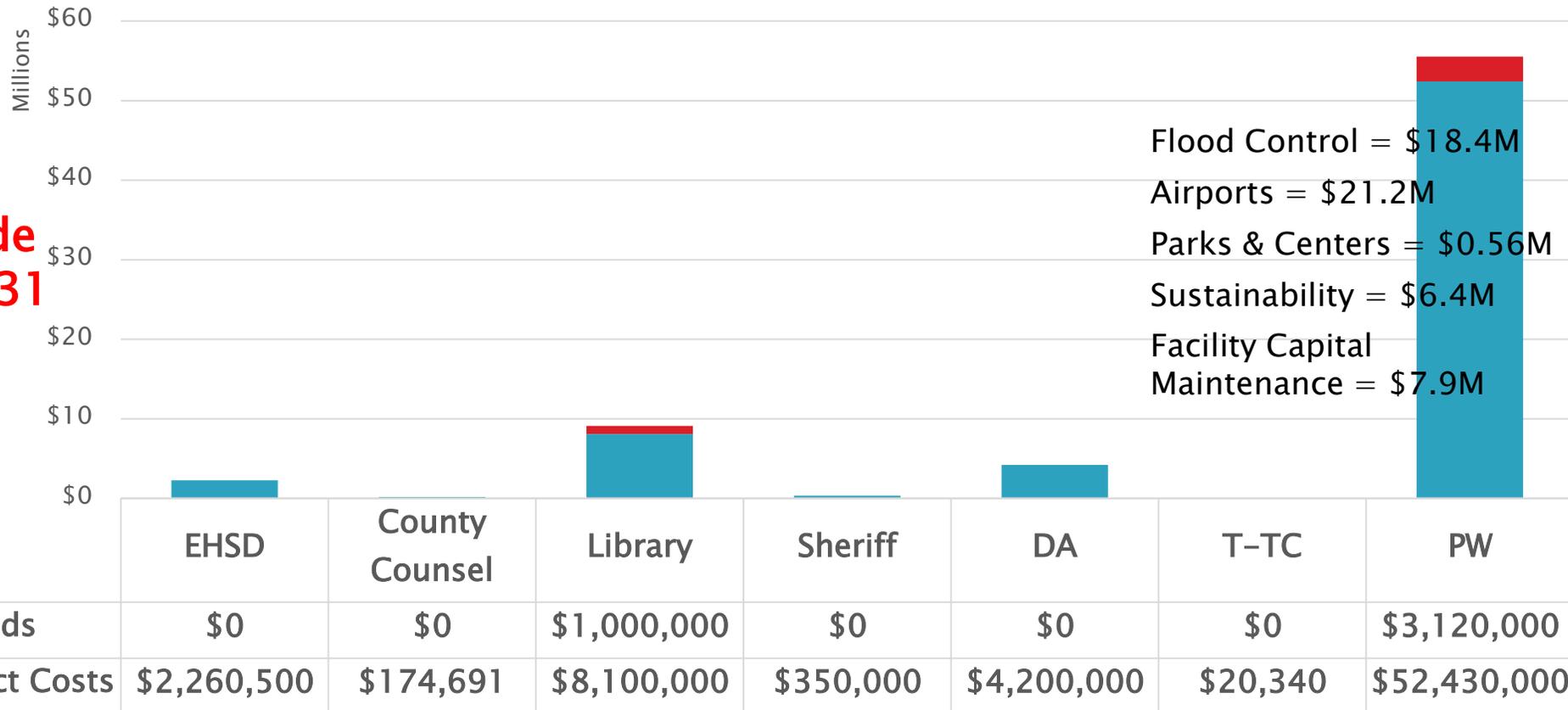


➤ Detailed analysis is available as Attachment C.1



# County One-Time Needs

**Countywide  
\$71,655,531**



➤ Detailed analysis is available as Attachment C.2



# State and Local Fiscal Recovery Fund

## ➤ Eligible Use Guiding Principles

- Unless otherwise noted, covered period is March 3, 2021-December 31, 2024 ([IFR p. 88](#))
- Costs can be incurred by December 31, 2024 but must be expended by December 31, 2026 ([IFR p. 122](#))
- Cannot spend funds on pension deposits ([IFR p. 71](#))
- States cannot spend the funds to reduce taxes or delay a tax increase ([IFR p. 69](#))
- May not be used as non-Federal Match for other Federal Programs ([IFR p. 86](#))

## ➤ Four Eligible Use categories

- COVID-19 or a negative economic impact
- Premium pay for eligible workers
- For government services to the extent of the loss of revenue
- Investments in water, sewer and broadband infrastructure



U.S. DEPARTMENT OF THE TREASURY



# COVID-19/Negative Economic Impact

## ➤ Eligible Uses

- Containing or mitigating COVID-19
- Behavioral Healthcare Needs
- Public Health and Safety Payroll for “...divisions primarily dedicated to the COVID-19 response”

## ➤ Examples of Negative Economic Impact Support

- Implement COVID-19 mitigation/prevention measures to enable safe resumption of tourism, travel and hospitality
- Rebuilding public sector capacity to pre-pandemic levels
- Small business support
- Hard-hit communities (investment in housing, disparities in education, etc.)



# Premium Pay for Eligible Workers

## ➤ Eligible Uses

- Premium pay to employees (public or private) within jurisdiction designated by Chief Executive as performing essential work consistent with definition in the Interim Final Rule. [\(IFR p. 43\)](#)
- “Essential work” defined as “...work involving regular in-person interactions or regular physical handling of items that were also handled by others. A worker would not be engaged in essential work and, accordingly may not receive premium pay, for telework performed from a residence.” [\(IFR p. 42\)](#)
- Premium pay can be retroactive and not subject to the March 3, 2021 covered period.

## ➤ Limitations

- \$13 per hour of additional premium pay max
- No more than \$25,000 for any single eligible worker
- If premium pay results in employee receiving 150% of statewide average annual wage for all occupations, then additional written justification must be made publicly available



# Gov't Services from Revenue Loss

## ➤ Eligible Uses

- “Government Services” in spending plan to the extent of revenue loss ([IFR p. 53-54](#))
- ✓ Provision of Services to residents
- ✓ Deferred maintenance costs on infrastructure
- ✓ Cybersecurity, healthcare services, police, fire and other public safety

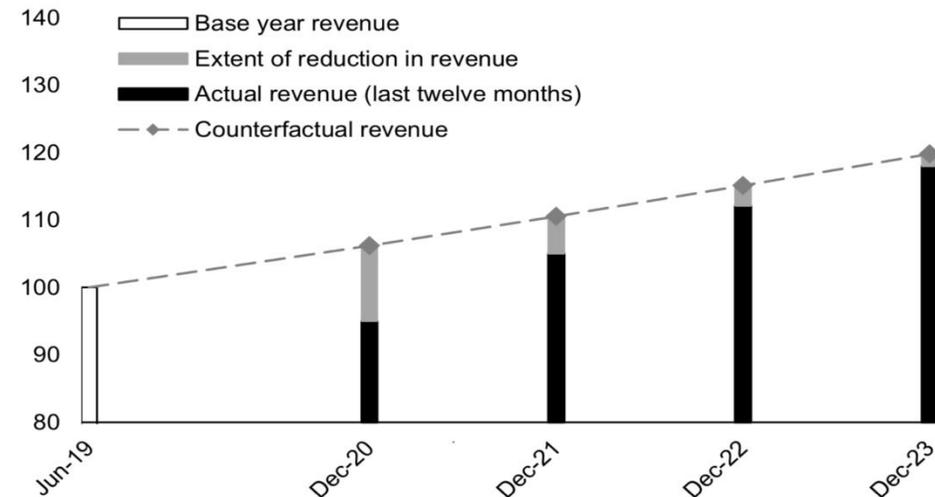
## ➤ Limitations

- Cannot spend on debt service costs
- Cannot replenish reserves or “rainy day” funds

## ➤ Calculation

- At the “Entity” level & over preceding 3 years as baseline
- Assumes at least 4.1% growth would have occurred annually

The overall methodology for calculating the reduction in revenue is illustrated in the figure below:





# Water, Sewer or Broadband Infrastructure

## ➤ Eligible Uses

- Building/upgrading of facilities and transmission, distribution and storage systems, including the replace of lead service lines.
- Investment in wastewater infrastructure
- Construction of reliable 100 Mbps broadband download/upload speeds unless impractical
- Prioritize investments in fiber optic broadband technology

## ➤ Limitations

- Not all infrastructure categories eligible
- Non water, sewer or broadband projects could be funded in “Revenue Loss” category





# Acknowledgements

1. ACKNOWLEDGE that on April 21, 2021, the Board acknowledged the intended use of approximately \$110 million from American Rescue Plan Year 1 funds for Health Services COVID-19 expenses, pending future discussion with the Board of Supervisors and final guidelines released by the US Treasury;
2. ACKNOWLEDGE that on May 11, 2021, the Board directed the County Administrator to return to the Board with recommendations regarding American Rescue Plan Act funding once definitive guidance is available;
3. ACKNOWLEDGE that the Health Services Department estimates FY 2021/22 COVID-19 response costs in the amount of \$135,311,296, which exceeds the Year 1 Coronavirus State and Local Fiscal Recovery Funds (CSLFRF) revenue allocation of \$112,029,451 from the U.S. Treasury;
4. ACKNOWLEDGE that County departments have identified \$16,882,139 in unreimbursed COVID-19 cost expenditures through June 30, 2021;
5. ACKNOWLEDGE that County departments have identified \$71,655,531 in one-time needs essential for the provision of County services to residents and reflect projects that could be obligated prior to December 31, 2024;
6. ACKNOWLEDGE that it is the intent of the Board to use one-time American Rescue Plan dollars to fund short term requirements and other one-time uses in compliance with Section 6 of the County Budget Policy;



# Recommendations

7. DIRECT the Year 1 allocation of American Rescue Plan – CSLFRF funds in the amount of \$112,029,451 to the Health Services department to defray the cost impacts of COVID-19 response activities to the County;
8. DIRECT the County Administrator to return to the Board of Supervisors with an appropriations and revenue adjustment to formally allocate the Year 1 allocation of American Rescue Plan – CSLFRF funds in the amount of \$112,029,451 to the Health Services department to the FY 2021/22 County Budget;
9. POSTPONE decisions related to the Year 2 allocation of American Rescue Plan - CSLFRF funds until more information is known about other American Rescue Plan revenue sources and the status of the COVID-19 pandemic response and related impacts on Contra Costa County; and
10. DIRECT the County Administrator to return to the Board of Supervisors quarterly, commencing in November 2021, with updates on use of American Rescue Plan funding by County departments responsible for administration of funds.



# Questions



# COVID-19 Update

**Anna Roth, RN, MS, MPH**

**Contra Costa County Health Director**

**August 3, 2021**

# COVID-19 Response Status as of July 20

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## Cases:

The 7-day average of new cases is higher than it was in July of 2020. (224 vs 222 cases). We had already peaked on this date in Summer 2020, and we haven't peaked yet in Summer 2021.

Considering factors like more contagious variant, our community returning to many group activities and with many still unvaccinated, another large surge in fall/winter is entirely possible. We at the Health Services Department need to continue our various efforts to support health and safety for all.





## Current Status of COVID-19 Response

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### Testing:

With increased cases and travel, COVID-19 testing demand at County sites has more than doubled in the last month alone.

We are performing 756 tests a day compared to 352 a month ago. With schools reopening and increasing return to work, testing demand is only going to increase.

We are keeping testing sites open that were previously scheduled to close this month (e.g., San Ramon).

# Current Status of COVID-19 Response

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## Vaccination:

Public Health and CCRMC/HC continue to operate 10+ vaccination sites in addition to our mobile vaccination clinics. We will need to further expand them in the fall as vaccines for younger children are approved, for a potential booster shot, and to help overcome vaccine hesitancy.

Vaccine operations are very labor and logistically intensive, need cold chain management, it comes with regulatory compliance needs, etc.



# Current Status of COVID-19 Response

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## Address Gaps in Care:

In addition to the direct impact on has resulted in thousands of missed screenings, missed diagnosis, missed and dental screening in children, etc.

Health Services will need to make a investment in patient care in the and years to close these gaps.



**Don't let little health problems become big ones.**

Schedule a visit today with your primary care provider for vital care like cancer screenings.





# Current Status of COVID-19 Response

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## Communication:

To provide timely information and combat misinformation, Health Services is investing in redesigning its website and data dashboards.

There is continued investment in mass communication, alerting technology and supports for media updates, social media campaigns and community presentations.

Staff is currently dedicated to a call center that is already experiencing increased volumes with the current surge.

# Current Status of COVID-19 Response

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## Public Health Communicable Disease Management:

To efficiently manage lab results reporting, case notification, case assignment and case/contact tracing both for the current surge and to prepare the County for future emergencies, our Public Health Division is investing in redesigning and digitizing its workflows using advanced tools and technologies.

This will also assist in disease outbreak tracking for our most vulnerable population living in congregate settings like SNFs, residential care as well as schools, workplaces, etc.





# Current Status of COVID-19 Response

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## Surveillance:

Surveillance will play a large role in driving our public response as we approach fall.

Health Services continues to use innovative tools surveillance, we will be scaling up the capacity of Public Health lab including its sequencing capacity.

This will require investment in advanced technology with advanced skills like Bioinformatics, lab Epidemiologist, molecular analysis, etc.

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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In reference to our April 20th Budget presentation and our May 3rd follow-up Board discussion the following is a summary of the significant items covered.

The total “one-time” revenue received by the Health Services Department for COVID-19 eligible expenses for the time period March 2020 – June 2021 was \$242.5 million.



# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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- This amount includes \$38.8 million for Homeless programs; Provider Relief and State grants of \$40.1 million that offset volume-based Medi-Cal losses; and \$163.6 million in CARES Coronavirus Relief Funds (CRF) to support the expenditures incurred responding to the Pandemic.
- The Health Services Department fully utilized all available COVID-19 funding and all of the budgeted \$159 million County General Fund support in fiscal year 2020/21.

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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- A line item COVID 2021/22 expense forecast, based on trended prior period expenses, was provided indicating an annual unfunded cost of \$135.3 million (attached).
- The only known new revenue source to pay for the forecast expenditures was the recently passed American Rescue Plan Act (ARPA).

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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- The American Rescue Plan was reviewed upon passage. The only significant funding stream identified to directly support local COVID-19 expenses was the State and Local Fiscal Recovery Fund (CSLFRF).
- Accordingly, Health Services requested an estimated \$110 million from the CSLFRF Year 1 allocation to support the County's FY 2021/22 on-going COVID-19 response activities.

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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Since our Board presentations three new revenue items have been identified:

- ARPA provided a direct allocation to our FQHCs in the amount of \$3.3 million for vaccine and contact tracing.
- The State provided an ARPA pass through allocation for expansion of Mental Health services in the amount of \$2.5 million.
- The State provide an ARPA pass through grant of \$500,000 annually for three years for Public Health Workforce development.

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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- Additionally, the pending State budget has a number of categorical ARPA health funded programs e.g., Homeless Housing Assistance, Behavioral Health Infrastructure Grants, Mobile Crisis, Home Community Based Services etc.
- But none of this pending funding is flexible enough to cover the cost previously supported by the CARES program.

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

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- As a result of the ongoing pandemic, the cost of responding to the pandemic, and the lack of any other revenue source to fund the COVID-19 response:
  - The full American Rescue Plan CSLFRF Year 1 allocation of \$112,029,452 will be required to maintain the current level of COVID-19 response activities Fiscal Year 2021/22.
  - This will still result in a funding gap of \$23.3 million, the revenue for which has yet to be identified

# Recap of COVID-19 Funding Streams and Projected 2021/22 COVID-19 Expenses

## Attachment

HEALTH SERVICES DEPARTMENT  
CARES CORONAVIRUS RELIEF FUND (CRF)  
July 2021 through June 2022

	<b>PROJECTED EXPENDITURES</b>
<b>PAYROLL COSTS FOR PUBLIC HEALTH EMPLOYEES*</b>	
PERMANENT SALARIES AND BENEFITS	\$ 37,696,927
TEMPORARY SALARIES (include Emergency Service Workers)	19,607,708
OVERTIME PAY	12,371,912
EMERGENCY SICK LEAVE (80 HOURS)	-
ADDITIONAL SICK LEAVE (64 HOURS)	-
<b>TOTAL PAYROLL COSTS FOR PUBLIC HEALTH EMPLOYEES</b>	<b>\$ 69,676,547</b>
<b>SERVICES AND SUPPLIES</b>	
LAB SPECIMEN TESTING	\$ 21,281,603
FACILITY SURGE AND SITE PREPARATION EXPENSE	1,200,000
CLEANING AND DISINFECTING	7,943,101
REGISTRY/MEDICAL PERSONNEL	9,440,214
HOUSING AND HOMELESS SERVICES	-
TESTING MACHINES AND OTHER TESTING COSTS	5,292,804
MEDICAL AND OTHER RELATED EXPENSES	3,677,365
MATERIALS & SUPPLIES	3,473,887
COMPUTER AND OTHER MINOR EQUIPMENT	900,000
IT SYSTEMS SUPPORT SERVICES	2,182,638
REPAIRS AND MAINTENANCE	2,162,299
TELEWORK	1,200,000
EQUIPMENT RENTAL, EQUIPMENT REPAIR/MAINTENANCE	1,919,684
PERSONAL PROTECTIVE EQUIPMENT	1,917,227
EQUIPMENT ACQUISITION	600,000
SECURITY & SAFETY	1,059,756
PHARMACY SYSTEM UPGRADES	-
TRAINING AND MISC. COST	720,703
COMPUTER SOFTWARE	351,704
COVID-19 TRANSLATION SERVICES	311,764
<b>TOTAL SERVICES AND SUPPLIES</b>	<b>\$ 65,634,749</b>
<b>TOTAL COVID RELATED EXPENSES</b>	<b>\$ 135,311,296</b>

\*Costs are for services substantially dedicated to mitigating or responding to the COVID-19 health emergency.

THANK YOU

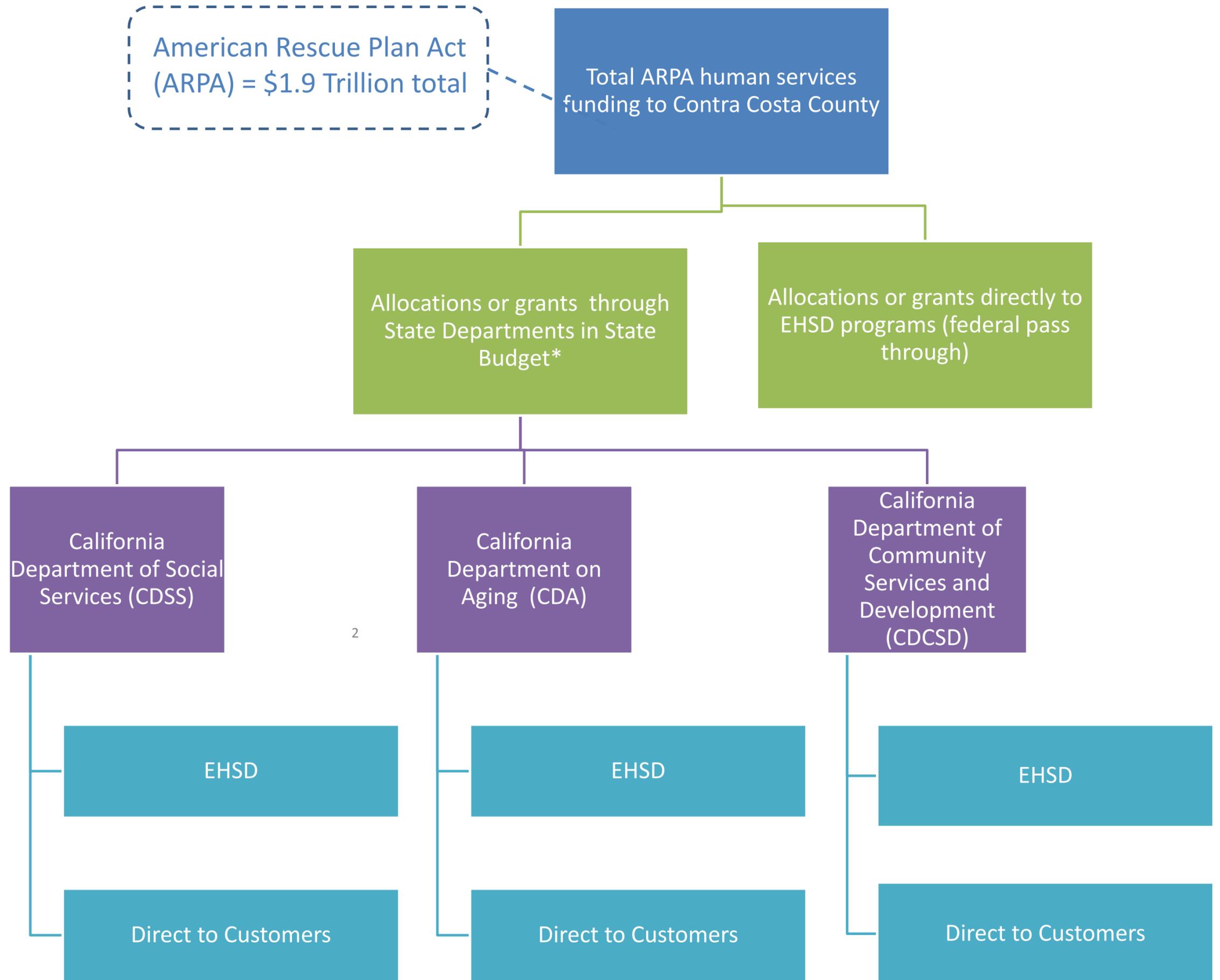


# American Rescue Plan of 2021 and State Budget: Impacts to EHSD and the Community



CONTRA COSTA COUNTY EMPLOYMENT & HUMAN SERVICES DEPARTMENT  
REPORT TO BOARD OF SUPERVISORS | AUGUST 3, 2021

# What ARPA funding is coming to Contra Costa County for human services?



2

Allocated through  
State Departments  
in State Budget



CDSS



EHSD

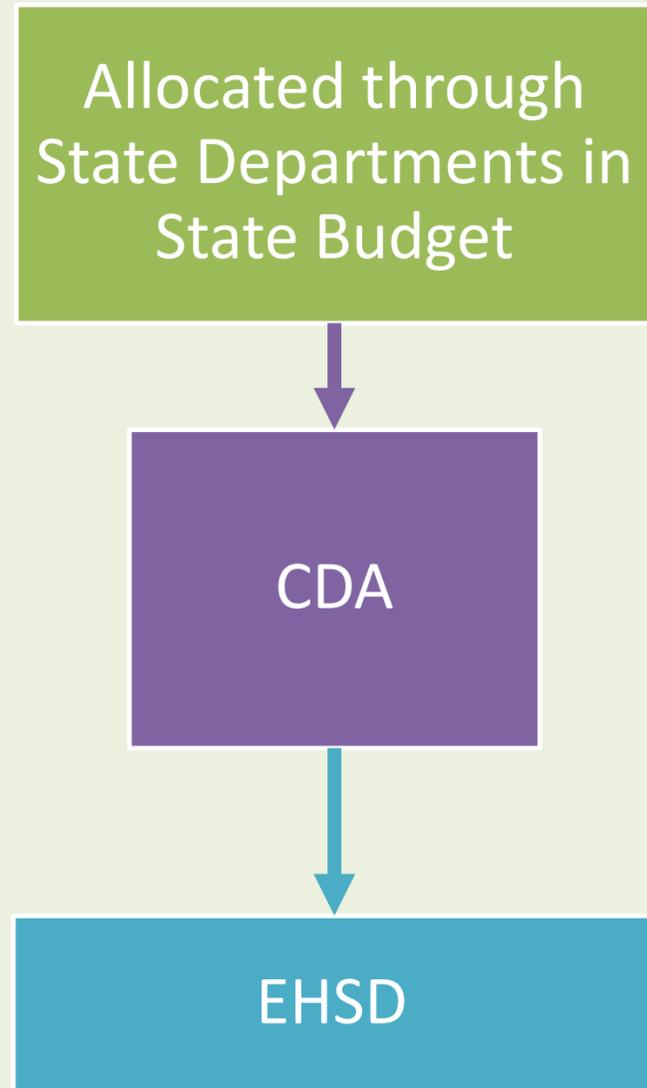
## What is ARPA providing through the California Department of Social Services?

- 5.3% benefit increase for CalWORKS families
- Additional administrative funds to expand CalFresh access
- Funding for more child care slots, vouchers for essential workers, increased reimbursements and grants to childcare centers
- Increased funding for child abuse prevention and improving child outcomes



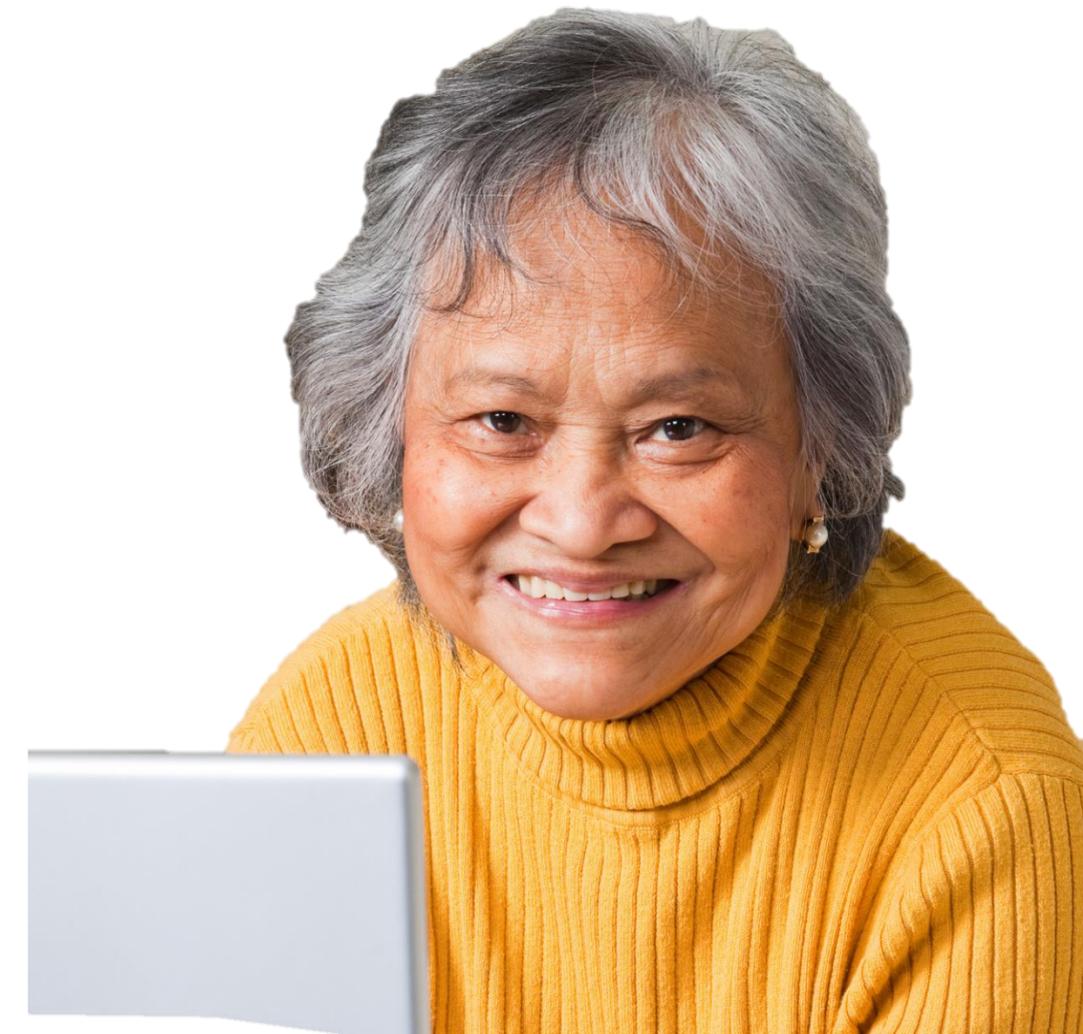
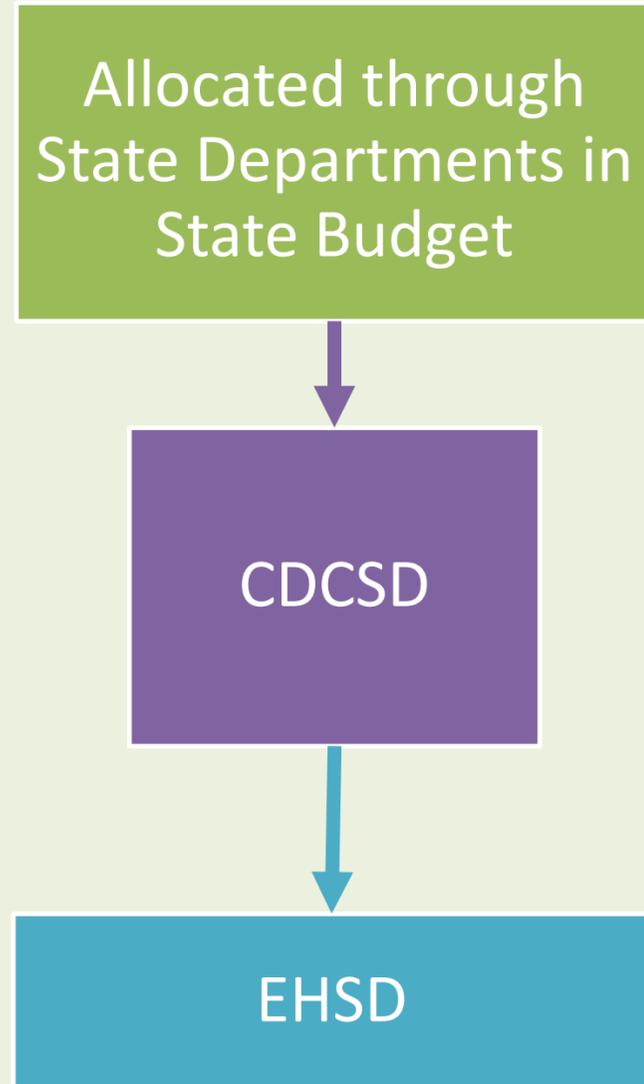
# What is ARPA providing through the California Department of Aging?

- Emergency support for Older Americans Act (OAA) programs for senior nutrition, home and community based support services, and more
- Funds to enhance and expand Adult Protective Services



## What is ARPA providing through the California Department of Community Services and Development?

- Increased number of low income residents will qualify for energy assistance, and continued flexibilities in eligibility criteria (LIHEAP)
- New Low Income Water Assistance Program (LIWAP)



## What is ARPA providing directly to EHSD Consumers?

- Extension of 15% CalFresh benefit increase to CalFresh recipients through September 30, 2021
- Increases in Child Tax Credit (CTC) to \$3,000, and Earned Income Tax Credit (EITC) to \$1,000
- Extension of the Pandemic-EBT program to school-age children during suspension of school lunch program
- Calif Arrearage Payment Program will provide ARPA funds directly to energy utilities to cover consumer arrearages

Allocated through  
State Departments in  
State Budget

Direct to Customers

Allocated directly to  
EHSD programs  
(Federal Pass  
Through)



EHSD

## What is ARPA providing directly?

- Full re-opening of in-person comprehensive Head Start services
- Workforce Development Economic Adjustment Assistance Program and the California Community Economic Resilience Fund make grants available for job training, small business relief, and more

# Non-ARPA Human Services Funding Added in the State Budget



- Undocumented persons age 50+ are eligible for full-scope Medi-Cal
- Authorization to use Title IV-E funds for child abuse prevention (FFPSA)
- Support for programs serving foster youth with complex needs and behavioral health needs
- Housing assistance and homelessness prevention for disabled General Assistance (GA) recipients and individuals served by Adult Protective Services (APS)
- Universal Basic Income (UBI) Pilot Program aimed at Foster Youth

# Questions?

*Building Brighter Futures Together...*



AMERICAN RESCUE PLAN - FUNDING SUMMARY			ATTACHMENT A
Program Area	Program Title	Federal Budget Augmentation	Summary Description
Fiscal Recovery Funds	State & Local Fiscal Recovery Funds	\$130.2B	Contra Costa will receive \$224M
Fiscal Recovery Funds		\$2B	This only applies if a jurisdiction gets Payment in Lieu of taxes (PILT): Provides an additional \$1.5 billion, split evenly over FY 2022 and 2023, for eligible revenue share counties (i.e., public land counties)
Assistance to Individuals and Families	Supplemental Nutrition Assistance Program (SNAP) Administration	\$1.1B	Pass through from the state for local SNAP administration and supplemental costs of running the program
Assistance to Individuals and Families	SNAP 15% Benefit Extension	\$3.5B	Extends the benefit increase through 9/30/2021
Assistance to Individuals and Families	Women, Infant, Child (WIC) Program	\$0.9B	Emergency funds which will enhance benefits for four months plus \$390 million of which will support outreach innovation and program modernization funding.
Assistance to Individuals and Families	Pandemic Electronic Benefits Transfer (EBT)	\$5.6B	Provides +15% monthly SNAP benefits to low-income children (including under 6 years old) who have lost access to free/reduced price meals at school or child care due to the pandemic; May not apply in CA
Assistance to Individuals and Families	Commodity Supplemental Food Program	\$37M	Funds supplementing low-income, 60+ individuals with healthy food commodities
Assistance to Individuals and Families	Family Violence Prevention and Services	\$0.5B	Formula grants may be available to counties for Domestic Violence hotlines and survivor support programs
Assistance to Individuals and Families	Community-based Child Abuse Prevention	\$0.3B	Through 9/30/2023; Going to state lead entities but may be available to counties through competitive sub-awards
Assistance to Individuals and Families	Pandemic Emergency Assistance	\$1.0B	Targeted cash assistance supplement
Assistance to Individuals and Families	Older Americans Act (OAA) Programs	\$1.4B	Additional funds for nutrition, community support and ombudsperson services provided directly to local Area Agencies on Aging (Triple A)

AMERICAN RESCUE PLAN - FUNDING SUMMARY			ATTACHMENT A
Program Area	Program Title	Federal Budget Augmentation	Summary Description
Assistance to Individuals and Families	Elder Justice Act Programs	\$276M	Funding through Federal FY 2022 to prevent elder fraud and abuse
Assistance to Individuals and Families	Early Childhood Home Visiting	\$150M	States receive these funds and may subaward to county entities providing services
Assistance to Individuals and Families	Family Planning	\$50M	Federal grant program providing low-income and adolescent patients with essential family planning and preventative health services. County health departments are eligible applicants of these grants.
Assistance to Individuals and Families	Tenant-Based Rental Assistance	\$5B	Provides housing choice vouchers, with funds available through September 30, 2030.
Assistance to Individuals and Families	Homelessness Assistance	\$5B	Provides rental assistance, provides supportive services and development of affordable housing through acquisition or creation of non-congregate shelter units. Funding will be allocated using the HOME Investment Partnerships Program.
Assistance to Individuals and Families	Emergency Rental Assistance	\$21.6B	Provides an additional round of funding for the Emergency Rental Assistance Program. Funding is distributed to counties with 200,000 residents or more, to help keep residents stably housed during the COVID-19 pandemic.
Education and Childcare	Child Care and Development Block Grants (CCDBG)	\$15B	Administered by state in CA, but may be available as a subaward to counties
Education and Childcare	Child Care Entitlements to States	\$633M	Permanent increase in funding to states and State match waiver through end of FFY 2022. These changes should make more money available to counties
Education and Childcare	Low Income Household Drinking Water and Wastewater Assistance Program (LIHWAP)	\$4.5B	County administered program has a flexible structure and can support household heating and cooling expenses, weatherization assistance, crisis assistance, and services such as counseling.
Education and Childcare	Low Income Home Energy Assistance Program (LIHEAP)	\$0.5B	Federal government is directing states to model LIHWAP after LIHEAP, it is possible that county governments functioning as a local LIHEAP agency will be responsible for administering this new program as well and may receive funds.
Education and Childcare	Head Start	\$1.0B	Emergency funding to be distributed across existing Head Start agencies according to their share of total enrolled children.
Health	Certified Community Behavioral Health Clinic Expansion Grant Program	\$420M	Grants aimed to increase access to, and improve the quality of community mental and substance use disorder treatment through the expansion of CCBHCs

AMERICAN RESCUE PLAN - FUNDING SUMMARY			ATTACHMENT A
Program Area	Program Title	Federal Budget Augmentation	Summary Description
Health	Youth Suicide Prevention Programs	\$20M	Counties that are public organizations designated by a state to develop or direct the youth suicide early intervention and prevention strategy are eligible to receive funds.
Health	Community Mental Health Services Block Grant	\$1.5B	Counties may use block grant dollars to provide a range of services for adults and children with serious mental illnesses.
Health	Substance Abuse Prevention and Treatment Block Grant	\$1.5B	Funding for county behavioral health authorities to serve vulnerable, low-income populations, such as those with HIV/AIDS, pregnant and parenting women, youth and others by ensuring access to substance abuse services.
Health	Community-based Funding for Local Substance Use Disorder Services	\$30M	Provides grants to local governments for community-based overdose prevention programs, syringe services programs and other harm reduction services in light of increased pandemic related drug-misuse
Health	Community-based Funding for Local Behavioral Health Needs	\$50M	Provides grants to local governments to address increased community behavioral health needs worsened by the COVID-19 pandemic.
Health	Project Aware	\$30M	Provides grants, contracts and cooperative agreements to entities to advance wellness and resiliency in education.
Health	Community Health Centers	\$7.6B	Provides grants to Federally Qualified Health Centers (FQHCs) to respond to the COVID-19 pandemic
Health	Public Health Workforce	\$7.66B	Provides funding to establish, expand and sustain a public health workforce including grants to local public health departments
Health	National Health Services Corps	\$800M	Provides funding for the scholarship as well as federal and state loan repayment programs for the healthcare workforce
Health	Nurse Corp	\$200M	Provides funding for the federal loan repayment programs for nurses
Health	Mental and Behavioral Health Professionals Training	\$80M	Provides funding for grants or contracts to local governments and other entities, to run training programs in strategies for reducing and addressing suicide, burnout, mental health conditions and substance use disorders among health care professionals.
Health	Grants for Health Care Providers to Promote Mental and Behavioral Health	\$80M	Provides funding to award grants or contracts to entities providing health care, including federal qualified health centers, to establish or expand programs to promote mental health among their providers and others
Health	Pediatric Mental Health Care Access	\$40M	Provides funding to award grants to counties to promote behavioral health integration in pediatric primary care through the development and support pediatric mental health care telehealth access programs
Health	Grants for Testing	\$47.8B	Provides funding for COVID-19 testing, contact tracing and mitigation activities. Note that this funding will be distributed to local jurisdictions through existing cooperative agreements

AMERICAN RESCUE PLAN - FUNDING SUMMARY			ATTACHMENT A
Program Area	Program Title	Federal Budget Augmentation	Summary Description
Health	Grants for Vaccines	\$7.5B	Provides funding for COVID-19 vaccine activities. Note that this funding will be distributed to local jurisdictions through existing cooperative agreements
Other	FEMA Disaster Relief Funds	\$50B	Provides additional funds to meet the immediate needs of local governments
Other	Emergency Food and Shelter Program	\$400M	Local governmental entities that provided food, shelter and supportive services to people with economic emergencies services in their communities are eligible to apply for this supplemental funding
Other	Emergency Food and Shelter Program - Humanitarian Relief	\$110M	Local governmental entities that provided food, shelter and supportive services to people with economic emergencies services in their communities are eligible to apply for this supplemental funding through the National Board for the Emergency Food and Shelter Program
Other	Assistance to Firefighter Grants (AFG)	\$100M	Fire agencies can apply for supplemental funds to purchase PPE for first responders
Other	Staffing for Adequate Fire and Emergency Response (SAFER) Grants	\$200M	Funding for local fire and emergency response teams to help them increase or maintain the number of trained, "front line" firefighters available in their communities
Other	Emergency Management Performance Grants	\$100M	Grant funding for local emergency management agencies for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation.
Other	Economic Development Assistance (EDA) Programs	\$3.0B	Local government is eligible to apply for the EDA program and can use the funding for economic recovery projects. 25% of the funds are reserved for communities that have suffered economic injury due to job losses in the travel, tourism or outdoor recreation sectors.
Other	Categorical Grants - Air Pollution	\$50M	Local government can apply for grants and activities related to air quality monitoring and the prevention and control of air pollution
Other	Emergency Connectivity Fund for Libraries (and schools)	\$7.2B	This competitive grant funding provides a 100% reimbursement to schools and libraries for internet access and connected devices for students and teachers for remote learning and library services.

**AMERICAN RESCUE PLAN  
DEPARTMENT IMPACT WORKSHEET**

**DEPARTMENT:** *Countywide*

**ATTACHMENT B**

PROGRAM INFORMATION						FINANCIAL INFORMATION		
CCC Department	CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any)	Program Title	Program Description	Est. Federal Grant Allocation to County	Federal Grant Allocation Received	Federal Grant Allocation Expended
CAO	21.027	U.S. Treasury	N/A	Coronavirus State and Local Fiscal Relief Fund (CSLFRF)	<p>\$350 billion to state, local, territorial, and Tribal governments to bolster their response to the COVID-19 emergency and its economic impacts. Eligible expenses include</p> <ul style="list-style-type: none"> <li>• Support public health expenditures, by funding COVID-19 mitigation efforts, medical expenses, behavioral healthcare, and certain public health and safety staff;</li> <li>• Address negative economic impacts caused by the public health emergency, including economic harms to workers, households, small businesses, impacted industries, and the public sector;</li> <li>• Replace lost public sector revenue, using this funding to provide government services to the extent of the reduction in revenue experienced due to the pandemic;</li> <li>• Provide premium pay for essential workers, offering additional support to those who have borne and will bear the greatest health risks because of their service in critical infrastructure sectors; and,</li> <li>• Invest in water, sewer, and broadband infrastructure, making necessary investments to improve access to clean drinking water, support vital wastewater and stormwater infrastructure, and to expand access to broadband internet.</li> </ul>	\$224,058,903	\$112,029,452	\$0
CAO	21.023	U.S. Treasury	N/A	Emergency Rental Assistance Program (ERAP) 2 - Federal Direct Allocation	<p>ERA2 payments are made directly to states, U.S. territories and local governments with more than 200,000 residents. ERA2 sets aside \$2.5 billion for eligible grantees with a high need for ERA2 assistance, based on the number of very low-income renter households paying more than 50 percent of income on rent or living in substandard or overcrowded conditions, rental market costs, and change in employment since February 2020. At least 90 percent of awarded funds must be used for direct financial assistance, including rent, rental arrears, utilities and home energy costs, utilities and home energy costs arrears, and other expenses related to housing. Remaining funds are available for housing stability services, including case management and other services intended to keep households stably housed. ERA2 funds generally expire on September 30, 2025</p>	\$38,941,950	\$15,576,780	\$0

CCC Department	CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any)	Program Title	Program Description	Est. Federal Grant Allocation to County	Federal Grant Allocation Received	Federal Grant Allocation Expended
CAO	21.023	U.S. Treasury	California Housing and Community Development Department	Emergency Rental Assistance Program (ERAP) 2 - State Subrecipient Allocation	ERA2 payments are made directly to states, U.S. territories and local governments with more than 200,000 residents. ERA2 sets aside \$2.5 billion for eligible grantees with a high need for ERA2 assistance, based on the number of very low-income renter households paying more than 50 percent of income on rent or living in substandard or overcrowded conditions, rental market costs, and change in employment since February 2020. At least 90 percent of awarded funds must be used for direct financial assistance, including rent, rental arrears, utilities and home energy costs, utilities and home energy costs arrears, and other expenses related to housing. Remaining funds are available for housing stability services, including case management and other services intended to keep households stably housed. ERA2 funds generally expire on September 30, 2026	\$32,663,062	\$0	\$0
EHSD	93.053	Health and Human Services - Administration for Community Living (ACL)	California Department of Aging	Emergency Older Americans Act (OAA) Program Funding	Provides \$1.43 billion in emergency OAA funding, including \$750 million for senior nutrition programs, \$460 million for home-and-community-based support services, \$45 million for disease prevention, \$10 million for the long-term care ombudsman program and \$145 million in assistance for grandparents caring for grandchildren.	TBD	\$0	\$0
EHSD	93.747	Health and Human Services - Administration for Community Living (ACL)	California Department of Social Services	Elder Justice Act Programs	Provides at least \$188 million for the Elder Justice Act in both FY 2021 and FY 2022, and \$88 million for grants to public transit systems to improve transportation access for older adults and people with disabilities.	TBD	\$0	\$0
EHSD	93.591	Health and Human Services - Administration for Children & Families- Family and Youth Services Bureau	CaIOES	Family Violence Prevention and Services Act (FVPSA) Program Supplemental Grants	\$450 million Federal funds allocated. Will provide 296 supplement grant awards to states, territories, tribes and local domestic violence organizations to respond to domestic violence. While counties are ineligible to receive direct allocations through the FVPSA program, they may receive funding through their state.	TBD	\$0	\$0
EHSD	93.590	Health and Human Services - Administration for Children & Families- Children's Bureau	California Department of Social Services	Community Based Child Abuse Prevention (CBCAP) and Child Abuse Prevention Treatment Act (CAPTA) Supplemental Funding	Permanently increases the total funding of the Child Care Entitlement to States from \$2.98 billion to \$3.05 billion per year (an increase of \$130 million) and temporarily waived state matching funds for 2021 and 2022. We estimate an additional allocation of \$20,000 for Family and Children's Trust (FACT) Contracts for services aimed at preventing child abuse and improving child outcomes. Total Federal allocation is \$350 million.	TBD	\$0	\$0
EHSD	93.575	Administration for Children & Families - Office of Childcare	California Department of Social Services	Child Care Development Block Grant (CCDBG)	ARPA provides a total of nearly \$39 billion in emergency funds for the Child Care Community Block Grant (CCDBG), of which nearly \$15 billion is for child care subsidies through FY 2024. The remaining \$24 billion will be available to states to make stabilization subgrants directly to child care providers to assist in maintaining operations (see Child Care Slots / Child Care Stabilization Funds section directly below).	TBD	\$0	\$0

CCC Department	CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any)	Program Title	Program Description	Est. Federal Grant Allocation to County	Federal Grant Allocation Received	Federal Grant Allocation Expended
EHSD	93.596	Administration for Children & Families - Office of Childcare	California Department of Social Services	Child Care Slots / Child Care Stabilization Funds	Increases child care access by 206,500 slots in Alternative Payment, General Child Care, Migrant Child Care, bridge program for foster children, and prioritizes ongoing vouchers for essential workers currently receiving short-term child care. Potential increase in the standard reimbursement rate and regional market rate ceilings. Two one time stipends will be issued out to providers: the first will be \$600 per child using March 2021 enrollment and the second will be based on facility type and licensing capacity. Stipends are to be used to support with COVID-19 pandemic relief, and, in the case of decreased enrollment or closures, to support child care providers and state preschool programs in remaining open or reopening. Budget to also include a hold harmless clause for all State Programs. Federal allocation is \$24 billion.	TBD	\$0	\$0
EHSD	93.600	Administration for Children & Families-Office of Head Start		Head Start	American Rescue Plan (ARP): Fiscal Year 2021 funding increase for Head Start grantees to support program work toward full re-opening of in-person comprehensive services as local health guidance allows. Federal allocation is \$1 billion.	\$ 2,300,000	\$0	\$0
EHSD	93.568	Administration for Children & Families-Office of Community Services	California Department of Community Services & Development	Low Income Home Energy Assistance Program (LIHEAP)	Provides \$4.5 billion in emergency LIHEAP funds to remain available until September 30, 2022.	TBD	\$0	\$0
EHSD	93.568	Administration for Children & Families-Office of Community Services	California Department of Community Services & Development	Low-Income Household Drinking Water and Wastewater Emergency Assistance Program (LIHWAP)	Created under the FY 2021 Omnibus to assist with payments for drinking water and wastewater expenses. Federal allocation is \$500 million.	TBD	\$0	\$0
EHSD	93.558	Administration for Children & Families-Office of Family Assistance	California Department of Social Services	Temporary Assistance for Needy Families (TANF) Pandemic Emergency Assistance Fund	Provides \$1 billion in short-term targeted aid (cash assistance or otherwise) to families in crisis. States will receive funds based on their population's share of children and portion of prior TANF expenditures dedicated to cash assistance.	TBD	\$0	\$0
HSD	93.224	Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (HHS)		American Rescue Plan Act Funding for Health Centers	Appropriates funds to the Department of Health and Human Services (HHS) to be distributed to community health centers for: <ul style="list-style-type: none"> <li>Vaccine planning, preparation, distribution, and tracking</li> <li>COVID-19 testing, monitoring, and contract tracing, including mobile testing and vaccinations</li> <li>Health care workforce expansion</li> <li>Health care services and infrastructure modification</li> <li>Community outreach related to COVID-19</li> </ul>	\$ 3,355,250	\$0	\$0
HSD	93.959	Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (HHS)	CA Department of Health Care Services (DHCS)	Substance Abuse Prevention and Treatment Block Grant (SABG)	Appropriates funds to HHS for Substance Abuse and Mental Health Services Administration (SAMHSA) block grants to states for SUD programs. States will have some discretion in how funds are expended consistent with federal block grant requirements, and may choose to utilize some dollars consistent with existing block grant programs/services while allocating other dollars to new or one-time activities and priorities. All expenditures are subject to approval by SAMHSA.	\$ 2,508,139	\$0	\$0

CCC Department	CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any)	Program Title	Program Description	Est. Federal Grant Allocation to County	Federal Grant Allocation Received	Federal Grant Allocation Expended
HSD		Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS)	CA Department of Health and Human Services	Public Health Workforce	<p>Appropriates funds to CDC to support 21st century outbreak response needs by:</p> <ol style="list-style-type: none"> <li>1. Expanding and enhancing frontline public health staff</li> <li>2. Conducting DIS workforce training and skills building</li> <li>3. Building organizational capacity for outbreak response</li> <li>4. Evaluating and improving recruitment, training, and outbreak response efforts</li> </ol> <p>\$500,000 per year for three years</p>	\$ 1,500,000	\$0	\$0
DCD	14.239	U.S Department of Housing and Urban Development		HOME-ARP: HOME Investment Partnerships American Rescue Plan Program	<p>Assist individuals or households who are homeless, at risk of homelessness, and other vulnerable populations, by providing housing, rental assistance, supportive services, and non-congregate shelter, to reduce homelessness and increase housing stability. HOME-ARP funds can be used for four eligible activities: production or preservation of affordable housing; tenant-based rental assistance; supportive services, homeless prevention services, and housing counseling; purchase and development of non-congregate shelter.</p>	\$ 12,000,000	\$0	\$0
						<b>\$317,327,304</b>	<b>\$127,606,232</b>	<b>\$0</b>

**AMERICAN RESCUE PLAN  
UNFUNDED COVID-19 IMPACTS**

**DEPARTMENT:** Countywide

**ATTACHMENT C.1**

UNFUNDED COVID-19 IMPACTS						FINANCIAL INFORMATION		
CCC Department	No.	COVID-19 Impact	Department/Org	Program	Additional Information	Unbudgeted Costs	Lost Revenue	Total Unfunded COVID-19 Impacts
CC	1	Staff's efforts dedicated to COVID-19 Response	0030/1700	Legal Advice	Personnel redirected to process emergency contracts, extend legal advice for client emergency operations activities, Public health orders, remote work configurations, and office administration.	\$0	\$673,112	\$673,112
Library	2	Building occupancy costs for Libraries used as COVID Test sites	0085/3796	Library	The Pinole Library was closed for library services from May 15, 2020 until July 6, 2021 to serve as a COVID-19 test site.	\$111,601	\$0	\$111,601
Library	3	Building occupancy costs for Libraries used as COVID Test sites	0085/3784	Library	The Ygnacio Valley Library has been closed for library services since August 23, 2020. It will reopen following completion of a previously funded parking lot.	\$290,010	\$0	\$290,010
PW	4	Lost gas tax revenue due to remote work and social distancing requirements causing less driving and fuel consumption	General Road Fund Revenue/0006	Preventative Road Maintenance Program	To balance the road program budget due to decreased gas tax, the Department had to reduce the number of roads that were due to receive a preventative maintenance surface treatment. In addition to the reduction in the surface treatment program, the curb ramp upgrades to meet ADA requirements required due to the surface treatment were also delayed. Lost revenue calculated for FY 2019-20 and FY 2020-21.	\$0	\$7,368,000	\$7,368,000
Con Fire	5	Minimum staffing backfill of COVID positive or quarantined personnel	202000/7300	Fire District General Fund	Minimum staffing backfill for personnel removed from service due to testing positive for COVID or placed on quarantine due to signs/symptoms based on CDC, OSHA, or County Health Officer directives.	\$982,721	\$0	\$982,721
Con Fire	6	Lost Revenue from emergency ambulance operations	204000/7040	Ambulance Transport Fund	Lost revenues for CY 2020 due to decreased emergency ambulance transports	\$0	\$5,290,740	\$5,290,740
Con Fire	7	Lost Revenue from emergency ambulance operations	204000/7040	Ambulance Transport Fund	Lost revenues for CY 2021 (Jan-June) due to decreased emergency ambulance transports	\$0	\$2,145,955	\$2,145,955
Risk	8	Temporary Personnel for COVID-19 response	0150 Risk Management	Risk Management Workers Compensation Unit	Temporary personnel to maintain COVID-19 SB 1159 positive reporting requirements. SB 1159 positive reporting requirements are through January 1, 2023. Per CAO's reopening memo to department heads dated June 14, 2021 - Phase 1 Cancellation of Emergency Blanket PO effective July 31, 2021 and General Org Fund 1565 will no longer be accessible to departments for posting expenditures.	\$20,000	\$0	\$20,000
						<b>\$1,404,332</b>	<b>\$15,477,807</b>	<b>\$16,882,139</b>

**AMERICAN RESCUE PLAN  
ONE TIME NEEDS SURVEY**

**DEPARTMENT:** Countywide

**ATTACHMENT C.2**

ONE-TIME NEEDS SURVEY							FINANCIAL INFORMATION		
CCC Department	No.	Name	District	Location	Description	Benefit Metrics	Proposed ARP Cost Share	Other Funding for Project	Total Project Cost
EHSD	1	Capital Building improvements	Various	Various	Due to COVID-19, the Public Works Department and EHSD staff prioritized emergency COVID-19 activities over non-emergency work. As a result, Public Works and EHSD were unable to complete several capital projects that otherwise would have occurred.	Repairs will be completed.	\$ 2,260,500	\$ -	\$ 2,260,500
CC	2	Document Management System	NA	Office of the County Counsel 1025 Escobar St, 3rd Floor Martinez	Establish a digital repository for case files.	1. Contributes to the sustainability goals of the Board by reducing the volume of paper used and stored in the office . 2. Enables remote workers access to case files and relevant documents. 3. Eliminates the transport of voluminous documents to court and meetings	\$ 174,691	\$ -	\$ 174,691
Library	3	Deferred Maintenance	District 1	Pinole Library, 2935 Pinole Valley Rd, Pinole 94564	Replacement and Update of systems as identified in the County Facility Condition Analysis	Reduction of deferred maintenance liability.	\$ 2,000,000	\$ 250,000	\$ 2,250,000
Library	4	Deferred Maintenance	District 5	Antioch Library, 501 W. 18th St, Antioch 94509	Replacement and Update of systems as identified in the County Facility Condition Analysis	Reduction of deferred maintenance liability.	\$ 2,500,000	\$ 200,000	\$ 2,700,000
Library	5	Deferred Maintenance	District 4	Ygnacio Valley Library, 2661 Oak Grove Rd, Walnut Creek 94598	Replacement and Update of systems as identified in the County Facility Condition Analysis	Reduction of deferred maintenance liability.	\$ 1,400,000	\$ 200,000	\$ 1,600,000
Library	6	Deferred Maintenance	District 1	Kensington Library, 61 Arlington Ave, Kensington 94707	Replacement and Update of systems as identified in the County Facility Condition Analysis	Reduction of deferred maintenance liability.	\$ 2,000,000	\$ 250,000	\$ 2,250,000
Library	7	Deferred Maintenance	District 5	Rodeo Library, 220 Pacific Ave, Rodeo 94572	Replacement and Update of systems as identified in the County Facility Condition Analysis	Reduction of deferred maintenance liability.	\$ 200,000	\$ 100,000	\$ 300,000
Sheriff	8	Skytron UVC Total Room Disinfection Robots	NA	Sheriff Detention Facilities	Ultra Violet Light Total Room Sanitizing Disinfection Robots. Placement and use in high public high traffic high risk of exposure and infection areas of the detention facilities	1. Reduction of potential risk of outbreak within the inmate population. 2. Reduces County's risk of exposure or outbreak to staff.	\$ 350,000	\$ -	\$ 350,000
PW	9	Wildcat Creek Sediment Basin Desilt	District 1	Off Davilla Rd, North Richmond	Remove accumulated sediment from basin to restore functionality.	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Protection of downstream habitat.	\$ 700,000	\$ 70,000	\$ 770,000
PW	10	Rodeo / Pinole Creek Channel Erosion Repairs	Districts 1 and 5	Rodeo Creek north of 4th St and north of 7th St, Rodeo; Pinole Creek between Henry Ave and I-80, Pinole	Repair of bank erosion from 2017 storms.	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 1,080,000	\$ 120,000	\$ 1,200,000
PW	11	Rodeo Creek Channel Deferred Maintenance	District 5	Rodeo	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 500,000	\$ 50,000	\$ 550,000
PW	12	Wildcat Creek Channel Deferred Maintenance	District 1	Downstream/west of 6th St., North Richmond	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 600,000	\$ 60,000	\$ 660,000
PW	13	San Pablo Creek Channel Deferred Maintenance	District 1	Downstream/West of Giant Rd, Richmond and Unincorporated County	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 300,000	\$ 30,000	\$ 330,000

PW	14	Rheem Creek - Deferred Maintenance	District 1	Downstream/West of Giant Rd, Richmond and Unincorporated County	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 400,000	\$ 40,000	\$ 440,000
PW	15	Garrity Creek Channel Deferred Maintenance	District 1	Unincorporated County, San Pablo Area	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 360,000	\$ 40,000	\$ 400,000
PW	16	Pinole Creek Channel Deferred Maintenance	District 5	Downstream/West of I-80, Pinole	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 900,000	\$ 100,000	\$ 1,000,000
PW	17	Kellogg Creek Channel Deferred Maintenance	District 3	Downstream of Bixler Rd, Discovery Bay	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 270,000	\$ 30,000	\$ 300,000
PW	18	Countywide Storm Drain Inventory	All Districts	Unincorporated Countywide	Complete GIS inventory of storm drain system, building on pilot study in Rodeo.	1. Mapping is first step for needs assessment and repairs. 2. Useful in hazardous spills tracing and emergency response. 3. Regional Board requirement.	\$ 2,000,000	\$ 200,000	\$ 2,200,000
PW	19	Countywide Storm Drain Repairs/Replacements	All Districts	Unincorporated Countywide	Replace storm drains, especially those made of corrugated metal pipe (CMP) beyond their service life (typically 50 years).	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 600,000	\$ 60,000	\$ 660,000
PW	20	Drainage Area 29G Line A Replacement - Phase 3	District 5	Unincorporated County, Antioch area	Replace 1,850 LF of failed 48" plastic (HDPE) with reinforced concrete pipe (RCP). Final phase.	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent further damage to private road.	\$ 3,990,000	\$ 210,000	\$ 4,200,000
PW	21	Bethel Island Storm Drains and Roadside Ditch Repairs	District 3	Bethel Island	Repair storm drains and ditches within road right of way.	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 90,000	\$ 10,000	\$ 100,000
PW	22	Marsh Creek and Walnut Creek Channels Deferred Maintenance	Districts 2, 3, 4 and 5	Brentwood and Walnut Creek	Sediment removal, erosion repairs, vegetation removal, fence repairs, repair maintenance roads at various locations	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk. 3. Prevent increase in size and repair cost.	\$ 3,000,000	\$ 2,000,000	\$ 5,000,000
PW	23	Marsh, Dry, and Pine Dams Seismic Assessment	District 3 and 4	Brentwood and Walnut Creek	Complete backlog of seismic assessments to ensure long term resilience of these important assets.	1. Reduction of deferred maintenance liability. 2. Reduction of flood risk.	\$ 500,000	\$ 100,000	\$ 600,000
PW	24	Byron Airport Utilities - Sewer and Water Upgrades	District 3	Byron Airport 550 Eagle Ct, Byron, CA 94514	When Byron Airport was constructed more than 25 years ago the utilities only included well water (non-potable) and a septic sewer system. New development at the airport has now exceeded the capacity of the sewer system and will soon do the same for the water system. The estimated cost of the project is \$8,500,000 (water \$4,500,000 and sewer \$4,000,000). Although this project is eligible for FAA Airport Improvement Program grant funding, utility projects and the size of the airport would make our chances of receiving any FAA funding nearly zero.  Of the two One-Time airport projects, this project would be the first priority.	The County airports rely on the Airport Enterprise Fund to fund operations. The airports do not receive any General Fund funding. Revenues are derived from a diverse mix of aviation and non-aviation business leases on airport property. If the capacity of the sewer and water utilities is increased, the airport will be more attractive to future development and positively impact the growth of lease generated revenues for airport operations. In addition to the benefit of a more sustainable Airport Enterprise Fund, taxes generated by airport based businesses benefit the County General Fund and Schools. In Fiscal Year 15/16, the airport businesses generated \$2,771,000 towards the County General Fund and \$1,205,000 towards schools. Improving the utility infrastructure at Byron Airport will attract further development and increase the taxes generated benefiting both the County General Fund and Schools. The Airport currently has several development projects in the entitlement process that will exceed the capacity of the existing utilities.	\$ 8,500,000	\$ -	\$ 8,500,000

PW	25	New Buchanan Field Air Traffic Control Tower	District 4	Buchanan Field Airport 550 Sally Ride Dr, Concord, CA 94520	<p>This project would replace the existing 70-year old air traffic control tower at Buchanan Field Airport. The building and associated systems are at the end of their useful life and must be replaced. The tower is owned by the County and leased to the FAA for air traffic control staff. Although the tower would be eligible for FAA Airport Improvement Program grant funding, because it is County owned and at a small airport, the chances of the project receiving funding is almost zero.</p> <p>Of the two One-Time ARP airport projects, this project would be the second priority.</p>	<p>The airports traffic control tower is an important safety asset. With a new and improved control tower, pilots and the surrounding communities are much safer from impacts due to collisions both on the airport and in the air. A new traffic control tower would be built to current standards, including seismic standards that would allow the control tower to withstand disasters such as earthquakes and remain operating. The airport is critical in disaster recovery and it is important that the structure and air traffic control systems remain operating to assist with evacuations, supply deliveries, and disaster recovery equipment in and out of Contra Costa County.</p> <p>The air traffic control tower is also an asset to attract commercial air service such as JSX currently operating at Buchanan Field. With a new air traffic control tower, the airports and County could benefit financially with additional air carriers and people wanting to base their corporate and private planes/jets at the airport due to the various safety amenities.</p>	\$ 12,650,000	\$ -	\$ 12,650,000
PW	26	Public Works Fleet Resiliency Project	District 5	2467 Waterbird Way, Martinez	Install back up generator and electrical panel upgrades to operate facility during power outages (PSPS Events)	Increase operational resiliency and reliability during emergency events (PSPS, Wildfire events)	\$ 1,000,000	\$ -	\$ 1,000,000
PW	27	Montalvin Park Sports Court Renovation	District 1	Tara Hills, San Pablo	Install ADA compliance improvements, all ages playground, accessible parking, spectator seating, walk/run path for community exercise & health, picnic tables, and sports courts	Increase use and accessibility of park to local residents of all ages and abilities to underserved community, Compliance with current ADA requirements	\$ 850,000	\$ -	\$ 850,000
PW	28	Montara Bay Community Center Parking Lots Improvements	District 1	2250 Tara Hills Drive, San Pablo	Repair and replace parking lot pavement	Reduced deferred maintenance liability and increase public accessibility	\$ 550,000	\$ -	\$ 550,000
PW	29	Fox Creek Park Improvements	District 4	118 Anthony Way, Walnut Creek	Update existing park facility to current ADA standards with accessible paths of travel, new picnic tables/amenities, and renovated existing landscaping	Increased accessibility and use of this park by local residents	\$ 300,000	\$ -	\$ 300,000
PW	30	Summit Center Energy Efficiency Lighting Upgrades	District 5	2530 Arnold Way, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 550,000	\$ -	\$ 550,000
PW	31	EHSD Energy Efficiency Lighting Upgrades	District 5	50 Douglas Dr, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 450,000	\$ -	\$ 450,000
PW	32	HSD (595 Center Ave) Energy Efficiency Lighting Upgrades	District 5	595 Center Ave, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 220,000	\$ -	\$ 220,000
PW	33	HSD (597 Center Ave) Energy Efficiency Lighting Upgrades	District 5	597 Center Ave, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 260,000	\$ -	\$ 260,000
PW	34	EHSD (1305 MacDonald Way) Energy Efficiency Lighting Upgrades	District 1	1305 MacDonald Way, Richmond	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 250,000	\$ -	\$ 250,000
PW	35	EHSD (4545 Delta Fair) Energy Efficiency Lighting Upgrades	District 5	4545 Delta Fair Blvd, Antioch	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 265,000	\$ -	\$ 265,000
PW	36	EHSD (4549 Delta Fair) Energy Efficiency Lighting Upgrades	District 5	4549 Delta Fair Blvd, Antioch	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 460,000	\$ -	\$ 460,000
PW	37	EHSD (151 Linus Pauling) Energy Efficiency Lighting Upgrades	District 5	151 Linus Pauling, Hercules	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 210,000	\$ -	\$ 210,000
PW	38	EHSD (1650 Cavallo) Energy Efficiency Lighting Upgrades	District 5	1650 Cavallo Rd, Antioch	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 130,000	\$ -	\$ 130,000
PW	39	EHSD (40 Douglas Drive) Energy Efficiency Lighting Upgrades	District 5	40 Douglas Drive, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 185,000	\$ -	\$ 185,000

PW	40	EHSD (10 Douglas Drive) Energy Efficiency Lighting Upgrades	District 5	10 Douglas Drive, Martinez	Building LED lighting retrofit and control upgrades	Reduce energy usage and GHG emissions	\$ 185,000	\$ -	\$ 185,000
PW	41	Electric vehicle charging stations	All Districts	Various County building locations	Install a total of 90 EV chargers at 16 County building locations	Reduce green house gas emission and dependence on fossil fuels	\$ 2,260,000	\$ -	\$ 2,260,000
PW	42	Health Services Clinic Roofing Project	District 4	1034 Oak Grove Rd, Concord	Replace roofing systems	Reduce deferred maintenance liability	\$ 315,000	\$ -	\$ 315,000
PW	43	Montara Bay Community Center Roofing Project	District 1	2250 Tara Hills Drive, San Pablo	Replace roofing systems	Reduce deferred maintenance liability	\$ 50,000	\$ -	\$ 50,000
PW	44	Lefty Gomez Community Center Roofing Project	District 5	470 Parker Ave, Rodeo	Replace roofing systems	Reduce deferred maintenance liability	\$ 90,000	\$ -	\$ 90,000
PW	45	HSD Martinez Homeless Shelter Roofing Project	District 5	1391 Shell Ave, Martinez	Replace roofing systems	Reduce deferred maintenance liability	\$ 130,000	\$ -	\$ 130,000
PW	46	HSD San Pablo Homeless Shelter Roofing Project	District 1	1515 Market Ave, San Pablo	Replace roofing systems	Reduce deferred maintenance liability	\$ 65,000	\$ -	\$ 65,000
PW	47	Public Works Facilities Roofing Project	District 5	2467 Waterbird Way, Martinez	Replace roofing systems	Reduce deferred maintenance liability	\$ 700,000	\$ -	\$ 700,000
PW	48	Public Works Maintenance Roofing Project	District 5	2475 Waterbird Way, Martinez	Replace roofing systems	Reduce deferred maintenance liability	\$ 225,000	\$ -	\$ 225,000
PW	49	Public Works Warehouse Roofing Project	District 5	2047 Arnold Industrial Way, Concord	Replace roofing systems	Reduce deferred maintenance liability	\$ 700,000	\$ -	\$ 700,000
PW	50	Public Works Roofing Project	District 5	255 Glacier Dr, Martinez	Replace roofing systems	Reduce deferred maintenance liability	\$ 1,000,000	\$ -	\$ 1,000,000
PW	51	EHSD Head Start Roofing Project	District 1	847B Brookside Dr, Richmond	Replace roofing systems	Reduce deferred maintenance liability	\$ 275,000	\$ -	\$ 275,000
PW	52	EHSD Roofing Project	District 5	4545 Delta Fair Blvd, Antioch	Repair Roofing System	Reduce deferred maintenance liability	\$ 150,000	\$ -	\$ 150,000
PW	53	Pittsburg Health Center Roofing Project	District 5	2311 Loveridge Rd, Pittsburg	Replace roofing systems	Reduce deferred maintenance liability	\$ 800,000	\$ -	\$ 800,000
PW	54	Rodeo Community Center Roofing Project	District 5	189 Parker Ave, Rodeo	Replace roofing systems	Reduce deferred maintenance liability	\$ 215,000	\$ -	\$ 215,000
PW	55	Public Works Surplus Roofing Project	District 5	4785 Blum Rd, Martinez	Replace roofing systems	Reduce deferred maintenance liability	\$ 200,000	\$ -	\$ 200,000
PW	56	West County Detention Facility Parking Lot Improvements	District 1	5555 Giant Highway, Richmond	Repair and replace parking lot pavement	Reduced deferred maintenance liability and increase public accessibility	\$ 1,500,000	\$ -	\$ 1,500,000
PW	57	Richmond Homeless Shelter Parking Lot Improvements	District 1	845/847 Brookside Drive	Repair and replace parking lot pavement	Reduced deferred maintenance liability and increase public accessibility	\$ 400,000	\$ -	\$ 400,000
PW	58	EHSD Parking Lot Improvements	District 5	4545/4559 Delta Fair Blvd, Antioch	Repair parking lot and ADA upgrades	Reduced deferred maintenance liability and increase public accessibility	\$ 300,000	\$ -	\$ 300,000
PW	59	Summit Center Parking Lot Improvements	District 5	2530 Arnold Drive, Martinez	Repair parking lot and ADA upgrades	Reduced deferred maintenance liability and increase public accessibility	\$ 750,000	\$ -	\$ 750,000
DA	60	Electronic Freeway Monitoring Expansion	Various	Freeways within Contra Costa County	Expand current electronic freeway monitoring by 4 linear miles for 3-years. Systems to enhance Countywide law enforcement efforts include automatic license plate readers (ALPRs), gunshot detectors/locators, and situational awareness cameras.	1. Effectively respond to, investigate and prosecute incidents by multiple jurisdictions in Contra Costa County. 2. Deter gun violence on freeways within Contra Costa County.	\$ 4,000,000	\$ -	\$ 4,000,000
DA	61	DA Office Lobby Bulletproofing	NA	900 Ward St, Martinez	Install bulletproof glass/panels in the lobby of the District Attorney's Office. Requests for Proposal (RFP) previously completed in January 2020, but delayed after vendor selection due to COVID-19 budget impacts.	1. Increased protection for District Attorney personnel located at the main office. 2. Provide level of security consistent with other law enforcement offices.	\$ 100,000	\$ -	\$ 100,000
DA	62	DA Investigations Unit Radio Replacement and Encryption Upgrade	NA	DA Office/Department	Upgrade existing handheld law enforcement radios and purchase additional units for District Attorney Investigators.	1. Additional radios and required encryption software upgrades will comply with the California Department of Justice's new privacy standards. 2. Meet standards of the East Bay Regional Communications Systems Authority.	\$ 100,000	\$ -	\$ 100,000

T-TC	63	Sneeze Guards	NA	T-TC Office, 625 Court Street	Plexiglas barrier placed between occupied employee work space.	Allows all employees to work in the office.	\$ 6,990	\$ -	\$ 6,990
T-TC	64	Strike Key Pad	NA	T-TC Office, 625 Court Street	Install access card reader to main employee entrance into office.	Minimize contact with high touch area to prevent virus infection	\$ 13,350	\$ -	\$ 13,350
<b>TOTALS:</b>							<b>\$ 67,535,531</b>	<b>\$ 4,120,000</b>	<b>\$ 71,655,531</b>

**County of Contra Costa**  
**OFFICE OF THE COUNTY ADMINISTRATOR**  
**MEMORANDUM**

**DATE:** JUNE 28, 2021

**TO:** DEPARTMENT HEADS

**FROM:** MONICA NINO, County Administrator 

**SUBJECT: AMERICAN RESCUE PLAN WORKSHOP AND ONGOING REPORTING GUIDANCE**

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The County Administrator's Office is working with the Board of Supervisors in preparation for the American Rescue Plan (ARP) Workshop currently scheduled for the August 3, 2021 regular meeting of the Board. At the ARP Workshop, it will be necessary to present a countywide picture of ARP funding streams being directed to County departments.

This document provides an update on preparations for the ARP Workshop along with guidance on future department reporting requirements on the use of ARP funds to the County Administrator's Office in preparation for future quarterly reports to the Board. The following components are covered in more detail below:

- August 3, 2021 ARP Workshop Agenda (*tentative*)
- ARP Allocation Reporting – Due July 19, 2021
- One-Time Needs Survey – Due July 19, 2021
- Quarterly ARP Reporting – Due 30 days following the end of each quarter, commencing on October 31, 2021

**ARP Workshop Agenda (*tentative*)**

The ARP Workshop agenda will highlight our continuing efforts at cost recovery related to the pandemic in addition to major funding streams associated with ARP; most notably the Coronavirus State and Local Fiscal Relief Fund (CSLFRF) for which the County will receive \$224 million over the next two years. On May 18, 2021, the County received \$112,029,451, or 50% of the allocation. The remainder will be distributed to the County in May 2022. In addition, we need to include specific ARP funding being allocated directly to County departments. Below is a tentative agenda for the Workshop:

**American Rescue Plan Workshop Agenda  
August 3, 2021**

1. Current Status of Cost Recovery – *County Administrator*
2. Overview of American Rescue Plan – *County Administrator*
3. Major ARP Revenue Streams Impacting the County – *County Administrator*
  - a. Coronavirus State and Local Fiscal Relief Fund
  - b. Emergency Rental Assistance Program
  - c. Other Revenue Streams Identified by the Board
4. Health Services Department Presentation – *Health Services Director*
  - a. Current Status of COVID-19 response
  - b. Recap of COVID-19 Funding Streams to HSD
  - c. Need for additional ARP Funding
5. Other County Departments – *County Department Heads*
  - a. Current and ongoing unrecovered COVID-19 expenses and revenue shortfall
6. Board Questions and Public Comment
7. Board Discussion of Priority for Use of Funds
8. Closing Comments – *County Administrator*

**ARP Allocation Reporting**

In preparation for the ARP Workshop, departments will be required to conduct an analysis of the ARP and report any revenues and planned expenditures to the County Administrator’s Office. Over the last three months since adoption, departments have likely received information directly from federal agencies or professional organizations regarding allocation criteria, amounts or have received ARP allocations. To further assist in this analysis, attached is a summary of funding allocations made to federal programs by the ARP (*Attachment A – Funding Summary*).

In completing your analysis, please complete the attached spreadsheet to log allocation information (*Attachment B – Department Impact Worksheet*). These are the amounts your Department is anticipating to receive from the American Rescue Plan outside of the County’s direct allocation of CSLFRF stated on page 1. The County Administrator’s Office will compile responses from departments and integrate into materials for the workshop. Departments may also be asked to participate in the workshop based on the information received.

Please remit to Senior Deputy County Administrator Dennis Bozanich at [Dennis.Bozanich@cao.cccounty.us](mailto:Dennis.Bozanich@cao.cccounty.us) no later than close of business Monday, July 19, 2021.

### **Unfunded COVID-19 Impacts & One-Time Needs Survey**

The CSLFRF portion of the ARP provides the County with a significant amount of one-time funding to address the impacts of COVID-19 and its negative economic impact on our County. As we have identified in the FY 2021/22 Recommended Budget and in subsequent presentations to the Board, this funding will largely be required to cover expenditures associated with the pandemic response in the Health Services department. The Board took action on that recommendation during the budget adoption process for the first allocation of CSLFRF dollars, equal to 50% of the total allocation.

Over the past 15 months since declaring the local, state and national emergencies, departments may have incurred costs or lost revenue related to COVID-19 that has not been backfilled by previous Federal or State financial assistance, such as the CARES Act. Similarly, projects and other efforts underway in departments may have been delayed or canceled due to availability of resources, cost escalation or other variables outside of our collective control.

For this reason, in the case that Health Services Department pandemic response expenditures are covered through ARP funds other than the CSLFRF, or are not as significant as currently projected, it will be important to illustrate County costs or revenue losses incurred by other Departments that were COVID-19 related that have not been previously reimbursed as well as one-time needs of all departments.

Departments are requested to analyze their unfunded COVID-19 impacts and one-time needs for potential funding by the CSLFRF portion of ARP. To assist, we have provided the attached worksheet (*Attachment C – Unfunded COVID-19 Impacts & One Time Needs Survey*) with required elements for reporting this information. Examples of each scenario are identified below:

#### *Scenario 1: Unfunded COVID-19 Costs*

A County department incurred costs outside of its budget allocation for additional personnel required to respond to the COVID-19 pandemic. The costs were incurred within the department, were not transferred to any of the countywide COVID-19 response orgs. (i.e. Org. 1565, 6911 or 5822) and the department did not receive outside revenue to offset the increased costs.

#### *Scenario 2: One-Time Needs*

The County currently has a significant deferred maintenance liability. A specific department may be in the planning stages for a parking lot replacement, including the addition of solar panels consistent with Board policy on sustainability measures, but has not yet identified funding for the project.

Survey information will be integrated into the ARP Workshop presentation. Note that one-time expenditures should not have an ongoing cost component associated with them.

**AMERICAN RESCUE PLAN WORKSHOP AND ONGOING REPORTING  
GUIDANCE**

**June 28, 2021**

Please remit to Senior Deputy County Administrator Dennis Bozanich at [Dennis.Bozanich@cao.cccounty.us](mailto:Dennis.Bozanich@cao.cccounty.us) no later than close of business Monday, July 19, 2021.

**Quarterly Reporting Requirements**

The County Administrator’s Office will be providing comprehensive reports to the Board of Supervisors related to the use of ARP revenue streams on a quarterly basis. To facilitate this, it will be necessary to collect information from departments on the use of ARP funds over the next several years until those funds are fully expended.

To standardize the collection of this information, the attached spreadsheet (*Attachment D – Quarterly Report Template*) will be required for submission to the County Administrator’s Office 30 days following the end of each quarter. The County Administrator’s Office will review and compile department information for presentation to the Board the following month. Below is a table outlining each reporting period, the reporting deadline to the County Administrator and the anticipated month that the countywide report will be presented to the Board of Supervisors:

**American Rescue Plan  
Department Quarterly Report Deadlines**

Report	Year	Quarter	Period Covered	Quarterly Report Due to County Administrator	Board of Supervisors Report Date
1	2021	2 and 3	Passage of ARP - September 30	October 31, 2021	November 2021
2	2021	4	October 1 - December 31	January 31, 2022	February 2022
3	2022	1	January 1 - March 31	April 30, 2022	May 2022
4	2022	2	April 1 - June 30	July 31, 2022	August 2022
5	2022	3	July 1 - September 30	October 31, 2022	November 2022
6	2022	4	October 1 - December 31	January 31, 2023	February 2023
7	2023	1	January 1 - March 31	April 30, 2023	May 2023
8	2023	2	April 1 - June 30	July 31, 2023	August 2023
9	2023	3	July 1 - September 30	October 31, 2023	November 2023
10	2023	4	October 1 - December 31	January 31, 2024	February 2024
11	2024	1	January 1 - March 31	April 30, 2024	May 2024
12	2024	2	April 1 - June 30	July 31, 2024	August 2024
13	2024	3	July 1 - September 30	October 31, 2024	November 2024
14	2024	4	October 1 - December 31	January 31, 2025	February 2025
15	2025	1	January 1 - March 31	April 30, 2025	May 2025
16	2025	2	April 1 - June 30	July 31, 2025	August 2025

**AMERICAN RESCUE PLAN WORKSHOP AND ONGOING REPORTING  
GUIDANCE**

**June 28, 2021**

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<b>Report</b>	<b>Year</b>	<b>Quarter</b>	<b>Period Covered</b>	<b>Quarterly Report Due to County Administrator</b>	<b>Board of Supervisors Report Date</b>
17	2025	3	July 1 - September 30	October 31, 2025	November 2025
18	2025	4	October 1 - December 31	January 31, 2026	February 2026

Reports should be submitted electronically to [ARP.Reports@cao.cccounty.us](mailto:ARP.Reports@cao.cccounty.us) on the date specified above. Reports will be acknowledged as received for file.

Thank you for your continued efforts to serve our residents during the pandemic and as we fully reopen our County for business. Should you have any questions, please do not hesitate to contact me directly.

*Attachment A – Funding Summary*

*Attachment B – Department Impact Worksheet*

*Attachment C – Unfunded COVID-19 Impacts & One-Time Needs Survey*

*Attachment D – Quarterly Report Template*

CC: CAO Budget

**AMERICAN RESCUE PLAN - FUNDING SUMMARY**

**ATTACHMENT A**

<b>Program Area</b>	<b>Program Title</b>	<b>Federal Budget Augmentation</b>	<b>Summary Description</b>
Fiscal Recovery Funds	State & Local Fiscal Recovery Funds	\$130.2B	Contra Costa will receive \$224M
Fiscal Recovery Funds		\$2B	This only applies if a jurisdiction gets Payment in Lieu of taxes (PILT): Provides an additional \$1.5 billion, split evenly over FY 2022 and 2023, for eligible revenue share counties (i.e., public land counties)
Assistance to Individuals and Families	Supplemental Nutrition Assistance Program (SNAP) Administration	\$1.1B	Pass through from the state for local SNAP administration and supplemental costs of running the program
Assistance to Individuals and Families	SNAP 15% Benefit Extension	\$3.5B	Extends the benefit increase through 9/30/2021
Assistance to Individuals and Families	Women, Infant, Child (WIC) Program	\$0.9B	Emergency funds which will enhance benefits for four months plus \$390 million of which will support outreach innovation and program modernization funding.
Assistance to Individuals and Families	Pandemic Electronic Benefits Transfer (EBT)	\$5.6B	Provides +15% monthly SNAP benefits to low-income children (including under 6 years old) who have lost access to free/reduced price meals at school or child care due to the pandemic; May not apply in CA
Assistance to Individuals and Families	Commodity Supplemental Food Program	\$37M	Funds supplementing low-income, 60+ individuals with healthy food commodities
Assistance to Individuals and Families	Family Violence Prevention and Services	\$0.5B	Formula grants may be available to counties for Domestic Violence hotlines and survivor support programs
Assistance to Individuals and Families	Community-based Child Abuse Prevention	\$0.3B	Through 9/30/2023; Going to state lead entities but may be available to counties through competitive sub-awards
Assistance to Individuals and Families	Pandemic Emergency Assistance	\$1.0B	Targeted cash assistance supplement
Assistance to Individuals and Families	Older Americans Act (OAA) Programs	\$1.4B	Additional funds for nutrition, community support and ombudsperson services provided directly to local Area Agencies on Aging (Triple A)
Assistance to Individuals and Families	Elder Justice Act Programs	\$276M	Funding through Federal FY 2022 to prevent elder fraud and abuse
Assistance to Individuals and Families	Early Childhood Home Visiting	\$150M	States receive these funds and may subaward to county entities providing services
Assistance to Individuals and Families	Family Planning	\$50M	Federal grant program providing low-income and adolescent patients with essential family planning and preventative health services. County health departments are eligible applicants of these grants.
Assistance to Individuals and Families	Tenant-Based Rental Assistance	\$5B	Provides housing choice vouchers, with funds available through September 30, 2030.
Assistance to Individuals and Families	Homelessness Assistance	\$5B	Provides rental assistance, provides supportive services and development of affordable housing through acquisition or creation of non-congregate shelter units. Funding will be allocated using the HOME Investment Partnerships Program.
Assistance to Individuals and Families	Emergency Rental Assistance	\$21.6B	Provides an additional round of funding for the Emergency Rental Assistance Program. Funding is distributed to counties with 200,000 residents or more, to help keep residents stably housed during the COVID-19 pandemic.
Education and Childcare	Child Care and Development Block Grants (CCDBG)	\$15B	Administered by state in CA, but may be available as a subaward to counties
Education and Childcare	Child Care Entitlements to States	\$633M	Permanent increase in funding to states and State match waiver through end of FFY 2022. These changes should make more money available to counties
Education and Childcare	Low Income Household Drinking Water and Wastewater Assistance Program (LIHWAP)	\$4.5B	County administered program has a flexible structure and can support household heating and cooling expenses, weatherization assistance, crisis assistance, and services such as counseling.
Education and Childcare	Low Income Home Energy Assistance Program (LIHEAP)	\$0.5B	Federal government is directing states to model LIHWAP after LIHEAP, it is possible that county governments functioning as a local LIHEAP agency will be responsible for administering this new program as well and may receive funds.
Education and Childcare	Head Start	\$1.0B	Emergency funding to be distributed across existing Head Start agencies according to their share of total enrolled children.
Health	Certified Community Behavioral Health Clinic Expansion Grant Program	\$420M	Grants aimed to increase access to, and improve the quality of community mental and substance use disorder treatment through the expansion of CCBHCs
Health	Youth Suicide Prevention Programs	\$20M	Counties that are public organizations designated by a state to develop or direct the youth suicide early intervention and prevention strategy are eligible to receive funds.
Health	Community Mental Health Services Block Grant	\$1.5B	Counties may use block grant dollars to provide a range of services for adults and children with serious mental illnesses.
Health	Substance Abuse Prevention and Treatment Block Grant	\$1.5B	Funding for county behavioral health authorities to serve vulnerable, low-income populations, such as those with HIV/AIDS, pregnant and parenting women, youth and others by ensuring access to substance abuse services.

**AMERICAN RESCUE PLAN - FUNDING SUMMARY**

**ATTACHMENT A**

<b>Program Area</b>	<b>Program Title</b>	<b>Federal Budget Augmentation</b>	<b>Summary Description</b>
Health	Community-based Funding for Local Substance Use Disorder Services	\$30M	Provides grants to local governments for community-based overdose prevention programs, syringe services programs and other harm reduction services in light of increased pandemic related drug-misuse
Health	Community-based Funding for Local Behavioral Health Needs	\$50M	Provides grants to local governments to address increased community behavioral health needs worsened by the COVID-19 pandemic.
Health	Project Aware	\$30M	Provides grants, contracts and cooperative agreements to entities to advance wellness and resiliency in education.
Health	Community Health Centers	\$7.6B	Provides grants to Federally Qualified Health Centers (FQHCs) to respond to the COVID-19 pandemic
Health	Public Health Workforce	\$7.66B	Provides funding to establish, expand and sustain a public health workforce including grants to local public health departments
Health	National Health Services Corps	\$800M	Provides funding for the scholarship as well as federal and state loan repayment programs for the healthcare workforce
Health	Nurse Corp	\$200M	Provides funding for the federal loan repayment programs for nurses
Health	Mental and Behavioral Health Professionals Training	\$80M	Provides funding for grants or contracts to local governments and other entities, to run training programs in strategies for reducing and addressing suicide, burnout, mental health conditions and substance use disorders among health care professionals.
Health	Grants for Health Care Providers to Promote Mental and Behavioral Health	\$80M	Provides funding to award grants or contracts to entities providing health care, including federal qualified health centers, to establish or expand programs to promote mental health among their providers and others
Health	Pediatric Mental Health Care Access	\$40M	Provides funding to award grants to counties to promote behavioral health integration in pediatric primary care through the development and support pediatric mental health care telehealth access programs
Health	Grants for Testing	\$47.8B	Provides funding for COVID-19 testing, contact tracing and mitigation activities. Note that this funding will be distributed to local jurisdictions through existing cooperative agreements
Health	Grants for Vaccines	\$7.5B	Provides funding for COVID-19 vaccine activities. Note that this funding will be distributed to local jurisdictions through existing cooperative agreements
Other	FEMA Disaster Relief Funds	\$50B	Provides additional funds to meet the immediate needs of local governments
Other	Emergency Food and Shelter Program	\$400M	Local governmental entities that provided food, shelter and supportive services to people with economic emergencies services in their communities are eligible to apply for this supplemental funding
Other	Emergency Food and Shelter Program - Humanitarian Relief	\$110M	Local governmental entities that provided food, shelter and supportive services to people with economic emergencies services in their communities are eligible to apply for this supplemental funding through the National Board for the Emergency Food and Shelter Program
Other	Assistance to Firefighter Grants (AFG)	\$100M	Fire agencies can apply for supplemental funds to purchase PPE for first responders
Other	Staffing for Adequate Fire and Emergency Response (SAFER) Grants	\$200M	Funding for local fire and emergency response teams to help them increase or maintain the number of trained, "front line" firefighters available in their communities
Other	Emergency Management Performance Grants	\$100M	Grant funding for local emergency management agencies for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation.
Other	Economic Development Assistance (EDA) Programs	\$3.0B	Local government is eligible to apply for the EDA program and can use the funding for economic recovery projects. 25% of the funds are reserved for communities that have suffered economic injury due to job losses in the travel, tourism or outdoor recreation sectors.
Other	Categorical Grants - Air Pollution	\$50M	Local government can apply for grants and activities related to air quality monitoring and the prevention and control of air pollution
Other	Emergency Connectivity Fund for Libraries (and schools)	\$7.2B	This competitive grant funding provides a 100% reimbursement to schools and libraries for internet access and connected devices for students and teachers for remote learning and library services.

**AMERICAN RESCUE PLAN  
DEPARTMENT IMPACT WORKSHEET**

**DEPARTMENT:** *[Department Name]*

**ATTACHMENT B**

PROGRAM INFORMATION					FINANCIAL INFORMATION		
CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any) <i>(Leave blank if received directly from Federal agency)</i>	Program Title <i>(Federal Grant Name)</i>	Program Description	Est. Federal Grant Allocation to County	Federal Grant Allocation Received <i>(as of July 19, 2021)</i>	Federal Grant Allocation Expended <i>(as of July 19, 2021)</i>
10.000	US Department of Interior	State Department of Forestry	Volunteer Fire Assistance Program	Federal financial assistance passed through the state for firefighting assistance in rural areas.	\$1,000,000	\$500,000	\$100,000

AMERICAN RESCUE PLAN  
UNFUNDED COVID-19 IMPACTS & ONE TIME NEEDS SURVEY

DEPARTMENT:

[Department Name]

ATTACHMENT C

UNFUNDED COVID-19 IMPACTS					FINANCIAL INFORMATION		
No.	COVID-19 Impact	Department/Org	Program	Additional Information	Unbudgeted Costs	Lost Revenue	Total Unfunded COVID-19 Impacts
1	Temporary Personnel for COVID-19 response	0003/1200	General Administration	1. Temporary personnel necessary to process emergency contracts, file federal and state reimbursement claims and other emergency operations activities.	\$80,000	\$0	\$80,000

ONE-TIME NEEDS SURVEY					FINANCIAL INFORMATION		
No.	Name	Location	Description	Benefit Metrics	Proposed ARP Cost Share	Other Funding for Project	Total Project Cost
1	Parking Lot Replacement Project	651 Pine Street, Martinez	Replacement of parking lot and installation of solar panels	1. Reduction of deferred maintenance liability. 2. Reduces County's carbon footprint consistent with sustainability goals adopted by the Board.	\$8,000,000	\$2,000,000	\$10,000,000

**AMERICAN RESCUE PLAN  
QUARTERLY REPORT**

**DEPARTMENT:** [Department Name]  
**REPORTING PERIOD:** FY 202X/2X - QX

**ATTACHMENT D**

PROGRAM INFORMATION					FINANCIAL INFORMATION			
CFDA	Federal Grantor Agency	State Passthrough Agency Name (if any) <i>(Leave blank if received directly from Federal agency)</i>	Program Title <i>(Federal Grant Name)</i>	Program Description	Est. Federal Grant Allocation to County <i>(Total Grant Amount)</i>	Federal Grant Allocation Received <i>(as of end of Quarter)</i>	Federal Grant Allocation Expended <i>(as of end of Quarter)</i>	Federal Grant Allocation Remaining <i>(as of end of Quarter)</i>
					A	B	C	= A-C
10.000	US Department of Interior	State Department of Forestry	Volunteer Fire Assistance Program	Federal financial assistance passed through the state for firefighting assistance in rural areas.	\$1,000,000	\$500,000	\$100,000	\$900,000



Contra  
Costa  
County

To: Board of Supervisors  
From: INTERNAL OPERATIONS COMMITTEE  
Date: August 3, 2021

Subject: MODIFICATIONS TO THE COUNTY'S ANTI-NEPOTISM/ANTI-FAVORITISM POLICY PERTAINING TO APPOINTMENTS TO ADVISORY BODIES

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**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/234 to modify the Board's policy on appointing family members of County Supervisors to seats on boards, committees or commissions for which the Contra Costa County Board of Supervisors is the appointing authority, by removing restrictions to appointing the following family members:

- Great-grandfather, great-grandmother, aunt, uncle, nephew, niece, great-grandson, and great-granddaughter;
- First cousin;
- Sister-in-law (brother's spouse or spouse's sister), brother-in-law (sister's spouse or spouse's brother), spouse's grandmother, spouse's grandfather, spouse's granddaughter, and spouse's grandson.

All other restrictions would remain.

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

In May 2011, the Civil Grand Jury published a report entitled "Ethics and Transparency Issues in Contra Costa County", attached, alleging ethical breaches and nepotism by certain public officials. Also attached is the County's response to that report.

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Julie DiMaggio Enea  
(925) 655-2056

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Clerk of the Board

## BACKGROUND: (CONT'D)

The grand jury's allegation of nepotism centered on a Board recommendation to appoint the spouse of a sitting County Supervisor to a special district board, making that spouse eligible to retain a seat on the Local Agency Formation Commission (LAFCo), a body which regulates county boundaries. Ultimately, the Board referred a recruitment process to an impartial outside panel, which recommended appointment of a different individual than the Supervisor's spouse.

Subsequently, the Board of Supervisors adopted an anti-nepotism policy (Resolution No. 2011/55) that prohibits Board members from appointing certain relatives, domestic partners, and individuals with shared business interests to County advisory bodies, a decision which was lauded by the grand jury. The grand jury further recommended that the County adopt a policy requiring the formation of impartial selection committees in situations where there are conflicts of interest, real or perceived, that cannot be adequately addressed by a normal recusal process. The Board had previously implemented this recommendation with adoption of Resolution No. 2002/377 (later updated to Resolution No. 2020/1), which provides that a screening committee may be selected to assist the Board, or a member of the Board, in the interview and selection of applicants for appointment.

Ten years have elapsed since the anti-nepotism/anti-favoritism policy was adopted by the Board. The Internal Operations Committee reviewed the policy at its regular meeting on July 12, 2021. Staff reached out to all the Bay Area counties to compare applicable policies. The responding counties -- San Mateo, San Francisco, Sonoma, Alameda and Marin -- reported having no comparable policy. The Committee determined that, for purposes of avoiding legally cognizable conflicts of interest, sections 3, 4 and 6 of the existing policy could be omitted for all bodies. These groups are not family for purposes of the Political Reform Act. The Act considers only the spouse and dependent children to be immediate family. In addition, section 8 would still prohibit appointment of a member who had a financial interest with anyone in group 2, 3, 4 or 6 of the existing policy. The Committee recommends the following modifications, as are reflected in the final recommended policy in Resolution No. 2021/234, attached.

*I. SCOPE: This policy applies to appointments to any seats on boards, committees or commissions for which the Contra Costa County Board of Supervisors is the appointing authority.*

*II. POLICY: A person will not be eligible for appointment if he/she is related to a Board of Supervisors' Member in any of the following relationships:*

*1. Mother, father, son, and daughter;*

*2. Brother, sister, grandmother, grandfather, grandson, and granddaughter;*

~~*3. Great-grandfather, great-grandmother, aunt, uncle, nephew, niece, great-grandson, and great-granddaughter;*~~

~~*4. First cousin;*~~

~~*5. 3. Husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepson, and stepdaughter;*~~

~~*6. Sister-in-law (brother's spouse or spouse's sister), brother-in-law (sister's spouse or spouse's brother), spouse's grandmother, spouse's grandfather, spouse's granddaughter, and spouse's grandson;*~~

~~*7. 4. Registered domestic partner, pursuant to California Family Code section 297.*~~

~~*8. 5. The relatives, as defined in 5 and 6 1 and 2 above, for a registered domestic partner.*~~

~~*9. 6. Any person with whom a Board Member shares a financial interest as defined in the Political Reform Act (Gov't Code §87103, Financial Interest), such as a business partner or business associate.*~~

*Candidates shall identify on the standard County application form any of the above-specified relationships with a Board of Supervisors member.*

CONSEQUENCE OF NEGATIVE ACTION:

Should the Board not approve the recommendation, certain extended family members of County Supervisors would continue to be ineligible for appointment to boards, committees, and commissions for which the Board is the appointing authority.

ATTACHMENTS

Resolution 2021/234

County Response to GJ Report 1105 Ethics and Transparency in CCC

2011 Grand Jury Report on Ethics and Transparency

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/234**

UPDATING THE POLICY APPLYING TO APPOINTMENTS TO ANY SEATS ON BOARDS, COMMITTEES OR COMMISSIONS FOR WHICH THE BOARD OF SUPERVISORS IS THE APPOINTING AUTHORITY

WHEREAS, appointment to County advisory bodies of family members or others who have a close relationship to a County Supervisor is a matter of policy and within the discretion of the Board of Supervisors; and

WHEREAS the Board of Supervisors wishes to avoid the reality or appearance of improper influence or favoritism; and

WHEREAS the policy adopted by the Board in 2011 made ineligible for appointment some family of Board members whose relationships seem fairly attenuated and do not merit exclusion;

NOW, THEREFORE, BE IT RESOLVED THAT the following modified policy is hereby adopted:

I. SCOPE: This policy applies to appointments to any seats on boards, committees or commissions for which the Contra Costa County Board of Supervisors is the appointing authority.

II. POLICY: A person will not be eligible for appointment if he/she is related to a Board of Supervisors' Member in any of the following relationships:

1. Mother, father, son, and daughter;
  2. Brother, sister, grandmother, grandfather, grandson, and granddaughter;
  3. Husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepson, and stepdaughter;
  4. Registered domestic partner, pursuant to California Family Code section 297.
  5. The relatives, as defined in 1 and 2 above, for a registered domestic partner.
  6. Any person with whom a Board Member shares a financial interest as defined in the Political Reform Act (Gov't Code §87103, Financial Interest), such as a business partner or business associate.
- Candidates shall identify on the standard County application form any of the above-specified relationships with a Board of Supervisors member.

III. This resolution supersedes and replaces Resolution No. 2011/55 adopted by the Board on February 8, 2011.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

Contact: Julie DiMaggio Enea (925)  
655-2056

ATTESTED: August 3, 2021  
Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Clerk of the Board

**CONTRA COSTA COUNTY CIVIL GRAND JURY REPORT NO. 1105  
"ETHICS AND TRANSPARENCY ISSUES IN CONTRA COSTA COUNTY"**

**BOARD OF SUPERVISORS RESPONSE**

**SECTION 2: "NEPOTISM ALIVE IN CEMETERY DISTRICT"**

**FINDINGS** - *Section 933.5(a) requires a response to the designated findings of the Grand Jury.*

**1. There was a failure to advertise/post the open position, in compliance with the Maddy Act.**

*Response:* Partially agree. In compliance with the Maddy Act of 1975 and Board Resolution No. 2002-377 "Board Advisory Body Procedures", the Board of Supervisors declared the Cemetery District seat vacant on August 10, 2010 (Attachment A) and directed the Clerk of the Board to post the vacancy. The Clerk is required to post unscheduled vacancies such as this one "...within 20 days after the vacancy occurs" (Attachment B). The Clerk of the Board did post the vacancy as ordered by the Board; however, the date of the posting was September 9, 2010, which was beyond the time requirements specified in state law and Board policy.

**2. The initial recommendation to appoint the spouse of the Supervisor for the open special district position was not consistent with the appointment procedure.**

*Response:* Disagree. The Board policy governing appointment procedures provides that nominating authority for certain District appointments is the responsibility of individual District Supervisors (Attachment B). In the case of the Cemetery District appointment, the District III Supervisor has the responsibility to nominate an applicant for appointment to the Board of Supervisors. In the case of this appointment, the District III Supervisor recused herself from both the interview and nomination process after her spouse had indicated his interest in applying for the vacant seat. The Board then acted to appoint a separate Supervisor to act on behalf of the full Board and carry out the interview and nomination process, returning with a recommendation to fill the vacant seat.

**3. At a minimum, these improprieties created the appearance of nepotism.**

*Response:* Disagree. The Board of Supervisors' decision to appoint a separate Supervisor to oversee the interview and nomination process and the District III Supervisor's recusal were undertaken specifically to ensure that the appearance of nepotism did not occur.

**4. The formation of an outside, impartial panel to interview and select an applicant was appropriate.**

*Response:* Agree.

**5. The adoption of a County anti-nepotism policy was proper.**

*Response:* Agree.

**RECOMMENDATIONS** - *Section 933.05(b) requires a response to the designated recommendations of the Grand Jury.*

**1. The County should adopt a policy requiring the formation of impartial selection committees in situations where there are conflicts of interest, real or perceived, that cannot be adequately addressed by a normal recusal process**

*Response:* The recommendation has been implemented and is being publicized. Section I(1) of Resolution No. 2002/377 "Board Advisory Body Procedures" (Attachment B), provides that, "A screening committee may be selected to assist the Board, or a member of the Board, in the interview and selection of applicants for appointment". This section has been reviewed by the Internal Operations Committee, which has determined that this policy is sufficient and should remain in force.

In February 2011, the Board of Supervisors adopted an anti-nepotism and anti-favoritism policy (Attachment C) for purposes of evaluating Board appointment requests. This is the only policy of its kind known to exist within the nine Bay Area counties and is more stringent than specifications outlined in the Maddy Act. The policy is attached to all applications for Board appointments and can be found by the public on the county website in the Board of Supervisors section.

### **SECTION 3: "DECOMPOSING THE KELLER CANYON MITIGATION FUND"**

**FINDINGS** - *Section 933.5(a) requires a response to the designated findings of the Grand Jury.*

**1. Proper oversight of the KCMF by the BOS is lacking, which provides opportunity for impropriety.**

*Response:* Disagree. The Board of Supervisors makes an annual appropriation of KCMF funds during the annual budget process. In addition, prior to policy enhancements to the KCMF allocation process approved by the Board of Supervisors on May 24, 2011 (*Attachment D*), the District V Supervisor would submit an allocation plan to the Board of Supervisors each fiscal year for consideration and approval. The 2010/11 KCMF allocation plan, as approved by the Board of Supervisors, is included for reference (*Attachment E*)

**2. The KCMF has distributed grants without the required applications, work plans, and follow-up reports.**

*Response:* Agree.

**3. The KCMF, as currently administered, is not transparent, and lends itself to a perception of being a "political slush fund," (defined as "A sum of money used for illicit or corrupt purposes, as for buying influence." (Webster's New Universal Unabridged Dictionary)).**

*Response:* Disagree. Prior to policy enhancements to the KCMF Allocation Process approved by the Board of Supervisors on May 24, 2011 (*Attachment D*), the District V Supervisor would submit an allocation plan to the Board of Supervisors each fiscal year for approval. A copy of the 2010/11 allocation plan, as approved by the Board of Supervisors, is included for reference (*Attachment E*).

**4. Ethical concerns are raised when grants are awarded to organizations whose boards include members of the granting committee.**

*Response:* Agree. To address real or perceived conflicts of interest, the Board of Supervisors approved Resolution No. 2002/376 "*Policy for Board Appointees Governing Conflict of Interest & Open Meetings*" (*Attachment F*), which revised the Conflict of Interest policy for certain Board appointees to local appointive bodies. In addition, Contra Costa County complies with Assembly Bill 1234 (Chapter 700, Statutes of 2005) which requires certain public officials to complete Ethics Training on a bi-annual basis.

**5. Despite the fact that \$14 million has been distributed over the past ten years, no annual report has been issued. At the time of the writing of this report, no County-linked website to the KCMF could be found.**

*Response:* Partially Disagree. The new Annual Report requirement was approved by the Board of Supervisors on May 24, 2011 (*Attachment D*). As of May 26, 2011, the date that the Grand Jury submitted Report No. 1105 to the Board of Supervisors, a county-linked website for the KCMF was active on the District V Supervisor's website.

**6. Due to a lack of publicly available information about the KCMF, not all non-profit organizations, nor the public, are aware of the fund its mission, and its processes, and thus are unable to benefit from it.**

*Response:* Partially Disagree. The Board of Supervisors makes an appropriation of KCMF funds during

the annual budget process. In addition, prior to policy enhancements to the KCMF allocation process approved by the Board of Supervisors on May 24, 2011 (*Attachment D*), the District V Supervisor would submit an allocation plan to the Board of Supervisors each fiscal year for approval. A copy of the 2010/11 allocation plan, as approved by the Board of Supervisors, is included for reference (*Attachment E*).

**RECOMMENDATIONS** - Section 933.05(b) requires a response to the designated recommendations of the Grand Jury.

**1. The BOS should direct the County Administrator's Office to more closely monitor the KCMF activity and ensure compliance with BOS approval requirements, as well as application, work plan and performance reporting requirements.**

Response: The recommendation will not be implemented. The Finance Committee reviewed the KCMF grant process and made policy enhancement recommendations to the Board of Supervisors. The recommendations were approved by the Board of Supervisors on May 24, 2011 (*Attachment D*) and have been implemented.

**2. The BOS should require training on and compliance with a County ethics policy for all KCMF Committee members.**

Response: The recommendation has been implemented. On April 14, 2011, the Board of Supervisors approved a recommendation from the Finance Committee to establish the "Keller Canyon Mitigation Fund Review Committee" (*Attachment G*). The Committee members, once appointed, are required to complete a conflict of interest training program pursuant to Section 3 of Resolution No. 2002/376 "Policy for Board Appointees Governing Conflict of Interest & Open Meetings" (*Attachment F*).

**3. An annual report for the KCMF should be issued, and a County-linked website should be established to clarify mission, application and selection process and requirements.**

Response: The recommendation has been implemented. On May 24, 2011, the Board of Supervisors adopted several policies, as recommended by the Finance Committee, governing the use of Keller Canyon Mitigation funds (*Attachment D*). Section II(E) of the policy requires that an Annual Report be filed with the Board of Supervisors no later than September 30<sup>th</sup> of each year for the prior fiscal year. Section II(A) of the policy requires that information regarding the KCMF grant process be posted on the District V and County websites.

**4. The BOS should consider re-establishing the Finance Committee oversight of grant awards.**

Response: The recommendation will not be implemented. The Finance Committee reviewed the KCMF grant process and made policy enhancement recommendations to the Board of Supervisors. The recommendations were approved by the Board of Supervisors on May 24, 2011 (*Attachment D*) and have been implemented.

**5. The BOS should ensure that all County mitigation funds, or similar funds under the control of a single Supervisor, receive proper supervision.**

Response: The recommendation has been implemented. In December 2008, the Board of Supervisors referred the issue of County Special Revenue Funds to the Internal Operations Committee for review and potential establishment of a protocol for allocating funding from such funds. After several months

of study, the IOC referred a draft Special Revenue Policy to the Finance Committee for review in August 2009. In December 2009, the Board of Supervisors approved a policy statement affirming that responsibility for administration of Special Revenue funds was to remain with the Supervisor of the District in which the revenue was generated (*Attachment H*).

## **OVERALL FINDINGS**

**1. Avoiding the appearance of unethical behavior especially with conflicts of interest and nepotism, is crucial to public confidence in governance.**

*Response:* Agree.

## **OVERALL RECOMMENDATIONS**

**1. Each of the 19 cities, 28 independent special districts and the County should review and report to the Grand Jury on the adequacy of its:**

- a) nepotism policy;**
- b) conflict of interest policy; and**
- c) ethics training policy.**

*Response:* The recommendation has been implemented. The Board of Supervisors makes the following determinations regarding the adequacy of each policy outlined above:

a) Nepotism Policy: On October 26<sup>th</sup>, 2010, a report from the Public Protection Committee to the Board of Supervisors noted that Committee staff did not find a policy prohibiting family members of Supervisors from being appointed to local committees, commissions, or bodies in the neighboring nine Bay Area counties (*Attachment I*). The Board of Supervisors approved Resolution No. 2011/55 (*Attachment C*) prohibiting family members of Supervisors from receiving such appointments and is thus the only county in the Bay Area known to have such a policy.

b) & c) Conflict of Interest and Ethics Policies: In 2002, the Board of Supervisors approved Resolution No. 2002/376 "*Policy for Board Appointees Governing Conflict of Interest & Open Meetings*" (*Attachment G*), which revised the Conflict of Interest policy for certain Board appointees. In addition, Contra Costa County complies with Assembly Bill 1234 (Chapter 700, Statutes of 2005) which requires certain appointees to local legislative bodies (committees, commissions, and advisory bodies) to complete Ethics Training on a bi-annual basis.

A REPORT BY  
THE 2010-2011 CONTRA COSTA COUNTY GRAND JURY

725 Court Street  
Martinez, California 94553

REPORT 1105

**Ethics and Transparency Issues in Contra Costa County**

APPROVED BY THE GRAND JURY:

Date: MAY 4, 2011



LINDA L. CHEW  
GRAND JURY FOREPERSON

ACCEPTED FOR FILING:

Date: 5/16/11



JOHN LAETTNER  
JUDGE OF THE SUPERIOR COURT



Contact: Linda Chew  
Foreperson  
(925)-567-9638

## Contra Costa County Grand Jury Report 1105

### **ETHICS AND TRANSPARENCY ISSUES IN CONTRA COSTA COUNTY**

**TO: Contra Costa County Board of Supervisors  
Contra Costa Local Agency Formation Commission  
Cities in Contra Costa County  
Independent Special Districts in Contra Costa County**

#### **SUMMARY**

Ethical behavior and transparency (openness) by public officials are essential to good government. Despite the fact that County officials receive ethics training, the Grand Jury has found instances of ethical breaches.

In some cases, there have been public accusations of ethical misbehavior and/or misrepresentation, charges of nepotism and cronyism, and allegations of long-term County mismanagement of a mitigation fund.

The Grand Jury believes that greater effort must be made to improve openness and accountability, to display more sensitivity to ethical considerations, and to be aware of any appearances of impropriety to the public.

#### **BACKGROUND**

Effective January 1, 2006, AB 1234 (Government Code Sections 53232, et seq.) required that local officials who receive compensation, salary, stipends, or expense reimbursements must receive training in public service ethics laws and principles. The requirement applies not only to the governing body of a local agency but also to members of commissions, committees, boards, or other local agency bodies, whether permanent or temporary, decision-making or advisory. Training must be renewed every two years.

According to the Fair Political Practices Commission and the California Attorney General, training regarding conflicts of interest, perquisites of office and governmental transparency should include the following:

(1) Laws relating to personal financial gain by public servants...

- (A) Laws prohibiting bribery (Pen. Code, § 68)
- (B) Conflicts of Interest under the Political Reform Act (Gov. Code, §§ 87100, 87103).
- (C) Contractual Conflicts of Interest (Gov. Code, § 1090 et seq.).
- (D) Conflicts of Interest and Campaign Contributions (Gov. Code, § 84308).
- (E) Conflicts of Interest When Leaving Office (Gov. Code, §§ 87406.3, 87407).

(2) Laws relating to claiming perquisites of office

(3) Government transparency laws

(4) Laws relating to fair processes

The Grand Jury has divided the remainder of this report into several sections. Each section contains its own findings and recommendations. An overall finding and recommendation has also been made that may apply to all agencies throughout the County.

## **LAFCO: SOME MEMBERS OVERSTEPPING THEIR BOUNDARIES**

### **BACKGROUND**

The Contra Costa Local Agency Formation Commission (LAFCO) reviews, approves, or disapproves changes in organization to cities and special districts including annexations, detachments, new formations and incorporations. Its members (commissioners) serve the entire county and are to be neutral decision makers. LAFCO commissioners are guided by a Commissioner's Handbook which states:

“Government Code Section 56325.1 states that while serving on the Commission all members shall exercise their independent judgment on behalf of the interests of residents, property owners and the public as a whole.”

In May, 2010, two LAFCO commissioners addressed a developer-sponsored local ballot measure to extend the Urban Limit Line of the City of Brentwood. Prior to the election, these commissioners signed a public letter indicating that they were speaking not only as LAFCO spokespeople, but as representatives of the Contra Costa County Mayors' Conference, their appointing agency. They stated that should Brentwood voters defeat Measure F, LAFCO could annex the land in question to Antioch. Further, certain other LAFCO commissioners, instead of speaking to these statements, chose to weigh in supportively on the **content** of the letter, when the matter was not before LAFCO. The measure failed, and both LAFCO and the Mayors' Conference took some action to address this.

LAFCO stated that its procedures do not allow for reprimand or removal of offenders, but inserted new language into the Commissioner's Handbook (1.4 Rules and Procedures – Section F.5) which details when a commissioner may act as a spokesperson.

The Mayors' Conference, while voting (12-4) not to remove the involved commissioners, issued an admonishment, and adopted an amendment to the Conference Policies and Procedures statement prohibiting individual positions from being expressed as representative of the will of the Conference. In its motion, the Mayors' Conference stated that it "is not in the business of taking issues on individual matters, especially when pitting one city against another."

The Grand Jury recognizes that some corrective actions have been taken. However, some LAFCO members weighed in favorably on the import of the letter. While LAFCO had the option to recommend removal to the offending members' appointing authority for "malfeasance of office" (Commissioner Handbook 1.2), it did not do so.

## **FINDINGS**

1. Some LAFCO members committed ethical breaches by indicating that they spoke on behalf of LAFCO and the Mayors' Conference on matters not before LAFCO.
2. Certain other LAFCO members weighed in inappropriately on the statements.

## **RECOMMENDATIONS**

1. All LAFCO members, including the public member, should receive regular training per AB 1234\*, on the LAFCO Commissioners Handbook with particular focus on LAFCO's mission statement and ethics, as well as the Updated Commissioner Representation policy (1.4 Rules and Procedures – Section F.5).
2. LAFCO should promptly consider appropriate action when a violation of its policies occurs.

### **\*AB 1234 - Local Officials Ethics Training Requirement**

The newest of these ethics training requirements applies to certain local public officials. While similar to the rules for state officials that have been in place since 1998, the rules applicable to local officials are different in content, including a requirement that these officials receive training not only in applicable ethics laws but also in ethics principles and agency rules.

## NEPOTISM ALIVE IN CEMETERY DISTRICT

### BACKGROUND

**Nepotism** is favoritism (as in appointment to a job) based on kinship.<sup>1</sup>

**Nepotism** undermines public trust by making government look like a family business run not for the community, but for the families in power.<sup>2</sup>

The Contra Costa County Board of Supervisors (BOS) makes appointments to certain special district boards. Each Supervisor recommends appointments for their respective district, after public notice of vacancy and interviews of applicants have been completed.

Recently, when a Supervisor's spouse sought an opening on the board of a small cemetery district, this notice and interview process was not initially followed. As a result, there was significant public reaction to the appearance of nepotism.

The spouse of one Supervisor sat on LAFCO, which regulates County boundaries. A prerequisite for this person's inclusion on LAFCO was being on the board of a special district. This person's current special district membership was ending soon and he sought a special district slot elsewhere.

In violation of California's Maddy Act (Gov. Code Section 54970-54974) the Clerk of the Board failed to advertise/post this opening to the public. As a result, several interested candidates were not considered or interviewed. The Supervisor self-recused and another Supervisor recommended appointment of the spouse. Ultimately, the BOS referred the process to an impartial outside panel, so as to avoid any real or perceived conflict-of-interest. The position was then advertised and applications from eight people were received.

After an interview process, a different individual was recommended by the special panel and was appointed by the BOS.

Subsequently, the BOS adopted an anti-nepotism policy that prohibits appointment by BOS members of relatives, domestic partners, and individuals with shared business interests to Boards, Councils, and Advisory Panels.

<sup>1</sup> Merriam-Webster Dictionary

<sup>2</sup> Robert Wechsler  
Director of Research, City Ethics  
<http://www.cityethics.org/node/811>

### FINDINGS

1. There was a failure to advertise/post the open position, in compliance with the Maddy Act.

2. The initial recommendation to appoint the spouse of the Supervisor for the open special district position was not consistent with the appointment procedure.
3. At a minimum, these improprieties created the appearance of nepotism.
4. The formation of an outside, impartial panel to interview and select an applicant was appropriate.
5. The adoption of a County anti-nepotism policy was proper.

## **RECOMMENDATIONS**

1. The County should adopt a policy requiring the formation of impartial selection committees in situations where there are conflicts of interest, real or perceived, that cannot be adequately addressed by a normal recusal process.

## **THE DECOMPOSING OF THE KELLER CANYON MITIGATION FUND**

### **BACKGROUND**

The Keller Canyon Mitigation Fund (KCMF) was established in 1992 to lessen the impacts of an East County landfill on roads, open space, and the surrounding community. Funds are generated through dumping fees and granted through an application process. Approximately \$14 million has been awarded over the past ten years.

In 2005, the BOS voted to eliminate the Finance Committee oversight of the KCMF. Since then the District Supervisor, the Supervisor's Chief-of-Staff, and a County employee comprise the KCMF Committee, and have had discretion in the awarding of grants. Eligible recipients of grants have expanded from those who were truly impacted by the landfill to any non-profit groups the KCMF Committee deems eligible.

In 2010, a group of concerned citizens complained about irregularities with the KCMF's operations. The group conveyed its concerns to various County agencies. Among these were:

- KCMF is being used illegally as a political "slush fund."
- KCMF lacks required grantee and management paperwork (applications, work plans, progress reports, etc.).
- Substantial expenditures are being made outside of the intent and guidelines of the KCMF, often without required BOS approval.

The Contra Costa County Auditor-Controller's office addressed the charges in its November 5, 2010, "Response to Allegations Concerning the Keller Canyon Mitigation Fund" Report (Auditor's report).

A fraud audit was not performed. However, it was determined that the "internal control environment of the KCMF is seriously deficient" and that because of this there is "a possibility of fraud and abuse". In addition, it was determined that over the last 10 years, \$634,372 was spent without required BOS approval, and that since 2005, when BOS Finance Committee oversight ended, the fund has had a deficit in each of the following years.

The Auditor's report detailed some problem areas with the fund and recommended, among other goals, restoring transparency, accountability, and public confidence in county governance with regard to the KCMF.

One recommendation calls for establishment of an ethics policy and training for KCMF Committee members. This recommendation, which "includes a recusal provision," seeks to eliminate numerous instances where KCMF Committee members also sit on boards of grantee organizations.

At the time this Grand Jury report was written, the BOS had instructed the Finance Committee to review the Auditor's Report and its recommendations.

## **FINDINGS**

1. Proper oversight of the KCMF by the BOS is lacking, which provides opportunity for impropriety.
2. The KCMF has distributed grants without the required applications, work plans, and follow-up reports.
3. The KCMF, as currently administered, is not transparent, and lends itself to a perception of being a "political slush fund," (defined as "A sum of money used for illicit or corrupt purposes, as for buying influence." (Webster's New Universal Unabridged Dictionary)).
4. Ethical concerns are raised when grants are awarded to organizations whose boards include members of the granting committee.
5. Despite the fact that \$14 million has been distributed over the past ten years, no annual report has been issued. At the time of the writing of this report, no County-linked website to the KCMF could be found.
6. Due to a lack of publicly available information about the KCMF, not all non-profit organizations, nor the public, are aware of the fund, its mission, and its processes, and thus are unable to benefit from it.

## RECOMMENDATIONS

1. The BOS should direct the County Administrator's Office to more closely monitor the KCMF activity and ensure compliance with BOS approval requirements, as well as application, work plan and performance reporting requirements.
2. The BOS should require training on and compliance with a County ethics policy for all KCMF Committee members.
3. An annual report for the KCMF should be issued, and a County-linked website should be established to clarify mission, application and selection process and requirements.
4. The BOS should consider re-establishing the Finance Committee oversight of grant awards.
5. The BOS should ensure that all County mitigation funds, or similar funds under the control of a single Supervisor, receive proper supervision.

## OVERALL FINDING

The Grand Jury finds that:

1. Avoiding the appearance of unethical behavior especially with regard to conflicts-of interest and nepotism, is crucial to public confidence in governance.

## OVERALL RECOMMENDATION

1. Each of the 19 cities, 28 independent special districts and the County should review and report to the Grand Jury on the adequacy of its:
  - a) nepotism policy;
  - b) conflict-of-interest policy; and
  - c) ethics training policy.

## REQUIRED RESPONSES

### LAFCO section

#### Findings and Recommendations

Local Agency Formation Commission

1, 2

**NEPOTISM section**

**Findings**

Contra Costa County Board of Supervisors 1-5

**Recommendations**

Contra Costa County Board of Supervisors 1

**KELLER CANYON section**

**Findings**

Contra Costa County Board of Supervisors 1-6

**Recommendations**

Contra Costa County Board of Supervisors 1-5

**Overall Finding and Recommendation**

**Finding and Recommendation**

Contra Costa County Board of Supervisors 1

**REQUESTED RESPONSES**

**Overall Finding and Recommendation**

**Finding and Recommendation**

The cities of: Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Moraga, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon and Walnut Creek

1

**Independent Special Districts:**

Crockett Community Services District, Diablo Community Services District, Discovery Bay Community Services District, Kensington Police Protection and Community Services District, Knightsen Town Community Services District, Kensington Fire Protection District, Moraga-Orinda Fire District, Rodeo-Hercules Fire Protection District, San Ramon Valley Fire Protection District, Los Medanos Community Healthcare District, Mt. Diablo Healthcare District, West Contra Costa County Healthcare District, Byron-Bethany Irrigation District, East Contra Costa Irrigation District, Bethel Island Municipal Improvement District, Ambrose Recreation and Park District, Green Valley Recreation and Park District, Pleasant Hill Recreation and Park District, Rollingwood-Wilart Park Recreation and Park District, Byron Sanitary District, Central Contra Costa Sanitary District, Ironhouse Sanitary District, Mt. View Sanitary District, Rodeo Sanitary District, Stege Sanitary District, West County Wastewater District, Contra Costa Water District and Diablo Water District, Byron-Brentwood-Knightsen Union Cemetery District 1



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approve & Authorize to fully close a portion of Marsh Creek Road, on September 23, 2021, Brentwood area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/228 approving and authorizing the Public Works Director, or designee, to fully close a portion of Marsh Creek Road between Camino Diablo and Vineyard Parkway (City of Brentwood), on September 23, 2021, from 6:00 a.m. through 6:00 p.m., for the purpose of strength testing gas transmission pipeline, Brentwood area. (District III)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Applicant shall follow guidelines set forth by the Public Works Department.

**CONSEQUENCE OF NEGATIVE ACTION:**

Applicant will be unable to close the road for planned activities.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Bob Hendry (925)  
374-2136

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander

ATTACHMENTS

Resolution No.

2021/228

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/228**

IN THE MATTER OF: Approving and Authorizing the Public Works Director, or designee, to fully close a portion of Marsh Creek Road between Camino Diablo and Vineyard Parkway (City of Brentwood), on September 23, 2021, from 6:00 a.m. through 6:00 p.m., for the purpose of strength testing gas transmission pipeline, Brentwood area. (District III)

RC21-6

NOW, THEREFORE, BE IT RESOLVED that permission is granted to PG&E to fully close a portion of Marsh Creek Road between Camino Diablo and Vineyard Parkway (City of Brentwood), except for emergency traffic, on September 23, 2021, for the period of 6:00 a.m. through 6:00 p.m., subject to the following conditions:

1. Traffic will be detoured per traffic control plan reviewed by Public Works.
2. All signing to be in accordance with the California Manual on Uniform Traffic Control Devices.
3. PG&E shall comply with the requirements of the Ordinance Code of Contra Costa County.
4. Provide the County with a Certificate of Insurance in the amount of \$1,000,000.00 for Comprehensive General Public Liability which names the County as an additional insured prior to permit issuance.
5. Obtain required permits and approvals from the City of Brentwood.
6. Obtain approval for the closure from the Sheriff's Department, the California Highway Patrol and the Fire District.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**Contact: Bob Hendry (925) 374-2136**

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: APPROVE and AUTHORIZE a Contract Amendment with CH2M Hill Inc., Clayton area.

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Public Works Director, or designee, to execute Amendment No. 2 to the Consulting Services Agreement (CSA) with CH2M Hill, Inc., effective August 3, 2021, to extend the term from June 30, 2022 to December 31, 2023, and increase the payment limit by \$204,727 to a new payment limit of \$1,167,439, for professional engineering services for the Marsh Creek Road Bridges (#28C-0143 & -0145) Replacement Project, Clayton area. (County Project No.: 0662-6R4083, Federal Project No.: BRLS 5928(125)) (District III)

**FISCAL IMPACT:**

This project, including work performed under this amendment, is funded by 88.53% Federal Highway Bridge Program Funds and 11.47% Local Road Funds.

**BACKGROUND:**

The Public Works Director, or designee, executed a Consulting Services Agreement, dated October 6, 2015, with CH2M Hill, Inc., for professional engineering services for the Marsh Creek Road Bridges (#28C-0143 and 28C-0145) Replacement Project.

This Project consists of preparing plans, specifications, and estimates, including geotechnical and hydraulic studies, construction support, project management

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Neil Leary (925)  
313-2278

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Neil Leary, Design & Construction, Ronald Thai - Design & Construction, Xiuwei Tang - Design & Construction, Cinda Tovar- Design & Construction

BACKGROUND: (CONT'D)

and coordination, and environmental and right of way support for the replacement of the Marsh Creek Road Bridges (#28C-0143 and 28C-0145) over Marsh Creek in eastern Contra Costa County.

Amendment #1, which was approved by the Board of Supervisors on September 11, 2018, replaced the termination condition of “acceptance of the completed bridges by the Contra Costa County Board of Supervisors” with June 30, 2022. The payment limit was increased by \$97,935, from \$864,777 to \$962,712.

The original scope of the contract and Amendment #1 did not include Stormwater C.3 analysis and design, additional plan sheet preparation, Contra Costa Water District (CCWD) waterline design, additional environmental permitting calculations, and support in preparing Caltrans Local Assistance paperwork. In order to meet project needs, additional support with Stormwater C.3 requirements, plan sheet needs, CCWD waterline design requirements, permitting needs, and outside agency coordination, is necessary.

Amendment No. 2 will amend the payment limits and completion date for this additional effort.

CONSEQUENCE OF NEGATIVE ACTION:

Without approval from the Board of Supervisors, a delay in construction of the Project will occur, which will ultimately delay the completion of the Project, result in substantial additional project costs and jeopardize the funding. Additionally, the consultant would not be compensated for services needed to complete the project. Executing this contract amendment will facilitate the process of design and construction for the project.



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approve & Authorize to fully close a portion of Stanford Avenue, on August 11, 2021, Kensington area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/230 approving and authorizing the Public Works Director, or designee, to fully close a portion of Stanford Avenue, on August 11, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole, Kensington area. (District I)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Applicant shall follow guidelines set forth by the Public Works Department.

**CONSEQUENCE OF NEGATIVE ACTION:**

Applicant will be unable to close the road for planned activities.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Bob Hendry (925)  
374-2136

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander

ATTACHMENTS

Resolution No.

2021/230

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/230**

IN THE MATTER OF: Approving and Authorizing the Public Works Director, or designee, to fully close a portion of Stanford Avenue, on August 11, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole, Kensington area. (District I)

RC21-8

NOW, THEREFORE, IT BE RESOLVED that permission is granted to PG&E to fully close a portion of Stanford Avenue, except for emergency traffic, on August 11, 2021, for the period of 7:00 a.m. through 5:00 p.m., subject to the following conditions:

1. Traffic will be detoured per traffic control plan reviewed by Public Works.
2. All signing to be in accordance with the California Manual on Uniform Traffic Control Devices.
3. PG&E shall comply with the requirements of the Ordinance Code of Contra Costa County.
4. Provide the County with a Certificate of Insurance in the amount of \$1,000,000.00 for Comprehensive General Public Liability which names the County as an additional insured prior to permit issuance.
5. Obtain approval for the closure from the Sheriff's Department, the California Highway Patrol, Kensington Police and the Fire District.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

**Contact: Bob Hendry (925) 374-2136**

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approve & Authorize to fully close a portion of Highgate Road at #69 Highgate Road, between August 30, 2021 & September 30, 2021, Kensington area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/231 approving and authorizing the Public Works Director, or designee, to fully close a portion of Highgate Road at #69 Highgate Road, for two consecutive days between August 30, 2021, and September 30, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing two utility poles, Kensington area. (District I)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Applicant shall follow guidelines set forth by the Public Works Department.

**CONSEQUENCE OF NEGATIVE ACTION:**

Applicant will be unable to close the road for planned activities.

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Bob Hendry (925)  
374-2136

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander

ATTACHMENTS

Resolution No.  
2021/231

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/231**

IN THE MATTER OF: Approving and Authorizing the Public Works Director, or designee, to fully close a portion of Highgate Road at #69 Highgate Road, for two consecutive days between August 30, 2021 and September 30, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing two utility poles, Kensington area. (District I)

RC21-12

NOW, THEREFORE, BE IT RESOLVED that permission is granted to PG&E to fully close a portion of Highgate Road at #69 Highgate Road, except for emergency traffic, for two consecutive days between August 30, 2021 and September 30, 2021, for the period of 7:00 a.m. through 5:00 p.m., subject to the following conditions:

1. Traffic will be detoured per traffic control plan reviewed by Public Works.
2. All signing to be in accordance with the California Manual on Uniform Traffic Control Devices.
3. PG&E shall comply with the requirements of the Ordinance Code of Contra Costa County.
4. Provide the County with a Certificate of Insurance in the amount of \$1,000,000.00 for Comprehensive General Public Liability which names the County as an additional insured prior to permit issuance.
5. Obtain approval for the closure from the Sheriff's Department, the California Highway Patrol, Kensington Police and the Fire Departments.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

**Contact: Bob Hendry (925) 374-2136**

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approving the ninth extension of the Subdivision Agreement for subdivision SD03-08744, Martinez area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/232 approving the ninth extension of the Subdivision Agreement for subdivision SD03-08744, for a project being developed by Discovery Builders, Inc., as recommended by the Public Works Director, Martinez area. (District V)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

The termination date of the Subdivision Agreement needs to be extended. The developer has not completed the required improvements and has requested more time. (Approximately 0% of the work has been completed to date.) By granting an extension, the County will give the developer more time to complete improvements and keeps the bond current.

**CONSEQUENCE OF NEGATIVE ACTION:**

The termination date of the Subdivision Agreement will not be extended

---

APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Randolph Sanders (925)  
313-2111

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

CONSEQUENCE OF NEGATIVE ACTION: (CONT'D)

and the developer will be in default of the agreement, requiring the County to take legal action against the developer and surety to get the improvements installed, or revert the development to acreage.

ATTACHMENTS

Resolution No. 2021/232

Subdivision Agreement Extension

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/232**

IN THE MATTER OF approving the ninth extension of the Subdivision Agreement for subdivision SD03-08744, for a project being developed by Discovery Builders, Inc., as recommended by the Public Works Director, Martinez area. (District V)

WHEREAS the Public Works Director having recommended that he be authorized to execute the ninth agreement extension which extends the subdivision improvement agreement between Discovery Builders, Inc., and the County for construction of certain improvements in subdivision SD03-08744, Martinez area, through August 14, 2022.

APPROXIMATE PERCENTAGE OF WORK COMPLETE: 0%

ANTICIPATED DATE OF COMPLETION: December 2023

BOND NO.: LICX1194585 Date: July 9, 2020

REASON FOR EXTENSION: Developer is completing CEQA and all environmental studies as required.

NOW, THEREFORE, BE IT RESOLVED that the recommendation of the Public Works Director is APPROVED

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**Contact: Randolph Sanders (925) 313-2111**

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Ronald Lai, Engineering Services, Cinda Tovar- Design & Construction, Ruben Hernandez - DCD, Discovery Builders, Inc., Lexon Insurance Company, T-06/14/2022



## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California  
County of Contra Costa )

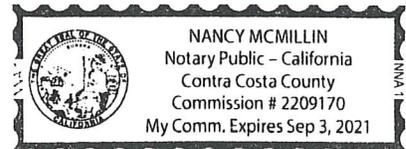
On June 29th, 2021 before me, Nancy McMillin, Notary Public  
(insert name and title of the officer)

personally appeared Albert D. Seeno, III,  
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are  
subscribed to the within instrument and acknowledged to me that he/she/they executed the same in  
his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the  
person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing  
paragraph is true and correct.

WITNESS my hand and official seal.

Signature  (Seal)



ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of TEXAS
County of DALLAS

On June 24, 2021 before me, TEUTA LURI, Notary Public
(insert name and title of the officer)

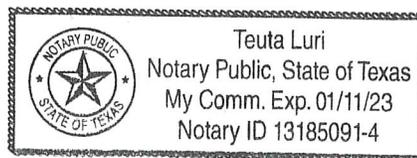
personally appeared S. Nicole Evans
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of TEXAS that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Teuta Luri

(Seal)



POWER OF ATTORNEY

4039

Lexon Insurance Company

KNOW ALL MEN BY THESE PRESENTS, that LEXON INSURANCE COMPANY, a Texas Corporation, with its statutory home office in Austin, Texas, does hereby constitute and appoint: Bradley N. Wright, Carlyne Emery, S. Nicole Evans its true and lawful Attorney(s)-In-Fact to make, execute, seal and deliver for, and on its behalf as surety, any and all bonds, undertakings or other writings obligatory in nature of a bond.

This authority is made under and by the authority of a resolution which was passed by the Board of Directors of LEXON INSURANCE COMPANY on the 1st day of July, 2003 as follows:

Resolved, that the President of the Company is hereby authorized to appoint and empower any representative of the Company or other person or persons as Attorney-In-Fact to execute on behalf of the Company any bonds, undertakings, policies, contracts of indemnity or other writings obligatory in nature of a bond not to exceed \$20,000,000.00, Twenty Million Dollars, which the Company might execute through its duly elected officers, and affix the seal of the Company thereto. Any said execution of such documents by an Attorney-In-Fact shall be as binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company. Any Attorney-In-Fact, so appointed, may be removed for good cause and the authority so granted may be revoked as specified in the Power of Attorney.

Resolved, that the signature of the President and the seal of the Company may be affixed by facsimile on any power of attorney granted, and the signature of the Assistant Secretary, and the seal of the Company may be affixed by facsimile to any certificate of any such power and any such power or certificate bearing such facsimile signature and seal shall be valid and binding on the Company. Any such power so executed and sealed and certificate so executed and sealed shall, with respect to any bond of undertaking to which it is attached, continue to be valid and binding on the Company.

IN WITNESS THEREOF, LEXON INSURANCE COMPANY has caused this instrument to be signed by its President, and its Corporate Seal to be affixed this 22nd day of June, 2018.

LEXON INSURANCE COMPANY



BY [Signature] Brian Beggs President

ACKNOWLEDGEMENT

On this 22nd day of June, 2018, before me, personally came Brian Beggs to me known, who be duly sworn, did depose and say that he is the President of LEXON INSURANCE COMPANY, the corporation described in and which executed the above instrument; that he executed said instrument on behalf of the corporation by authority of his office under the By-laws of said corporation.



AMY TAYLOR Notary Public- State of Tennessee Davidson County My Commission Expires 5-9-2023

BY [Signature] Amy Taylor Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of LEXON INSURANCE COMPANY, A Texas Insurance Company, DO HEREBY CERTIFY that the original Power of Attorney of which the forgoing is a true and correct copy, is in full force and effect and has not been revoked and the resolutions as set forth are now in force.

Signed and Seal at Mount Juliet, Tennessee this 24th Day of JUNE, 2021.



BY [Signature] Andrew Smith Assistant Secretary

“WARNING: Any person who knowingly and with intent to defraud any insurance company or other person, files and application for insurance of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact material thereto, commits a fraudulent insurance act, which is a crime and subjects such person to criminal and civil penalties.”



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approve the Parcel Map for minor subdivision MS05-00053, Knightsen area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/233 approving the Parcel Map for minor subdivision MS05-00053, for a project being developed by Main Stone Corporation, as recommended by the Public Works Director, Knightsen area. (District V)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

The Public Works Department has reviewed the conditions of approval for minor subdivision MS05-00053 and has determined that all conditions of approval for Parcel Map approval have been satisfied.

**CONSEQUENCE OF NEGATIVE ACTION:**

The Parcel Map will not be approved and recorded.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Randolph Sanders (925)  
313-2111

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

ATTACHMENTS

Resolution No.

2021/233

Parcel Map

Tax Letter

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/233**

IN THE MATTER OF approving the Parcel Map for minor subdivision MS05-00053, for a project being developed by Main Stone Corporation, as recommended by the Public Works Director, Knightsen area. (District III)

WHEREAS, the following documents were presented for board approval this date:

The Parcel Map of minor subdivision MS05-00053, property located in the Knightsen area, Supervisorial District III, said map having been certified by the proper officials. Said document was accompanied by:

1. Letter from the County Tax Collector stating that there are no unpaid County taxes heretofore levied on the property included in said map and that the 2021-2022 tax lien has been paid in full and the 2021-2022 tax lien, which became a lien on the first day of January, 2021, is estimated to be \$19,000.00.
2. Security to guarantee the payment of taxes, as required by Title 9 of the County Ordinance Code, in the form of a cash deposit, (Auditor's Deposit Permit No. DP831914, dated July 9, 2021) made by Main Stone Corporation in the amount: \$19,000.00, guaranteeing the payment of the estimated tax.

NOW, THEREFORE, BE IT RESOLVED:

1. That said subdivision, together with the provisions for its design and improvement, is DETERMINED to be consistent with the County's general and specific plans.
2. That said Parcel map is APPROVED.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**Contact: Randolph Sanders (925) 313-2111**

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Ronald Lai, Engineering Services, Cinda Tovar- Design & Construction, Stanley Muroaka- DCD, Main Stone Corporation, Fidelity National Title Company, T-06/03/2022

**PARCEL MAP**  
SUBDIVISION MS 05-0053

LANDS OF MAIN STONE CORPORATION  
PER DOCUMENT 2020-058597 RECORDED MARCH 26,  
2020, CONTRA COSTA COUNTY OFFICIAL RECORDS,  
BEING A PORTION OF SECTIONS 25,  
26, 27, 34, 35, T.2N., R.3E., M.D.B.&M.,  
COMMONLY KNOWN AS HOLLAND TRACT  
KNIGHTSEN

CONTRA COSTA COUNTY CALIFORNIA  
NO SCALE OCTOBER 2020

**MERIDIAN SURVEYING ENGINEERING, INC.**

CORPORATE OFFICE  
2550 RAY AVE SUITE 410  
SAN FRANCISCO, CA 94109  
(415) 440-4131

777 BAY STREET  
SAN RAFAEL, CA 94901  
(415) 656-5469



**OWNER'S STATEMENT**  
THE UNDERSIGNED, BEING THE ONLY PARTIES HAVING A RECORD TITLE INTEREST IN  
THE LANDS DELINEATED AND EMBRACED WITHIN THE HEAVY BLACK LINES UPON THIS  
MAP, DO HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THE SAME.  
THIS MAP SHOWS ALL RECORD EASEMENTS DISCLOSED IN THE TITLE REPORT LISTED  
HEREON, EXCEPT AS NOTED BELOW.

BY: MAIN STONE CORPORATION, A CALIFORNIA CORPORATION

*Pierre H. Perret*  
PIERRE H. PERRET, PRESIDENT  
DATE 1-5-2021

*Marc R. Frelier*  
MARC R. FRELIER, VICE-PRESIDENT  
DATE 1-5-2021

**OWNER'S ACKNOWLEDGMENT**

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES  
THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR  
VALIDITY OF THAT DOCUMENT

STATE OF CALIFORNIA }  
COUNTY OF Inyo } SS  
ON 1/5/2021 BEFORE ME, Lori L. Norman, Notary Public  
PERSONALLY APPEARED Pierre H. Perret and

Marc R. Frelier  
WHO PRESENTED TO ME SUFFICIENT EVIDENCE TO BE THE  
PERSON(S) WHOSE NAME(S) WAS/WERE SUBSCRIBED TO THE WITHIN INSTRUMENT, AND  
ACKNOWLEDGED TO ME THAT HE/SHE (THEY) EXECUTED THE SAME IN WAKE/AND  
OTHER AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER (THEIR) SIGNATURE(S) ON  
THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE  
PERSON(S) ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF  
CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND OFFICIAL SEAL

*Lori L. Norman*  
SIGNATURE SEAL

**SURVEYOR'S STATEMENT**

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON  
A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION  
MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF MARC PERRET AND PIERRE  
FRELIER. I HAVE CONDUCTED A VISUAL INSPECTION OF THE MONUMENTS SHOWN ON THE  
TENTATIVE MAP. THIS MAP SUBSTANTIALLY CONFORMS TO THE CONDITIONALLY APPROVED  
TENTATIVE MAP. I FURTHER STATE THAT THE MONUMENTS SHOWN HEREON ARE OF THE  
CHARACTER AND OCCUPY THE POSITIONS INDICATED, AND WILL BE SUFFICIENT  
TO ENABLE THE SURVEY TO BE RETRACTED.



*Stanley T. Gray*  
STANLEY T. GRAY  
PLS. 6784  
DATE 1/5/2021

**CLERK OF THE BOARD OF SUPERVISORS' CERTIFICATE**  
STATE OF CALIFORNIA  
COUNTY OF CONTRA COSTA

I, DAVID TWA, CLERK OF THE BOARD OF SUPERVISORS AND THE COUNTY  
ADMINISTRATOR OF CONTRA COSTA COUNTY, STATE OF CALIFORNIA DO HEREBY  
CERTIFY THAT THE ABOVE AND FORGING MAP ENTERED REVISION MS  
05-0053 WAS PREPARED BY THE BOARD OF SUPERVISORS, AS PROVIDED BY  
LAW AT A REGULAR MEETING THEREOF HELD ON THE \_\_\_\_\_ DAY  
OF \_\_\_\_\_, 20\_\_\_\_, AND THAT THE SAID BOARD DID THEREUPON  
BY RESOLUTION DULY PASSED AND ADOPTED AT SAID MEETING, APPROVE SAID  
MAP AND DID ACCEPT, SUBJECT TO INSTALLATION AND ACCEPTANCE OF  
IMPROVEMENTS, ON BEHALF OF THE PUBLIC ALL STREETS, EASERS, AVENUES OR  
EASEMENTS SHOWN THEREON AS DEDICATED TO PUBLIC USE.

I FURTHER CERTIFY THAT ALL TAX LIENS HAVE BEEN SATISFIED AND THAT ALL  
BONDS AS REQUIRED BY LAW TO ACCOMPANY THE WITHIN MAP HAVE BEEN  
APPROVED BY THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY AND ARE  
ON FILE IN MY OFFICE.  
IN WITNESS WHEREOF, I HAVE SET MY HAND ON THIS \_\_\_\_\_ DAY  
OF \_\_\_\_\_, 20\_\_\_\_.

DAVID TWA  
CLERK OF THE BOARD OF SUPERVISORS

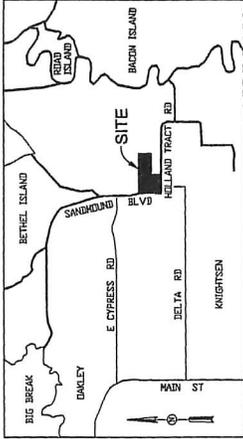
BY: \_\_\_\_\_  
DEPUTY CLERK

**RECORDER'S STATEMENT**

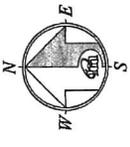
FILED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_ AT \_\_\_\_\_ IN  
BOOK \_\_\_\_\_ OF PARCEL MAPS, AT PAGE(S) \_\_\_\_\_ AT THE REQUEST OF  
DOCUMENT NO: \_\_\_\_\_

DEBORAH COOPER  
COUNTY RECORDER  
COUNTY OF CONTRA COSTA, CALIFORNIA

BY: \_\_\_\_\_  
DEPUTY COUNTY RECORDER



VICINITY MAP  
NO SCALE



- LEGEND**
- BOUNDARY
  - LOT LINE
  - CENTER LINE
  - EASEMENT LINE
  - ENVIRONMENTAL EASEMENT LINE
  - RADIAL / TIE LINE
  - FOUND MONUMENT AS NOTED
  - FND 5/8" REBAR & PLASTIC CAP "1.5 6784" (A)
  - FOUND COUNTY MONUMENT, 2" / 1/2" REBAR DISK & PLUNGER (C) (2012-23326) (A)
  - RECORD DIMENSION PER REFERENCE (A) [1]
  - RECORDAL RECORDS (A)
  - SAUTARY SENER EASEMENT (A)
  - TOTAL (A)

**BASIS OF BEARINGS**

BEARINGS SHOWN HEREON ARE GRID, BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983, ZONE 3. BASIS OF BEARINGS IS THE BEARING NORTH 14°31'25" WEST BETWEEN COUNTY MONUMENTS IN DELTA ROAD AND THE ROCK SLOUGH BRIDGE, AS SHOWN ON THE RECORD OF SURVEY FILED SEPTEMBER 3, 2008, 139 LSM 24, CONTRA COSTA RECORDS.

**REFERENCES**

THE FOLLOWING DOCUMENTS WERE REVIEWED AS A PART OF THE BOUNDARY ANALYSIS AND FIELD SURVEY OF THE SUBJECT PROPERTY. THEY ARE CITED HEREIN FOR CLARITY AND TO PERPETUATE THE FACT THAT THEY WERE CONSIDERED. DOCUMENTS AND MAPS ARE CONTRA COSTA COUNTY OFFICIAL RECORDS.

- (A) RECORD OF SURVEY, FILED AUGUST 10, 1950, 14 LSM 29
- (B) PARCEL MAP MS 61-94, FILED FEBRUARY 11, 1966, 121 PM 9
- (C) RECORD OF SURVEY 2544, FILED OCTOBER 12, 2001, 121 LSM 47
- (D) PARCEL MAP MS 4-83, FILED MARCH 20, 2002, 163 PM 21
- (E) RECORD OF SURVEY 3264, FILED SEPTEMBER 3, 2008, 139 LSM 28
- (F) CORNER RECORD, FILED APRIL 9, 2015, 142 OR 21
- (G) GRANT DEED FOR BAY ROAD, FILED JANUARY 23, 1959, 169 OR 23
- (H) GRANT DEED FOR BAY ROAD, FILED JANUARY 23, 1959, 169 OR 23
- (I) RESOLUTION NO. 93/218, FILED MAY 18, 1983, DOCUMENT 83-129483 OR.

**LINE TABLE**

LINE	BEARING	DISTANCE	RECORD DIMENSIONS
L1	S 87°53'32" E	286.25'	S 89°58'17" E 284.24' [E]
L2	S 29°37'03" E	67.25'	S 31°32'10" E 67.27' [E]
L3	S 59°37'35" E	46.25'	S 59°34'10" E 46.35' [E]
L4	S 31°04'32" W	246.80'	S 29°10'00" W 247.23' [E]
L5	S 59°20'05" E	155.10'	S 60°52'00" E 157.09' [E]
L6	S 59°20'05" E	155.10'	S 60°52'00" E 157.09' [E]
L7	N 28°12'05" W	128.15'	
L8	N 85°50'05" W	25.00'	
L9	N 01°08'05" E	27.75'	
L10	N 85°50'05" W	27.75'	
L11	N 89°02'05" W	32.27'	
L12	N 85°50'05" E	60.00'	
L13	N 85°50'05" E	363.33'	
L14	N 85°50'05" E	150.33'	
L21	N 01°35'05" W	36.55'	S 89°28'00" W 150.00' [B][C]
L22	N 01°35'05" W	36.55'	

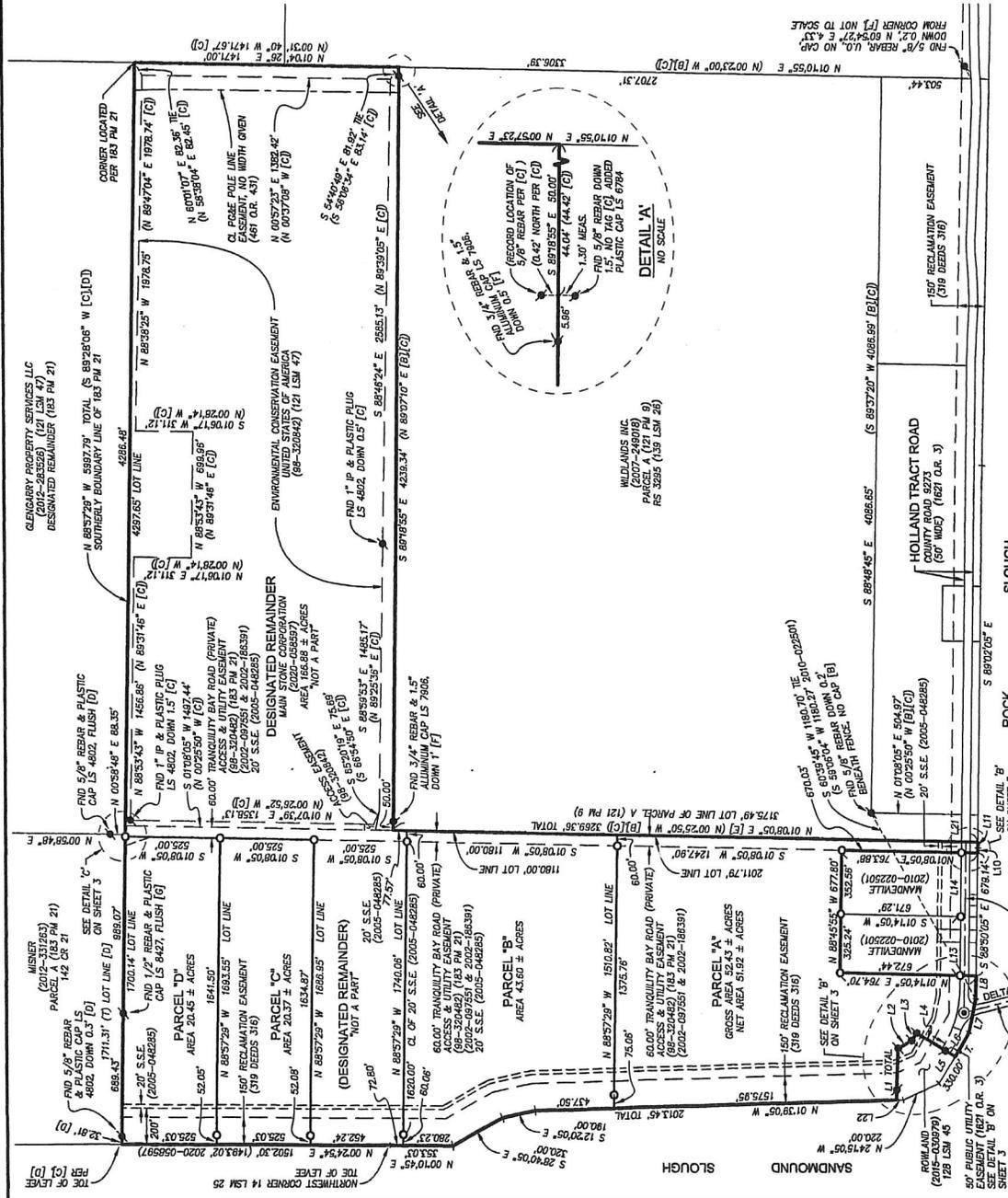
**PARCEL MAP**  
SUBDIVISION MS 05-0053

LANDS OF MAIN STONE CORPORATION  
PER DOCUMENT 2020-058597 RECORDED MARCH 26, 2020, CONTRA COSTA COUNTY OFFICIAL RECORDS, BEING A PORTION OF SECTIONS 25, 26, 27, 34, 35, T.2N., R.3E., M.D.B.&M., COMMONLY KNOWN AS HOLLAND TRACT

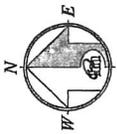
CONTRA COSTA COUNTY  
SCALE 1" = 400'  
OCTOBER 2020

**MERIDIAN SURVEY ENGINEERING, INC.**  
CORPORATE  
2859 VAN NESS AVE #200  
SAN FRANCISCO, CA 94134  
(415) 442-4711  
(415) 456-3407

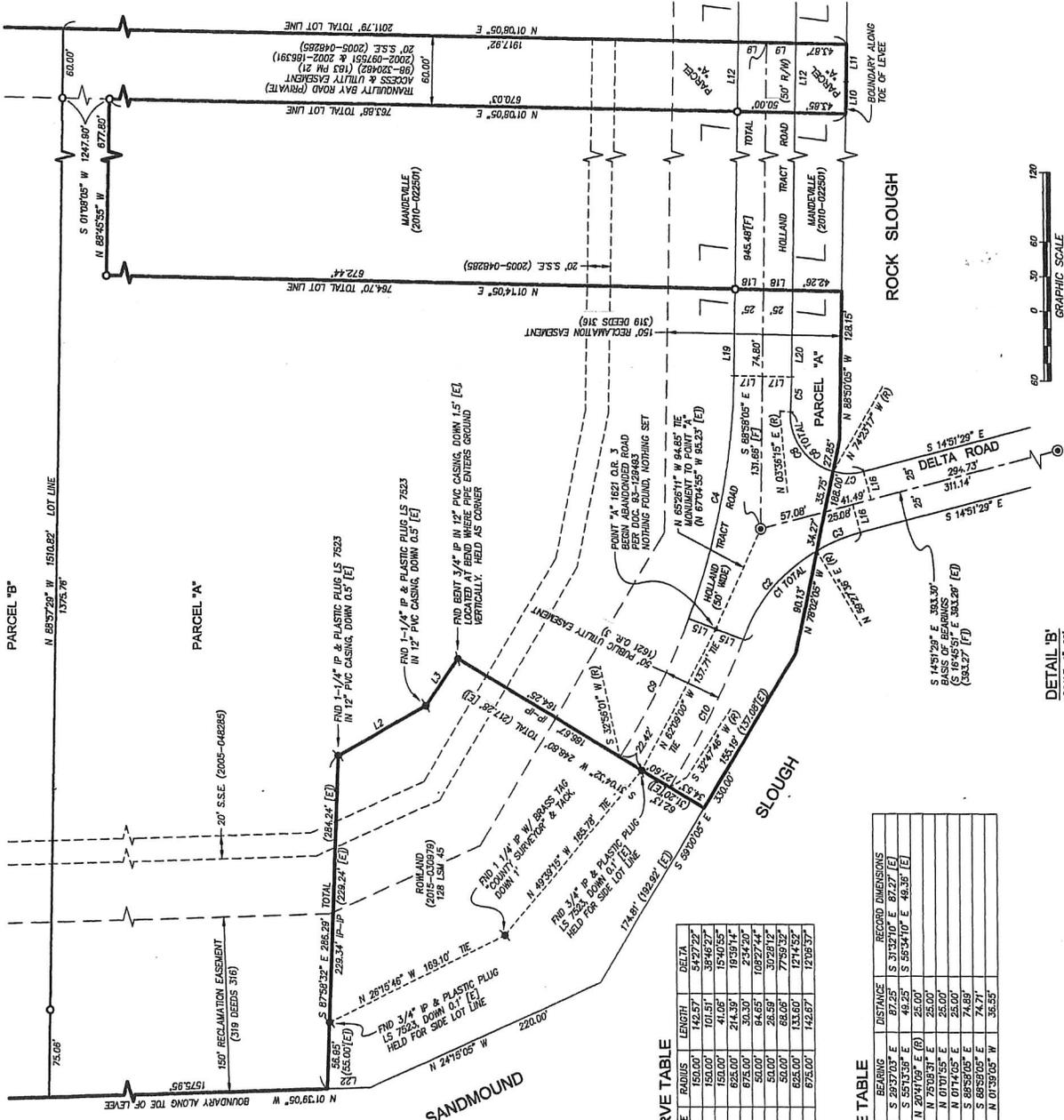
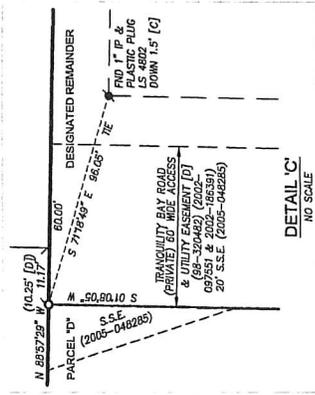
CONTRA COSTA COUNTY  
SCALE 1" = 400'  
OCTOBER 2020



- NOTES**
1. SHOWN ARE GROUND IN UNITED STATES SURVEY FEET AND DEGREES THEREOF. TO OBTAIN GRID DISTANCES, MULTIPLY GROUND DISTANCES BY THE COMBINED FACTOR OF 0.999908.
  2. THE SOUTHERLY AND WESTERLY BOUNDARY LINES ARE UNDER WATER ALONG THE TOE OF THE LEVEE SLOPE PER HISTORICAL DEEDS AND GRANT DEED 2020-058597 OR. THE TOE WAS LOCATED PER RECORD OF SURVEY 139 LSM 28, FILED SEPTEMBER 3, 2008, 139 LSM 28, CONTRA COSTA RECORDS.
  3. THE BOUNDARY OF THE FOLLOWING PROPERTY, LANDS OF MAIN STONE CORPORATION, WAS ACCEPTED AS UNMOUNTED AND ITS SIDE LOT LINES WERE EXTENDED TO THE TOE OF THE LEVEE LOCATED PER NOTE 2 ABOVE.



- LEGEND**
- BOUNDARY
  - LOT LINE
  - CENTER LINE
  - EASEMENT LINE
  - ENVIRONMENTAL EASEMENT LINE
  - RADIAL / TIE LINE
  - FOUND MONUMENT AS NOTED
  - SET REBAR & PLASTIC CAP PLUS 8784\*
  - FOUND COUNTY MONUMENT, 2" x 1/2" BRASS
  - FOUND COUNTY MONUMENT, 2" x 1/2" BRASS
  - RECORDED DIMENSION PER REFERENCE ( [A], [B], [C], [D], [E], [F], [G], [H], [I], [J], [K], [L], [M], [N], [O], [P], [Q], [R], [S], [T], [U], [V], [W], [X], [Y], [Z], [AA], [AB], [AC], [AD], [AE], [AF], [AG], [AH], [AI], [AJ], [AK], [AL], [AM], [AN], [AO], [AP], [AQ], [AR], [AS], [AT], [AU], [AV], [AW], [AX], [AY], [AZ], [BA], [BB], [BC], [BD], [BE], [BF], [BG], [BH], [BI], [BJ], [BK], [BL], [BM], [BN], [BO], [BP], [BQ], [BR], [BS], [BT], [BU], [BV], [BW], [BX], [BY], [BZ], [CA], [CB], [CC], [CD], [CE], [CF], [CG], [CH], [CI], [CJ], [CK], [CL], [CM], [CN], [CO], [CP], [CQ], [CR], [CS], [CT], [CU], [CV], [CW], [CX], [CY], [CZ], [DA], [DB], [DC], [DD], [DE], [DF], [DG], [DH], [DI], [DJ], [DK], [DL], [DM], [DN], [DO], [DP], [DQ], [DR], [DS], [DT], [DU], [DV], [DW], [DX], [DY], [DZ], [EA], [EB], [EC], [ED], [EE], [EF], [EG], [EH], [EI], [EJ], [EK], [EL], [EM], [EN], [EO], [EP], [EQ], [ER], [ES], [ET], [EU], [EV], [EW], [EX], [EY], [EZ], [FA], [FB], [FC], [FD], [FE], [FF], [FG], [FH], [FI], [FJ], [FK], [FL], [FM], [FN], [FO], [FP], [FQ], [FR], [FS], [FT], [FU], [FV], [FW], [FX], [FY], [FZ], [GA], [GB], [GC], [GD], [GE], [GF], [GG], [GH], [GI], [GJ], [GK], [GL], [GM], [GN], [GO], [GP], [GQ], [GR], [GS], [GT], [GU], [GV], [GW], [GX], [GY], [GZ], [HA], [HB], [HC], [HD], [HE], [HF], [HG], [HH], [HI], [HJ], [HK], [HL], [HM], [HN], [HO], [HP], [HQ], [HR], [HS], [HT], [HU], [HV], [HW], [HX], [HY], [HZ], [IA], [IB], [IC], [ID], [IE], [IF], [IG], [IH], [II], [IJ], [IK], [IL], [IM], [IN], [IO], [IP], [IQ], [IR], [IS], [IT], [IU], [IV], [IW], [IX], [IY], [IZ], [JA], [JB], [JC], [JD], [JE], [JF], [JG], [JH], [JI], [JJ], [JK], [JL], [JM], [JN], [JO], [JP], [JQ], [JR], [JS], [JT], [JU], [JV], [JW], [JX], [JY], [JZ], [KA], [KB], [KC], [KD], [KE], [KF], [KG], [KH], [KI], [KJ], [KK], [KL], [KM], [KN], [KO], [KP], [KQ], [KR], [KS], [KT], [KU], [KV], [KW], [KX], [KY], [KZ], [LA], [LB], [LC], [LD], [LE], [LF], [LG], [LH], [LI], [LJ], [LK], [LL], [LM], [LN], [LO], [LP], [LQ], [LR], [LS], [LT], [LU], [LV], [LW], [LX], [LY], [LZ], [MA], [MB], [MC], [MD], [ME], [MF], [MG], [MH], [MI], [MJ], [MK], [ML], [MN], [MO], [MP], [MQ], [MR], [MS], [MT], [MU], [MV], [MW], [MX], [MY], [MZ], [NA], [NB], [NC], [ND], [NE], [NF], [NG], [NH], [NI], [NJ], [NK], [NL], [NM], [NO], [NP], [NQ], [NR], [NS], [NT], [NU], [NV], [NW], [NX], [NY], [NZ], [OA], [OB], [OC], [OD], [OE], [OF], [OG], [OH], [OI], [OJ], [OK], [OL], [OM], [ON], [OO], [OP], [OQ], [OR], [OS], [OT], [OU], [OV], [OW], [OX], [OY], [OZ], [PA], [PB], [PC], [PD], [PE], [PF], [PG], [PH], [PI], [PJ], [PK], [PL], [PM], [PN], [PO], [PP], [PQ], [PR], [PS], [PT], [PU], [PV], [PW], [PX], [PY], [PZ], [QA], [QB], [QC], [QD], [QE], [QF], [QG], [QH], [QI], [QJ], [QK], [QL], [QM], [QN], [QO], [QP], [QQ], [QR], [QS], [QT], [QU], [QV], [QW], [QX], [QY], [QZ], [RA], [RB], [RC], [RD], [RE], [RF], [RG], [RH], [RI], [RJ], [RK], [RL], [RM], [RN], [RO], [RP], [RQ], [RR], [RS], [RT], [RU], [RV], [RW], [RX], [RY], [RZ], [SA], [SB], [SC], [SD], [SE], [SF], [SG], [SH], [SI], [SJ], [SK], [SL], [SM], [SN], [SO], [SP], [SQ], [SR], [SS], [ST], [SU], [SV], [SW], [SX], [SY], [SZ], [TA], [TB], [TC], [TD], [TE], [TF], [TG], [TH], [TI], [TJ], [TK], [TL], [TM], [TN], [TO], [TP], [TQ], [TR], [TS], [TT], [TU], [TV], [TW], [TX], [TY], [TZ], [UA], [UB], [UC], [UD], [UE], [UF], [UG], [UH], [UI], [UJ], [UK], [UL], [UM], [UN], [UO], [UP], [UQ], [UR], [US], [UT], [UU], [UV], [UW], [UX], [UY], [UZ], [VA], [VB], [VC], [VD], [VE], [VF], [VG], [VH], [VI], [VJ], [VK], [VL], [VM], [VN], [VO], [VP], [VQ], [VR], [VS], [VT], [VU], [VV], [VW], [VX], [VY], [VZ], [WA], [WB], [WC], [WD], [WE], [WF], [WG], [WH], [WI], [WJ], [WK], [WL], [WM], [WN], [WO], [WP], [WQ], [WR], [WS], [WT], [WU], [WV], [WW], [WX], [WY], [WZ], [XA], [XB], [XC], [XD], [XE], [XF], [XG], [XH], [XI], [XJ], [XK], [XL], [XM], [XN], [XO], [XP], [XQ], [XR], [XS], [XT], [XU], [XV], [XW], [XX], [XY], [XZ], [YA], [YB], [YC], [YD], [YE], [YF], [YG], [YH], [YI], [YJ], [YK], [YL], [YM], [YN], [YO], [YP], [YQ], [YR], [YS], [YT], [YU], [YV], [YW], [YX], [YY], [YZ], [ZA], [ZB], [ZC], [ZD], [ZE], [ZF], [ZG], [ZH], [ZI], [ZJ], [ZK], [ZL], [ZM], [ZN], [ZO], [ZP], [ZQ], [ZR], [ZS], [ZT], [ZU], [ZV], [ZW], [ZX], [ZY], [ZZ]



**PARCEL MAP**  
SUBDIVISION MS 05-0053

LANDS OF MAIN STONE CORPORATION  
PER CONTRACT 2020-086897 RECORDED MARCH 26,  
2020, CONTRA COSTA COUNTY OFFICIAL RECORDS,  
BEING A PORTION OF SECTIONS 25,  
26, 27, 34, 35, T21N, R3E., M.D.B. 60M.,  
COMMONLY KNOWN AS HOLLAND TRACT  
KNIGHTSEN

CONTRA COSTA COUNTY CALIFORNIA  
SCALE 1" = 60' OCTOBER 2020

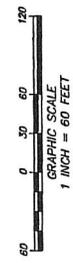
**MERIDIAN SURVEYING ENGINEERING, INC.**  
3500 SAN RAFAEL AVE  
SAN RAFAEL, CA 94903  
(415) 440-4031  
(415) 458-5650

**CURVE TABLE**

CURVE	RADIUS	LENGTH	DELTA
C1	150.00'	142.57'	54°27'22"
C2	150.00'	101.51'	38°46'55"
C3	625.00'	241.39'	18°32'14"
C4	675.00'	30.30'	2°34'20"
C5	50.00'	84.65'	109°27'44"
C6	50.00'	26.59'	30°20'12"
C7	50.00'	68.06'	77°59'32"
C8	625.00'	133.60'	12°14'52"
C9	675.00'	142.87'	12°08'37"

**LINE TABLE**

LINE	BEARING	DISTANCE	RECORD DIMENSIONS
L1	S 28°57'03" E	87.25'	S 31°32'10" E 87.27' [E]
L2	S 88°57'29" E	151.02'	S 88°57'29" E 151.02' [E]
L3	N 20°14'05" E (R)	25.00'	S 55°54'10" E 46.50' [E]
L4	N 20°14'05" E (R)	25.00'	
L5	N 20°14'05" E (R)	25.00'	
L6	N 20°14'05" E (R)	25.00'	
L7	N 01°07'55" E	25.00'	
L8	N 01°07'55" E	25.00'	
L9	N 01°07'55" E	25.00'	
L10	S 88°57'05" E	74.89'	
L11	S 88°57'05" E	74.71'	
L12	N 01°39'05" W	36.55'	



DETAIL 'B'  
SCALE 1"=60'

**Tax Collector's Office**  
625 Court Street  
Finance Building, Room 100  
P. O. Box 631  
Martinez, California 94553-0063  
(925) 957-5280  
(925) 957-2898 (FAX)

# Contra Costa County

**Russell V. Watts**  
County Treasurer-Tax Collector  
  
**Brice B. Bins**  
Chief Deputy Treasurer-Tax Collector  
  
**Lulis Lopez**  
Assistant Tax Collector



Date: 7/9/2021

IF THIS TRACT IS NOT FILED PRIOR TO THE DATE TAXES ARE OPEN FOR COLLECTION (R&T CODE 2608) **THIS LETTER IS VOID.**

This will certify that I have examined the map of the proposed subdivision entitled:

<u>Tract / MS #</u>	<u>City</u>	<u>T.R.A.</u>
05-0053	Knightsen	72014
Parcel #: 023-010-010-9 023-020-001-6 023-060-001-7		

and have determined from the official tax records that there are no unpaid County taxes heretofore levied on the property included in the map.

The 2020-2021 tax lien has been paid in full. Our estimate of the 2021-2022 tax lien, which became a Lien on the **1st day of January, 2021** is :

**\$19,000.00**

This tract is not subject to a 1915 Act Bond.

The amount calculated is void 45 days from the date of this letter, unless this letter is accompanied with security approved by the Contra Costa County Tax Collector **Subdivision bond must be presented to the County Tax Collector for review and approval of adequacy of security prior to filing with the Clerk of the Board of Supervisors.**

RUSSEL V. WATTS  
Treasurer-Tax Collector

By:

**COUNTY OF CONTRA COSTA**  
**ELECTRONIC DEPOSIT PERMIT**  
OFFICE OF COUNTY AUDITOR-CONTROLLER  
MARTINEZ, CALIFORNIA

DEPARTMENT NAME  
**TREASURER-TAX COLLECTOR**

FISCAL YEAR  
**2021 - 2022**

ORGANIZATION NUMBER **15**

DESCRIPTION OF DEPOSIT	FUND/ORG NO.	SUB ACCT	TASK	OPT	ACTIVITY	AMOUNT	TOTAL
subdiv guarantee	831400	0803				\$19,000.00	
tax collector special - subdivision guarantee							\$19,000.00

TOTAL DEPOSIT: **\$19,000.00**

**GENERAL DEPOSIT NOTES:**

**SITE OF DEPOSIT: BANK ACCOUNT DEPOSITED: Wells Fargo Bank - Tax Collector**  
**CASH: \$0.00 CHECKS: \$0.00 BANK DEPOSIT: \$19,000.00**

**Bank Receipt: SUB-DIV Date: 07/09/2021 NOTES: SUB-DIVISION 05-0053 GURANTEE APN 023-010-010-9, 023-010-001-6, AND 023-060-001-7**

SECTION 26901 GOVERNMENT CODE  
I HEREBY SWEAR THAT THIS IS A  
TRUE AND CORRECT RECORD OF THE TOTAL  
AMOUNT OF MONEY AS DESCRIBED ABOVE  
FOR DEPOSIT INTO THE COUNTY TREASURY

THE A-C OF CCC, HEREBY CERTIFIES  
THAT THE AMOUNT DUE THE TREASURER  
OF SAID COUNTY FOR MONIES COLLECTED  
BY **TREASURER-TAX COLLECTOR**  
**-WELLS FARGO BANK - TAX COLLECTOR**  
IN SETTLEMENT OF THE ABOVE DESCRIBED  
ACCOUNTS IS THE SUM OF **\$19,000.00**

RECEIPT OF ABOVE AMOUNT  
IS HEREBY ACKNOWLEDGED.

Jul 09, 2021 01:31:58PM

NOT PROCESSED

NOT PROCESSED

Marcela Perez  
USER VALIDATION

NOT SIGNED  
AUDITOR'S VALIDATION

NOT SIGNED  
TTC VALIDATION

USER PHONE NO.  
**925-957-2812**

SUBMIT DATE  
**Jul 09, 2021 01:31:58PM**

USER NAME  
**Marcela Perez**

EDP NO  
**DP831914**



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Approve & Authorize to fully close a portion of Beloit Avenue, on August 4, 2021 from 7:00 a.m. to 5:00 p.m., Kensington area.

---

**RECOMMENDATION(S):**

ADOPT Resolution No. 2021/235 approving and authorizing the Public Works Director, or designee, to fully close a portion of Beloit Avenue between Lake Drive and Purdue Avenue, on August 4, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole and installing an anchor, Kensington area. (District I)

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Applicant shall follow guidelines set forth by the Public Works Department.

**CONSEQUENCE OF NEGATIVE ACTION:**

Applicant will be unable to close the road for planned activities.

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APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Bob Hendry (925)  
374-2136

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander

ATTACHMENTS

Resolution No.  
2021/235

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/235**

IN THE MATTER OF: Approving and Authorizing the Public Works Director, or designee, to fully close a portion of Beloit Avenue between Lake Drive and Purdue Avenue, on August 4, 2021, from 7:00 a.m. through 5:00 p.m., for the purpose of replacing a utility pole and installing an anchor, Kensington area. (District I)

RC21-13

NOW, THEREFORE, BE IT RESOLVED that permission is granted to PG&E to fully close a portion of Beloit Avenue between Lake Drive and Purdue Avenue, except for emergency traffic, on August 4, 2021, for the period of 7:00 a.m. through 5:00 p.m., subject to the following conditions:

1. Traffic will be detoured per traffic control plan reviewed by Public Works.
2. All signing to be in accordance with the California Manual on Uniform Traffic Control Devices.
3. PG&E shall comply with the requirements of the Ordinance Code of Contra Costa County.
4. Provide the County with a Certificate of Insurance in the amount of \$1,000,000.00 for Comprehensive General Public Liability which names the County as an additional insured prior to permit issuance.
5. Obtain approval for the closure from the Sheriff's Department, the California Highway Patrol, Kensington Police and the Fire District.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**Contact: Bob Hendry (925) 374-2136**

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

**cc:** Larry Gossett- Engineering Services, Randolph Sanders- Engineering Services, Bob Hendry -Engineering Services, CHP, Sheriff - Patrol Division Commander



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Keith Freitas, Airports Director  
Date: August 3, 2021

Subject: APPROVE and AUTHORIZE the Director of Airports, or designee, to execute a hangar rental agreement with Buchanan Field Airport Hangar tenant

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Director of Airports, or designee, to execute a month-to-month hangar rental agreement with Michael McCarthy for a south-facing shade hangar at Buchanan Field Airport effective August 1, 2021 in the monthly amount of \$140.00, Pacheco area.

**FISCAL IMPACT:**

The Airport Enterprise Fund will realize \$1,680.00 annually.

**BACKGROUND:**

On September 1, 1970, Buchanan Airport Hangar Company entered into a 30-year lease with Contra Costa County for the construction of seventy-five (75) hangars and eighteen (18) aircraft shelters/shade hangars at Buchanan Field Airport. In 1977 Buchanan Airport Hangar Company amended their lease to allow for the construction of another 30-year lease with Contra Costa County for the construction of seventeen (17) additional hangars. Buchanan Airport Hangar Company was responsible for the maintenance and property management of the property during the lease period.

On

---

APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Beth Lee, (925)  
681-4200

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

BACKGROUND: (CONT'D)

September 1, 2000, the ninety-three (93) t- and shade hangars at Buchanan Field reverted to the County ownership pursuant to the terms of the above lease.

On November 14, 2006, the Contra Costa County Board of Supervisors approved the form of the T-Hangar and Shade Hangar Rental Agreement for use with renting the County's t-hangars, shade hangars, medium hangars, and executive hangars at Buchanan Field Airport.

On February 16, 2007, the additional seventeen (17) hangars at Buchanan Field reverted back to the County pursuant to the above referenced lease. This row included six (6) large hangars which were not covered by the approved T-Hangar and Shade Hangar Rental Agreement.

On February 23, 2007, Contra Costa County Board of Supervisors approved the new Large Hangar Rental Agreement for use with the large East Ramp Hangars.

On January 16, 2009, Contra Costa County Board of Supervisors approved an amendment to the T-Hangar and Shade Hangar Rental Agreement and the Large Hangar Rental Agreement (combined "Hangar Rental Agreements") which removed the Aircraft Physical Damage Insurance requirement. The Hangar Rental Agreements are the current forms in use for rental of all the County hangars at Buchanan Field Airport.

CONSEQUENCE OF NEGATIVE ACTION:

A negative action will cause a loss of revenue to the Airport Enterprise Fund.

ATTACHMENTS

B-5 Hangar Rental Agmt M McCarthy

## CONTRA COSTA COUNTY - BUCHANAN FIELD AIRPORT

### T-HANGAR AND SHADE HANGAR RENTAL AGREEMENT

1. **PARTIES:** August 1, 2021 ("Effective Date"), the COUNTY OF CONTRA COSTA, a political subdivision of the State of California ("Airport"), Michael McCarthy ("Renter"), hereby mutually agree and promise as follows:
  
2. **RENTER AND AIRCRAFT INFORMATION:** Simultaneous with the execution of this T-Hangar and Shade Hangar Rental Agreement ("**Rental Agreement**") by Renter, Renter shall complete the Renter and Aircraft Information Form. A completed copy of the Renter and Aircraft Information Form is attached hereto as Exhibit "A" and incorporated herein. Renter must also provide to Airport at that time, for inspection and copying, (1) the original current Aircraft Registration or, if the aircraft described in Exhibit A is under construction, the plans for and proof of ownership of such aircraft; and (2) the insurance information required by Section 16 below.
  
3. **PURPOSE:** The purpose of this Rental Agreement is to provide for the rental of a T-Hangar or Shade Hangar space at the Contra Costa County - Buchanan Field Airport for the storage of the aircraft described in the Renter and Aircraft Information Form ("**Renter's Aircraft**").
  
4. **PREMISES:** For and in consideration of the rents and faithful performance by Renter of the terms and conditions set forth herein, Airport hereby rents to Renter and Renter hereby rents from Airport that T-Hangar or Shade Hangar shown as # **B-05** on the T-Hangar and Shade Hangar Site Plan, attached hereto as Exhibit B and incorporated herein. This T-Hangar or Shade Hangar is part of the T-Hangar and Shade Hangar Site ("**T-Hangar Site**") and shall hereinafter be described as the "**T-Hangar**."
  

Renter has inspected the T-Hangar and hereby accepts the T-Hangar in its present condition, as is, without any obligation on the part of Airport to make any alterations, improvements, or repairs in or about the T-Hangar.

  
5. **USE:** The T-Hangar shall be exclusively by Renter for the storage of Renter's Aircraft. In addition to the storage of Renter's Aircraft, Renter may use the T-Hangar for (1) the homebuilding, restoration and/or maintenance of Renter's Aircraft, provided that such homebuilding, restoration and/or maintenance is performed by Renter only and in conformance with all applicable statutes, ordinances, resolutions, regulations, orders, circulars (including but not limited to FAA Advisory Circular 20-27) and policies now in existence or adopted from time to time by the United States, the State of California, the County of Contra Costa and other government agencies with jurisdiction over Buchanan Field Airport; (2) the storage of and materials directly

related to the storage, construction of homebuilt planes homebuilding, restoration, and/or maintenance of Renter's Aircraft; (3) the storage of one boat, or one recreational vehicle, or one motorcycle, or one automobile, provided that Renter first provides to Airport proof of Renter's ownership and original registration of any stored boat or vehicle, for inspection and copying; and/or (4) the storage of comfort items (such as a couch, small refrigerator, etc.) that the Director of Airports, in his sole discretion, determines will not impede the use of the hangar for the storage of Renter's Aircraft, and are not prohibited by applicable building and fire codes. The T-Hangar shall not be used for any purpose not expressly set forth in this Section 5. Use.

The use of all or a portion of the T-Hangar for the storage of aircraft not owned or leased by Renter is prohibited. ("Aircraft not owned or leased by Renter" means any aircraft in which Renter does not have an ownership interest or which is not directly leased to Renter). Renter shall present proof of said ownership interest or lease to Airport upon request in addition to that information provided in Exhibit A.

If Renter's Aircraft is or becomes non-operational, it may be stored in the T-Hangar only if it is being homebuilt or restored by Renter. Prior to the commencement of any such homebuilding or restoration, Renter shall provide to Airport (1) a copy of the purchase agreement or (2) a valid federal registration number. If Renter's Aircraft is not registered as of the Effective Date, upon completion of construction, Renter shall register and apply for an airworthiness certificate for Renter's Aircraft in accordance with all applicable federal statutes and regulations and provide the original registration and certification to Airport, for inspection and copying, immediately upon receipt by Renter. On or before January 1 of each year, if the homebuilding or restoration has not been completed, Renter shall provide a written annual report to the Director of Airports that details the homebuilding or restoration activity performed, work still required to be completed and an estimate of time of completion.

6. **TERM:** This Rental Agreement shall be from month to month commencing **August 1, 2021**, and shall continue until terminated. This Rental Agreement may be terminated by any party upon thirty (30) days written notice to the other party.

7. **RENT:**

**A. Monthly Rent and Additional Rent.** Renter shall pay \$ **140.00** in rent per month ("**Monthly Rent**") due and payable in advance on the first day of each calendar month, beginning on the commencement date of this Rental Agreement. Unless directed to do otherwise by Airport, Renter shall pay rent only in cash or by personal check, certified check, or money order. If the term of this Rental Agreement begins on a day other than the first day of the month, the Monthly Rent stated above for the first month shall be prorated



Contra  
Costa  
County

To: Board of Supervisors  
From: Monica Nino, County Administrator  
Date: August 3, 2021

Subject: Claims

---

**RECOMMENDATION(S):**

DENY claims filed by Dale Holly and Christopher Dwayne Slaughter.

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Dale Holly: Property claim for lost cell phone in an undisclosed amount.

Christopher Dwayne Slaughter: Personal injury claim for failure to treat back injury in the amount of \$200,000.

**CONSEQUENCE OF NEGATIVE ACTION:**

Not acting on the claims could extend the claimants' time limits to file actions against the County.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Scott Selby, Risk  
Mgmt

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors

From:

Date: August 3, 2021

Subject: APPROVE the Board meeting minutes for June 2021

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**RECOMMENDATION(S):**

APPROVE Board meeting minutes for June 2021, as on file with the Office of the Clerk of the Board.

**FISCAL IMPACT:**

No fiscal impact.

**BACKGROUND:**

Government Code Section 25101(b) requires the Clerk of the Board to keep and enter in the minute book of the Board a full and complete record of the proceedings of the Board at all regular and special meetings, including the entry in full of all resolutions and of all decisions on questions concerning the allowance of accounts. The vote of each member on every question shall be recorded. Districts I, IV and V have nothing to report for January 2021.

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Joellen Bergamini  
925.655.2000

, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors  
From: Candace Andersen, District II Supervisor  
Date: August 3, 2021

Subject: Resolution honoring the Discovery Counseling Center on its 50th Anniversary

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF  
SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator and Clerk of the Board of Supervisors

Contact: 9259578860

By: , Deputy

cc:

ATTACHMENTS

Resolution  
2021/240

*The Board of Supervisors of  
Contra Costa County, California*

In the matter of:

**Resolution No. 2021/240**

recognizing the Discovery Counseling Center on their 50th Anniversary.

The Discovery Counseling Center is a community-based non-profit organization serving the San Ramon Valley with high quality counseling services and programs; and

Whereas, Five decades ago, community members came together and hired a counselor to work with teens who were struggling with drug and alcohol issues; since then, the Discovery Counseling Center has grown to be a thriving source of mental health support for the whole community; and

Whereas, The Discovery Counseling Center provides affordable, culturally appropriate and accessible resources and treatment, promoting a safe environment where all issues and concerns can be discussed and addressed; and

Whereas, The Discovery Counseling Center is committed to implementing effective Diversity, Equity and Inclusion policies and practices; and

Whereas, The Discovery Counseling Center works to create a greater awareness of the prevalence of mental wellness issues in the community and the importance of early treatment; and

Whereas, The Discovery Counseling Center serves as the advocate in securing funding and resources for the treatment of mental wellness issues.

Now, therefore be it resolved that the Board of Supervisors of Contra Costa County is proud to recognize and honor the 50<sup>th</sup> Anniversary of the Discovery Counseling Center.

\_\_\_\_\_  
**DIANE BURGIS**

Chair, District III Supervisor

\_\_\_\_\_  
**JOHN GIOIA**

District I Supervisor

\_\_\_\_\_  
**CANDACE ANDERSEN**

District II Supervisor

\_\_\_\_\_  
**KAREN MITCHOFF**

District IV Supervisor

\_\_\_\_\_  
**FEDERAL D. GLOVER**

District V Supervisor

I hereby certify that this is a true and correct copy of an  
action taken  
and entered on the minutes of the Board of Supervisors on  
the date  
shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator

By: \_\_\_\_\_, Deputy



Contra  
Costa  
County

To: Board of Supervisors  
From: Karen Mitchoff, District IV Supervisor  
Date: August 3, 2021

Subject: In the Matter of Recognizing Monument Crisis Center for their 18 years of service to our community and the establishment of their "forever home"

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator and Clerk of the Board of Supervisors

Contact: Colleen Awad,  
925-521-7100

By: , Deputy

cc:

ATTACHMENTS

Resolution

2021/251

*The Board of Supervisors of  
Contra Costa County, California*

**In the matter of:**

**Resolution No. 2021/251**

**In the Matter of Recognizing Monument Crisis Center for their 18 years of service to our community and the establishment of their “forever home”**

**WHEREAS**, in 2003, a small group of concerned citizens banded together and founded Monument Crisis Center; and

**WHEREAS**, Monument Crisis Center initially started to serve the community as a food pantry that worked out of one single office and food “closet” and served 84 families on the first day of food distribution in the Monument Corridor; and

**WHEREAS**, not only does the Monument Crisis Center still have the food pantry, but they have several other programs as well including Senior Moments, After School Café, Summer and Holiday Food Box Drives, Annual Backpack Drive; and

**WHEREAS**, Monument Crisis Center seeks to improve the health of the community through Nutrition and Cooking classes, health screenings, dental screening and physical education; and

**WHEREAS**, After School Café is a tutoring program held throughout the school year where high school students help to tutor the neighborhood children. Not only do the younger students learn and improve in school, but the high school students learn responsibility and accountability; and

**WHEREAS**, in 2020, the needs in the community skyrocketed due to the COVID-19 pandemic, and Monument Crisis Center stepped up to the challenge and got back to basics with focusing on the food pantry program; and

**WHEREAS**, during the pandemic, Monument Crisis Center has averaged 171.1 households per day, spiking to an average of 298.2 households per day in April 2020 and over three months, from April to June of 2020, staff and volunteers served 1.5 households per minute every minute they were open; and

**WHEREAS**, the local community has supplied Monument Crisis Center with 10,000-12,000 pounds of nonperishable food donated every day for the distributions; and

**WHEREAS**, the health of clients is extremely important to Monument Crisis Center. They have partnered with Contra Costa Health Services to provide flu vaccines and partnered with La Clínica De La Raza to provide COVID-19 vaccine clinics to the community during some of the food distributions to provide a one-stop-shop of resources; and

**WHEREAS**, to preserve the location at 1990 Market Street in Concord, after tailoring the building to provide an extraordinary number of services, Monument Crisis Center embarked on a journey to purchase the building; and

**WHEREAS**, after many years of savings, combined with the recent capital campaign efforts, the help of private foundations, family foundations, long-time supporters, and donations from the greater community, Monument Crisis Center combined to raise the funds essential for the down payment, making it possible for MCC to secure a commercial loan for the balance; and

**WHEREAS**, at the request of California Senator Steve Glazer (D-Contra Costa), the California State Legislature voted to include Monument Crisis Center in the state budget by directing \$3.7 million to Monument Crisis Center’s capital expenses, which will pay off the remainder of the commercial mortgage, generating an equivalent savings of \$15,000 a month that can now be

directed to essential client services.

**Now Therefore Be It Resolved** that the Board of Supervisors does hereby honor Monument Crisis Center on their 18th anniversary and applauds their dedication to helping those with the highest need in our community. **Now Be It Further Resolved** that the Board of Supervisors congratulates Monument Crisis Center on the establishment of their “forever home” and to their long-term goal to provide food, education, and resources across our County.

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**DIANE BURGIS**

Chair, District III Supervisor

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**JOHN GIOIA**

District I Supervisor

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**CANDACE ANDERSEN**

District II Supervisor

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**KAREN MITCHOFF**

District IV Supervisor

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**FEDERAL D. GLOVER**

District V Supervisor

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator

By: \_\_\_\_\_, Deputy



Contra  
Costa  
County

To: Board of Supervisors  
From: Matt Slattengren, Ag Commissioner/Weights & Measures Director  
Date: August 3, 2021

Subject: Industrial Hemp Ag Ordinance

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**RECOMMENDATION(S):**

1. DETERMINE that adoption of ordinances to regulate industrial hemp cultivation is exempt from the California Environmental Quality Act (CEQA) under CEQA Guidelines section 15061(b)(3) (common sense exemption).
- 2.

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF  
SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator and Clerk of the Board of Supervisors

Contact:  
925-608-6600

By: , Deputy

cc:

### RECOMMENDATION(S): (CONTD)

ADOPT Ordinance No. 2021-22 to require all persons desiring to engage in industrial hemp cultivation in the unincorporated areas of Contra Costa County to obtain a permit from the Contra Costa County Agricultural Commissioner in addition to all other required County and State permits and registrations, and to establish standards for cultivating industrial hemp.

3. DIRECT staff to file a CEQA Notice of Exemption with the County Clerk-Recorder.

### FISCAL IMPACT:

None

### BACKGROUND:

The Agriculture Improvement Act of 2018 (the 2018 Farm Bill) removed industrial hemp from Schedule I of the federal Controlled Substances Act. Even though growing industrial hemp is currently legal under State and Federal law, the lack of local regulation has shown to be problematic as the similarities between cannabis and industrial hemp plants present challenges for law enforcement and code enforcement when determining whether a cultivation site complies with applicable law.

Industrial hemp and cannabis are derivatives of the same plant and can only be distinguished through chemical analysis for the presence of tetrahydrocannabinol (THC). If the plant has a concentration of 0.3% THC or less, it is industrial hemp. However, THC levels are difficult to test reliably until the plant is close to maturity and ready for harvest. The cultivation of industrial hemp has also shown to be a potential creator of significant impacts to neighboring properties such as light pollution, odor, and need for heightened security.

Considering these issues, and to allow time for staff to develop appropriate draft regulations, on November 17, 2020, the Board of Supervisors adopted an urgency interim ordinance imposing a temporary moratorium on industrial hemp cultivation. The Board twice extended the moratorium, which currently extends through September 30, 2021. During the moratorium the Department of Conservation and Development and the Department of Agriculture worked collaboratively to develop regulations for industrial hemp cultivation. Staff believes that the two ordinances—a zoning ordinance and an agricultural permit ordinance—will provide appropriate regulation of industrial hemp cultivation.

### Proposed Ordinance

On July 27, 2021, the Board of Supervisors held a public hearing and adopted the Industrial Hemp Cultivation Zoning Ordinance No. 2021-21. The Board also introduced the Agricultural Industrial Hemp Permit Ordinance No. 2021-22 and fixed August 3, 2021 for adoption of Ordinance No. 2021-22.

Ordinance No. 2021-22 was prepared by the County Agricultural Department to establish standards for cultivating industrial hemp and require a person to obtain a permit from the Contra Costa County Agricultural Commissioner, in addition to all other required County and State permits and registrations, prior to cultivation. Testing, tracking, transportation, and destruction of industrial hemp plants will be regulated by the County Agricultural Department under the provisions of the agricultural permit ordinance.

Staff believes that Ordinance No. 2021-22, with the previously adopted zoning ordinance, will provide appropriate regulation of industrial hemp cultivation.

### CONSEQUENCE OF NEGATIVE ACTION:

If the Board does not adopt the proposed ordinance, industrial hemp cultivation will be insufficiently regulated and may continue to result in problems with enforcement.

ATTACHMENTS

Ordinance No. 2021-22

ORDINANCE NO. 2021-22

INDUSTRIAL HEMP PERMITS AND CULTIVATION

The Contra Costa County Board of Supervisors ordains as follows (omitting the parenthetical footnotes from the official text of the enacted or amended provisions of the County Ordinance Code):

**SECTION I. SUMMARY.** This ordinance adds Chapter 512-4 to the County Ordinance Code to require all persons desiring to engage in industrial hemp cultivation in the unincorporated areas of Contra Costa County to obtain a permit from the Contra Costa County Agricultural Commissioner in addition to all other required County and State permits and registrations, and to establish standards for cultivating industrial hemp.

**SECTION II.** Chapter 512-4 is added to the County Ordinance Code, to read:

**Chapter 512-4**  
**INDUSTRIAL HEMP PERMITS AND CULTIVATION**

**Article 512-4.2**  
**General Provisions**

**512-4.202 Purpose.** The purpose of this chapter is to regulate industrial hemp cultivation by requiring all persons engaged in industrial hemp cultivation to obtain a permit from the Contra Costa County Agricultural Commissioner in addition to all other licenses, permits, authorizations, and registrations required by the County and the State. (Ord. 2021-22, § 2.)

**512-4.204 Definitions.** For purposes of this chapter, the following terms have the following meanings:

- (a) “Cultivation” includes any activity involving the propagation, planting, growing, breeding, harvesting, drying, curing, grading, trimming, other development of industrial hemp plants or propagative plant material, and includes cultivation for research purposes.
- (b) “Established agricultural research institution” has the meaning set forth in Food and Agricultural Code section 81000(a)(4).
- (c) “Greenhouse” means a structure that is used for the indoor propagation of plants; has permanent structural elements, such as footings or foundations; is constructed with a translucent roof or walls; and is served by utilities such as electrical, natural gas, or plumbing. The term “greenhouse” includes structures commonly known as “hothouses.”
- (d) “Hoop structure” means a structure consisting of a lightweight metal, plastic, or wooden frame, or a series of hoops, that is covered by an impermeable, removable layer of plastic or polyethylene film used to protect plants grown in the soil or in containers upon the soil. A hoop structure has no permanent structural elements, such as footings, foundations, plumbing, or electrical wiring. The term “hoop structure” includes structures commonly known as “berry hoops” or “hoop houses.”

- (e) “Industrial hemp” or “hemp” has the meaning set forth in Food and Agricultural Code section 81000(a)(6).
- (f) “Male industrial hemp plant” means an industrial hemp plant that has male staminate flowers or is otherwise capable of producing pollen.
- (g) “Nursery stock” has the meaning set forth in Food and Agricultural Code section 5005. (Ord. 2021-22, § 2.)

#### **Article 512-4.4 Industrial Hemp Permits**

##### **512-4.402 Permit requirement.**

- (a) It is unlawful for any person to engage in industrial hemp cultivation without obtaining and maintaining an industrial hemp permit from the Agricultural Commissioner pursuant to this chapter.
- (b) The requirements of this chapter are in addition to all other applicable requirements of this code and all applicable state laws and regulations. Nothing in this chapter eliminates the requirement for a person engaged in industrial hemp cultivation to comply with all applicable county, state, and federal laws and regulations, and to obtain all other permits, approvals, registrations, and authorizations required by this code and by state and federal agencies. (Ord. 2021-22, § 2.)

**512-4.404 Permit applications.** An application for an industrial hemp permit shall be submitted to the Agricultural Commissioner on a form available from the Agricultural Commissioner and shall contain the following information:

- (a) Identifying information for applicant. The name, address, and telephone number for the applicant. If the applicant is an entity and not an individual, the term “applicant” means each person participating in the direction, control, or management of the entity.
- (b) Description of premises. The address and assessor’s parcel number(s) of the property upon which the proposed industrial hemp activity will be located.
- (c) Proof of ownership of premises. Proof of the applicant’s ownership of the premises on which the industrial hemp cultivation is to occur, or if the premises is rented or leased, written permission from the property owner containing the property owner’s notarized signature that authorizes the tenant or lessee to engage in industrial hemp cultivation at the site.
- (d) State industrial hemp registration. The applicant must satisfy the registration requirements in Food and Agricultural Code sections 81003, 81004, and 81004.5, as applicable.

- (e) Consent to inspections. The applicant must consent to inspections, sampling, and testing that may be conducted at the discretion of the Agricultural Commissioner.
- (f) Land use permit. A copy of the land use permit issued pursuant to Chapter 88-34 of this code authorizing the proposed industrial hemp cultivation, and all applications and materials submitted in support of issuance of the land use permit.
- (g) Certification. Certification, under penalty of perjury, that all the information contained in the application is true and correct. (Ord. 2021-22, § 2.)

**512-4.408 Review of application.**

- (a) The Agricultural Commissioner will review each application for an industrial hemp permit. The Agricultural Commissioner will deem the application incomplete if it does not contain all required information and documents, or if any required application fees have not been paid.
- (b) After reviewing a complete application for an industrial hemp permit, the Agricultural Commissioner will approve the application unless any of the following grounds for denial exist:
  - (1) The applicant has knowingly made a false statement of material fact or has knowingly omitted a material fact from the application.
  - (2) The proposed industrial hemp cultivation will not comply with the provisions of this chapter.
  - (3) The proposed industrial hemp cultivation will not comply with all State and local laws and regulations.
  - (4) The applicant has not obtained all required State registrations and local permits.
- (c) The decision of the Agricultural Commissioner to approve or deny a permit application is final. If the Agricultural Commissioner denies the application, the Agricultural Commissioner will specify in writing the reasons for denial of the application and notify the applicant of the decision. (Ord. 2021-22, § 2.)

**512-4.410 Permit renewal.**

- (a) A permit issued under this chapter expires one year from the date of its issuance.
- (b) An application for renewal must be filed with the Agricultural Commissioner at least seven calendar days before the permit expires. If any of the documentation or information supplied by the applicant pursuant to Section 512-4.404 has changed since the permit was issued, the applicant must submit updated information and documentation with the application for renewal. The Agricultural Commissioner will deem the application incomplete if it does not contain all required information and documents.

- (c) After reviewing a renewal application, the Agricultural Commissioner will approve the renewal application unless any of the following grounds for denial exist:
  - (1) Any of the grounds for denial under Section 512-4.408.
  - (2) The application is filed less than seven calendar days before the permit expires.
  - (3) The permit is revoked at the time of application.
- (d) The decision of the Agricultural Commissioner to approve or deny a permit renewal application is final. If the Agricultural Commissioner denies the application for renewal, the Agricultural Commissioner will specify in writing the reasons for denial of the application for renewal and notify the applicant of the decision.
- (e) If a renewal application is denied, an applicant may file a new permit application pursuant to Section 512-4.404. (Ord. 2021-22, § 2.)

**512-4.412 Fees.** An industrial hemp permit or a renewed industrial hemp permit will not be issued until all required fees are paid. (Ord. 2021-22, § 2.)

**512-4.414 Permit nontransferable.** An industrial hemp permit is not transferable and automatically terminates upon transfer of ownership. (Ord. 2021-22, § 2.)

## **Article 512-4.6 Cultivation Standards**

### **512-4.602 Cultivation**

- (a) An outdoor cultivation area may only be planted with female propagative plant material.
- (b) A permittee must conduct regular inspections of an outdoor cultivation area to ensure no male industrial hemp plants are growing outdoors. If a male industrial hemp plant is growing outdoors, the permittee must remove and destroy the male industrial hemp plant within 72 hours after the permittee knew of the occurrence and in accordance with California Code of Regulations, Title 3, Section 4950.1.
- (c) Cultivation of male industrial hemp plants may only occur in a permanent building or a greenhouse. Cultivation of male industrial hemp plants in a hoop structure is prohibited.
- (d) The sale or transfer of nursery stock is prohibited.
- (e) Signs. All premises used for the cultivation of industrial hemp must have signs indicating that it is an industrial hemp cultivation site. The signs shall:
  - (1) be placed at all premises entry points, including each road, trail, footpath, walkway, and aisle;

- (2) be posted at all premises corners;
  - (3) have minimum dimensions of three feet by three feet;
  - (4) contain words that are clearly visible and readable to a person with normal vision from a distance of 25 feet;
  - (5) use letters and symbols that are of a color that sharply contrasts with their immediate background; and
  - (6) when a premises is adjacent to a public right-of-way, be posted at intervals not exceeding 600 feet along the border of the premises with the public right-of-way.
- (g) If industrial hemp is to be removed from a premises before harvest for any purpose, the permittee must notify the Agricultural Commissioner of the proposed removal a minimum of three calendar days before the removal. The notification must identify the number of hemp plants to be removed and the proposed destination of the hemp to be removed, and must include any additional information required by the Agricultural Commissioner. No industrial hemp may be removed from a premises before the required notification to the Agricultural Commissioner is made. (Ord. 2021-22, § 2.)

#### **512-4.604 Destruction**

- (a) A destruction plan must contain all information required by State industrial hemp laws and regulations, and all other information required by the Agricultural Commissioner, to ensure compliance with this chapter and this code.
- (b) No industrial hemp plant may be destroyed before the Agricultural Commissioner's review and approval of the destruction plan. The Agricultural Commissioner may require one or more inspections before and after destruction, and may require other methods of verifying compliance with an approved destruction plan. (Ord. 2021-22, § 2.)

#### **512-4.606 Cultivation of industrial hemp for research**

- (a) An established agricultural research institution wishing to grow industrial hemp for research purposes in the County must have a permit issued by the Agricultural Commissioner.
- (b) The cultivation of industrial hemp by an established agricultural research institution for research or educational purposes is:
  - (1) Subject to the registration requirements imposed by the California Department of Food and Agriculture; and
  - (2) Limited to a total of one acre per permit holder within the County. (Ord. 2021-22, § 2.)

**Article 512-4.8  
Administration**

**512-4.802 Fees**

- (a) The Board of Supervisors may establish a schedule of fees for services provided under this chapter.
- (b) The Board of Supervisors may establish fees to cover the costs of implementing, administering, and enforcing State industrial hemp laws, except for costs that are otherwise reimbursed by the State, pursuant to Food and Agricultural Code section 81005. (Ord. 2021-22, § 2.)

**512-4.804 Records.** A permittee, upon request, shall provide the Agricultural Commissioner with copies of records that the Agricultural Commissioner requires to verify the permittee's compliance with this chapter and other applicable requirements of this code, as well as federal and State laws and regulations. (Ord. 2021-22, § 2.)

**512-4.806 Report of theft and vandalism.** A permittee must report any theft, vandalism, or other criminal or potentially criminal activity occurring on a parcel on which the permittee is cultivating industrial hemp to the Contra Costa County Sheriff within 24 hours after the permittee's knowledge of the incident, and must report the incident to the Agricultural Commissioner within five days after the permittee's knowledge of the incident. (Ord. 2021-22, §2.)

**Article 512-4.10  
Permit Enforcement**

**512-4.1002 Enforcement.** The County may enforce this chapter by any remedy allowed under this code, including permit revocation and administrative fines pursuant to Chapter 14-12 of this code, and any other remedy allowed by law. (Ord. 2021-22, § 2.)

**512-4.1004 Permit revocation.**

- (a) Grounds for revocation. An industrial hemp permit may be revoked on any of the following grounds:
  - (1) One or more of the grounds for denial of an industrial hemp permit under Section 512-4.408 existed either when the permit application was made or before the industrial hemp permit was issued.
  - (2) Any violation of this chapter.
  - (3) Any violation of State or local laws or regulations.
  - (4) The industrial hemp permit was transferred in violation of Section 512-4.414.
- (b) Notice of revocation hearing. If any grounds for revocation exist, the Agricultural Commissioner may issue a notice of revocation hearing. A written notice of revocation

hearing will be served on the permittee by either personal service or regular United States mail and will include all of the following information:

- (1) The date of the violation.
  - (2) The address or other description of the location where the violation occurred.
  - (3) The grounds for revocation.
  - (4) The date of the revocation hearing before the Agricultural Commissioner.
- (c) Revocation hearing. An industrial hemp permit may be revoked by the Agricultural Commissioner after a revocation hearing. At the hearing, the permittee will be given the opportunity to testify and to present evidence concerning the notice of revocation hearing. After considering the testimony and evidence submitted at the hearing, the Agricultural Commissioner will issue a written decision to revoke or not revoke the industrial hemp permit and will list in the decision the reason or reasons for the decision. The written decision will be served by either personal service or regular United States mail.
- (d) Revocation appeal. The decision of the Agricultural Commissioner to revoke an industrial hemp permit is appealable to the board of supervisors under Chapter 14-4.
- (e) Final order. The industrial hemp permit revocation becomes a final administrative order at one of the following times:
- (1) On the date of the revocation hearing, if the permittee fails to appear at a scheduled revocation hearing.
  - (2) On the date the Agricultural Commissioner's decision is served, if the permittee fails to file a written appeal to the board of supervisors within the time specified.
  - (3) On the date of the appeal hearing, if the permittee fails to appear at a scheduled appeal hearing before the board of supervisors.
  - (4) On the date of the decision by the board of supervisors, if the permittee appears at a scheduled appeal hearing before the board of supervisors.
- (f) If a permit is revoked under this section, the permittee may file a new permit application pursuant to Section 512-4.404, after remedying the grounds upon which the permit was revoked. (Ord. 2021-22, § 2.)

**SECTION III.** Section 14-12.002 of the County Ordinance Code is amended to read:

**14-12.002 Applicability and Authorization.**

- (a) This chapter provides for administrative fines, enforcement, and collection remedies that the County may pursue to address any violation of the following provisions of the Contra Costa County Ordinance Code:
  - (1) Division 413 and Chapters 414-4, 414-6, 416-14, 418-2, 418-6, 418-12, 420-2, 420-6, and 450-6 (environmental health regulations).
  - (2) Division 445 (smoking and tobacco regulations).
  - (3) Title 7 (building regulations).
  - (4) Title 8 (zoning regulations).
  - (5) Chapter 512-4 (industrial hemp).
- (b) Remedies under this chapter are in addition to any other remedy allowed by this code or applicable law. The use of this chapter is at the sole discretion of the director.
- (c) This chapter is authorized by California Government Code section 53069.4. (Ords. 2021-22 § 3, 2006-66 § 8, 2003-01 § 6, 2002-47 § 3, 2000-21 § 2.)

**SECTION IV.** Section 14-12.004 of the County Ordinance Code is amended to read:

**14-12.004 Definitions.** For purposes of this chapter, the following words and phrases have the following meanings:

- (a) “Director” includes the following officials and their designees:
  - (1) Director of Health Services.
  - (2) Director of Community Development.
  - (3) Director of Building Inspection (County Building Official).
  - (4) Agricultural Commissioner.
- (b) “Effective date” means the date by which a violation must be corrected, as specified in a notice of violation.
- (c) “Hearing Examiner” means the following officials:
  - (1) Director of Environmental Health.

- (2) Public Health Director.
  - (2) Director of Building Inspection.
  - (3) Zoning Administrator.
  - (4) Agricultural Commissioner.
- (d) “Owner” means the owner of property upon which a violation of this chapter exists, the occupant of that property, or any other party responsible for the violation.
- (e) “Service date” means the date a notice or decision is served in accordance with section 14-12.018. (Ords. 2021-22 § 4, 2003-01 § 7, 2002-47 § 3, 2000-21 § 2.)

**SECTION V.** Section 14-12.008 of the County Ordinance Code is amended to read:

**14-12.008 Appeals.**

- (a) Any person upon whom an administrative fine is imposed by the director may appeal the fine pursuant to the procedures set forth in this section. The appellant must file a written appeal with the director within 15 calendar days of the service date of the notice of fine. The written appeal must contain:
- (1) A brief statement setting forth the interest the appealing party has in the matter relating to the imposition of the penalty; and
  - (2) A brief statement of the material facts that the appellant claims supports his or her contention that no administrative penalty should be imposed or that an administrative penalty of a different amount is warranted.
- (b) Notice of the appeal hearing will be served as specified in section 14-12.018 and will set the appeal hearing no sooner than 20 days and no later than 45 days following the service date of the notice of appeal hearing.
- (c) An appeal of an administrative fine imposed for violations of this code will be heard by the following hearing examiners:
- (1) Director of Environmental Health for violations of Division 413 and Chapters 414-4, 414-6, 416-14, 418-2, 418-6, 418-12, 420-2, 420-6, and 450-6.
  - (2) Public Health Director for violations of Division 445.
  - (3) Director of Building Inspection for violations of Title 7.
  - (4) Zoning Administrator for violations of Title 8.
  - (5) Agricultural Commissioner for violations of Chapter 512-4.

- (d) At the hearing, the appellant will be given the opportunity to testify and to present evidence.
- (e) After considering the testimony and evidence submitted at the hearing, or after the appellant has failed to appear at the hearing, the hearing examiner will issue a written decision to uphold, modify, or cancel the administrative fine and will list in the decision the reason or reasons for that decision. The decision will be served as specified in section 14-12.018. (Ords. 2021-22 § 5, 2006-66 § 8, 2003-01 § 8, 2002-47 § 3, 2000-21 § 2.)

**SECTION VI. EFFECTIVE DATE.** This ordinance becomes effective 30 days after passage, and within 15 days after passage shall be published once with the names of supervisors voting for or against it in the East Bay Times, a newspaper published in this County.

PASSED ON \_\_\_\_\_, 2021, by the following vote:

AYES:  
 NOES:  
 ABSENT:  
 ABSTAIN:

ATTEST:	MONICA NINO, Clerk of the Board of Supervisors and County Administrator	_____ Board Chair
---------	---	----------------------

By:	_____ Deputy	[SEAL]
-----	-----------------	--------

HMS:



Contra  
Costa  
County

To: Board of Supervisors  
From: Karen Mitchoff, District IV Supervisor  
Date: August 3, 2021

Subject: APPOINTMENT TO THE FAMILY AND CHILDREN'S TRUST COMMITTEE

---

**RECOMMENDATION(S):**

REAPPOINT David Leimsieder to the District 4 seat on the Family and Children's Trust Committee for a term with an expiration date of September 30, 2023.

**FISCAL IMPACT:**

none

**BACKGROUND:**

In 1982 the Board of Supervisors established the Family and Children's Trust (FACT) Committee to make recommendations regarding the allocation of funds for the prevention and intervention services to reduce child abuse and neglect, provide support services for families with children, and promote a more coordinated seamless system of services. In addressing the needs of the community focusing on prevention and intervention services to reduce child abuse and neglect, FACT maintains a committee comprised of individuals with diverse knowledge, backgrounds, and community perspectives regarding community needs to serve families with children.

**CONSEQUENCE OF NEGATIVE ACTION:**

The seat will become vacant

---

APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Lisa Chow,  
(925)521-7100

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Medical Staff Appointments and Reappointments – July, 2021

---

**RECOMMENDATION(S):**

APPROVE the medical staff appointments and reappointments, additional privileges, advancement, and voluntary resignations as recommend by the Medical Staff Executive Committee, at their July 19, 2021 meeting, and by the Health Services Director.

**FISCAL IMPACT:**

There is no fiscal impact for this action.

**BACKGROUND:**

The Joint Commission has requested that evidence of Board of Supervisors approval for each medical staff member will be placed in his or her Credentials File. The above recommendations for appointment/reappointment were reviewed by the Credentials Committee and approved by the Medical Executive Committee at their July 19, 2021 meeting.

**CONSEQUENCE OF NEGATIVE ACTION:**

If this action is not approved, the Contra Costa Regional Medical and Contra Costa Health Centers' medical staff would not be appropriately credentialed and not be in compliance with The Joint Commission.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Jaspreet Benepal,  
925-370-5101

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Marcy Wilhelm , Linda Barnum

## ATTACHMENTS

List

Anna M. Roth, R.N., M.S., M.P.H.  
Health Services Director

---

Samir B. Shah, M.D., F.A.C.S.  
Chief Executive Officer  
Contra Costa Regional Medical Center  
and Health Centers  
& Chief Medical Officer  
Contra Costa Health Services



Contra Costa Regional  
Medical Center  
& Health Centers

---

2500 Alhambra Avenue  
Martinez, California 94553-3156  
Ph 925-370-5000

**A. New Medical Staff Members**

Chambers, Cynthia, MD  
Cho, Peter, MD  
Dalal, Aparna, MD  
Elahi, Shan, MD  
Fonseca, Sylvia, MD  
Frischtak, Helena, MD  
Harris, Laura, MD  
Hobson, Kali, MD  
Najibi, Skender, MD  
Postone, Ariel, MD  
Saud, Shakir, MD  
Shah, Amish, MD  
Sivimani, Raja, MD  
Simon, Ari, DO  
Tung, Chiu, MD  
Yen, An, MD

Internal Medicine-Dermatology  
DFAM  
Anesthesia  
Psychiatry/Psychology  
DFAM  
DFAM  
OB/GYN  
Psychiatry/Psychology  
DFAM  
DFAM  
DFAM  
Internal Medicine-Pulmonology  
Internal Medicine-Dermatology  
Emergency Medicine  
Anesthesia  
Internal Medicine-Dermatology

**B. Lifelong Residents**

---

Khanolkar, Adrienne, MD

**C. 6 Month Evaluations**

Chen, Douglas, MD  
Stotesbery, Kory, MD  
Trope, Alexander, MD  
Anderson, Orson  
Deshpande, Durga MD

Psychiatry/Psychology  
Psychiatry/Psychology  
Psychiatry/Psychology  
Family Medicine  
Pediatrics

**D. Advance to Non-Provisional**

Bapat, Manasi, MD  
Doctorvaladan, Sahar, MD  
Mutter, Bettina, MD  
Pai, Vidya, MD

Internal Medicine (Nephrology)           A  
OB/GYN                                        A  
Psychiatry/Psychology                    A  
Pediatrics                                      C

**E. Biennial Reappointments**

Aarden, Pyra, MD	Emergency Medicine	A
Bhatt, Veda, MD	DFAM	A
Boly, Lawrence, MD	DFAM	A
Boudreau, Jamie, MD	Pediatircs	A
Burt, Karen, MD	DFAM	ADMIN
Cheng, Jennifer, DO	Internal Medicine	C
Dyer, Bridget, MD	Emergency Medicine	A
Frances, Catherine, DO	Psychiatry/Psychology	C
Kim, Charleen, MD	Surgery	A
Larson, Kimberly, MD	Pediatircs	C
Lee, Bailey, MD	Diagnostic Imaging	C
Moyer, Kaili, Psy.D	Psychiatry/Psychology	A
Nguyen, MyHoang, MD	DFAM	A
Roe, Taiyun, MD	DFAM	A
Rosenthal, Macey, MD	Psychiatry/Psychology	C
Terry, Jonathan, DO	Psychiatry/Psychology	C
Wasserman, Ronald, MD	Internal Medicine	C

**F. Biennial Renewal of Privileges**

Hellman-Wylie, Cynthia, NP	Internal Medicine	AFF
Shaw, Howard, NP	Internal Medicine	AFF
Turner, Shannon, NP	DFAM	AFF

**G. Teleradiologist (VRAD) Reappointments**

Cheng, Sam, MD	Diagnostic Imaging
Fernandez, James Reza, MD	Diagnostic Imaging
Pratt, Alan, MD	Diagnostic Imaging

**H. Voluntary Resignations**

Boutros, Shadi, DDS	Dental
Chen, Douglas, MD	Psychiatry/Psychology
Critchlow, Kevin, MD	DFAM
Gandhi, Shailesh, MD	Psychiatry/Psychology
Howard, Phyllis, NP	DFAM
Jenkins, Vuthy, FNP	DFAM
Mariano, Maria, MD	Psychiatry/Psychology
Seymour, Jennifer, DO	Emergency Medicine
Tome, Lucia, MD	DFAM
Watters, Emily, MD	Psychiatry/Psychology
Wright, Matthew, MD	Psychiatry/Psychology
Boutros, Shadi, DDS	Dental
Chen, Douglas, MD	Psychiatry/Psychology
Critchlow, Kevin, MD	DFAM
Gandhi, Shailesh, MD	Psychiatry/Psychology
Howard, Phyllis, NP	DFAM
Jenkins, Vuthy, FNP	DFAM



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Karen Mitchoff, District IV Supervisor  
Date: August 3, 2021

Subject: ACCEPT the resignation of Dan Wichlan from the Contra Costa County Library Commission and DECLARE the seat vacant

---

**RECOMMENDATION(S):**

ACCEPT the resignation of Dan Wichlan, DECLARE a vacancy in the District IV Alternate Seat on the Contra Costa County Library Commission, and DIRECT the Clerk of the Board to post the vacancy, as recommended by Supervisor Karen Mitchoff.

**FISCAL IMPACT:**

none

**BACKGROUND:**

The role of members that serve in an advisory capacity to the Board of Supervisors and the County Librarian are; to provide a community linkage to the County Library; to establish a

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Lisa Chow,  
(925)521-7100

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

BACKGROUND: (CONT'D)

forum for the community to express its views regarding goals and operations of the County Library; to assist the Board of Supervisors and the County Librarian to provide library services based on assessed public needs; and to develop and recommend proposals to the Board of Supervisors and the County Librarian for the betterment of the County Library including, but not limited to, such efforts as insuring a stable and adequate funding level for the libraries in the County.

CONSEQUENCE OF NEGATIVE ACTION:

The Supervisor would be unable to appoint a new individual to the seat.



Contra  
Costa  
County

To: Board of Supervisors  
From: Russell Watts, Treasurer-Tax Collector  
Date: August 3, 2021

Subject: Accept a Resignation and a New Appointment on the Treasury Oversight Committee

---

**RECOMMENDATION(S):**

ACCEPT the resignation of Bill Clark from the County Superintendent of School's seat on the Treasury Oversight Committee due to retirement on June 30, 2021, and ACCEPT the appointment of Denise Porterfield to represent the County Superintendent of Schools, Lynne Mackey, on the Treasury Oversight Committee for the period of August 1, 2021 to April 30, 2024.

**FISCAL IMPACT:**

None

**BACKGROUND:**

The Contra Costa County Treasury Oversight Committee is composed of seven statutory members, one of whom is the County Superintendent of Schools or his/her designee. With the retirement of Bill Clark on June 30, 2021, Lynn Mackey, Contra Costa County Superintendent of Schools, has appointed Denise Porterfield as her designee to the TOC effective August 1, 2021 to April 30, 2024. Attached is a copy of the County Superintendent of School's appointment letter and Denise Porterfield's application and biography.

Ms. Porterfield comes

---

APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Ronda Boler, (925)  
957-2806

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

BACKGROUND: (CONT'D)

to Contra Costa County Office of Education with 29 years of experience in providing business services for education and serving school districts and county offices of education. In addition, Ms. Porterfield grew up in Contra Costa County. Prior to returning to Contra Costa County, she served 11 years as the Deputy Superintendent in a neighboring county. Ms. Porterfield has a Bachelor's degree in Business Administration from Saint Mary's College, is a graduate of FCMAT/CASBO CBO Mentor Program and has certification E as a Chief Business Official (CBO) from CASBO.

CONSEQUENCE OF NEGATIVE ACTION:

No continuous representation by the Contra Costa County Superintendent of Schools on the Treasury Oversight Committee.

ATTACHMENTS

Superintendent of School Appointment Ltr

Biography

TOC Application\_D Porterfield\_Redacted



## Contra Costa County Office of Education

77 Santa Barbara Road, Pleasant Hill, CA 94523 • (925) 942-3388  
Lynn Mackey, Superintendent of Schools

May 25, 2021

Russell V. Watts  
Treasurer-Tax Collector  
Contra Costa County  
625 Court Street, Room 100  
Martinez, CA 94553

Dear Mr. Watts:

I hereby appoint Denise Porterfield to serve as the County Superintendent of Schools' designee on the Treasury Oversight Committee for the period of August 1, 2021- April 30, 2024.

Feel free to contact me should you have any questions.

Respectfully,

A handwritten signature in blue ink that reads "Lynn Mackey". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Lynn Mackey  
Superintendent of Schools  
Contra Costa County

LM:bf

## Biography

Denise Porterfield comes to Contra Costa County Office of Education with 29 years of experience in providing business services for education. She has served in both school districts and in county offices of education and understands the complexity involved in business practices.

Denise Porterfield grew up in Contra Costa County and recently moved back after serving 11 years as the Deputy Superintendent in a neighboring county where she provided guidance and expertise to school districts and county office programs. She believes that students and staff should have all the resources they need and that educational funding can support.

Ms. Porterfield has a Bachelor's degree in Business Administration from Saint Mary's College, is a graduate of the FCMAT/CASBO CBO Mentor program and has her certification E as a Chief Business Official (CBO) from CASBO. She believes in lifelong learning and serves as a mentor for candidates in the CBO Mentor Program.

As the Business and Administration Steering Committee chair, Ms. Porterfield worked closely with state and local representatives on issues affecting students and educational funding. She continues to serve of a number of committees, such as the Common Message, to provide guidance and advice to the educational field.

Ms. Porterfield enjoys raising cows, chickens and her hobby vineyard. When not working her small farm, she enjoys travel, reading and crafts.

As the Deputy Superintendent, Business and Administrative Service, Denise will provide leadership in Business, General Services, Technology and District Fiscal Oversight for the school districts in Contra Costa.



Contra  
Costa  
County

Please return completed applications to:

Clerk of the Board of Supervisors  
1025 Escobar Street, 1st Floor  
Martinez, CA 94553

or email to: ClerkofTheBoard@cob.cccounty.us

**BOARDS, COMMITTEES, AND COMMISSIONS APPLICATION**

**First Name**  
Denise

**Last Name**  
Porterfield

**Home Address - Street**  
[REDACTED]

**City**  
Knightsen

**Zip Code**  
94548-0472

**Phone (best number to reach you)**  
[REDACTED]

**Email**  
[REDACTED]

**Resident of Supervisorial District:** 3

**EDUCATION** Check appropriate box if you possess one of the following:

High School Diploma     CA High School Proficiency Certificate     G.E.D. Certificate

Colleges or Universities Attended	Course of Study/Major	Degree Awarded	
St. Mary's College	Business Administration	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Other Training Completed: [REDACTED]

**Board, Committee or Commission Name**  
Treasury Oversight Board

**Seat Name**  
Committe Member

**Have you ever attended a meeting of the advisory board for which you are applying?**

No     Yes    If yes, how many? [REDACTED]

**Please explain why you would like to serve on this particular board, committee, or commission.**

To serve as the schools representative.

**Describe your qualifications for this appointment.** (NOTE: you may also include a copy of your resume with this application)

Deputy Superintendent, Contra Costa County Office of Education  
Served 10 years on TOC for San Mateo County

**I am including my resume with this application:**

Please check one:     Yes     No

**I would like to be considered for appointment to other advisory bodies for which I may be qualified.**

Please check one:     Yes     No

Are you currently or have you ever been appointed to a Contra Costa County advisory board?

Please check one:  Yes  No

List any volunteer and community experience, including any boards on which you have served.

Do you have a familial relationship with a member of the Board of Supervisors? (Please refer to the relationships listed below or Resolution no. 2011/55)

Please check one:  Yes  No

If Yes, please identify the nature of the relationship:

Do you have any financial relationships with the county, such as grants, contracts, or other economic relationships?

Please check one:  Yes  No

If Yes, please identify the nature of the relationship:

I CERTIFY that the statements made by me in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge and understand that all information in this application is publicly accessible. I understand and agree that misstatements and/or omissions of material fact may cause forfeiture of my rights to serve on a board, committee, or commission in Contra Costa County.

Signed:

[Redacted Signature]

Date:

6/15/2021

Submit this application to: [ClerkofTheBoard@cob.cccounty.us](mailto:ClerkofTheBoard@cob.cccounty.us) OR Clerk of the Board of Supervisors  
1025 Escobar Street, 1st Floor  
Martinez, CA 94553

Questions about this application? Contact the Clerk of the Board at (925) 655-2000 or by email at [ClerkofTheBoard@cob.cccounty.us](mailto:ClerkofTheBoard@cob.cccounty.us)

**Important Information**

1. This application and any attachments you provide to it is a public document and is subject to the California Public Records Act (CA Government Code §6250-6270).
2. All members of appointed bodies are required to take the advisory body training provided by Contra Costa County.
3. Members of certain boards, commissions, and committees may be required to: 1) file a Statement of Economic Interest Form also known as a Form 700, and 2) complete the State Ethics Training Course as required by AB 1234.
4. Meetings may be held in various locations and some locations may not be accessible by public transportation.
5. Meeting dates and times are subject to change and may occur up to two (2) days per month.
6. Some boards, committees, or commissions may assign members to subcommittees or work groups which may require an additional commitment of time.
7. As indicated in Board Resolution 2011/55, a person will not be eligible for appointment if he/she is related to a Board of Supervisors member in any of the following relationships: mother, father, son, daughter, brother, sister, grandmother, grandfather, grandson, granddaughter, great-grandfather, great-grandmother, aunt, uncle, nephew, niece, great-grandson, great-granddaughter, first-cousin, husband, wife, father-in-law, mother-in-law, daughter-in-law, stepson, stepdaughter, sister-in-law, brother-in-law, spouse's grandmother, spouse's grandfather, spouse's granddaughter, and spouses' grandson, registered domestic partner, relatives of a registered domestic partner as listed above.
8. A person will not be eligible to serve if the person shares a financial interest as defined in Government Code §87103 with a Board of Supervisors Member.



Contra  
Costa  
County

To: Board of Supervisors  
From: Federal D. Glover, District V Supervisor  
Date: August 3, 2021

Subject: RE-APPOINT Anita Pereira-Sekhon to the Family and Children's Trust Committee

---

**RECOMMENDATION(S):**

REAPPOINT Anita Pereira-Sekhon to the District V Seat on the Family and Children's Trust Committee with a term ending on September 30, 2023 as recommended by Supervisor Federal D. Glover.

**FISCAL IMPACT:**

None.

**BACKGROUND:**

The Family and Children’s Trust Committee (FACT) was established in 1985 by the Contra Costa County Board of Supervisors to make funding recommendations on the allocation of specific funds for the prevention and treatment of child abuse and neglect and supportive services for families and children. Funding for FACT supported projects derived from federal and state program legislation, and donations to the County’s Family and Children’s Trust Fund.

**CONSEQUENCE OF NEGATIVE ACTION:**

The position would remain vacant.

**CHILDREN'S IMPACT STATEMENT:**

None.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Vincent Manuel (925)  
608-4200

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors  
From: Federal D. Glover, District V Supervisor  
Date: August 3, 2021

Subject: APPOINT Pier Angeli Linsangan to the District V Seat on the Emergency Medical Care Committee

---

**RECOMMENDATION(S):**

APPOINT Pier Angeli Linsangan to the District V Seat on the Emergency Medical Care Committee with a term to expire September 30, 2022, as recommended by Supervisor Federal D. Glover.

**FISCAL IMPACT:**

None.

**BACKGROUND:**

The Emergency Medical Care Committee reviews the County's ambulance and other emergency services as required in State law; and serves in an advisory capacity to the County Board of Supervisors, and to the County EMS Agency, on matters relating to emergency medical services as directed by the Board.

**CONSEQUENCE OF NEGATIVE ACTION:**

The position would remain vacant.

**CHILDREN'S IMPACT STATEMENT:**

None.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Vincent Manuel (925)  
608-4200

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors  
From: Federal D. Glover, District V Supervisor  
Date: August 3, 2021

Subject: APPOINT Joe D. Arandia to the District V Seat on the Arts & Culture Commission

---

**RECOMMENDATION(S):**

APPOINT Joe D. Arandia to the District V Seat on the Arts & Culture Commission for a term ending on June 30, 2025, as recommended by Supervisor Federal D. Glover.

**FISCAL IMPACT:**

None.

**BACKGROUND:**

The Arts and Culture Commission of Contra Costa County was established to advise the Board of Supervisors on matters related to promoting arts and culture as a vital aspect of community engagement.

The Arts and Culture Commission is dedicated to advancing the arts in a way that promotes communication, education, appreciation and collaboration throughout Contra Costa County so that we may grow creatively as a community that preserves and celebrates our diverse cultural expression.

**CONSEQUENCE OF NEGATIVE ACTION:**

Position would remain vacant.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Vincent Manuel (925)  
608-4200

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

CHILDREN'S IMPACT STATEMENT:

None.



Contra  
Costa  
County

To: Board of Supervisors  
From: Diane Burgis, District III Supervisor  
Date: August 3, 2021

Subject: VACANCY ON COUNTY SERVICE AREA P-2A CITIZEN ADVISORY COMMITTEE

---

**RECOMMENDATION(S):**

DECLARE vacant the Appointee 2 seat on County Service Area, P-2A Citizens Advisory Committee previously held by Chris Gallagher due to resignation and DIRECT the Clerk of the Board to post the vacancy, as recommended by Supervisor Diane Burgis.

**FISCAL IMPACT:**

None.

**BACKGROUND:**

Mr. Gallagher notified the District Office of his resignation effective July 20, 2021.

**CONSEQUENCE OF NEGATIVE ACTION:**

Unable to recruit for a replacement.

---

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Monica Nino, County Administrator and Clerk of the Board of Supervisors

Contact: Lea Castleberry  
925-252-4500

By: , Deputy

cc:



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Fiscal Year 2020/21 Appropriation and Revenue Adjustment to Resolve Over Expenditures

---

**RECOMMENDATION(S):**

APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No.5068 and AUTHORIZE new revenue in Building Maintenance Budget Unit 0079 for interfund reimbursements in the amount of \$3,400,000.00, as recommended by the Public Works Director.

**FISCAL IMPACT:**

100% General Fund

**BACKGROUND:**

This action appropriates unanticipated Fiscal Year 2020/21 revenue and provides adjustments for estimated expenditures.

**CONSEQUENCE OF NEGATIVE ACTION:**

If not approved, expenditures will exceed current budgets in the General Fund.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Lauren Weston, (925) 313-2155

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC24/27\_AP005068

CONTRA COSTA COUNTY  
 ESTIMATED REVENUE ADJUSTMENT/  
 ALLOCATION ADJUSTMENT  
**T/C 24**

**PY**  
**20/21**

AUDITOR-CONTROLLER USE ONLY

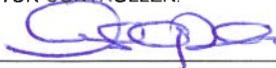
FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS  
 COUNTY ADMINISTRATOR  
 AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT: <b>PUBLIC WORKS</b>			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
<b>BUILDING MAINTENANCE (BU 0079) - FUND 100300</b>					
4070	9879	BLDG MTCE SERVICES	2,800,000	00	
4070	9859	GEN SVC-BLDG OCPNCY COSTS	400,000	00	
4031	9879	BLDG MTCE SERVICES	200,000	00	
<b>TOTALS</b>			<b>3,400,000</b>	<b>00</b>	<b>0 00</b>

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/23/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

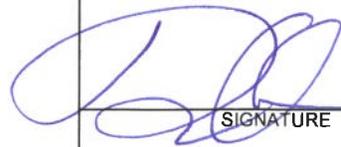
YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustment to resolve FY 2020-21 over expenditures and appropriate new revenue received.



PW Chief of  
 Fiscal Services

SIGNATURE

TITLE

7/20/2021  
 DATE

REVENUE ADJ.

RAOO

5068

JOURNAL NO.

**CONTRA COSTA COUNTY  
APPROPRIATION ADJUSTMENT /  
ALLOCATION ADJUSTMENT  
TIC 27**

**PY  
20/21**

AUDITOR-CONTROLLER USE ONLY

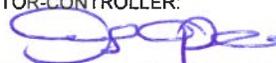
FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : PUBLIC WORKS FLEET SERVICES			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
		<b>BUILDING MAINTENANCE (BU 0079) - FUND 100300</b>			
4031	1011	PERMANENT SALARIES	650,000	00	
4031	1014	PERMANENT OVERTIME	50,000	00	
4031	1044	RETIREMENT EXPENSE	200,000	00	
4032	1011	PERMANENT SALARIES	300,000	00	
4033	1011	PERMANENT SALARIES	500,000	00	
4034	1011	PERMANENT SALARIES	550,000	00	
4034	1044	RETIREMENT EXPENSE	150,000	00	
4034	1060	EMPLOYEE GROUP INSURANCE	100,000	00	
4070	2281	MAINTENANCE OF BUILDINGS			2,500,000 00
4070	2281	MAINTENANCE OF BUILDINGS			3,400,000 00
<b>TOTALS</b>			<b>2,500,000</b>	<b>00</b>	<b>5,900,000 00</b>

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/23/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustment to resolve FY 2020-21 over expenditures.



PW Chief of  
Fiscal Services

7/20/2021

SIGNATURE

TITLE

DATE

APPROPRIATION APOO 5068

ADJ. JOURNAL NO.



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: FY 2020/21 Revenue Adjustment for Unanticipated Revenue and Appropriation for Estimated Expenditures in Area of Benefit Funds.

---

**RECOMMENDATION(S):**

APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No. 5070 authorizing new revenue in Central County Area of Benefit (Fund 124200) for road development fees in the amount of \$100,000 and North Richmond Area of Benefit (Fund 123400) for road development fees in the amount of \$500,000, as recommended by the Public Works Director.

**FISCAL IMPACT:**

83% North Richmond Area of Benefit funds, and 17% Central County Area of Benefit funds.

**BACKGROUND:**

This action provides additional appropriations from unanticipated realized revenues in Area of Benefit Funds and budgets for expenditures for Fiscal Year 2020/21.

**CONSEQUENCE OF NEGATIVE ACTION:**

If not approved, expenditures will exceed current budgets in the Area of Benefit funds.

- 
- APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Michelle Gonsalves,  
(925) 313-2123

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC27/24\_AP005070

CONTRA COSTA COUNTY  
 ESTIMATED REVENUE ADJUSTMENT/  
 ALLOCATION ADJUSTMENT  
**T/C 24**

**PY**  
**20/21**  
 2021 JUL 20 P 5:01

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : Public Works Department			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
0637	9752	<b>CENTRAL CO AREA/BENEFIT (BU 0637) - FUND 124200</b> ROAD DEVELOPMENT FEES	100,000	00	
0634	9752	<b>NORTH RICHMOND AOB (BU 0634) - FUND 123400</b> ROAD DEVELOPMENT FEES	500,000	00	
<b>TOTALS</b>			<b>600,000</b>	<b>00</b>	<b>0 00</b>

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/27/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustment to resolve FY 2020/21 over expenditures and appropriate new revenue received.



Chief of Fiscal  
 Services

SIGNATURE

TITLE

DATE

7/19/21

REVENUE ADJ.

RA00

5070

JOURNAL NO.

CONTRA COSTA COUNTY  
 APPROPRIATION ADJUSTMENT /  
 ALLOCATION ADJUSTMENT  
**T/C 27**

**PY  
 20/21**

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS  
 COUNTY ADMINISTRATOR  
 AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : Public Works Department			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
0637	5011	<b>CENTRAL CO AREA/BENEFIT (BU 0637) - FUND 124200</b> REIMBURSEMENTS-GOV/GOV			100,000 00
0634	2479	<b>NORTH RICHMOND AOB (BU 0634) - FUND 123400</b> OTHER SPECIAL DPMTAL EXP			500,000 00
TOTALS			0	00	600,000 00

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/23/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustment to resolve FY 2020/21 over expenditures and appropriate new revenue received.

 Chief of Fiscal Services  
 SIGNATURE TITLE DATE 7/19/21

APPROPRIATION APOO 5070  
 ADJ. JOURNAL NO.



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: FY 2020/21 Appropriation Adjustment for Estimated Expenditures in Road Fund.

---

**RECOMMENDATION(S):**

APPROVE Fiscal Year 2020/21 Appropriation Adjustment No. 5069 authorizing the transfer of appropriations in the amount of \$2,010,000 from Road Construction (BU 0662) to General Road Admin (BU 0676), as recommended by the Public Works Director.

**FISCAL IMPACT:**

100% Road Fund.

**BACKGROUND:**

This action transfers appropriations between departments within the Road Fund (Fund 110800) to resolve year-end over expenditures.

**CONSEQUENCE OF NEGATIVE ACTION:**

If not approved, expenditures will exceed current budgets in the Road Fund.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Michelle Gonsalves,  
(925) 313-2123

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC27/24\_AP005069

CONTRA COSTA COUNTY  
 APPROPRIATION ADJUSTMENT /  
 ALLOCATION ADJUSTMENT  
**T/C 27**

**PY**  
**20/21**  
 2021 JUL 20 P 5:01

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : Public Works Department			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
<b>ROAD CONSTRUCTION-RD FUND (BU 0662) - FUND 110800</b>					
0662	2319	PUBLIC WORKS CONTRACTS	2,010,000	00	
0662	3611	INTERFUND EXP-GOV/GOV			2,000,000 00
0662	5011	REIMBURSEMENTS-GOV/GOV			10,000 00
0662	3611	INTERFUND EXP-GOV/GOV	2,000,000	00	
0662	5011	REIMBURSEMENTS-GOV/GOV	10,000	00	
<b>GEN ROAD PLAN/ADM-RD FUND (BU 0676) - FUND 110800</b>					
0676	3611	INTERFUND EXP-GOV/GOV			2,000,000 00
0676	5011	REIMBURSEMENTS-GOV/GOV			10,000 00
TOTALS			4,020,000	00	4,020,000 00

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/23/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustment to resolve FY 2020/21 over expenditures.

 Chief of Fiscal Services  
 SIGNATURE TITLE DATE 7/19/21

APPROPRIATION APOO 5069  
 ADJ. JOURNAL NO.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Appropriation and Revenue Adjustment for General Fund Plant Acquisition Projects for Fiscal Year 2020/21

---

**RECOMMENDATION(S):**

APPROVE Appropriation and Revenue Adjustment No. 5067 to recognize revenue received totaling \$13,529,000 and allocate budgets to approved capital projects at various county facilities within Plant Acquisition - General Fund (BU 0111), as recommended by the Public Works Director.

**FISCAL IMPACT:**

100% General Fund, Plant Acquisition BU 0111.

**BACKGROUND:**

This action recognizes unanticipated revenue related to general fund projects and adjust appropriations to various capital project expenditure accounts for work performed in fiscal year 2020/21.

**CONSEQUENCE OF NEGATIVE ACTION:**

Revenue received will not be recognized and expenditure accounts will exceed appropriations.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Diana Oyler, (925) 313-2122

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC24/27\_AP005067

AUDITOR-CONTROLLER  
 07/21 JUL 20 5:01 P

CONTRA COSTA COUNTY

ESTIMATED REVENUE ADJUSTMENT/  
 ALLOCATION ADJUSTMENT  
**T/C 24**

PY  
 20-21

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : PLANT ACQUISITION - GENERAL FUND			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
4401	9921	SALE OF REAL ESTATE	13,516,000	00	00
4407	9975	MISC NON-TAXABLE REVENUE	13,000	00	
TOTALS			13,529,000	00	0 00

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/22/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

To recognize revenue from the sale of the Oak Park property in Pleasant Hill and appropriate budgets to approved capital projects at County facilities for FYE 20-21.



Chief of Fiscal Services

SIGNATURE

TITLE

DATE

7/20/21

REVENUE ADJ.

RAOO

5067

JOURNAL NO.

AUDITOR-CONTROLLER  
2021 JUL 20 P 5:01

CONTRA COSTA COUNTY  
APPROPRIATION ADJUSTMENT /  
ALLOCATION ADJUSTMENT  
T/C 27

PY  
20-21

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS  
 COUNTY ADMINISTRATOR  
 AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT : PLANT ACQUISITION - GENERAL FUND			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
4433	4113	102-SALE PH LIBRY PROPERTY			11,800,000 00
4435	4470	UNDESIGNATED CAP PROJECTS	2,192,000	00	
4405	4319	000-RELOCATE RADIO TOWER			60,000 00
4411	4318	182-REPLACE SEPTIC SYSTEM			950,000 00
4405	4328	012-PAINT AND FLOORING			1,000 00
4405	2330	OTHER GEN SVCS CHARGES			130,000 00
4405	4356	001-651 PINE DEMO			1,180,000 00
4405	4197	CAP FACILITIES MASTERPLAN			650,000 00
4402	4265	VARIOUS IMPROVEMENTS			200,000 00
4401	4329	CNTY CAPITAL PLAN 21-22			750,000 00
4433	4234	458-BLDG IMPROVEMENTS	124,955	00	
4433	5016	TRANSFERS - GOV/GOV			124,955 00
TOTALS			2,316,955	00	15,845,955 00

APPROVED

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/23/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

To recognize revenue from the sale of the Oak Park property in Pleasant Hill and appropriate budgets to approved capital projects at County facilities for FYE 20-21.

[Signature]

Chief of Fiscal Services

SIGNATURE

TITLE

DATE

7/20/21

APPROPRIATION APOO

ADJ. JOURNAL NO.

5067



**Contra  
Costa  
County**

To: Board of Supervisors  
From: John Kopchik, Director, Conservation & Development Department  
Date: August 3, 2021

Subject: FY 2020/21 Rebalance Appropriation Adjustment for the Department of Conservation and Development (DCD),  
Energy Upgrade Program

---

**RECOMMENDATION(S):**

APPROVE prior year Appropriation and Revenue Adjustment No. 005063 authorizing new revenue in the amount of \$69,898 from the California Public Utilities Commission and appropriating it cover Department of Conservation and Development, Energy Upgrade Program expenditures.

**FISCAL IMPACT:**

This action is to adjust the expenditures and revenue budgets to more accurately reflect budgetary requirements for Energy Upgrade program (0285) costs for FY 2020/21. The net effect is an increase in expenditures and an increase in revenue of \$69,898. Funding is from the California Public Utilities Commission.

**BACKGROUND:**

The Department of Conservation and Development has identified the need for corrections to the FY 2020/21 budget to better align the expenditures and revenue expectations for FY 2020/21.

**CONSEQUENCE OF NEGATIVE ACTION:**

Appropriations and estimated revenues will not be properly reflected in the FY 20/21 budget.

---

APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Elizabeth Chebotarev,  
925-655-3015

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC24/27\_AP005063

**CONTRA COSTA COUNTY  
ESTIMATED REVENUE ADJUSTMENT/  
ALLOCATION ADJUSTMENT  
TC/24**

PY

AUDITOR-CONTROLLER USE ONLY:	
FINAL APPROVAL NEEDED BY:	
<input checked="" type="checkbox"/>	BOARD OF SUPERVISORS
<input type="checkbox"/>	COUNTY ADMINISTRATOR
<input type="checkbox"/>	AUDITOR-CONTROLLER

AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT: DEPARTMENT OF CONSERVATION AND DEVELOPMENT		
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE	<DECREASE>
0285	9611	ARRA/CHARGES FOR SVCS	69,898.00	
<b>TOTALS</b>			<b>69,898.00</b>	<b>0.00</b>

**APPROVED**

AUDITOR - CONTROLLER  
 By:  Date 7/23/21

COUNTY ADMINISTRATOR  
 By: \_\_\_\_\_ Date \_\_\_\_\_

BOARD OF SUPERVISORS

YES:  
 NO:

By: \_\_\_\_\_ Date \_\_\_\_\_

**EXPLANATION OF REQUEST**

BUDGET ADJUSTMENT TO APPROPRIATE FUNDS DUE TO UNANTICIPATED EXPENDITURES

PREPARED BY: ELIZABETH CHEBOTAREV  
 TITLE: FISCAL OFFICER  
 DATE: 7/16/21



REVENUE ADJ. JOURNAL NO.      RAOO 5063

**CONTRA COSTA COUNTY**  
**APPROPRIATION ADJUSTMENT/**  
**ALLOCATION ADJUSTMENT**  
**T/C-27**

AUDITOR-CONTROLLER  
 2021 JUL 19 P 1:22  
 PY

**AUDITOR-CONTROLLER USE ONLY:**  
 FINAL APPROVAL NEEDED BY:  
 BOARD OF SUPERVISORS  
 COUNTY ADMINISTRATOR  
 AUDITOR-CONTROLLER

ACCOUNT CODING		DEPARTMENT: DEPARTMENT OF CONSERVATION AND DEVELOPMENT		
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>	INCREASE
0285	2103	POSTAGE		461.00
0285	2110	COMMUNICATIONS		280.00
0285	2132	MINOR COMPUTER EQUIPMENT		322.00
0285	1060	EMPLOYEE GROUP INSURANCE		20,000.00
0285	3622	GEN SVC-OTHER GS CHARGES		48,835.00
			0.00	69,898.00

**APPROVED**

AUDITOR – CONTROLLER  
 By:  Date 7/23/21

COUNTY ADMINISTRATOR  
 By: \_\_\_\_\_ Date \_\_\_\_\_

BOARD OF SUPERVISORS  
 YES:  
 NO:

By: \_\_\_\_\_ Date \_\_\_\_\_

**EXPLANATION OF REQUEST**  
 BUDGET ADJUSTMENT TO APPROPRIATE FUNDS DUE TO UNANTICIPATED EXPENDITURES INCURRED IN FY20/21

PREPARED BY: ELIZABETH CHEBOTAREV  
 TITLE: FISCAL OFFICER  
 DATE: 7/16/2021

  
 APPROPRIATION APOO 5063  
 ADJ. JOURNAL NO.



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Revenue Adjustment for Unanticipated Revenue and Appropriation for Estimated Expenditures in Walden Green Maintenance Fund for Fiscal Year 2020/21

---

**RECOMMENDATION(S):**

APPROVE Fiscal Year 2020/21 Appropriation and Revenue Adjustment No. 5062 and AUTHORIZE new revenue in Walden Green Maintenance, Fund 113200, for Park Dedication Fund reimbursements and Recycle Grant funding in the total amount of \$520,000, as recommended by the Public Works Director.

**FISCAL IMPACT:**

This action provides additional appropriations from unanticipated realized revenues in Walden Green Maintenance Fund and budgets for expenditures for Fiscal Year 2020/21 (100% Walden Green Maintenance Fund).

**BACKGROUND:**

This action appropriates unanticipated Fiscal Year 2020/21 revenues and provides adjustments to Walden Green Maintenance Fund for estimated expenditures.

**CONSEQUENCE OF NEGATIVE ACTION:**

If not approved, expenditures will exceed current budgets in Walden Green Maintenance Fund.

- 
- APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Shirley Lau,  
925-313-2035

, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

ATTACHMENTS

TC27/24\_AP005062

CONTRA COSTA COUNTY  
 APPROPRIATION ADJUSTMENT/  
 ALLOCATION ADJUSTMENT  
**T/C 27**

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

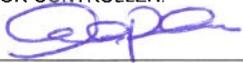
- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

AUDITOR-CONTROLLER  
 2021 JUL 15 PY# 12

ACCOUNT CODING		DEPARTMENT : Public Works Department			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
<b>WALDEN GREEN MAINTENANCE - Fund 113200</b>					
0664	2120	UTILITIES			20,000 00
0664	2190	PUBLICATNS & LEGL NOTICES			10,000 00
0664	2282	GROUNDS MAINTENANCE			25,000 00
0664	2284	REQUESTED MAINTENANCE			11,000 00
0664	2310	NON CNTY PROF SPCLZD SVCS			450,500 00
0664	3611	INTERFUND EXP - GOV/GOV			1,000 00
0664	5011	REIMBURSEMENTS-GOV/GOV			2,500 00
<b>TOTALS</b>				0 00	520,000 00

**APPROVED**

AUDITOR-CONTROLLER:

BY:  DATE 7/16/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustments to resolve FY 2020/21 over expenditures in Walden Green Maintenance Fund and appropriate new revenue received.

 **Chief of Fiscal Services** 7/15/21

SIGNATURE TITLE DATE  
 APPROPRIATION APOO 5062  
 ADJ. JOURNAL NO.

CONTRA COSTA COUNTY  
 ESTIMATED REVENUE ADJUSTMENT/  
 ALLOCATION ADJUSTMENT  
**T/C 24**

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

- BOARD OF SUPERVISORS
- COUNTY ADMINISTRATOR
- AUDITOR-CONTROLLER

2021 JUL 15 P 4:12  
 PY

ACCOUNT CODING		DEPARTMENT: Public Works Department		
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE	<DECREASE>
0664	9975	<b>WALDEN GREEN MAINTENANCE - Fund 113200</b> MISC NON-TAXABLE REVENUE	520,000 00	
<b>TOTALS</b>			520,000 00	0 00

**APPROVED**

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/16/21

COUNTY ADMINISTRATOR:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST:

Appropriation Adjustments to resolve FY 2020/21 over expenditures in Walden Green Maintenance Fund and appropriate new revenue received.

[Signature] **Chief of Fiscal Services** 7/15/21  
 SIGNATURE TITLE DATE

REVENUE ADJ. RAOO 5062  
 JOURNAL NO.



Contra  
Costa  
County

To: Board of Supervisors  
From: David O. Livingston, Sheriff-Coroner  
Date: August 3, 2021

Subject: Appropriation Adjustment - County Service Area P-6 Zones - Special Tax Levy - FY 20-21

---

**RECOMMENDATION(S):**

APPROVE Appropriations and Revenue Adjustment No. 005071 increasing fiscal year 2020/21 revenue and appropriations in the amount of \$277,000 in various special tax levy zones within County Service Area P-6 to reflect anticipated revenue and expenditures.

**FISCAL IMPACT:**

This action increases revenue and appropriations by \$277,000.

**BACKGROUND:**

The above action adjusts the total expenditures and revenues for County Service Area (CSA) P-6 Zones by a total of \$277,000. In July of each calendar year, the Board of Supervisors authorizes the special tax rate to be levied upon parcels in each CSA P-6 Zone based on the June CPI-U indicator released by the Bureau of Labor Statistics (BLS) as discussed in the fiscal impact section. Due to the significant amount of parcels in CSA P-6 zones, only the cumulative special tax amount is included in the fiscal impact section. Information regarding specific parcel taxes in particular zones is available for inspection in the Sheriff's Fiscal Services unit.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Heike Anderson, (925) \_\_\_\_\_, County Administrator and Clerk of the Board of Supervisors  
655-0023

By: \_\_\_\_\_, Deputy

cc: Heike Anderson, Alycia Rubio, Paul Reyes

CONSEQUENCE OF NEGATIVE ACTION:

Fiscal year 2020/21 expenditure appropriations will be insufficient to cover actual expenditures.

ATTACHMENTS

TC24/27 AP005071

CONTRA COSTA COUNTY  
ESTIMATED REVENUE ADJUSTMENT  
T/C 24

MONITOR POLICE  
P/Y  
JUL 27 P 4 33

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
7603	9066	SPECIAL TAX-FIRE/POLICE	7,000	00	
7606	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7608	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7609	9066	SPECIAL TAX-FIRE/POLICE	5,000	00	
7610	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7611	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7612	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7613	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7614	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7615	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7618	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7619	9066	SPECIAL TAX-FIRE/POLICE	38,000	00	
7620	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7621	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7622	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7623	9066	SPECIAL TAX-FIRE/POLICE	9,000	00	
7627	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7628	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7631	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7634	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7638	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7640	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7643	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7644	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7646	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
TOTALS			91,000	00	0 00

APPROVED

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/16/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/28/21

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST

To appropriate new revenue in Police Zones FY 20/21

[Signature]  
SIGNATURE

Fiscal Officer

TITLE

7/23/2021

DATE

REVENUE ADJ.  
JOURNAL NO.

RAO

5071

CONTRA COSTA COUNTY  
ESTIMATED REVENUE ADJUSTMENT  
T/C 24

P/Y

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
7648	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7649	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7654	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7658	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7661	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7662	9066	SPECIAL TAX-FIRE/POLICE	11,000	00	
7671	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7673	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7675	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7681	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7683	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7684	9066	SPECIAL TAX-FIRE/POLICE	7,000	00	
7685	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7687	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7688	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7690	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7694	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7695	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7696	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7699	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7700	9066	SPECIAL TAX-FIRE/POLICE	51,000	00	
7701	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7704	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7705	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7706	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
TOTALS			101,000	00	0 00

APPROVED

EXPLANATION OF REQUEST

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/20/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/23/21

BOARD OF SUPERVISORS:

YES:

NO:

To appropriate new revenue in Police Zones FY 20/21

BY: \_\_\_\_\_ DATE \_\_\_\_\_

[Signature] Fiscal Officer 7/23/2021  
SIGNATURE TITLE DATE

REVENUE ADJ. RAOO 5071  
JOURNAL NO.

CONTRA COSTA COUNTY  
ESTIMATED REVENUE ADJUSTMENT  
T/C 24

P/M

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	REVENUE ACCOUNT	REVENUE ACCOUNT DESCRIPTION	INCREASE		<DECREASE>
7708	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7709	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7714	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7715	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7716	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7717	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7718	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7719	9066	SPECIAL TAX-FIRE/POLICE	21,000	00	
7720	9066	SPECIAL TAX-FIRE/POLICE	4,000	00	
7721	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7722	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7723	9066	SPECIAL TAX-FIRE/POLICE	4,000	00	
7724	9066	SPECIAL TAX-FIRE/POLICE	6,000	00	
7725	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7726	9066	SPECIAL TAX-FIRE/POLICE	8,000	00	
7727	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7728	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7729	9066	SPECIAL TAX-FIRE/POLICE	8,000	00	
7730	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7732	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7734	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7737	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7741	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
7742	9066	SPECIAL TAX-FIRE/POLICE	3,000	00	
7745	9066	SPECIAL TAX-FIRE/POLICE	1,000	00	
7746	9066	SPECIAL TAX-FIRE/POLICE	2,000	00	
TOTALS			85,000	00	0 00

APPROVED

EXPLANATION OF REQUEST

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/28/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/29/21

BOARD OF SUPERVISORS:

YES:

NO:

To appropriate new revenue in Police Zones FY 20/21

[Signature] Fiscal Officer

7/23/2021  
DATE

SIGNATURE

TITLE

BY: \_\_\_\_\_ DATE \_\_\_\_\_

REVENUE ADJ.  
JOURNAL NO.

RAOO

5071

CONTRA COSTA COUNTY  
APPROPRIATION ADJUSTMENT

T/C 27

7/23/21 JUL 27 9 43

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

BOARD OF SUPERVISORS

COUNTY ADMINISTRATOR

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
7603	5016	TRANSFERS - GOV/GOV			7,000 00
7606	5016	TRANSFERS - GOV/GOV			3,000 00
7608	5016	TRANSFERS - GOV/GOV			2,000 00
7609	5016	TRANSFERS - GOV/GOV			5,000 00
7610	5016	TRANSFERS - GOV/GOV			2,000 00
7611	5016	TRANSFERS - GOV/GOV			1,000 00
7612	5016	TRANSFERS - GOV/GOV			1,000 00
7613	5016	TRANSFERS - GOV/GOV			1,000 00
7614	5016	TRANSFERS - GOV/GOV			1,000 00
7615	5016	TRANSFERS - GOV/GOV			1,000 00
7618	5016	TRANSFERS - GOV/GOV			3,000 00
7619	5016	TRANSFERS - GOV/GOV			38,000 00
7620	5016	TRANSFERS - GOV/GOV			1,000 00
7621	5016	TRANSFERS - GOV/GOV			3,000 00
7622	5016	TRANSFERS - GOV/GOV			1,000 00
7623	5016	TRANSFERS - GOV/GOV			9,000 00
7627	5016	TRANSFERS - GOV/GOV			1,000 00
7628	5016	TRANSFERS - GOV/GOV			1,000 00
7631	5016	TRANSFERS - GOV/GOV			1,000 00
7634	5016	TRANSFERS - GOV/GOV			2,000 00
7638	5016	TRANSFERS - GOV/GOV			1,000 00
7640	5016	TRANSFERS - GOV/GOV			2,000 00
7643	5016	TRANSFERS - GOV/GOV			1,000 00
7644	5016	TRANSFERS - GOV/GOV			1,000 00
7646	5016	TRANSFERS - GOV/GOV			2,000 00
TOTALS			0	00	91,000 00

APPROVED

EXPLANATION OF REQUEST

To appropriate new revenue in Police Zones FY 20/21

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/20/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/28/21

BOARD OF SUPERVISORS:

YES:

NO:

[Signature] Fiscal Officer 7/23/2021  
SIGNATURE TITLE DATE

APPROPRIATION APOO 5071  
ADJ. JOURNAL NO.

BY: \_\_\_\_\_ DATE \_\_\_\_\_

174

CONTRA COSTA COUNTY  
APPROPRIATION ADJUSTMENT

T/C 27

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

BOARD OF SUPERVISORS

COUNTY ADMINISTRATOR

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
7648	5016	TRANSFERS - GOV/GOV			1,000 00
7649	5016	TRANSFERS - GOV/GOV			2,000 00
7654	5016	TRANSFERS - GOV/GOV			1,000 00
7658	5016	TRANSFERS - GOV/GOV			2,000 00
7661	5016	TRANSFERS - GOV/GOV			1,000 00
7662	5016	TRANSFERS - GOV/GOV			11,000 00
7671	5016	TRANSFERS - GOV/GOV			1,000 00
7673	5016	TRANSFERS - GOV/GOV			2,000 00
7675	5016	TRANSFERS - GOV/GOV			2,000 00
7681	5016	TRANSFERS - GOV/GOV			1,000 00
7683	5016	TRANSFERS - GOV/GOV			2,000 00
7684	5016	TRANSFERS - GOV/GOV			7,000 00
7685	5016	TRANSFERS - GOV/GOV			1,000 00
7687	5016	TRANSFERS - GOV/GOV			1,000 00
7688	5016	TRANSFERS - GOV/GOV			1,000 00
7690	5016	TRANSFERS - GOV/GOV			2,000 00
7694	5016	TRANSFERS - GOV/GOV			2,000 00
7695	5016	TRANSFERS - GOV/GOV			2,000 00
7696	5016	TRANSFERS - GOV/GOV			1,000 00
7699	5016	TRANSFERS - GOV/GOV			2,000 00
7700	5016	TRANSFERS - GOV/GOV			51,000 00
7701	5016	TRANSFERS - GOV/GOV			1,000 00
7704	5016	TRANSFERS - GOV/GOV			1,000 00
7705	5016	TRANSFERS - GOV/GOV			2,000 00
7706	5016	TRANSFERS - GOV/GOV			1,000 00
TOTALS			0	00	101,000 00

APPROVED

EXPLANATION OF REQUEST

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/26/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/26/21

BOARD OF SUPERVISORS:

YES:

NO:

To appropriate new revenue in Police Zones FY 20/21

[Signature] Fiscal Officer 7/23/2021  
SIGNATURE TITLE DATE

APPROPRIATION APOO 5071  
ADJ. JOURNAL NO.

BY: \_\_\_\_\_ DATE \_\_\_\_\_

CONTRA COSTA COUNTY  
APPROPRIATION ADJUSTMENT

T/C 27

AUDITOR-CONTROLLER USE ONLY

FINAL APPROVAL NEEDED BY:

BOARD OF SUPERVISORS

COUNTY ADMINISTRATOR

PTV

ACCOUNT CODING		BUDGET UNIT: P6 Zones			
ORGANIZATION	EXPENDITURE SUB-ACCOUNT	EXPENDITURE ACCOUNT DESCRIPTION	<DECREASE>		INCREASE
7708	5016	TRANSFERS - GOV/GOV			1,000 00
7709	5016	TRANSFERS - GOV/GOV			2,000 00
7714	5016	TRANSFERS - GOV/GOV			1,000 00
7715	5016	TRANSFERS - GOV/GOV			2,000 00
7716	5016	TRANSFERS - GOV/GOV			1,000 00
7717	5016	TRANSFERS - GOV/GOV			1,000 00
7718	5016	TRANSFERS - GOV/GOV			1,000 00
7719	5016	TRANSFERS - GOV/GOV			21,000 00
7720	5016	TRANSFERS - GOV/GOV			4,000 00
7721	5016	TRANSFERS - GOV/GOV			3,000 00
7722	5016	TRANSFERS - GOV/GOV			1,000 00
7723	5016	TRANSFERS - GOV/GOV			4,000 00
7724	5016	TRANSFERS - GOV/GOV			6,000 00
7725	5016	TRANSFERS - GOV/GOV			2,000 00
7726	5016	TRANSFERS - GOV/GOV			8,000 00
7727	5016	TRANSFERS - GOV/GOV			1,000 00
7728	5016	TRANSFERS - GOV/GOV			3,000 00
7729	5016	TRANSFERS - GOV/GOV			8,000 00
7730	5016	TRANSFERS - GOV/GOV			3,000 00
7732	5016	TRANSFERS - GOV/GOV			2,000 00
7734	5016	TRANSFERS - GOV/GOV			1,000 00
7737	5016	TRANSFERS - GOV/GOV			1,000 00
7741	5016	TRANSFERS - GOV/GOV			2,000 00
7742	5016	TRANSFERS - GOV/GOV			3,000 00
7745	5016	TRANSFERS - GOV/GOV			1,000 00
7746	5016	TRANSFERS - GOV/GOV			2,000 00
TOTALS			0	00	85,000 00

APPROVED

AUDITOR-CONTROLLER:

BY: [Signature] DATE 7/28/21

COUNTY ADMINISTRATOR:

BY: [Signature] DATE 7/28/21

BOARD OF SUPERVISORS:

YES:

NO:

BY: \_\_\_\_\_ DATE \_\_\_\_\_

EXPLANATION OF REQUEST

To appropriate new revenue in Police Zones FY 20/21

[Signature] Fiscal Officer 7/23/2021  
SIGNATURE TITLE DATE

APPROPRIATION APOO 5071  
ADJ. JOURNAL NO.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Russell Watts, Treasurer-Tax Collector  
Date: August 3, 2021

Subject: Reallocate Salary for Assistant County Treasurer and Assistant County Tax Collector, Cancel Chief Deputy Treasurer-Tax

---

**RECOMMENDATION(S):**

ADOPT Position Adjustment Resolution No. 25737 to reallocate the salaries for Assistant County Tax Collector - Exempt (S5D1) from Salary Plan and Grade B85 1918 (\$9,055-\$11,006) to Salary Plan and Grade B85 2054 (\$10,360-\$13,883) and the Assistant County Treasurer - Exempt (S5B4) from Salary Plan and Grade B85 1956 (\$9,402-\$11,428) to Salary Plan and Grade B85 1956 (\$10,774-\$14,438); and cancel vacant position #11835 Chief Deputy Treasurer-Tax Collector - Exempt (S5B2) in the Treasurer-Tax Collector's Office.

**FISCAL IMPACT:**

The action will result in an annual cost savings of \$229,000.

**BACKGROUND:**

The Assistant County Treasurer-Exempt and the Assistant County Tax Collector-Exempt serve critical roles in the fiscal success of the County, school districts, and special districts. A recent study showed that their current salaries are significantly less than similar classifications in the County as well as the surrounding bay area counties. The Treasurer-Tax Collector is requesting this action in order to appropriately compensate these two positions to be able to retain talented staff and recruit future qualified individuals to occupy these roles. The Treasurer-Tax Collector has also determined that current organizational structure does not warrant the need for a Chief Assistant Treasurer-Tax Collector position.

---

APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Ronda Boler, (925)  
957-2806

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Sylvia Wong-Tam, Ronda Boler

CONSEQUENCE OF NEGATIVE ACTION:

If this action is not approved, salaries for the Assistant County Treasurer - Exempt and Assistant County Tax Collector - Exempt, will be below market and would make it difficult for the department to retain and recruit talented staff.

ATTACHMENTS

P300 25737

**POSITION ADJUSTMENT REQUEST**

NO. 25737  
DATE 7/21/21

Department Treasurer-Tax Collector Department No./  
Budget Unit No. 0015 Org No. 0015 Agency No. 15  
Action Requested: Reallocate salary for Assistant County Treasurer-Exempt (S5B4) to (B85-2054) \$10,360-\$13,883 and Assistant County Tax Collector - Exempt (S5DF) to (B85-2054) \$10,774-\$14,438. Cancel position #11835.

Proposed Effective Date: 8/1/2021

Classification Questionnaire attached: Yes  No  / Cost is within Department's budget: Yes  No

Total One-Time Costs (non-salary) associated with request: \_\_\_\_\_

Estimated total cost adjustment (salary / benefits / one time):

Total annual cost (\$229,000.00) Net County Cost (\$229,000.00)  
Total this FY (\$210,000.00) N.C.C. this FY (\$210,000.00)

SOURCE OF FUNDING TO OFFSET ADJUSTMENT Salary savings

Department must initiate necessary adjustment and submit to CAO.  
Use additional sheet for further explanations or comments.

Russell Watts

\_\_\_\_\_  
(for) Department Head

REVIEWED BY CAO AND RELEASED TO HUMAN RESOURCES DEPARTMENT

Laura Strobel

7/21/21

\_\_\_\_\_  
Deputy County Administrator

\_\_\_\_\_  
Date

HUMAN RESOURCES DEPARTMENT RECOMMENDATIONS

DATE 7/21/2021

Reallocate salary for Assistant County Tax Collector - Exempt (S5D1) from (B85-1918) \$9,055-\$11,006 to (B85-2054) \$10,360-\$13,883 and Assistant County Treasurer - Exempt (S5B4) from (B85-1956) \$9,402-\$11,428 to (B85-1956) \$10,774-\$14,438. Cancel position #11835 (vacant).

Amend Resolution 71/17 establishing positions and resolutions allocating classes to the Basic / Exempt salary schedule.

Effective:  Day following Board Action.  
 8/1/21(Date)

Alycia Leach

7/21/2021

\_\_\_\_\_  
(for) Director of Human Resources

\_\_\_\_\_  
Date

COUNTY ADMINISTRATOR RECOMMENDATION:

DATE \_\_\_\_\_

- Approve Recommendation of Director of Human Resources
- Disapprove Recommendation of Director of Human Resources
- Other: \_\_\_\_\_

\_\_\_\_\_  
(for) County Administrator

BOARD OF SUPERVISORS ACTION:

Adjustment is APPROVED  DISAPPROVED

Monica Nino, Clerk of the Board of Supervisors  
and County Administrator

DATE \_\_\_\_\_

BY \_\_\_\_\_

APPROVAL OF THIS ADJUSTMENT CONSTITUTES A PERSONNEL / SALARY RESOLUTION AMENDMENT

POSITION ADJUSTMENT ACTION TO BE COMPLETED BY HUMAN RESOURCES DEPARTMENT FOLLOWING BOARD ACTION

Adjust class(es) / position(s) as follows:

## REQUEST FOR PROJECT POSITIONS

Department \_\_\_\_\_

Date \_\_\_\_\_

No. \_\_\_\_\_

1. Project Positions Requested:
  
2. Explain Specific Duties of Position(s)
  
3. Name / Purpose of Project and Funding Source (do not use acronyms i.e. SB40 Project or SDSS Funds)
  
4. Duration of the Project: Start Date \_\_\_\_\_ End Date \_\_\_\_\_  
Is funding for a specified period of time (i.e. 2 years) or on a year-to-year basis? Please explain.
  
5. Project Annual Cost
  - a. Salary & Benefits Costs: \_\_\_\_\_
  - b. Support Costs: \_\_\_\_\_  
(services, supplies, equipment, etc.)
  - c. Less revenue or expenditure: \_\_\_\_\_
  - d. Net cost to General or other fund: \_\_\_\_\_
  
6. Briefly explain the consequences of not filling the project position(s) in terms of:
  - a. potential future costs
  - b. legal implications
  - c. financial implications
  - d. political implications
  - e. organizational implications
  
7. Briefly describe the alternative approaches to delivering the services which you have considered. Indicate why these alternatives were not chosen.
  
8. Departments requesting new project positions must submit an updated cost benefit analysis of each project position at the halfway point of the project duration. This report is to be submitted to the Human Resources Department, which will forward the report to the Board of Supervisors. Indicate the date that your cost / benefit analysis will be submitted
  
9. How will the project position(s) be filled?
  - a. Competitive examination(s)
  - b. Existing employment list(s) Which one(s)? \_\_\_\_\_
  - c. Direct appointment of:
    1. Merit System employee who will be placed on leave from current job
    2. Non-County employee

Provide a justification if filling position(s) by C1 or C2

USE ADDITIONAL PAPER IF NECESSARY



Contra  
Costa  
County

To: Board of Supervisors  
From: Kathy Gallagher, Employment & Human Services Director  
Date: August 3, 2021

Subject: Cancel one Children Services Manager-Project (9MH1) (unrepresented) and Add One Comprehensive Services Manager-Project (9MS3) (unrepresented)

---

**RECOMMENDATION(S):**

ADOPT Position Adjustment Resolution No. 25782 to cancel one Children Services Manager-Project (9MH1) (unrepresented) vacant position No. 12585 at Salary Plan and Grade C85 1322 (\$5,018.57 -\$6,100.10); and add one Comprehensive Services Manager-Project (9MS3) (unrepresented) position at Salary Plan and Grade C85 1454 (\$5,719.28-\$6,951.82) in the Community Services Bureau (CSB), Employment and Human Services Department.

**FISCAL IMPACT:**

Approval of this personnel action will result in an increase of \$16,839 to CSB baseline budget. The added Comprehensive Services Manager-Project position will be funded 100% by Federal Funds.

**BACKGROUND:**

The Employment and Human

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Eva Gaipa 925  
608 5024

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Sylvia Wong Tam, Eva Gaipa

### BACKGROUND: (CONT'D)

Services Department, Community Services Bureau (CSB) is requesting to add a Comprehensive Services Manager-Project (CSM) in their Quality Management Unit (QMU). The added Comprehensive Services Manager position will be responsible for conducting classroom observations, monitoring childcare centers, reviewing files, and measuring and improving Teacher-Student Interactions utilizing the Classroom Assessment Scoring System (CLASS). CSB Quality Management Unit (QMU) monitors approximately 600-800 Children and Family files and conducts 135 classroom health and safety observations each year. Recently, Child Care Licensing, California Department of Education, and The Office of Head Start have increased the number of monitoring/observations and the number of assessments required for Infant/Toddler and Preschool classrooms. Throughout the year, QMU conducts four types of monitoring assessments and classroom observations (curriculum fidelity, teacher to child interactions, and classroom environment). These assessments are mandated by Child Care Licensing, California Department of Education, and The Office of Head Start to ensure classroom health and safety, quality of services, and continuous improvement. In addition, the unit has increased monitoring services for two additional services provided to enrolled families in the CalWORKS Stage 2/CAPP Child Care Unit and Low Income Home Energy Assistant Programs. In addition to conducting classroom monitoring, the unit is responsible for aggregating and analyzing the data collected from the monitoring conducted by QMU and implementing training for continuous improvement. The added Comprehensive Services Manager position will allow CSB to successfully monitor the quality of programs and CSB will continue receiving federal and state funding benefiting families and children in Contra Costa County. CSB will maintain the workload distributed fairly amongst other managers, ensuring quality of work, and CSB will meet requirements of Child Care Licensing, California Department of Education, and The Office of Head Start.

### CONSEQUENCE OF NEGATIVE ACTION:

CSB may lose funding as our quality of services may decline and federal and state mandates won't be met.

### ATTACHMENTS

Fiscal Calculations

AIR 46008 P300 25782

**SALARY AND BENEFIT (INCLUDING PENSION) COSTS PER JOB CLASSIFICATION**

**CANCEL ONE (1) CHILDREN SERVICES MANAGER - PROJECT FOR ONE (1) COMPREHENSIVE SERVICES MANAGER - PROJECT**

ASSIST Request #	TBD
Date:	6/8/2021
Annualization Factor	12
Benefit Percentage	69.70%
Pension Percentage	27.55%

ASSIST Request #	TBD
Date:	6/8/2021
Annualization Factor	12
Benefit Percentage	69.70%
Pension Percentage	27.55%

**VARIANCE**

**CANCEL POSITION**

		COST FOR ONE	
		Children Services Manager - Project	
Classification			
Step 5 Monthly Salary	\$	(5,922.43)	
Number of Position (FTE)		1.00	
Benefit Amount	\$	(4,128)	
Salary + Benefit	\$	(10,050)	
Annualized Sal+ Ben Cost	\$	(120,604)	
Effective Mo's		12	
Upcoming Yr. Cost	\$	(120,604)	
Federal Percentage		100.00%	
Federal Cost	\$	(120,604)	
State Percentage		0.00%	
State Cost	\$	-	
Other Funding	\$	-	
County Percentage		0.00%	
County Cost	\$	-	
Annual Pension Cost	\$	(19,580)	

**FOR THIS POSITION**

		COST FOR ONE	
		Comprehensive Services Manager - Project	
Classification			
Step 5 Monthly Salary	\$	6,749.34	
Number of Position (FTE)		1	
Benefit Amount	\$	4,704	
Salary + Benefit	\$	11,454	
Annualized Sal+ Ben Cost	\$	137,444	
Effective Mo's		12	
Upcoming Yr. Cost	\$	137,444	
Federal Percentage		100.00%	
Federal Cost	\$	137,444	
State Percentage		0.00%	
State Cost	\$	-	
Other Funding	\$	-	
County Percentage		0.00%	
County Cost	\$	-	
Annual Pension Cost	\$	22,313	

**\$ 16,839**

The request is to cancel one (1) Children Services Manager for one (1) Comprehensive Services Manager position within CSB.

The Comprehensive Services Manager position will be funded by 100% Federal revenue.

Approval of this position request will have no effect on CSB's NCC.

Net annualized salary and benefits cost is \$16,839 increase

**Fiscal Impact:**

Approval of this personnel action will result in of \$16,839 increase to the baseline budget. The change to CSM position will be funded 100% by Federal Funds

**Prepared By:**

Accountant III Haydee Ilan

Accountant III Haydee Ilan

POSITION ADJUSTMENT REQUEST

NO. 25782
DATE 6/5/2021

Department EHSD-CSB

Department No./
Budget Unit No. 0588 Org No. 1432 Agency No. 19

Action Requested: Cancel one Children Services Manager-Project (9MH1) (unrepresented) and add one Comprehensive Services Manager-Project (9MS3) (unrepresented) full time position.

Proposed Effective Date: 6/1/2021

Classification Questionnaire attached: Yes [ ] No [X] / Cost is within Department's budget: Yes [X] No [ ]

Total One-Time Costs (non-salary) associated with request: \_\_\_\_\_

Estimated total cost adjustment (salary / benefits / one time):

Total annual cost \$137,444.00 Net County Cost \$0.00
Total this FY \$11,454.00 N.C.C. this FY \$0.00

SOURCE OF FUNDING TO OFFSET ADJUSTMENT 100% Federal Funds

Department must initiate necessary adjustment and submit to CAO.
Use additional sheet for further explanations or comments.

Eva Gaipa

(for) Department Head

REVIEWED BY CAO AND RELEASED TO HUMAN RESOURCES DEPARTMENT

Dennis Bozanich

7/23/2021

Deputy County Administrator

Date

HUMAN RESOURCES DEPARTMENT RECOMMENDATIONS

DATE 7/26/2021

Cancel one Children Services Manager-Project (9MH1) vacant position No. 12585 (unrepresented); and add one Comprehensive Services Manager-Project (9MS3) (unrepresented) position.

Amend Resolution 71/17 establishing positions and resolutions allocating classes to the Basic / Exempt salary schedule.

Effective: [X] Day following Board Action.
[ ] (Date)

Rebecca Martinez

7/26/2021

(for) Director of Human Resources

Date

COUNTY ADMINISTRATOR RECOMMENDATION:

DATE

7-29-2021

- [X] Approve Recommendation of Director of Human Resources
[ ] Disapprove Recommendation of Director of Human Resources
[ ] Other: \_\_\_\_\_

Handwritten signature of County Administrator

(for) County Administrator

BOARD OF SUPERVISORS ACTION:

Monica Nino, Clerk of the Board of Supervisors and County Administrator

Adjustment is APPROVED [ ] DISAPPROVED [ ]

DATE \_\_\_\_\_

BY \_\_\_\_\_

APPROVAL OF THIS ADJUSTMENT CONSTITUTES A PERSONNEL / SALARY RESOLUTION AMENDMENT

POSITION ADJUSTMENT ACTION TO BE COMPLETED BY HUMAN RESOURCES DEPARTMENT FOLLOWING BOARD ACTION

Adjust class(es) / position(s) as follows:

## REQUEST FOR PROJECT POSITIONS

Department \_\_\_\_\_

Date \_\_\_\_\_

No. \_\_\_\_\_

1. Project Positions Requested:
2. Explain Specific Duties of Position(s)
3. Name / Purpose of Project and Funding Source (do not use acronyms i.e. SB40 Project or SDSS Funds)
4. Duration of the Project: Start Date \_\_\_\_\_ End Date \_\_\_\_\_  
Is funding for a specified period of time (i.e. 2 years) or on a year-to-year basis? Please explain.
5. Project Annual Cost
  - a. Salary & Benefits Costs: \_\_\_\_\_
  - b. Support Costs: \_\_\_\_\_  
(services, supplies, equipment, etc.)
  - c. Less revenue or expenditure: \_\_\_\_\_
  - d. Net cost to General or other fund: \_\_\_\_\_
6. Briefly explain the consequences of not filling the project position(s) in terms of:
  - a. potential future costs
  - b. legal implications
  - c. financial implications
  - d. political implications
  - e. organizational implications
7. Briefly describe the alternative approaches to delivering the services which you have considered. Indicate why these alternatives were not chosen.
8. Departments requesting new project positions must submit an updated cost benefit analysis of each project position at the halfway point of the project duration. This report is to be submitted to the Human Resources Department, which will forward the report to the Board of Supervisors. Indicate the date that your cost / benefit analysis will be submitted
9. How will the project position(s) be filled?
  - a. Competitive examination(s)
  - b. Existing employment list(s) Which one(s)? \_\_\_\_\_
  - c. Direct appointment of:
    1. Merit System employee who will be placed on leave from current job
    2. Non-County employee

Provide a justification if filling position(s) by C1 or C2

USE ADDITIONAL PAPER IF NECESSARY



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Alison McKee, County Librarian  
Date: August 3, 2021

Subject: Add one part-time Library Assistant-Journey Level position to the Library

---

**RECOMMENDATION(S):**

ADOPT Position Adjustment Resolution No. 25776 to add one (1) part-time 20/40 Library Assistant-Journey Level (3KVB) (represented) position at salary plan and grade QXX 1030 (\$3,746.66 - \$4,784.63) in the Library Department.

**FISCAL IMPACT:**

Upon approval, this action will result in an annual cost approximately \$50,881. This cost will be covered by the City of Concord. No impact to the County General Fund.

**BACKGROUND:**

The Library has been conducting an evaluation of its staffing and scheduling plans to better meet the needs of patrons and create staffing efficiencies at its various community library locations. As of July 1, 2021, the Library revised operating hours at multiple branch locations and increased the County-funded base hours open to the public from 35 to 40 hours per week. The City of Concord has authorized and is funding 12 additional Library hours beyond the County-funded base hours. As a result of these changes, the Library has determined that it needs a part-time Library Assistant-Journey Level at the Concord Community Library.

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APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Samuel Treanor at (925) 608-7702

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Samuel Treanor, Sylvia Wong

BACKGROUND: (CONT'D)

This Library Assistant will be responsible for handling both circulation and reference services with a substantial amount of public contact. Adding this part-time position will help mitigate some potential scheduling gaps and provide more efficient coverage and service to patrons.

CONSEQUENCE OF NEGATIVE ACTION:

If this position change is not approved, the Library will not have adequate staffing to cover the additional 12 open hours authorized and funded by the City of Concord.

ATTACHMENTS

P300 25776\_Add One 20/40 Lib Assist Journey-Concord

**POSITION ADJUSTMENT REQUEST**

NO. 25776  
DATE 7/2/2021

Department Library Department No./  
Budget Unit No. 0621 Org No. 3752 Agency No. 85  
Action Requested: Add one 20/40 Library Assistant-Journey Level (3KVB) position to the Library

Proposed Effective Date: 8/1/2021

Classification Questionnaire attached: Yes  No  / Cost is within Department's budget: Yes  No

Total One-Time Costs (non-salary) associated with request: \_\_\_\_\_

Estimated total cost adjustment (salary / benefits / one time):

Total annual cost \$50,881.00 Net County Cost \$0.00  
Total this FY \$46,641.00 N.C.C. this FY \$0.00

SOURCE OF FUNDING TO OFFSET ADJUSTMENT City of Concord

Department must initiate necessary adjustment and submit to CAO.  
Use additional sheet for further explanations or comments.

Alison McKee

\_\_\_\_\_  
(for) Department Head

REVIEWED BY CAO AND RELEASED TO HUMAN RESOURCES DEPARTMENT

/s/ Erin M. Steffen

7/16/2021

\_\_\_\_\_  
Deputy County Administrator

\_\_\_\_\_  
Date

HUMAN RESOURCES DEPARTMENT RECOMMENDATIONS

DATE 7/20/2021

Add one (1) 20/40 Library Assistant-Journey Level (3KVB) (represented) position to the Library Department.

Amend Resolution 71/17 establishing positions and resolutions allocating classes to the Basic / Exempt salary schedule.

Effective:  Day following Board Action.  
 \_\_\_\_\_(Date)

Carol Berger

7/20/2021

\_\_\_\_\_  
(for) Director of Human Resources

\_\_\_\_\_  
Date

COUNTY ADMINISTRATOR RECOMMENDATION:

DATE 7/28/2021

Approve Recommendation of Director of Human Resources  
 Disapprove Recommendation of Director of Human Resources  
 Other: \_\_\_\_\_

/s/ Julie DiMaggio Enea

\_\_\_\_\_  
(for) County Administrator

BOARD OF SUPERVISORS ACTION:

Monica Nino, Clerk of the Board of Supervisors  
and County Administrator

Adjustment is APPROVED  DISAPPROVED

DATE \_\_\_\_\_

BY \_\_\_\_\_

APPROVAL OF THIS ADJUSTMENT CONSTITUTES A PERSONNEL / SALARY RESOLUTION AMENDMENT

POSITION ADJUSTMENT ACTION TO BE COMPLETED BY HUMAN RESOURCES DEPARTMENT FOLLOWING BOARD ACTION

Adjust class(es) / position(s) as follows:

## REQUEST FOR PROJECT POSITIONS

Department \_\_\_\_\_

Date \_\_\_\_\_

No. \_\_\_\_\_

1. Project Positions Requested:
  
2. Explain Specific Duties of Position(s)
  
3. Name / Purpose of Project and Funding Source (do not use acronyms i.e. SB40 Project or SDSS Funds)
  
4. Duration of the Project: Start Date \_\_\_\_\_ End Date \_\_\_\_\_  
Is funding for a specified period of time (i.e. 2 years) or on a year-to-year basis? Please explain.
  
5. Project Annual Cost
  - a. Salary & Benefits Costs: \_\_\_\_\_
  - b. Support Costs: \_\_\_\_\_  
(services, supplies, equipment, etc.)
  - c. Less revenue or expenditure: \_\_\_\_\_
  - d. Net cost to General or other fund: \_\_\_\_\_
  
6. Briefly explain the consequences of not filling the project position(s) in terms of:
  - a. potential future costs
  - b. legal implications
  - c. financial implications
  - d. political implications
  - e. organizational implications
  
7. Briefly describe the alternative approaches to delivering the services which you have considered. Indicate why these alternatives were not chosen.
  
8. Departments requesting new project positions must submit an updated cost benefit analysis of each project position at the halfway point of the project duration. This report is to be submitted to the Human Resources Department, which will forward the report to the Board of Supervisors. Indicate the date that your cost / benefit analysis will be submitted
  
9. How will the project position(s) be filled?
  - a. Competitive examination(s)
  - b. Existing employment list(s) Which one(s)? \_\_\_\_\_
  - c. Direct appointment of:
    1. Merit System employee who will be placed on leave from current job
    2. Non-County employee

Provide a justification if filling position(s) by C1 or C2

USE ADDITIONAL PAPER IF NECESSARY



Contra  
Costa  
County

To: Board of Supervisors  
From: Anna Roth, Health Services  
Date: August 3, 2021

Subject: Add Two Accountant I and Two Accountant III Positions in the Health Services Department

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**RECOMMENDATION(S):**

ADOPT Position Adjustment Resolution No. 25783 to add two (2) Accountant I (SAWA) positions at salary plan and grade ZB5-1332 (\$5,067 - \$6,158) and two (2) Accountant III (SATA) positions at salary plan and grade ZB5-1576 (\$6,451 - \$7,841) in the Health Services Department. (Represented)

**FISCAL IMPACT:**

Upon approval, this will result in an annual cost of approximately \$582,514, with \$225,899 in pension costs already included. (100% premium offset)

**BACKGROUND:**

The Finance division of the Health Services department is requesting to add four full-time Accountant positions to support the CCHP unit in meeting new State imposed mandates and reporting requirements. Effective January 2022, the State will be requiring Health Plans to submit a new Quarterly Financial Report to the Department of Health Care Services (DHCS) state oversight agency. The format is similar to the current Rate Development Template (RDT) that the Health Plan submits annually. Based on the time required to prepare the annual RDT, it is estimated that the new Quarterly Financial Reporting will take five-six weeks each quarter to assimilate information,

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Lauren Ludwig,  
925-957-5269

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Bud DeCesare, Kathi Caudel, Jo-Anne Linares, Kathy Sitton, Lauren Ludwig, Sylvia Wong-Tam

BACKGROUND: (CONT'D)

provide required detail analysis to the state, and allow for management review and questions. Due to the increased workload this will cause, there is a need for new staff who will be dedicated to this function.

Additionally, a new state mandate requires Health Plans to report information related to Plan Members who have Other Health Care Coverage (OHC). Health Plans must also account for refunds due from providers for medical claim overpayments. This information is needed for both the RDT and the new Quarterly Financial Reporting. The employee who was previously responsible for the RDT rate setting process was recently promoted to manage the CCHP Finance unit; the resulting workload that was left behind is too large for current staff to absorb. Additional staff are necessary to maintain operations and meet all reporting requirements in a timely manner.

Similarly, the promotion of the new manager has caused a need for someone to take over the responsibilities for setting premium rates, monitoring Pharmacy costs, etc., for the Community Health Plan. This plan includes commercial coverage for County employees and retirees, and the State-sponsored coverage available to in-home supportive service providers in Contra Costa County. To comply with increased state and federal reporting obligations for this Commercial Line of Business, new staff is needed to backfill the manager's previous role, which will allow her to manage the unit and focus on the reviewing the RDT and the quarterly financial reporting that will now be assigned to other staff.

CONSEQUENCE OF NEGATIVE ACTION:

If not approved, the CCHP finance unit will have insufficient staffing to comply with new mandates and reporting requirements that have been implemented by the State.

ATTACHMENTS

P300 No. 25783 HSD

**POSITION ADJUSTMENT REQUEST**

NO. 25783  
DATE 7/21/2021

Department Health Services

Department No./  
Budget Unit No. 0540 Org No. 6567 Agency No. A18

Action Requested: Add two (2) Accountant I (SAWA) positions and two (2) Accountant III (SATA) positions in the Health Services Department. (100% premium offset)

Proposed Effective Date: 8/4/2021

Classification Questionnaire attached: Yes  No  / Cost is within Department's budget: Yes  No

Total One-Time Costs (non-salary) associated with request: \$0.00

Estimated total cost adjustment (salary / benefits / one time):

Total annual cost \$582,514.38 Net County Cost \$0.00  
Total this FY \$582,514.38 N.C.C. this FY \$0.00

SOURCE OF FUNDING TO OFFSET ADJUSTMENT 100% Premium Offset

Department must initiate necessary adjustment and submit to CAO.  
Use additional sheet for further explanations or comments.

Lauren Ludwig

\_\_\_\_\_  
(for) Department Head

REVIEWED BY CAO AND RELEASED TO HUMAN RESOURCES DEPARTMENT

Sarah Kennard for

7/23/2021

\_\_\_\_\_  
Deputy County Administrator

\_\_\_\_\_  
Date

HUMAN RESOURCES DEPARTMENT RECOMMENDATIONS

DATE \_\_\_\_\_

Exempt from Human Resources review under delegated authority.

Amend Resolution 71/17 establishing positions and resolutions allocating classes to the Basic / Exempt salary schedule.

Effective:  Day following Board Action.  
 \_\_\_\_\_(Date)

\_\_\_\_\_  
(for) Director of Human Resources

\_\_\_\_\_  
Date

COUNTY ADMINISTRATOR RECOMMENDATION:

DATE

7/28/2021

- Approve Recommendation of Director of Human Resources
- Disapprove Recommendation of Director of Human Resources
- Other: Approve as recommended by the department.

Enid Mendoza

\_\_\_\_\_  
(for) County Administrator

BOARD OF SUPERVISORS ACTION:

Adjustment is APPROVED  DISAPPROVED

Monica Nino, Clerk of the Board of Supervisors  
and County Administrator

DATE \_\_\_\_\_

BY \_\_\_\_\_

APPROVAL OF THIS ADJUSTMENT CONSTITUTES A PERSONNEL / SALARY RESOLUTION AMENDMENT

POSITION ADJUSTMENT ACTION TO BE COMPLETED BY HUMAN RESOURCES DEPARTMENT FOLLOWING BOARD ACTION

Adjust class(es) / position(s) as follows:

## REQUEST FOR PROJECT POSITIONS

Department \_\_\_\_\_

Date \_\_\_\_\_

No. \_\_\_\_\_

1. Project Positions Requested:
  
2. Explain Specific Duties of Position(s)
  
3. Name / Purpose of Project and Funding Source (do not use acronyms i.e. SB40 Project or SDSS Funds)
  
4. Duration of the Project: Start Date \_\_\_\_\_ End Date \_\_\_\_\_  
Is funding for a specified period of time (i.e. 2 years) or on a year-to-year basis? Please explain.
  
5. Project Annual Cost
  - a. Salary & Benefits Costs: \_\_\_\_\_
  - b. Support Costs: \_\_\_\_\_  
(services, supplies, equipment, etc.)
  - c. Less revenue or expenditure: \_\_\_\_\_
  - d. Net cost to General or other fund: \_\_\_\_\_
  
6. Briefly explain the consequences of not filling the project position(s) in terms of:
  - a. potential future costs
  - b. legal implications
  - c. financial implications
  - d. political implications
  - e. organizational implications
  
7. Briefly describe the alternative approaches to delivering the services which you have considered. Indicate why these alternatives were not chosen.
  
8. Departments requesting new project positions must submit an updated cost benefit analysis of each project position at the halfway point of the project duration. This report is to be submitted to the Human Resources Department, which will forward the report to the Board of Supervisors. Indicate the date that your cost / benefit analysis will be submitted
  
9. How will the project position(s) be filled?
  - a. Competitive examination(s)
  - b. Existing employment list(s) Which one(s)? \_\_\_\_\_
  - c. Direct appointment of:
    1. Merit System employee who will be placed on leave from current job
    2. Non-County employee

Provide a justification if filling position(s) by C1 or C2

USE ADDITIONAL PAPER IF NECESSARY



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Standard Agreement (Amendment) #29-772-40 with the State of California, Department of Health Care Services

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Health Services Director, or designee, to execute on behalf of the County Standard Agreement (Amendment) #29-773-40 (State #04-36067, A26) with the State of California, Department of Health Care Services (DHCS), to amend Agreement #29-772-13 (as amended by subsequent amendments #29-772-14 through #29-772-39) to revise language for the Final Rule and Behavioral Health Treatment and add 2018-2019 capitation rates, with no change in the original amount payable to the County not to exceed \$317,472,000 and no change in the term of April 1, 2005 through December 31, 2021.

**FISCAL IMPACT:**

This is no fiscal impact, since the original amount payable to County remains at up to \$317,472,000 for the Medi-Cal Managed Care Local Initiative Project. No County match is required.

**BACKGROUND:**

The State has been contracting with the Health Services Department's Contra Costa Health Plan to provide health care services to eligible Medi-Cal recipients within the scope of Medi-Cal benefits under the Medi-Cal Local Initiative Health Plan since February 1, 1997.

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Sharron Mackey,  
925-313-6004

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Marcy Wilhelm

BACKGROUND: (CONT'D)

On April 26, 2005, the Board of Supervisors approved Standard Agreement #29-772-13 with the State of California, DHCS, for the Medi-Cal Local Initiative Health Plan, for the period from April 1, 2005 through December 31, 2021. Subsequent amendments #29-772-14 through #29-772-39 have been issued by DHCS to amend Standard Agreement #29-772-13 to extend the term, add funds, adjust capitation rates and modify language.

Approval of this Standard Agreement (Amendment) #29-772-40 will revise language for the Final Rule and Behavioral Health Treatment and add 2018-2019 capitation rates with no change in the payment limit of term through December 31, 2021.

CONSEQUENCE OF NEGATIVE ACTION:

If this amendment is not approved, the County will not be able to participate as a Medi-Cal Local Initiative Health Plan.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Amendment Agreement #29-819-1 with California Business, Consumer Services and Housing Agency

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Health Services Director, or designee, to execute on behalf of the County Grant Amendment Agreement #29-819-1 (State #18-HEAP-00031) with California Business, Consumer Services and Housing Agency (BCSH), to amend Grant Agreement #29-819, to make adjustments to the budget with no change in the amount payable to County of \$7,196,771 or term January 9, 2019 through October 31, 2021.

**FISCAL IMPACT:**

Approval of this amendment will not impact the payment limit of the contract.

**BACKGROUND:**

HEAP funding is intended to support Continuum of Care (CoC) in Contra Costa County and large cities in addressing the state's homelessness crisis. Contra Costa CoC is eligible to receive \$7,196,771 based on its 2017 point-in-time count total homeless population and its 2017 share of the overall state's homeless population. Five percent of HEAP funding is allocated by state statute to address youth experiencing or at-risk of experiencing homelessness. Five percent of funds will also be utilized for administrative

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APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Lavonna Martin,  
925-608-6701

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: L Walker, M Wilhelm

BACKGROUND: (CONT'D)

costs. This funding will allow the County to expand homelessness services across the County and implement interventions that build on the best-practices and current CoC efforts.

On February 12, 2019, the Board of Supervisors approved Grant Agreement #29-819 in an amount payable to the County of \$7,196,771 for funding for the CoC Program in Contra Costa County for the period January 9, 2019 through October 31, 2021.

Approval of Amendment Agreement #29-819-1 will allow the grantor to make adjustments to the budget for the CoC Program through October 31, 2021. Budget adjustments include shifting general services funding to capital improvements and homeless set-aside specific services.

CONSEQUENCE OF NEGATIVE ACTION:

If this amendment agreement is not approved, the County will not receive the adjusted budget and be able to better assist its homeless population with emergency homeless crisis response for unsheltered individuals and families.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: John Kopchik, Director, Conservation & Development Department  
Date: August 3, 2021

Subject: Contract Amendment with Environmental Science Associates for Environmental Impact Report Preparation Services for the Bayview Residential Project

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Director of Conservation and Development, or designee, to execute a contract amendment with Environmental Science Associates (ESA) to extend the term of contract #C45921 from August 7, 2021 through August 7, 2022, with no change to the payment limit of \$357,869, for providing continued service to complete the Environmental Impact Report for the Bayview Residential Project. (County Files# CDS04-08809 / CDGP04-00013 / CDRZ04-03148 / CDDP04-03080)

**FISCAL IMPACT:**

No impact to the County General Fund. The contract is funded 100% by the applicant.

**BACKGROUND:**

In February of 2017, the Department of Conservation and Development (DCD) entered into a contract with ESA to provide technical assistance and services to DCD related to the Bayview Residential Project. The term of the contract will expire on August 7, 2021. This amendment to extend the contract will allow the contractor to continue to prepare the Environmental Impact Report for the project. Coordination and analysis work has required more time than anticipated.

---

APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Gary Kupp, (925)  
655-2871

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

CONSEQUENCE OF NEGATIVE ACTION:

If the proposed contract amendment is not approved, the contractor would not be able to complete the Environmental Impact Report.



Contra  
Costa  
County

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Contract #77-224-2 with Familytree Medical Transport, LLC

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Health Service Director, or designee, to execute on behalf of the County Contract #77-224-2 with Familytree Medical Transport, LLC, a limited liability company, in an amount not to exceed \$600,000, to provide non-emergency medical transportation services for Contra Costa Health Plan (CCHP) Medi-Cal members, for the period from August 1, 2021 through July 31, 2024.

**FISCAL IMPACT:**

This contract will result in contractual service expenditures of up to \$600,000 over a three-year period and will be funded 100% by CCHP Enterprise Fund II revenue.

**BACKGROUND:**

CCHP has an obligation to provide certain specialized health care services for its members under the terms of their Individual and Group Health Plan membership contracts with the County. This contractor has been a part of the CCHP Provider Network providing non-emergency medical transportation services to CCHP Medi-Cal members since 2019.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Sharron Mackey,  
925-313-6104

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Noel Garcia, Marcy Wilhelm

BACKGROUND: (CONT'D)

On June 16, 2020, the Board of Supervisors approved Contract #77-224-1 with Familytree Medical Transport, LLC, in an amount not to exceed \$400,000 to provide non-medical transportation services for CCHP Medi-Cal members, for the period August 1, 2020 through July 31, 2021.

Approval of Contract #77-224-2 will allow this contractor to continue to provide non-emergency medical transportation services to CCHP Medi-Cal members through July 31, 2024.

CONSEQUENCE OF NEGATIVE ACTION:

If this contract is not approved, certain specialized health care services for CCHP members under the terms of their Individual and Group Health Plan membership contracts with the county will not be provided.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Contract #23-723 with Public Health Foundation Enterprises, Inc. (dba Heluna Health)

---

**RECOMMENDATION(S):**

APPROVE and AUTHORIZE the Health Services Director, or designee, to execute Contract #23-723 with Public Health Foundation Enterprises, Inc. (dba Heluna Health), a corporation, in an amount not to exceed \$2,947,041, provide temporary public health microbiologist, licensed vocational nurses and registered nurses for coverage at COVID-19 testing, vaccination and person under investigation sites, for the period from July 1, 2021 through December 31, 2021.

**FISCAL IMPACT:**

Approval of this contract will result in annual expenditures of up to \$2,947,041 for a six (6) month period and will be funded as budgeted by the Department in FY 2021-2022 by applicable Federal emergency funding.

**BACKGROUND:**

On March 10, 2020, the Board of Supervisors requested that the Governor proclaim a State of Emergency in Contra Costa County (Gov. Code Section 8625) due to COVID-19. The Health Department must use all available preventative measures to combat the spread of COVID-19 which includes testing and vaccine administration. The Department must enter into contracts for these services and competitive bidding requirements are suspended to the extent necessary to address the effects of COVID-19.

---

APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Anna Roth,  
925-957-2670

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Marcy Wilhelm

BACKGROUND: (CONT'D)

Approval of this new contract #23-723 with Public Health Foundation Enterprises, Inc. (dba Heluna Health) will allow the contractor to provide temporary public health microbiologist, licensed vocational nurses and registered nurses for coverage at COVID-19 testing, vaccination and person under investigation sites to provide temporary relief for County employees due to peak loads from the COVID-19 pandemic, as needed through December 31, 2021.

CONSEQUENCE OF NEGATIVE ACTION:

If this contract is not approved, patients at COVID-19 testing, vaccination and person under investigation sites would not have adequate care.



**Contra  
Costa  
County**

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Rescind Prior Board Action Pertaining to Purchase Order with McKesson Medical-Surgical, Inc.

---

**RECOMMENDATION(S):**

RESCIND Board action of June 8, 2021 (C.132), which pertained to a purchase order with McKesson Medical-Surgical, Inc.; and APPROVE and AUTHORIZE the Health Services Director, or designee, to execute on behalf of the County a Purchase Order with McKesson Corporation, in an amount not to exceed \$5,500,000 for the purchase of pharmaceuticals designated as 340B replenishment inventories dispensed through nine (9) Rite Aid pharmacies located within Contra Costa County, for the period from July 1, 2021 through June 30, 2025.

**FISCAL IMPACT:**

Approval of this purchase order will result in annual expenditures of up to \$5,500,000 over a four-year period and will be funded 100% by Contra Costa Health Plan (CCHP) Enterprise Fund III budget. Participation in the 340 program allows the CCHP to maximize savings.

**BACKGROUND:**

CCHP has entered the 340B pharmacy program through the Federal Government's Office of Pharmacy Affairs (OPA). CCHP received OPA approval to contract with nine (9) local Rite Aid pharmacies in the 340B program. This program supplies prescription medications to CCHP members at a significantly reduced-price structure governed by the OPA. The \$5,500,000 request, for a four-year purchase order, maintains drug inventories for our current population.

---

APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Jaspreet Benepal,  
925-370-5101

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

BACKGROUND: (CONT'D)

This vendor has been used for these products since at least 2009. It provides drugs for patients at a considerable savings for CCHP. Patient prescription needs and cost savings are crucial.

On June 8, 2021, the Board of Supervisors approved item C.132, however, the contractor's name should have read McKesson Corporation not McKesson Medical-Surgical, Inc. This Board Order will rescind that incorrect Board Order and allow the Department to continue to participate in the 340B program to allow CCHP to maximize savings for pharmaceuticals through June 30, 2025.

CONSEQUENCE OF NEGATIVE ACTION:

If this Board Order is not approved the prior action with the incorrect contractor's name would remain and the contractor would not be paid for services.

CHILDREN'S IMPACT STATEMENT:



Contra  
Costa  
County

To: Board of Supervisors  
From: John Kopchik, Director, Conservation & Development Department  
Date: August 3, 2021

Subject: Approve Reissuance of Notes for Bay Point Family Apartments

---

**RECOMMENDATION(S):**

1. ADOPT Resolution No. 2021/229 approving the reissuance of Multi-Family Housing Revenue Notes in the amount of \$66,000,000 that provided financing for the construction of a 193-unit residential rental housing development known as Baypoint Family Apartments located at 3600-3628 Willow Pass Road in the Bay Point unincorporated area of the County. Such approval is solely for the purposes of satisfying the requirements of Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) and Section 147(f) of the Internal Revenue Code of 1986, as amended (the "Code");
2. ACKNOWLEDGE that adoption of this resolution does not relieve or exempt the project sponsor from obtaining required permits or approvals, nor obligate the County to incur any obligation to provide financial assistance with respect to the Bonds or the Development; and
3. AUTHORIZE and DIRECT the Chair of the Board of Supervisors, the Vice-Chair of the Board of Supervisors, the County Administrator, the Director of Conservation and Development, the Assistant Deputy Director of Conservation and Development, County Counsel and the Clerk of the Board to execute such other agreements, documents and certificates, and to perform such other acts and deeds, as may be necessary or convenient to effect the purposes of the Resolution and the transactions authorized.

---

APPROVE
  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR
  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Deidre Hodgers,  
925-655-2892

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

### FISCAL IMPACT:

No impact to the General Fund. The County will be reimbursed for any costs incurred in the process of conducting the TEFRA Hearing, and Board of Supervisors' approval. The reissuance authorization is for the sole purpose of meeting the provisions of the Code. No County funds are pledged to secure the bonds.

### BACKGROUND:

Contra Costa County, through the Conservation and Development Department, operates a multifamily mortgage revenue bond financing program. The purpose of the program is to increase or preserve the supply of affordable rental housing available to low and very low-income households. The County program may be undertaken within the unincorporated County and within the cities located in the County that have agreed to let the County operate the program in their jurisdiction. The County is authorized to issue multifamily housing revenue notes and bonds pursuant to Section 52075 and following of the California Health and Safety Code.

On October 23, 2018, the Board of Supervisors adopted Resolution No. 2018/512 authorizing the issuance of two series (2018 B-1 and B-2) of multifamily housing revenue notes (the "Notes") in the principal amount of \$66,000,000, and loaned the proceeds to Baypoint Family Apartments, L.P., a California limited partnership (the "Borrower"), to provide financing for costs of the acquisition and construction of a 193-unit residential rental housing development located at 3600-3628 Willow Pass Road in the unincorporated Bay Point area of the County known as Baypoint Family Apartments (the "Development").

Due to unforeseen circumstances, the completion of the construction and lease-up of the Development has been delayed, and the Borrower and the owner of one of the Notes, the Series 2018B-1, have agreed to modify some of the documents executed in connection with the issuance of the Notes, to increase the principal amount of the Series 2018B-1 Note to remain outstanding and to change the interest rate following the conversion of the Series 2018B-1 Note to the permanent phase of the financing. The modification of the documents will result in a "reissuance" of the Notes for purposes of the Code. In order for the interest on the Notes to continue to be tax-exempt, Section 147(f) of the Code requires that the Board of Supervisors approve the reissuance of the Notes following the conduct of a public hearing on the financing of the Development.

A public hearing was held by the Department of Conservation and Development on July 13, 2021, where members of the community were given an opportunity to speak in favor of or against the use of tax-exempt financing for the Development. No public comments were received. A notice of the hearing was published in the East County Times (proof of publication attached) on July 6, 2021.

### CONSEQUENCE OF NEGATIVE ACTION:

Without the approval of the reissuance, the interest on the Notes will become subject to federal income taxes.

### CHILDREN'S IMPACT STATEMENT:

Bay Point Family Apartments will support outcome number 3: Families are Economically Self Sufficient.

### ATTACHMENTS

Resolution 2021/229

Proof of Publication

TEFRA transcript

**THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, CALIFORNIA**  
**and for Special Districts, Agencies and Authorities Governed by the Board**

Adopted this Resolution on 08/03/2021 by the following vote:

**AYE:**

**NO:**

**ABSENT:**

**ABSTAIN:**

**RECUSE:**



**Resolution No. 2021/229**

Resolution Approving the Reissuance of Multifamily Housing Revenue Notes Issued to Provide Financing for Baypoint Family Apartments Located in the Baypoint Unincorporated Area of the County.

WHEREAS, the County of Contra Costa (the "County") is authorized to issue multifamily housing revenue notes and bonds pursuant to Section 52075 and following of the California Health and Safety Code; and

WHEREAS, on October 23, 2018, the Board of Supervisors adopted Resolution No. 2018/512 authorizing the issuance of two series of multifamily housing revenue notes (the "Notes") to provide financing for costs of the acquisition and construction of a 193-unit residential rental housing development located at 3600-3628 Willow Pass Road in the unincorporated Bay Point area of the County known as Baypoint Family Apartments (the "Development"), owned by Baypoint Family Apartments, L.P., a California limited partnership (the "Borrower"); and

WHEREAS, all of the rental units in the Development, except for one unit set aside for a resident manager, have been, or will be, rented to persons and families of very low or low income.

WHEREAS, on December 20, 2018, the county issued the Notes in the principal amount of \$66,000,000, and loaned the proceeds of the Notes to the Borrower to pay costs of the acquisition and construction by the Borrower of the Development, thereby assisting in providing housing for very low or low income persons; and

WHEREAS, the interest payable on the Notes is exempt from federal income taxes under the provisions of the Internal Revenue Code of 1986, as amended (the "Code"); and

WHEREAS, due to unforeseen circumstances, the completion of the construction and lease-up of the Development has been delayed, and the Borrower and the owner of one of the Notes, the Series 2018B-1 Note have agreed to modify some of the documents executed in connection with the issuance of the Notes to, among other changes, increase the principal amount of the Series 2018B-1 Note to remain outstanding and to change the interest rate on the Series 2018B-1 Note following the conversion of the Series 2018B-1 Note to the permanent phase of the financing, and the modification of the documents will result in a "reissuance" of the Notes for purposes of the Code; and

WHEREAS, in order for the interest on Notes to continue to be tax-exempt, Section 147(f) of the Code requires that the Board of Supervisors approve the reissuance of the Notes following the conduct of a public hearing on the financing of the Development; and

WHEREAS, in light of the foregoing, the Borrower has requested that the Board of Supervisors approve the reissuance of the Notes in order to satisfy the requirements of section 147(f) of the Code so that the interest paid on the Notes can continue to be tax-exempt; and

WHEREAS, the Assistant Deputy Director of the Department of Conservation and Development of the Housing and Community Improvement Division of the County has, following notice duly given, held a public hearing regarding the reissuance of the Notes and the Development, and a summary of any oral or written testimony received at the public hearing has been presented to the Board of Supervisors for its consideration; and

WHEREAS, the Board now desires to approve the reissuance of the Notes.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Supervisors of the County of Contra Costa, as follows:

Section 1. The Board hereby finds and declares that the foregoing recitals are true and correct.

Section 2. The Board hereby approved the reissuance of the Notes for purposes of Section 147(f) of the Code.

Section 3. The adoption of this Resolution does not (i) relieve or exempt the Borrower from obtaining any permits or approvals that are required by, or determined to be necessary from, the County in connection with the Development, nor (ii) obligate the County to incur any obligation or provide financial assistance with respect to the Notes or the Development.

Section 4. All actions heretofore taken by the officers and agents of the County with respect to the financing of the Development and the issuance of Notes are hereby approved, ratified and confirmed, and any authorized officer of the County is hereby authorized and directed, for and in the name and on behalf of the County, to do any and all things and take any and all actions and execute and deliver any and all certificates, agreements and other documents needed in connection with the modifications do not in any way increase the obligations or liability of the County under such documents.

Section 5. This Resolution shall take effect upon its adoption.

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

**Contact: Deidre Hodgers, 925-655-2892**

**ATTESTED: August 3, 2021**

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

**cc:**

# East County Times

Bay Area News Group  
5179 Lone Tree Way  
Antioch, CA 94531  
925-779-7115

3697629

QUINT & THIMMIG LLP  
900 LARKSPUR LANDING, SUITE 270  
LARKSPUR, CA 94939

## PROOF OF PUBLICATION

### FILE NO. Baypoint Notice

In the matter of

### East County Times

I am a citizen of the United States. I am over the age of eighteen years and I am not a party to or interested in the above entitled matter. I am the Legal Advertising Clerk of the printer and publisher of the East County Times, a newspaper published in the English language in the City of Antioch, County of Contra Costa, State of California.

I declare that the East County Times is a newspaper of general circulation as defined by the laws of the State of California as determined by court decree dated January 6, 1919, Case Number 8268 and modified January 19, 2006, Case Number N05-1494. Said decree states that the East County Times is adjudged to be a newspaper of general circulation for the City of Antioch, County of Contra Costa and State of California. Said order has not been revoked.

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

**07/06/2021**

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Executed at Walnut Creek, California.  
On this 6th day of July, 2021.



Signature

Legal No.

**0006589430**

#### NOTICE OF PUBLIC HEARING

Notice is hereby given that the Assistant Executive Director of the Department of Conservation and Development of the County of Contra Costa (the "County") on Tuesday, July 13, 2021 at the hour of 1:30 p.m., or as soon thereafter as the matter may be heard, will hold a public hearing in accordance with Section 147(f) of the Internal Revenue Code of 1986 with respect to the prospective reissuance by the County of multifamily housing revenue notes issued by the County in the aggregate principal amount of \$66,000,000. Proposed amendments to the documents for the notes that were issued by the County in December of 2018 will result in a reissuance of the notes for purposes of the Internal Revenue Code of 1986, as amended.

The notes were issued in order to finance costs of the acquisition and construction by Baypoint Family Apartments, L.P., a California limited partnership, of a 193-unit rental housing development known as Baypoint Family Apartments located at 3600-3628 Willow Pass Road in the Bay Point unincorporated area of the County. All of the rental units in the housing development, except for one unit set aside for a resident manager, have been or will be rented to persons and families of very low or low income.

Notice is further given that at said hearing, all proponents and opponents of the multifamily housing development and the financing thereof will have an opportunity to be heard on the question as to whether or not such multifamily housing revenue notes should be reissued and all interested parties will be given the opportunity to be heard. The hearing will commence at 1:30 p.m. on July 13, 2021 or as soon thereafter as the matter can be heard.

As a public health and safety precaution, no physical location will be available for the hearing. The hearing will be conducted by toll-free teleconference only. Interested persons wishing to express their views on the reissuance of the notes and the bonds may provide public comments during the hearing by following this Zoom link <https://cccounty-us.zoom.us/j/87349211608?pwd=MUloNysZNVVqaHlleW1UYXYzOEVkUT09>, Passcode: 565933, or by Telephone: Dial: USA 214 765 0478 US Toll, USA 888 278 0254 US Toll-free, Conference code: 841892, Meeting ID: 873 4921 1608, Passcode: 565933. Public comments may also be submitted by email to [deidre.hodgers@dcd.cccounty.us](mailto:deidre.hodgers@dcd.cccounty.us), or by mail to 30 Muir Road, Martinez, CA 94553, Attention Deidre Hodgers, at least 24 hours in advance of the hearing. All timely public comments will be provided to the Board of Supervisors prior to the consideration by the Board of Supervisors of the approval of the reissuance of the notes, and will become part of the public record.

**ECT# 6589430 July 6, 2021**

**TRANSCRIPT FOR THE TEFRA HEARING**

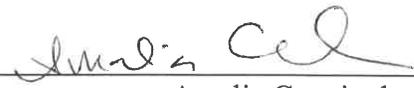
**July 13, 2021 1:30 p.m.**

This noticed public hearing is required by Section 147(f) of the Internal Revenue Code of 1986, as amended. The hearing is with regard to the proposed reissuance of multifamily housing revenue notes and bonds by the County of Contra Costa (the "County") in the amount of sixty-six million dollars (\$66,000,000). Proceeds from the sale of the notes were used to provide financing for costs of the acquisition and construction of a multifamily residential rental housing development known as Baypoint Family Apartments by Baypoint Family Apartments, L.P., a California limited partnership. Baypoint Family Apartments is a 193-unit rental housing development located at 3600-3628 Willow Pass Road in the Bay Point unincorporated area of the County. Proposed amendments to the documents for the notes will result in a reissuance of the notes for purposes of the Internal Revenue Code of 1986, as amended.

The Board of Supervisors may consider adoption of a resolution approving the reissuance of the notes on August 3, 2021. Any comments provided at this hearing will be made available to the Board of Supervisors prior to their taking action on August 3rd or on such later date as the matter may be considered by the Board of Supervisors.

If there are parties who wish to voice their opinion and provide comments on the proposed financing of the development or the reissuance of the notes and the bonds, I would ask that they be recognized now. I will then let each person provide any written or oral testimony that they may wish to provide on this matter.

Opened hearing: 1:31  
Speakers participating: 0  
Closed hearing: 1:34

By:   
Amalia Cunningham,  
Assistant Deputy Director of the  
Department of Conservation and Development,  
County of Contra Costa

Date: July 13, 2021



Contra  
Costa  
County

To: Board of Supervisors  
From: Kathy Gallagher, Employment & Human Services Director  
Date: August 3, 2021

Subject: May 2021 Operations Update of the Employment and Human Services Department, Community Services Bureau

---

**RECOMMENDATION(S):**

ACCEPT the May 2021 update of the operations of the Employment and Human Services Department, Community Services Bureau, as recommended by the Employment and Human Services Director.

**FISCAL IMPACT:**

There is no fiscal impact.

**BACKGROUND:**

The Employment and Human Services Department submits a monthly report to the Contra Costa County Board of Supervisors (BOS) to ensure ongoing communication and updates to the County Administrator and BOS regarding any and all issues pertaining to the Head Start Program and Community Services Bureau.

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APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

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Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: elaine Burres  
608-4960

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

## ATTACHMENTS

CSB May 2021 CAO Report

CSB May 2021 HS Financials

CSB May 2021 EHS Financials

CSB May 2021 EHS-CCP financial  
Report

CSB May 2021 Credit Card

CSB May 2021 Child Nutrition Report

CSB May 2021 LIHEAP

CSB May 2021 Menu

CSB May 2021 Self Assessment



To: Monica Nino, Contra Costa County Administrator  
From: Kathy Gallagher, EHSD Director  
Subject: Community Services Monthly Report  
Date: May 2021

---

### News /Accomplishments

- The Community Services Bureau (CSB) completed its Self-Assessment the week of May 10, 2021, and there were no non-compliance issues. Highlights of the process include participation from three Board of Supervisors, Policy Council (PC) members, and staff from our delegate agency, First Baptist Head Start (FBHS). The assessment focused on Health and Safety, Program Management and Governance, Education, and Family and Community Engagement. Please refer to attachment *10\_CSB...* for the entire report.
- May was Community Action Month and the Economic Opportunity Council celebrated by honoring the service providers funded by CSBG at the Annual Roundtable event held virtually. We heard heartwarming stories of successes and challenges through the pandemic and CSBs Monica DeVera, Trauma Support Team lead, conducted a much-appreciated self-care/wellness activity to close the event. This is a wonderful way to celebrate as we are not yet in a place with the pandemic to do the in-person outreach events that we typically do every May. Looking forward to next year!
- CSB has officially requested pre-approval for the Central Kitchen relocation and renovation project from the Regional Office of Head Start via the federal 1303 application process. The request is included in the carryover applications for Head Start, Early Head Start, and Early Head Start- Child Care Partnership submitted April 27, 2021. After having located unobligated funds from previous fiscal years, CSB now has sufficient funds for this project which can commence once Head Start approval is obtained.
- CSB provided CAO Analyst, Monica Carlisle, with a tour of our Bayo Vista child care site in Rodeo on Thursday, May 13, 2021. Monica learned about Bayo Vista's collaborations with the Housing Authority, the local Crisis Center, and the refinery near the site. She also had an opportunity to visit each classroom and see children and teaching staff engaged in various activities.
- CSB Trauma Informed Trainers, Ruth Hunter and Julia Kittle-White, provided a virtual training to 25 CSB staff in Trauma 102. The participants were responsive and engaged throughout the 6 hours of training. The topics ranged from the varying types of trauma, brain development and the impact of trauma on brain development, strategies for children and families, and self-care for staff. In six weeks, the same group will receive Trauma 103, which will focus on many strategies that our staff will implement while supporting children and families who experience traumatic situations.

  
1470 Civic Court,  
Suite 200  
Concord, CA  
94520

  
P: 925 681 6300  
F: 925 313 8301

  
[www.cccounty.us/ehsd](http://www.cccounty.us/ehsd)



**I. Status Updates:**

**a. Caseloads, workload (all programs)**

- o Head Start enrollment: 62.1%
- o Early Head Start enrollment: 90%
- o Early Head Start Child Care Partnership enrollment: 75%
- o Head Start Average Daily attendance: 79.6%
- o Early Head Start Average Daily attendance: 85.1%
- o Early Head Start Child Care Partnership attendance: 82.8%
- o Stage 2: 392 children
- o CAPP: 384 children
  - In total: 776 children
  - Incoming transfers from Stage 1: 13 children
- o LIHEAP: 240 households have been assisted
- o CARES LIHEAP: 0 households served (Utility Assistance is 100% spent; however, funds will be transferred to Utility Assistance to serve more households)
- o Weatherization: 9 households served

**b. Staffing:**

- o During the month of May, CSB filled several temporary and permanent Clerk positions. The Bureau also processed temporary upgrades and extensions. For all other vacancies, the Bureau is working through the established process to fill vacancies permanently or by TU with support from EHSD Personnel and HR.

**c. Union:**

- o There are no union issues to report

**II. Emerging Issues and Hot Topics:**

- There are no emerging issues and hot topics to report.

cc: Policy Council Chair, Jasmine Cisneros  
Administration for Children and Families  
Program Specialist, Chris Pflaumer

**CONTRA COSTA COUNTY - COMMUNITY SERVICES BUREAU**

**2021 HEAD START PROGRAM**

**BUDGET PERIOD JANUARY - DECEMBER 2021**

**AS OF APRIL 2021**

<b>DESCRIPTION</b>	<b>APRIL YTD Actual</b>	<b>Total Budget</b>	<b>Remaining Budget</b>	<b>33% %YTD</b>
a. PERSONNEL	\$ 1,278,520	\$ 4,147,590	\$ 2,869,070	31%
b. FRINGE BENEFITS	835,984	2,834,447	1,998,463	29%
c. TRAVEL	-	22,060	22,060	0%
d. EQUIPMENT	12,552	30,000	17,448	0%
e. SUPPLIES	37,220	213,000	175,780	17%
f. CONTRACTUAL	831,816	4,027,919	3,196,103	21%
g. CONSTRUCTION	-	-	-	0%
h. OTHER	270,051	5,545,028	5,274,977	5%
<b>I. TOTAL DIRECT CHARGES</b>	<b>\$ 3,266,142</b>	<b>\$ 16,820,044</b>	<b>\$ 13,553,902</b>	<b>19%</b>
j. INDIRECT COSTS	(132,835)	788,042	920,877	-17%
<b>k. TOTAL-ALL BUDGET CATEGORIES</b>	<b>\$ 3,133,307</b>	<b>\$ 17,608,086</b>	<b>\$ 14,474,779</b>	<b>18%</b>
<i>In-Kind (Non-Federal Share)</i>	<b>\$ 783,327</b>	<b>\$ 4,402,022</b>	<b>\$ 3,618,695</b>	<b>18%</b>

**CONTRA COSTA COUNTY - COMMUNITY SERVICES BUREAU**

**2021 HEAD START PROGRAM**

**BUDGET PERIOD JANUARY - DECEMBER 2021**

**AS OF APRIL 2021**

1	2	3	4	5	6
	Actual Apr-21	Total YTD Actual	Total Budget	Remaining Budget	33% % YTD
<b>a. Salaries &amp; Wages (Object Class 6a)</b>					
Permanent 1011	277,144	1,219,126	3,885,308	2,666,182	31%
Temporary 1013	14,622	59,394	262,282	202,888	23%
<b>a. PERSONNEL (Object class 6a)</b>	<b>291,766</b>	<b>1,278,520</b>	<b>4,147,590</b>	<b>2,869,070</b>	<b>31%</b>
<b>b. FRINGE BENEFITS (Object Class 6b)</b>					
Fringe Benefits	177,343	835,984	2,834,447	1,998,463	29%
<b>b. FRINGE (Object Class 6b)</b>	<b>177,343</b>	<b>835,984</b>	<b>2,834,447</b>	<b>1,998,463</b>	<b>29%</b>
<b>c. Travel (Object Class 6c)</b>					
HS Staff	-	-	22,060	22,060	-
<b>c. TRAVEL (Object Class 6c)</b>	<b>-</b>	<b>-</b>	<b>22,060</b>	<b>22,060</b>	<b>-</b>
<b>d. EQUIPMENT (Object Class 6d)</b>					
2. Classroom/Outdoor/Home-based/FCC	-	-	15,000	15,000	-
4. Other Equipment	12,552	12,552	15,000	2,448	12,552
<b>d. EQUIPMENT (Object Class 6d)</b>	<b>12,552</b>	<b>12,552</b>	<b>30,000</b>	<b>17,448</b>	<b>12,552</b>
<b>e. SUPPLIES (Object Class 6e)</b>					
1. Office Supplies	8,737	20,089	55,000	34,911	37%
2. Child and Family Services Supplies (Includesclassroom Supplies)	7,721	20,392	80,000	59,608	25%
4. Other Supplies					
Health and Safety Supplies	-	-	1,000	1,000	0%
Computer Supplies, Software Upgrades, Computer Replacement	1,580	(3,288)	60,000	63,288	-5%
Health/Safety Supplies	-	-	2,500	2,500	0%
Mental helath/Diasabilities Supplies	-	-	500	500	
Miscellaneous Supplies	-	-	9,500	9,500	0%
Emergency Supplies	-	-	500	500	0%
Employee Morale	-	28	3,000	2,972	1%
Household Supplies	-	-	1,000	1,000	0%
<b>TOTAL SUPPLIES (6e)</b>	<b>18,038</b>	<b>37,220</b>	<b>213,000</b>	<b>175,780</b>	<b>17%</b>
<b>f. CONTRACTUAL (Object Class 6f)</b>					
1. Adm Svcs (e.g., Legal, Accounting, Temporary Contracts)	6,469	6,469	115,000	108,531	6%
2. Health/Disabilities Services					
Health Consultant	2,560	17,920	53,000	35,080	34%
5. Training & Technical Assistance - PA11					
One Solution	-	5,530	15,000	9,470	37%
Diane Godard	6,375	7,830	8,500	670	92%
Josephine Lee	-	1,178	4,600	3,423	26%
St John Maria/Nalo Ayannakai/Tandem/McClendon	615	615	16,500	15,885	4%
7. Delegate Agency Costs					
First Baptist Church Head Start PA22	196,398	530,321	2,285,865	1,755,544	23%
First Baptist Church Head Start PA20	-	-	8,000	8,000	0%
8. Other Contracts					
First Baptist/Fairgrounds Wrap (20 slots x 243days x \$15.27)	26,850	73,951	436,403	362,452	17%
First Baptist/Fairgrounds Enhance (68 slots x 12 x \$225)	10,113	24,043	136,843	112,800	18%
FB-E. Leland/Mercy Housing Partnership	-	-	-	-	
Martinez ECC (40 slots x 12 mos. x \$225)	11,590	34,770	159,080	124,310	22%
Tiny Toes	5,562	11,124	86,744	75,620	13%
YMCA of the East Bay	-	118,064	702,384	584,320	17%
<b>f. CONTRACTUAL (Object Class 6f)</b>	<b>266,533</b>	<b>831,816</b>	<b>4,027,919</b>	<b>3,196,103</b>	<b>21%</b>
<b>h. OTHER (Object Class 6h)</b>					
2. Bldg Occupancy Costs/Rents & Leases	11,683	65,888	535,000	469,112	12%
(Rents & Leases/Other Income)	-	8,369	-	(8,369)	
4. Utilities, Telephone	17,005	40,912	218,000	177,088	19%
5. Building and Child Liability Insurance	2,312	2,312	4,100	1,789	56%
6. Bldg. Maintenance/Repair and Other Occupancy	5,555	56,483	267,000	210,517	21%
8. Local Travel (55.5 cents per mile effective 1/1/2012)	169	583	25,875	25,292	2%
9. Nutrition Services					
Child Nutrition Costs	-	(13,943)	280,000	293,943	-5%
(CCFP & USDA Reimbursements)	(10,542)	(14,562)	(107,000)	(92,438)	14%
13. Parent Services					
Parent Conference Registration - PA11	-	-	3,000	3,000	0%
Parent Resources (Parenting Books, Videos, etc.) - PA11	-	-	500	500	0%
PC Orientation, Trainings, Materials & Translation - PA11	-	-	5,000	5,000	0%
Policy Council Activities	-	-	2,000	2,000	0%
Male Involvement Activities	-	-	500	500	0%
Parent Activities (Sites, PC, BOS luncheon) & Appreciation	-	-	10,300	10,300	0%
Child Care/Mileage Reimbursement	-	-	5,500	5,500	0%
14. Accounting & Legal Services					
Auditor Controllers	1,218	1,218	3,100	1,882	39%
Data Processing/Other Services & Supplies	-	4,928	16,500	11,572	30%
15. Publications/Advertising/Printing					
Outreach/Printing	-	-	1,500	1,500	0%
Recruitment Advertising (Newspaper, Brochures)	-	5,833	6,000	167	97%
16. Training or Staff Development					
Agency Memberships (WIPFLI, Meeting Fees, NHTSA, NAEYC, etc.)	5,121	8,888	8,000	(888)	111%
Staff Trainings/Dev. Conf. Registrations/Memberships - PA11	48,150	53,992	106,184	52,192	51%
17. Other					
Site Security Guards	-	550	6,000	5,450	9%
Dental/Medical Services	-	-	1,000	1,000	0%
Vehicle Operating/Maintenance & Repair	8,771	39,674	103,600	63,926	38%
Equipment Maintenance Repair & Rental	60	5,593	63,500	57,907	9%
Dept. of Health and Human Services-data Base (CORD)	833	3,333	10,000	6,667	33%
Other Operating Expenses (Facs Admin/Other admin)	-	-	780,169	780,169	0%
Other Departmental Expenses	-	-	3,189,700	3,189,700	0%
<b>h. OTHER (6h)</b>	<b>90,335</b>	<b>270,051</b>	<b>5,545,028</b>	<b>5,274,977</b>	<b>5%</b>
<b>i. TOTAL DIRECT CHARGES (6a-6h)</b>	<b>856,566</b>	<b>3,266,142</b>	<b>16,820,044</b>	<b>13,553,902</b>	<b>19%</b>
<b>j. INDIRECT COSTS</b>	<b>(132,835)</b>	<b>(132,835)</b>	<b>788,042</b>	<b>920,877</b>	<b>-17%</b>
<b>k. TOTALS (ALL BUDGET CATEGORIES)</b>	<b>723,731</b>	<b>3,133,307</b>	<b>17,608,086</b>	<b>14,474,779</b>	<b>18%</b>
<b>Non-Federal Share (In-kind)</b>	<b>180,933</b>	<b>783,327</b>	<b>4,402,022</b>	<b>3,618,695</b>	<b>18%</b>

**CONTRA COSTA COUNTY - COMMUNITY SERVICES BUREAU**

**2021 EARLY HEAD START PROGRAM**

**BUDGET PERIOD JANUARY - DECEMBER 2021**

**AS OF APRIL 2021**

<b>DESCRIPTION</b>	<b>APRIL YTD Actual</b>	<b>Total Budget</b>	<b>Remaining Budget</b>	<b>33% %YTD</b>
a. PERSONNEL	\$ 165,820	\$ 479,714	\$ 313,894	35%
b. FRINGE BENEFITS	109,088	295,675	186,587	37%
c. TRAVEL	-	2,000	2,000	0%
d. EQUIPMENT	-	-	-	0%
e. SUPPLIES	8,655	17,100	8,445	51%
f. CONTRACTUAL	422,433	1,877,348	1,454,916	23%
g. CONSTRUCTION	-	-	-	0%
h. OTHER	5,968	1,114,151	1,108,183	1%
<b>I. TOTAL DIRECT CHARGES</b>	<b>\$ 711,963</b>	<b>\$ 3,785,988</b>	<b>\$ 3,074,025</b>	<b>19%</b>
j. INDIRECT COSTS	(14,508)	91,146	105,654	-16%
<b>k. TOTAL-ALL BUDGET CATEGORIES</b>	<b>\$ 697,455</b>	<b>\$ 3,877,134</b>	<b>\$ 3,179,679</b>	<b>18%</b>
<i>In-Kind (Non-Federal Share)</i>	<b>\$ 174,364</b>	<b>\$ 969,284</b>	<b>\$ 794,920</b>	<b>18%</b>

**CONTRA COSTA COUNTY - COMMUNITY SERVICES BUREAU**

**2021 EARLY HEAD START PROGRAM**

**BUDGET PERIOD JANUARY - DECEMBER 2021**

**AS OF APRIL 2021**

1	2	3	4	5	6
	Actual Apr-21	Total YTD Actual	Total Budget	Remaining Budget	33% % YTD
<b>a. Salaries &amp; Wages (Object Class 6a)</b>					
Permanent 1011	51,298	164,551	396,703	232,152	41%
Temporary 1013	1,269	1,269	83,011	81,742	2%
<b>a. PERSONNEL (Object class 6a)</b>	<b>52,566</b>	<b>165,820</b>	<b>479,714</b>	<b>313,894</b>	<b>35%</b>
<b>b. FRINGE (Object Class 6b)</b>	<b>31,695</b>	<b>109,088</b>	<b>295,675</b>	<b>186,587</b>	<b>37%</b>
<b>c. Travel (Object Class 6c)</b>					
1. Out-of-Town Travel	-	-	2,000	2,000	-
<b>c. TRAVEL (Object Class 6c)</b>	-	-	<b>2,000</b>	<b>2,000</b>	-
<b>e. SUPPLIES (Object Class 6e)</b>					
1. Office Supplies	2,547	5,050	5,000	(50)	101%
2. Child and Family Services Supplies (Includes classroom Supplies)	6	3,601	2,000	(1,601)	180%
4. Other Supplies					
Computer Supplies, Software Upgrades, Computer Replacemer	-	-	8,500	8,500	0%
Household Supplies	-	4	1,100	1,096	0%
Employee Health and Welfare costs (formerly Employee morale	-	-	500	500	0%
<b>TOTAL SUPPLIES (6e)</b>	<b>2,553</b>	<b>8,655</b>	<b>17,100</b>	<b>8,445</b>	<b>51%</b>
<b>f. CONTRACTUAL (Object Class 6f)</b>					
1. Adm Svcs (e.g., Legal, Accounting, Temporary Contracts)	-	9,682	25,000	15,318	39%
2. Health/Disabilities Services					
Health Consultant	640	4,480	12,000	7,520	37%
5. Training & Technical Assistance - PA11					
Leadership Trainings/Seminars/Worshops	-	-	2,800	2,800	0%
Demogtaphic/Data Research	-	-	4,500	4,500	0%
Practice Based Coaching/Classroom Observation	-	1,063	3,000	1,938	35%
Family Development Credential/Reflective Practice	-	3,120	12,600	9,480	25%
8. Other Contracts					
First Baptist/Fairgrounds and Lone Tree	9,785	28,840	117,420	88,580	25%
First Baptist/East Leland and Kids Castle	19,570	50,470	185,400	134,930	27%
Aspiranet	69,010	207,030	940,820	733,790	22%
Crossroads	14,420	43,260	193,040	149,780	22%
KinderCare	8,240	16,480	118,880	102,400	14%
Martinez ECC	8,240	24,720	98,880	74,160	25%
YMCA of the East Bay	-	33,288	163,008	129,720	20%
<b>f. CONTRACTUAL (Object Class 6f)</b>	<b>129,905</b>	<b>422,433</b>	<b>1,877,348</b>	<b>1,454,916</b>	<b>23%</b>
<b>h. OTHER (Object Class 6h)</b>					
2. Bldg Occupancy Costs/Rents & Leases	-	419	35,000	34,581	1%
4. Utilities, Telephone	-	300	5,000	4,700	6%
5. Building and Child Liability Insurance	-	-	500	500	0%
6. Bldg. Maintenance/Repair and Other Occupancy	-	134	5,500	5,366	2%
8. Local Travel (55.5 cents per mile effective 1/1/2012)	-	-	8,000	8,000	0%
13. Parent Services					
Parent Conference Registration - PA11	-	-	3,000	3,000	0%
PC Orientation, Trainings, Materials & Translation - PA11	-	-	4,000	4,000	0%
Policy Council Activities	-	-	1,000	1,000	0%
Parent Activities (Sites, PC, BOS luncheon) & Appreciation	-	-	2,000	2,000	0%
Child Care/Mileage Reimbursement	-	-	800	800	0%
14. Accounting & Legal Services					
Auditor Controllers	-	-	500	500	0%
Data Processing/Other Services & Supplies	-	1,628	6,000	4,372	27%
Recruitment Advertising (Newspaper, Brochures)	-	1,458	2,200	742	66%
16. Training or Staff Development					
Agency Memberships (WIPFLI, Meeting Fees, NHSA, NAEYC.	259	591	1,000	409	59%
Staff Trainings/Dev. Conf. Registrations/Memberships - PA11	-	388	50,044	49,656	1%
17. Other					
Site Security Guards	-	55	1,000	945	5%
Vehicle Operating/Maintenance & Repair	195	978	12,000	11,022	8%
Equipment Maintenance Repair & Rental	-	16	2,500	2,484	1%
Dept. of Health and Human Services-data Base (CORD)	-	-	1,000	1,000	0%
Other Operating Expenses (Facs Admin/Other admin)	-	-	123,107	123,107	0%
Other Departmental Expenses	-	-	850,000	850,000	0%
<b>h. OTHER (6h)</b>	<b>454</b>	<b>5,968</b>	<b>1,114,151</b>	<b>1,108,183</b>	<b>1%</b>
<b>i. TOTAL DIRECT CHARGES (6a-6h)</b>	<b>217,173</b>	<b>711,963</b>	<b>3,785,988</b>	<b>3,074,025</b>	<b>19%</b>
<b>j. INDIRECT COSTS</b>	<b>(14,508)</b>	<b>(14,508)</b>	<b>91,146</b>	<b>105,654</b>	<b>-16%</b>
<b>k. TOTALS (ALL BUDGET CATEGORIES)</b>	<b>202,665</b>	<b>697,455</b>	<b>3,877,134</b>	<b>3,179,679</b>	<b>18%</b>
<i>Non-Federal Share (In-kind)</i>	<i>50,666</i>	<i>174,364</i>	<i>969,284</i>	<i>794,920</i>	<i>18%</i>

CONTRA COSTA COUNTY - EHSD COMMUNITY SERVICES BUREAU

EARLY HEAD START - CHILDCARE PARTNERSHIP PROGRAM

BUDGET PERIOD: SEPTEMBER 01, 2020 THROUGH AUGUST 31, 2021

AS OF APRIL 2021

DESCRIPTION	APRIL	Original	Remaining	50%
	YTD Actual	Budget Sep 20-Aug 21	Budget Mar-Aug 21	Budget % YTD
a. PERSONNEL	702,122	1,044,684	342,563	67%
b. FRINGE BENEFITS	444,253	676,672	232,419	66%
c. TRAVEL	-	7,000	7,000	0%
d. EQUIPMENT	-	-	-	0%
e. SUPPLIES	18,510	27,000	8,490	69%
f. CONTRACTUAL	512,476	1,181,455	668,979	43%
g. CONSTRUCTION	-	-	-	0%
h. OTHER	713,239	1,918,123	1,204,884	37%
<b>I. TOTAL DIRECT CHARGES</b>	<b>2,390,599</b>	<b>4,854,934</b>	<b>2,464,335</b>	<b>49%</b>
<b>j. INDIRECT COSTS</b>	<b>95,854</b>	<b>175,440</b>	<b>79,586</b>	<b>55%</b>
<b>k. TOTAL-ALL BUDGET CATEGORIES</b>	<b>2,486,453</b>	<b>5,030,374</b>	<b>2,543,921</b>	<b>49%</b>

**CONTRA COSTA COUNTY - EHSD COMMUNITY SERVICES BUREAU**  
**EARLY HEAD START - CHILDCARE PARTNERSHIP PROGRAM**  
**BUDGET PERIOD: SEPTEMBER 01, 2020 THROUGH AUGUST 31, 2021**  
**AS OF APRIL 2021**

1	2	3	4	5	6
	Actual Apr 21	Total YTD Actual	Total Budget	Remaining Budget	50% YTD Percentage
<b>Expenditures</b>					
<b>a. PERSONNEL (Object Class 6a)</b>					
Permanent	65,281.83	696,462	917,589	221,127	76%
Temporary	-	5,659	127,095	121,436	4%
<b>TOTAL PERSONNEL (Object Class 6a)</b>	<b>65,281.83</b>	<b>702,122</b>	<b>1,044,684</b>	<b>342,563</b>	<b>67%</b>
<b>b. FRINGE BENEFITS (Object Class 6b)</b>					
Fringe Benefits	41,664.85	444,253	676,672	232,419	66%
<b>TOTAL FRINGE BENEFITS (Object Class 6b)</b>	<b>41,664.85</b>	<b>444,253</b>	<b>676,672</b>	<b>232,419</b>	<b>66%</b>
<b>c. TRAVEL (Object Class 6c)</b>					
1. Staff Out-Of-Town Travel (Training and Technical Assistance)	-	-	7,000	7,000	0%
<b>TOTAL TRAVEL (Object Class 6c)</b>	<b>-</b>	<b>-</b>	<b>7,000</b>	<b>7,000</b>	<b>0%</b>
<b>e. SUPPLIES (Object Class 6e)</b>					
1. Office Supplies	866.48	2,115	4,500	2,385	47%
2. Child and Family Services Supplies	-	14,844	14,000	(844)	106%
3. Other Supplies					
Computer Supplies, Software Upgrades, Replacements, etc.	-	-	500	500	0%
Miscellaneous Supplies	-	613	3,000	2,387	20%
Household Supplies	-	938	5,000	4,062	19%
<b>TOTAL SUPPLIES (Object Class 6e)</b>	<b>866.48</b>	<b>18,510</b>	<b>27,000</b>	<b>8,490</b>	<b>69%</b>
<b>f. CONTRACTUAL (Object Class 6f)</b>					
1. Adm Svcs (e.g., Legal, Accounting, Temp Help)	-	2,193	3,000	807	73%
2. Training and Technical Assistance					
Tandem (Training and Technical Assistance)	-	21,021	21,000	(21)	100%
Josephine Lee (Training and Technical Assistance)	-	2,725	19,400	16,675	14%
Crystal McClelland [Consultation Services] (Training and Technical Assistance)	-	-	8,000	8,000	0%
Susan Rogers FDC Classes] (Training and Technical Assistance)	-	4,560	8,000	3,440	57%
Myriamakai Nani [Relative Supervision Workshops] (Training and Technical Assistance)	615.00	5,584	8,000	2,417	70%
Wendy St. John [Relative Supervision Consultation] (Training and Technical Assistance)	-	2,218	8,000	5,782	28%
Katherine [Leadership Workshops] (Training and Technical Assistance)	-	-	8,000	8,000	0%
3. Other Contracts					
Childcare Services: Aspiranet [15 slots @ \$515 for 12 months]	7,725.00	54,075	92,718	38,643	58%
Childcare Services: COCOKids [52 slots @ \$515 for 12 months]	26,780.00	160,680	321,422	160,742	50%
Childcare Services: COCOKids [Loss of Subsidy]	-	-	3,000	3,000	0%
Childcare Services: COCOKids [Diapers, Formula, Wipes, etc.]	1,170.31	2,448	18,260	15,812	13%
Childcare Services: COCOKids [Emergency Health/Safety Repairs]	-	-	10,000	10,000	0%
Childcare Services: COCOKids [Professional Development] (Training and Technical Assistance)	-	-	10,000	10,000	0%
Childcare Services: First Baptist Church [24 slots @ \$515 for 12 months]	6,180.00	39,140	148,349	109,209	26%
Childcare Services: KinderCare [32 slots @ \$515 for 12 months]	41,200.00	102,485	197,798	95,313	52%
Childcare Services: TinyToes Preschool [8 slots @ \$515 for 12 months]	4,120.00	9,785	49,450	39,665	20%
Childcare Services: YMCA [32 slots @ \$630 for 12 months]	-	105,562	242,058	136,496	44%
One Solution Technology [Software License, Data Mgmt, Hosting Svcs, etc.]	-	-	5,000	5,000	0%
<b>TOTAL CONTRACTUAL (Object Class 6f)</b>	<b>87,790.31</b>	<b>512,476</b>	<b>1,181,455</b>	<b>668,979</b>	<b>43%</b>
<b>h. OTHER (Object Class 6h)</b>					
1. Rent	1,292.62	8,412	12,860	4,448	65%
2. Utilities/Telephone	3,900.36	6,317	7,600	1,283	83%
3. Building Maintenance/Repair and Other Occupancy	-	45,904	82,912	37,008	55%
4. Local Travel (57.5 cents per mile effective 1/1/2020)	-	477	2,000	1,523	24%
5. Parent Services					
Parent Activities, Policy Council, and Appreciation (Sites, PC, BOS luncl)	-	-	1,000	1,000	0%
6. Accounting and Legal Services					
Auditor Controllers	-	-	500	500	0%
Data Processing	-	2,027	3,700	1,673	55%
7. Training or Staff Development					
Agency Memberships (WIPLI, Meeting Fees, NHSA, NAEYC, etc.) (Trair)	1,695.00	2,427	2,500	73	97%
Staff Trainings/Dev. Conf. Registrations/Memberships - PA 11 (Training :)	291.66	1,590	11,361	9,771	14%
8. Other					
Collaboration with Child Development Program	-	605,696	1,683,690	1,077,994	36%
Vehicle Operating/Maintenance & Repair	626.61	5,733	8,700	2,967	66%
Equipment Maintenance Repair and Rental	601.95	26,050	26,300	250	99%
Other Operating Expenses (CSD Admin, Fac Mgmt Allocation)	-	8,607	75,000	66,393	11%
<b>TOTAL OTHER (Object Class 6h)</b>	<b>8,408.20</b>	<b>713,239</b>	<b>1,918,123</b>	<b>1,204,884</b>	<b>37%</b>
<b>I. TOTAL DIRECT CHARGES (Sum of Line 6a-6h)</b>	<b>204,012</b>	<b>2,390,599</b>	<b>4,854,934</b>	<b>2,464,335</b>	<b>49%</b>
<b>j. INDIRECT COSTS (19% of Salaries only)</b>	<b>(34,685.13)</b>	<b>95,854</b>	<b>175,440</b>	<b>79,586</b>	<b>55%</b>
<b>k. TOTAL FEDERAL (ALL BUDGET CATEGORIES)</b>	<b>169,326.54</b>	<b>2,486,453</b>	<b>5,030,374</b>	<b>2,543,921</b>	<b>49%</b>

Note: Administration for Children and Families (ACF) approved the non-federal share waiver request for this budget year [Head Start Act Section 640.(b)(4)]. The non-federal share requirement is now \$0 at 0%.

**COMMUNITY SERVICES BUREAU  
SUMMARY CREDIT CARD EXPENDITURE  
April 2021**

<b>Stat. Date</b>	<b>Amount</b>	<b>Program</b>	<b>Purpose/Description</b>
04/22/21	169.29	EHS-Child Care Partnership #2	Office Exp
	<b>169.29</b>		
04/22/21	228.83	HS CARES COVID-19	Books, Periodicals
04/22/21	213.57	HS CARES COVID-19	Books, Periodicals
04/22/21	625.64	EHS Basis Grant	Books, Periodicals
04/22/21	268.13	HS CARES COVID-19	Books, Periodicals
	<b>1,336.17</b>		
04/22/21	65.24	Facilities	Minor Furniture/Equipment
04/22/21	3,389.93	HS CARES COVID-19	Minor Furniture/Equipment
	<b>3,455.17</b>		
04/22/21	755.00	Indirect Admin Costs	Computer Software Cost
04/22/21	359.88	HS Basic Grant	Computer Software Cost
	<b>1,114.88</b>		
04/22/21	2,448.00	Head Start T & TA	Training & Registration
04/22/21	1,500.00	Head Start T & TA	Training & Registration
04/22/21	125.00	HS Basic Grant	Training & Registration
04/22/21	399.00	Facilities	Training & Registration
04/22/21	1,642.85	Head Start T & TA	Training & Registration
	<b>6,114.85</b>		
04/22/21	130.40	HS Basic Grant	Educational Supplies
04/22/21	593.96	EHS-Child Care Partnership #2	Educational Supplies
04/22/21	697.90	HS CARES COVID-19	Educational Supplies
04/22/21	193.04	EHS Basis Grant	Educational Supplies
04/22/21	60.83	Indirect Admin Costs	Educational Supplies
04/22/21	1,974.53	Comm. Svc Block Grant	Educational Supplies
04/22/21	164.63	Indirect Admin Costs	Educational Supplies
04/22/21	160.18	Comm. Svc Block Grant	Educational Supplies
04/22/21	65.20	HS Basic Grant	Educational Supplies
04/22/21	97.80	HS CARES COVID-19	Educational Supplies
	<b>4,138.47</b>		
04/22/21	911.87	Comm. Svc Block Grant	Other Special Dpmtal Exp
	<b>911.87</b>		
<b>Total</b>	<b>17,240.70</b>		

EMPLOYMENT & HUMAN SERVICES DEPARTMENT  
 COMMUNITY SERVICES BUREAU  
 CHILD NUTRITION FOOD SERVICES  
 CHILD and ADULT CARE FOOD PROGRAM MEALS SERVED  
 FY 2020-2021

Month covered	2020 DECEMBER
Approved sites operated this month	13
Number of days meals served this month	22
Average daily participation	120
<b>Child Care Center Meals Served:</b>	
Breakfast	2,152
Lunch	2,634
Supplements	1,821
<b>Total Number of Meals Served</b>	<b>6,607</b>
<b>Claim Reimbursement Total</b>	<b>\$15,776</b>

**CAO Monthly Report  
 Low-Income Home Energy Assistance  
 Community Services Block Grant  
 Year-to-Date Expenditures  
 As of April 30, 2021**

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
1) CONTRACT NO. 20B-2005 / Term: Oct. 1, 2019 through Dec. 31, 2021				
2020 LIHEAP WX	1,280,226	(1,280,097)	129	100%
2020 EHA-16	1,132,577	(894,346)	238,231	79%
2020 UTILITY ASSISTANCE (UA)	2,466,877	(2,466,877)	0	100%
<b>TOTAL 2020 LIHEAP CONTRACT</b>	<b>4,879,680</b>	<b>(4,641,320)</b>	<b>238,360</b>	<b>95%</b>

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
2) CONTRACT NO. 20U-2554 / Term: Jul. 1, 2020 - Sept. 30, 2021				
2020 CARES EHA-16	387,634	(201,360)	186,274	52%
2020 CARES UTILITY ASSISTANCE (UA)	727,903	(727,903)	0	100%
<b>TOTAL 2020 LIHEAP CARES ACT CONTRACT</b>	<b>1,115,537</b>	<b>(929,263)</b>	<b>186,274</b>	<b>83%</b>

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
3) CONTRACT NO. 21F-4007 / Term: Jan. 1, 2021 - May 31, 2022				
2021 CSBG CAA	876,852	(88,786)	788,066	10%
<b>TOTAL 2021 CSBG CONTRACT</b>	<b>876,852</b>	<b>(88,786)</b>	<b>788,066</b>	<b>10%</b>

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
4) CONTRACT NO. 21B-5005 / Term: November 1, 2020 - June 30, 2022				
2021 EHA-16	775,546	(108,938)	666,608	14%
2021 LIHEAP WX	876,799	(270,179)	606,620	31%
2021 LIHEAP UTILITY ASSISTANCE (UA)	1,690,590	(736,286)	954,304	44%
<b>TOTAL 2021 LIHEAP CONTRACT</b>	<b>3,342,935</b>	<b>(1,115,402)</b>	<b>2,227,533</b>	<b>33%</b>

\*CSB received an amendment and budget will be adjusted once amendment is executed

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
5) CONTRACT NO. 20F-3007 / Term: Jan. 1, 2020 - May 31, 2021				
2020 CSBG CAA	876,852	(825,650)	51,202	94%
2020 CSBG DISCRETIONARY	32,000	(16,382)	15,618	51%
<b>TOTAL 2020 CSBG CONTRACT</b>	<b>908,852</b>	<b>(842,032)</b>	<b>66,820</b>	<b>93%</b>

	BUDGET	SPENT	REMAINING BALANCE	PERCENT EXPENDED
6) CONTRACT NO. 20F-3646 / Term: Mar. 27, 2020 - May 31, 2022				
2020 CSBG CARES CAA	1,189,181	(62,218)	1,126,963	5%
2020 CSBG CARES CAA DISCRETIONARY	40,370	0	0	0%
<b>TOTAL 2020 CSBG CARES CONTRACT</b>	<b>1,189,181</b>	<b>(62,218)</b>	<b>1,126,963</b>	<b>5%</b>

# May 2021 - COMMUNITY SERVICES BUREAU PRESCHOOL MENU

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
<p><b>3</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Orange ¼ c. + Rice Chex Cereal</p> <p><b>LUNCH</b> ½ c. <b>JERK TOFU</b> (garlic, coriander, paprika, cinnamon) ¼ c. Roasted Beets ¼ c. Pineapple Tidbits ½ ea. + Whole Wheat Pita Bread</p> <p><b>PM SNACK</b> ½ c. + Lets Go Fishing Trail Mix (corn chex, pretzels, fish &amp; cheese crackers) ½ c. 1% Milk</p>	<p><b>4</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Banana ½ ea. + Whole Wheat Bagel/Cream Cheese</p> <p><b>LUNCH</b> ½ c. <b>HOPPIN' JOHNS</b> (black eyed peas, smoked turkey, onion, cheddar cheese) ¼ c. Garlic Roasted Green Beans ½ ea. Fresh Apple ¼ c. + Brown Rice</p> <p><b>PM SNACK</b> ½ c. Fresh Strawberries 1 pkg. Graham Crackers</p>	<p><b>5</b></p> <p><b>BREAKFAST</b> ½ c. Pineapple Chunks 1 sq. + Homemade Banana Bread</p> <p><b>LUNCH</b> ½ c. <b>CHANA MASALA</b> (garbanzo beans, onion, garlic, ginger, cumin, coriander, tomato, garam masala, ground turmeric) ¼ c. Roasted Cauliflower ¼ c. Mango Chunks ½ sl. + Whole Wheat Naan Bread</p> <p><b>PM SNACK</b> ½ c. Friends Trail Mix (kix, cheerios, corn chex, raisins, pretzels, &amp; dried apricots) ½ c. 1% Milk</p>	<p><b>6</b></p> <p><b>BREAKFAST</b> 1 ea. Hard Boiled Egg ¼ c. <b>Cinnamon oatmeal</b> 1 ea. Fresh Banana</p> <p><b>LUNCH</b> ¼ c. <b>VEGGIE LASAGNA</b> (home made marinara, yellow squash, eggplant, onion, mozzarella) ½ c. Spinach Salad/Ranch Dressing 1 ea. Fresh Tangerine Satsuma ½ ea. + Whole Wheat Dinner Roll</p> <p><b>PM SNACK</b> 1 pkg. + Goldfish Pretzel Crackers 1 ea. Fresh Kiwi</p>	<p><b>7</b></p> <p><b>BREAKFAST</b> ½ c. Fresh Fresh Strawberries ¾ c. + Kix Cereal</p> <p><b>LUNCH</b> 1.5 ozs. <b>HERB ROASTED TURKEY BREAST</b> ¼ c. Roasted Garlic Eggplant ½ ea. Fresh Pear ¼ c. + Spanish Rice</p> <p><b>PM SNACK</b> 1 pkg. + Cheese Crackers ½ c. 1% Milk</p>
<p><b>10</b></p> <p><b>BREAKFAST</b> ½ c. Pineapple Chunks ½ c. + Cheerios</p> <p><b>LUNCH</b> ½ c. <b>KIDNEY BEAN FIDEO SOUP</b> (kidney beans, tomato, onion, garlic, + whole wheat pasta) ¼ c. Carrot Sticks ¼ c. Fresh Strawberries</p> <p><b>PM SNACK</b> 2 pkgs. + Wheatworth Crackers/Hummus ½ c. 1% Milk</p>	<p><b>11</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Fuji Apple ½ c. + Bran Cereal</p> <p><b>LUNCH</b> 1 ¼ c. * <b>JAMBALAYA</b> (+ rice, veggie stock, diced chicken, turkey apple sausage, onion, green bellpepper, garlic, celery) ½ ea. Fresh Orange</p> <p><b>PM SNACK</b> 1 pkg. Graham Crackers ½ c. 1% Milk</p>	<p><b>12</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Kiwi ¾ c. + Kix Cereal</p> <p><b>LUNCH</b> 1 ea. <b>TANDOORI CHICKEN</b> (chicken leg, yogurt, chili powder, garlic, ginger, turmeric, garam masala, kashmiri powder) ¼ c. Roasted Broccoli ½ ea. Fresh Pink Lady Apple 1 ea. + Brown Rice</p> <p><b>PM SNACK</b> <b>Early Closure</b></p>	<p><b>13</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Orange ½ ea. + English Muffin/Cream Cheese &amp; Strawberries</p> <p><b>LUNCH</b> ¾ c. <b>BROCCOLI &amp; CHEDDAR SOUP</b> (broccoli, cheddar, light cream, salt, pepper) 1 sl. Fresh Cantaloupe ¼ c. Spanish Quinoa</p> <p><b>PM SNACK</b> <b>Fruit Sunbutter Pita</b> 1 tbsp. Sunbutter ½ ea. Fresh Banana ½ ea. + Whole Wheat Pita Bread</p>	<p><b>14</b></p> <p><b>BREAKFAST</b> ½ c. Mango Chunks 1 sq. + A - Z Bread</p> <p><b>LUNCH</b> 1 ea. <b>ROASTED CHICKEN LEG</b> ¼ c. Roasted Cauliflower &amp; Onion ½ ea. Fresh Apple 1 ea. + Whole Wheat Tortilla</p> <p><b>PM SNACK</b> ½ c. Cottage Cheese ½ c. Pineapple Tidbits</p>
<p><b>17</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Orange ½ c. + Bran Cereal</p> <p><b>LUNCH</b> 1 ea. <b>BAJA BEAN WRAP</b> ¼ c. Fresh Jicama Sticks ¼ c. Fresh Papaya 1 ea. + Whole Wheat Tortilla</p> <p><b>PM SNACK</b> 1 ea. Hard Boiled Egg 1 ea. Fresh Kiwi</p>	<p><b>18</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Banana ½ c. + Cornflakes</p> <p><b>LUNCH</b> <b>BUILD YOUR OWN TACO SALAD</b> 1 ½ ozs. Ground Turkey ½ oz. Shredded Cheese ¼ c. Shredded Lettuce ⅓ c. Diced Tomatoes ½ ea. Fresh Satsuma Orange 5 ea. + Whole Corn Tortilla Chips</p> <p><b>PM SNACK</b> 1 ea. Fresh Pear 1 tbsp. Sunbutter</p>	<p><b>19</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Smitten Apple ½ sl. + Whole Wheat Cinnamon Toast</p> <p><b>LUNCH</b> 1 ea. <b>BBQ CHICKEN LEG</b> ¼ c. Cucumber Slices/Ranch Dressing ½ ea. Fresh Red Pear ¾ c. + Whole Wheat Pasta Salad (celery, red onion, eggless mayo, apple cider vinegar, salt, pepper)</p> <p><b>PM SNACK</b> 1 pkg. Scooby Doo Graham Crackers ½ c. 1% Milk</p>	<p><b>20</b></p> <p><b>Staff Development Day</b></p>	<p><b>21</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Apple ¾ c. + Corn Chex Cereal</p> <p><b>LUNCH</b> 1 ea. <b>CHEESE &amp; BEAN QUESADILLA</b> 2 tbsps. Light Sour Cream ¼ c. Pico De Gallo 1 ea. Fresh Kiwi 1 ea. + Whole Wheat Tortilla</p> <p><b>PM SNACK</b> 1 pkg. Animal Crackers ½ c. 1% Milk</p>
<p><b>24</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Pear ½ c. + Bran Cereal</p> <p><b>LUNCH</b> * <b>VEGGIE WRAP</b> ½ c. Leafy Greens &amp; Shredded Carrots ½ oz. Shredded Cheese 1 ea. Hard Boiled Egg 1 ea. Fresh Tangerine 1 ea. + Whole Wheat Tortilla</p> <p><b>PM SNACK</b> 2 pkgs. + Wheatworth Crackers/Hummus ½ c. 1% Milk</p>	<p><b>25</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Orange ¼ c. Cinnamon Oatmeal</p> <p><b>LUNCH</b> ¼ c. <b>SLOPPY JOE</b> ¼ c. Mexicali Corn ¼ c. Fresh Apple Slices ½ ea. + Whole Wheat Hamburger Bun</p> <p><b>PM SNACK</b> 1 pkg. Animal Crackers ½ c. 1% Milk</p>	<p><b>26</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Banana ¾ c. + Kix Cereal</p> <p><b>LUNCH</b> ½ c. <b>RED POZOLE SOUP</b> (diced chicken, tomato paste, hominy) ¼ c. Shredded Cabbage &amp; Cilantro ¼ c. Mango Chunks 5 ea. + Whole Corn Tortilla Chips</p> <p><b>PM SNACK</b> ½ c. Cucumber &amp; Carrot Sticks/Ranch Dressing ½ c. 1% Milk</p>	<p><b>27</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Orange ½ sl. + Whole Wheat Cinnamon Bread</p> <p><b>LUNCH</b> ½ c. <b>HOPPIN' JOHN BLACKEYE PEAS</b> (black eyed peas, onion, cheddar cheese) ¼ c. Collard Greens ½ ea. Fresh Pear 1 sq. + Homemade Cornbread Square</p> <p><b>PM SNACK</b> ½ c. Pineapple Tidbits ½ c. Cottage Cheese</p>	<p><b>28</b></p> <p><b>BREAKFAST</b> 1 ea. Fresh Banana ½ c. + Cheerios</p> <p><b>LUNCH</b> ½ c. * <b>CHINESE CHICKEN SALAD</b> (diced chicken, napa cabbage, red cabbage, carrots, scallions, chow mein noodles) 1 ea. Fresh Tangerine ½ ea. + Whole Wheat Roll</p> <p><b>PM SNACK</b> ½ c. Fresh Apple 1 tbsp. Sunbutter</p>
<p><b>31</b></p> <div data-bbox="73 1266 430 1485" data-label="Image"> </div> <p style="text-align: center;"><b>ALL BREAKFAST &amp; LUNCH SERVED WITH 1% MILK</b></p> <p style="text-align: center;">*Indicates vegetable included in main dish</p> <p style="text-align: center;">+ Indicates Whole Grain Rich</p> <p style="text-align: center;"><b>WATER IS OFFERED THROUGHOUT THE DAY</b></p>				

# COMMUNITY SERVICES BUREAU 2021 SELF-ASSESSMENT

May 10<sup>th</sup>-May 14<sup>th</sup>, 2021

## Overview of Methods

The annual self-assessment is conducted to determine the effectiveness of CSB's efforts, ensuring we continue to meet our program's goals and objectives, and that we are implementing Federal regulations. This year, CSB's self-assessment was conducted during the week of May 10<sup>th</sup> with a team of 30 people, which included grantee and delegate staff, board members, community partners, and parents.

There were a total of 11 sites selected for review, including the administrative units for CSB and First Baptist Head Start. The program areas that were assessed among the selected sites were:

1. Focus Area 2: Program Management & Quality Improvement
2. Focus Area 2: Education & Child Development Services
3. Focus Area 2: Health Services
4. Focus Area 2: Family & Community Engagement Services
5. Health & Safety Checklist- Center Based & Family Child Care

While CLASS, ERSEA strategies, and Fiscal Infrastructure are typically included in the Self-Assessment, these areas were not included this year; CLASS is conducted as part of CSB's ongoing internal monitoring and the ERSEA and Fiscal areas were assessed in April 2021 during an externally conducted audit/review with 0% errors.

## COVID-19 Considerations

During the 2020-21 program year, we continued to see the effects of COVID-19 on our organization, community, and the world. Because of this, the Office of Head Start issued an Addendum to their Focus Area 2 Monitoring Protocol. This addendum gives guidance and information about how adaptations may be seen in the Focus Areas of the Monitoring Protocols. The information from the addendum was included in our instruments to ensure that practices which have been adapted (if applicable) could be explained as an adaptation to COVID-19.

## Components, Instruments, & Measures

Components	Instruments	Measures
Program Management & Quality Improvement	FY 2021 Office of Head Start Focus Area 2 Monitoring Protocol	Grantee & Partner Interviews
Education & Child Development Services	FY 2021 Office of Head Start Focus Area 2 Monitoring Protocol	Grantee & Partner Interviews Virtual Site Visits
Health Services	FY 2021 Office of Head Start Focus Area 2 Monitoring Protocol	Grantee & Partner Interviews Virtual Site Visits
Family & Community Engagement Services	FY 2021 Office of Head Start Focus Area 2 Monitoring Protocol	Grantee & Partner Interviews Virtual Site Visits
Health & Safety Checklist	A locally designed site monitoring tool based on OHS health and safety guidelines	Grantee & Partner Interviews Virtual Site Visits

## Key Findings

Areas of Strength as identified by the teams during the site visits:

<b>Program Management &amp; Quality Improvement</b>	<ul style="list-style-type: none"> <li>- Continued training/staff development throughout pandemic; adapted to Zoom/web based trainings</li> <li>- Ongoing internal monitoring &amp; analysis used to drive program planning &amp; improvement</li> </ul>
<b>Education &amp; Child Development Services</b>	<ul style="list-style-type: none"> <li>- Continued quality education extended to children in programs either through in-class instruction or distance learning</li> <li>- Innovative redesign of learning environments to meet social distancing guidelines and continue to foster early social development</li> </ul>
<b>Health Services</b>	<ul style="list-style-type: none"> <li>- Mental Health Consultants are available to the children and families as needed at directly operated and delegate sites</li> <li>- Sites are sending home information to in class and distance learners about brushing teeth (including toothbrushes) to continue positive oral health practices</li> </ul>
<b>Family &amp; Community Engagement Services</b>	<ul style="list-style-type: none"> <li>- Curricula implemented (Parenting a Pleasure guide &amp; Growing Great Kids) to encourage family engagement in children’s learning at home</li> <li>- Encouraging ongoing family &amp; community engagement in policy council &amp; parent meetings via Zoom</li> </ul>
<b>Health &amp; Safety Checklist</b>	<ul style="list-style-type: none"> <li>- All sites are including additional information re COVID-19, such as spacing at entrances, protocols for drop off and pick up during COVID-19, and posting updated information/communications as needed</li> </ul>

Areas of Concern:

During the 2021 Self-Assessment, it was determined that there were no areas of concern or corrective actions that needed to take place.



Contra  
Costa  
County

To: Board of Supervisors  
From: Brian M. Balbas, Public Works Director/Chief Engineer  
Date: August 3, 2021

Subject: Discharge from Accountability for Uncollected Public Works Accounts

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**RECOMMENDATION(S):**

AUTHORIZE the discharge from accountability for uncollected Public Works Land Development accounts totaling \$157,933.40 which have been deemed uncollectible, as recommended by the Public Works Director.

**FISCAL IMPACT:**

The accounts to be discharged total \$157,933.40 (100% Land Development Fund).

**BACKGROUND:**

The Public Works Department has received confirmation that these accounts are not recoverable due to one or more of the following reasons: the accounts are being discharged in bankruptcy; the debtors are deceased; the company no longer exists; the statute of limitations for pursuing recovery of the debt has expired; the cost of recovery is excessive; and/or the debtor no longer resides in the state. Based on the stated facts, Public Works should write off these accounts as uncollectable.

Approval of the recommended action will allow Public Works to purge these records from the system thereby creating an accurate inventory of recoverable accounts, a more manageable case count for staff, and elimination of redundant research by the accounting staff.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Michelle Gonsalves,  
(925) 313-2123

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

CONSEQUENCE OF NEGATIVE ACTION:

The Public Works Department will continue to carry the uncollectable accounts creating an overstatement of accounts receivables.

ATTACHMENTS

FY20-21 Write Offs

<u>VENDOR</u>	<u>INV AMOUNT</u>	<u>DATE</u>	<u>INV #</u>	<u>BALANCE</u>
AT&T	1,506.04	03/10/08	913430	1,506.04
AT&T	456.73	05/26/09	914432	456.73
AT&T	5,526.54	03/14/13	916998	5,526.54
AT&T	3,594.91	05/21/13	917120	1,009.47
AT&T	1,626.49	12/09/13	917406	1,626.49
AT&T	1,688.41	01/07/14	917490	1,688.41
AT&T	6,056.24	01/07/14	917493	6,056.24
AT&T	1,592.71	04/03/14	917646	1,592.71
AT&T	2,597.29	04/03/14	917647	2,597.29
AT&T	763.53	06/12/15	918554	763.53
COMCAST	1,501.12	09/07/11	916061	1,501.12
COMCAST	873.32	07/08/13	917166	873.32
COMCAST	2,166.45	10/17/13	917357	2,166.45
COMCAST	1,733.10	10/17/13	917356	487.17
COMCAST	1,800.23	12/10/13	917410	1,800.23
COMCAST	494.78	01/07/14	917494	494.78
COMCAST	164.57	02/04/14	917528	164.57
COMCAST	1,353.01	03/05/14	917622	1,353.01
COMCAST	1,248.37	08/05/14	917924	1,248.37
COMCAST	831.30	10/02/14	918061	300.49
COMCAST	2,064.56	12/04/14	918136	1,733.49
Comcast	2,669.89	04/02/15	918329	536.28
Comcast	450.74	06/11/15	918545	450.74
Comcast	896.51	08/19/15	918665	896.51
Comcast	4,012.27	11/24/15	918869	2,025.23
Comcast	3,362.37	01/07/16	918913	394.93
Comcast	3,112.16	04/12/16	919022	3,112.16
Comcast	2,841.86	05/20/16	919162	2,841.86
Comcast	762.50	05/26/16	919178	762.50
Comcast	762.13	06/10/16	919195	762.13
Comcast	3,697.72	07/11/16	919228	3,697.72
Comcast	1,101.56	07/11/16	919229	1,101.56
Comcast	2,751.05	07/26/16	919267	472.21
COMCAST COMMUNICATIONS	4,203.30	03/05/15	918230	3,552.94
COMCAST COMMUNICATIONS	1,614.39	03/05/15	918229	1,121.23
COMCAST OF CALIF	735.19	05/30/06	912164	735.19
COMCAST OF CALIF	3,396.30	05/30/06	912163	3,396.30
EBMUD	1,850.77	11/20/09	914869	1,850.77
EBMUD	45,035.07	01/14/11	915706	45,035.07
EBMUD	24,843.71	05/13/11	915911	23,334.58
EBMUD	1,588.25	05/13/11	915914	682.82
EBMUD	260.20	05/13/11	915910	260.20
EBMUD	1,962.50	05/13/11	915916	1,498.15
EBMUD	1,959.73	05/13/11	915917	978.48
EBMUD	9,614.94	10/29/12	916763	8,783.33
EBMUD	926.79	03/14/13	917007	926.79

<u>VENDOR</u>	<u>INV AMOUNT</u>	<u>DATE</u>	<u>INV #</u>	<u>BALANCE</u>
EBMUD	2,057.37	03/14/13	917009	1,401.41
EBMUD	911.36	03/14/13	917010	463.10
EBMUD	1,170.34	03/27/13	917052	407.24
EBMUD	1,087.83	03/27/13	917054	207.96
EBMUD	723.94	12/10/13	917416	422.10
EBMUD	5,917.53	03/05/15	918233	1,399.10
EBMUD	411.33	04/13/16	919025	411.33
EBMUD - EAST	712.51	09/07/16	700642	220.10
EBMUD - EAST	614.46	09/14/16	700677	204.81
EBMUD - EAST	710.72	09/29/16	700707	171.00
EBMUD - EAST	1,078.26	12/22/16	700847	405.34
EBMUD - EAST	1,952.53	12/22/16	700850	171.00
EBMUD - EAST	2,012.21	02/09/17	700886	1,499.21
EBMUD - EAST	893.54	02/09/17	700888	209.54
EBMUD - NORTH	1,142.18	09/12/16	700659	234.34
EBMUD - NORTH	625.96	09/12/16	700660	283.96
EBMUD - NORTH	845.53	10/06/16	700748	171.00
EBMUD Oakland	172.47	06/10/16	919196	172.47
EBMUD Oakland	17,362.30	07/08/16	919213	808.64
SPRINT	956.96	01/23/08	913362	956.96
SPRINT	599.44	10/20/08	913944	599.44
SPRINT	599.44	10/20/08	913944	599.44
T-MOBILE	1,409.62	08/26/11	916059	1,409.62
TOWN OF DISCOVERY BAY	1,516.29	05/21/13	917152	261.84
TOWN OF DISCOVERY BAY	1,348.23	10/21/13	917386	686.32

**TOTAL 157,933.40**



Contra  
Costa  
County

To: Board of Supervisors  
From: John Kopchik, Director, Conservation & Development Department  
Date: August 3, 2021

Subject: RECEIVE letter from Sustainability Commission recommending actions to reduce greenhouse gas emissions from buildings and REFER the letter to the Susta

**RECOMMENDATION(S):**

RECEIVE letter from Sustainability Commission recommending actions to reduce greenhouse gas emissions from buildings and REFER the letter to the Sustainability Committee.

**FISCAL IMPACT:**

There is no fiscal impact at this time beyond staff time needed to study the recommendations.

**BACKGROUND:**

The responsibilities of the Contra Costa County Sustainability Commission include: (1) Provide advice to staff and the Board on successful implementation of the Climate Action Plan, including suggestions on how that work can be performed more efficiently and effectively; (2) Advise the Board on opportunities to realize equity and fairness across the diverse communities of Contra Costa County in sustainability programs that support the Climate Action Plan; and (3) Provide suggestions to staff and the Board on how to better engage Contra Costa County residents and businesses on sustainability issues and implementation of the Climate Action Plan. The Sustainability Commission at its April 26, 2021 meeting received a report from Wes Sullens in his role as Director, Leadership in Energy and Environmental Design (LEED), at the U.S. Green Building Council (USGBC). The report focused on USGBC's green building rating system and

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Jody London,  
925-655-2815

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc:

BACKGROUND: (CONT'D)

> opportunities to integrate LEED principles into the County's Climate Action Plan. The Commission formed a working group to explore ideas and develop recommendations.

At the June 28, 2021 meeting of the Sustainability Commission, the Commission unanimously adopted four of the five recommendations brought forward by the working group. The recommendations are described in greater detail in the attachment. They include: (1) All-electric requirements for new buildings. (Note: this issue has been discussed by the Sustainability Committee and is on the August 3 Board agenda for discussion and direction.) (2) Procurement policies and lifecycle greenhouse gas analysis. (3) Buy Clean California specifications. (4) Adaptability and repurposing of public buildings. The Sustainability Commission recommends the Board take action to adopt and implement these policies.

CONSEQUENCE OF NEGATIVE ACTION:

Failure to take action on the recommendations in the letter means the Board would be disregarding the advice of the Sustainability Commission.

ATTACHMENTS

Sustainability Commission's Letter re Green Building Recommendations

July 17, 2021

Contra Costa Board of Supervisors  
651 Pine St.  
Martinez, CA 94553

Dear Members of the Board,

At its June 21, 2021 meeting the Sustainability Commission unanimously supported four recommendations developed by its “Green Buildings” working group. The recommendations aim at reducing the carbon footprint of the County’s buildings and infrastructure. This includes electrification, reuse, and reducing embodied carbon in construction materials, both in the public and private sector. This letter briefly states those recommendations.

A fifth recommendation, the adoption of a low-carbon concrete reach code, is still under discussion by our Commission members.

Measures similar to the four recommendations below have been, or are in the process of being adopted in neighboring Bay Area cities. In the footnotes, you will find references to specific measures in their Climate Action Plans.

### **1. All-electric requirements for new buildings**

The Sustainability Commission fully supports current work by County staff to develop all-electric building reach codes for new construction in both public and private sectors. We recommend the adoption of a prescriptive, rather than performance-based, reach code.<sup>1</sup>

### **2. Procurement policies and lifecycle GHG analysis**

We recommend adoption of procurement standards that incorporate total lifecycle GHG analyses. Products and materials should be selected with consideration for their recovery, resale and reuse potential. Such policies will result not only in reducing lifetime GHG emissions but also bring cost savings over the long-term, factoring in operations, durability, and maintenance.<sup>2</sup>

### **3. Buy Clean California specifications**

The *Buy Clean California Act* states the Department of General Services (DGS) is required to establish and publish the maximum acceptable Global Warming Potential (GWP) limit for select construction materials.

We recommend that the county’s Requests for Proposals require use of the construction materials identified by *Buy Clean California*. These materials currently include structural steel, concrete reinforcing steel, flat glass, and mineral wool board insulation.<sup>3</sup>

#### **4. Adaptability and repurposing of public buildings**

Promote adaptability and capacity for re-purposing in new and existing public buildings. For example, community centers should be designed with potential for being quickly adapted as cooling and clean air centers or as evacuation support facilities. Planning for such contingencies aligns with the Climate Emergency Resolution, which identifies the need to plan for the needs of the County's most vulnerable populations.<sup>4</sup>

We wish to restate this: these four recommendations were unanimously approved by the members of the Commission. This is an indication of the importance that our members, representing residents from across the county, attach to the goal of rapidly cutting carbon emission. Reducing the carbon content of our buildings and infrastructure is a cost-effective, technologically viable, and socially just step toward achieving that goal.

Respectfully,

Wes Sullens  
Chair, Sustainability Commission

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<sup>1</sup> [Oakland CAP](#), B-2 (p. 66)  
[Dublin CAP](#), Measure EE-1 (p. 75) and ML-1 (p. 106)  
[San Francisco CAP \(Draft\)](#), BO 1-1, BO 2-1, BO 2-9 (enter these into search box at top of page)

<sup>2</sup> [San Francisco CAP \(Draft\)](#), RPC 1-2 through 1-7  
[Dublin CAP](#), ML-4 (p. 114)  
[Oakland CAP](#), B-4  
[Circular Economy - Principles for Building Design, European Commission, 2020](#) (download)  
General Principles B, F, H (document p. 8)  
From Principle F: "Favor construction systems that incorporate circular economy thinking... enable systems to be easily maintained, repaired and replaced as this will prolong life cycle of buildings."

<sup>3</sup> [Buy Clean California Act](#), accessed July 8, 2021.

<sup>4</sup> [San Francisco CA \(Draft\)](#), RPC 1-2, RPC 1-4 through RPC 1-7, TLU 6-4  
[Circular Economy - Principles for Building Design](#),  
General Principles F and G (p. 8)



Contra  
Costa  
County

To: Board of Supervisors  
From: Anna Roth, Health Services Director  
Date: August 3, 2021

Subject: Mental Health Services Act (Proposition 63): Fiscal Year 2021/22 Annual Update to Three Year Program and Expenditure Plan for Fiscal Years 2020/23

---

**RECOMMENDATION(S):**

ACCEPT the recommendation of the Behavioral Health Services Director to adopt the Mental Health Services Act FY 2021/22 Annual Update to Three Year Program and Expenditure Plan for Fiscal Years 2020/23; and

AUTHORIZE the Chair of the Board of Supervisors to sign and send the attached letter, included as page 224 of the attached Mental Health Service Act Three Year Program and Expenditure Plan Update for fiscal years 2020/22, to the Department of Health Care Services (DHCS) and the Mental Health Services Oversight and Accountability Commission (MHSOAC) to inform of the approval of the adoption of this Plan.

**FISCAL IMPACT:**

Adoption of the Mental Health Services Act FY 2021/22 Annual Update to Three Year Program and Expenditure Plan, Fiscal Year 2020/23 assures continued MHSA funding for Fiscal Year 21/22 in the amount of \$54,428,310.

**BACKGROUND:**

Proposition 63 was passed by California voters in the November 2004 election. Now known as the Mental Health Services Act (MHSA), the legislation

APPROVE

OTHER

RECOMMENDATION OF CNTY ADMINISTRATOR

RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Suzanne Tavano,  
925-957-5212

Monica Nino, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Jennifer Bruggeman, Marcy Wilhelm

BACKGROUND: (CONT'D)

provides public mental health funding by imposing an additional one percent tax on individual taxable income in excess of one million dollars. There are a total of five MHSA components which have been enacted out over time by the State with the goal of creating a better program of mental health services and supports in California's public mental health systems. The five components include: Community Services and Supports; Prevention and Early Intervention; Workforce Education and Training; Capital Facilities and Technology; and Innovation. There are multiple programs operated within each component. This is a state mandated program under California's Welfare & Institutions Code.

The following attached reports provide detailed information and updates on MHSA programs and funding: Executive Summary 21-22 MHSA Plan Update, FY 21-22 MHSA Plan, and PEI & Innovations Reports 19-20.

CONSEQUENCE OF NEGATIVE ACTION:

The Board would not accept the reports and annual MHSA plan update nor authorize the Board Chair to sign the confirming letter as required by the Department of Health Care Services (DHCS) and the Mental Health Services Oversight and Accountability Commission (MHSOAC).

ATTACHMENTS

Exec Summary 21-22 MHSA Plan Update

FY 21-22 MHSA Plan

PEI & Innovation Reports 19-20

## Executive Summary

We are pleased to present Contra Costa Behavioral Health Services (CCBHS) Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan Update (Plan Update) for fiscal years 2021-22. This Plan Update starts July 1, 2021 and updates the MHSA Three Year Program and Expenditure Plan (Three Year Plan) that was initiated in July of 2020. *The past year has been unprecedented in many ways.* We look forward to continued community partnerships that have emerged in 2020 to address the pandemic, health inequities and community crisis response services. These on-going efforts will continue to provide learning opportunities that guide our work moving forward.

The Three-Year Plan describes programs that are funded by the MHSA, what they will do, and how much money will be set aside to fund these programs. The Three-Year Plan includes the components of Community Services and Supports (CSS), Prevention and Early Intervention (PEI), Innovation (INN), Workforce Education and Training (WET), and Capital Facilities/ Information Technology (CF/TN). Also, the Three-Year Plan describes what will be done to evaluate plan effectiveness and ensure that all MHSA funded programs meet the intent and requirements of the Mental Health Services Act.

California approved Proposition 63 in November 2004, and the Mental Health Services Act became law. The Act provides significant additional funding to the existing public mental health system and combines prevention services with a full range of integrated services to treat the whole person. With the goal of wellness, recovery and self- sufficiency, the intent of the law is to reach out and include those most in need and those who have been traditionally underserved. Services are to be consumer driven, family focused, based in the community, culturally and linguistically responsive, and integrated with other appropriate health and social services. Funding is to be provided at sufficient levels to ensure that counties can provide each child, transition age youth, adult and senior with the necessary mental health services and supports set forth in their treatment plan. Finally, the Act requires the Three-Year Plan be developed with the active participation of local stakeholders in a Community Program Planning Process (CPPP).

### **Highlights of changes and updates to the Plan Update for 2021-22 include the following:**

- Budget updated to reflect estimated available funding for FY 21-22
- No Place Like Home (NPLH) and housing updates
- New PEI Programs related to:

- Early Childhood Mental Health Outreach & Education
- Suicide Prevention Training & Education
- Updates to the Suicide Prevention Coalition efforts
- Expansion of Loan Repayment Program to address mental health career pathways and cultural responsiveness

**Funding:**

Fiscal Year 21-22 sets aside up to \$54.4 million in budget authority. In 20-21, there were funds authorized and vetted through a community stakeholder process that would permit use of up to approximately \$7 million in one-time funding to preserve existing MHSA programs that were at risk due to Covid related budget shortfalls. Those funds have been removed from the current budget, which is the rationale behind this year's decrease in total budget authority. The contents of this Plan (including Budget) are a snap-shot in time from early spring 2021. Any changes will be reflected in the subsequent Annual Update.

**Outcomes:**

Performance indicators for the County's Full Service Partnership Programs and Prevention and Early Intervention component were updated in FY 19-20, and are reflected in the current Plan Update. In addition, Appendix B contains individual program profiles of MHSA programs and plan elements and includes FY 19-20 performance outcomes.



**Contra Costa County Mental Health Services Act  
Three Year Program and Expenditure  
Plan Update  
Fiscal Year 2021-2022**



## Introduction

We are pleased to present Contra Costa Behavioral Health Services (CCBHS) Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan Update (Plan Update) for fiscal years 2021-22. This Plan Update starts July 1, 2021 and updates the MHSA Three Year Program and Expenditure Plan (Three Year Plan) that was initiated in July of 2020. The past year has been unprecedented in many ways. We look forward to continued community partnerships that have emerged in 2020 to address the pandemic, health inequities and community crisis response services. These on-going efforts will continue to provide learning opportunities that guide our work moving forward.

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California approved Proposition 63 in November 2004, and the Mental Health Services Act became law. The Act provides significant additional funding to the existing public mental health system and combines prevention services with a full range of integrated services to treat the whole person. With the goal of wellness, recovery and self-sufficiency, the intent of the law is to reach out and include those most in need and those who have been traditionally underserved. Services are to be consumer driven, family focused, based in the community, culturally and linguistically responsive, and integrated with other appropriate health and social services. Funding is to be provided at sufficient levels to ensure that counties can provide each child, transition age youth, adult and senior with the necessary mental health services and supports set forth in their treatment plan. Finally, the Act requires the Three-Year Plan be developed with the active participation of local stakeholders in a Community Program Planning Process (CPPP).

### **Highlights of changes and updates to the Plan Update for 2021-22 include the following:**

- Budget updated to reflect estimated available funding for FY 21-22 (Pg. 61)
- Full Service Partnership performance indicators for FY 19-20 (Pg. 23)
- Prevention and Early Intervention Data & Performance Indicators (Pg. 39)
- No Place Like Home (NPLH) and housing updates (Pg. 30)
- New PEI Programs currently in the Request for Proposal (RFP) process:
  - Early Childhood Mental Health Outreach & Education (Pg. 42)
  - Suicide Prevention Training & Education (Pg. 48)
- Information on Suicide Prevention Coalition and new Youth Subcommittee (Pg. 49)
- Expansion of Loan Repayment Program to address mental health career pathways and cultural responsiveness (Pg. 56)

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## Vision

The Mental Health Services Act serves as a catalyst for the creation of a framework that calls upon members of our community to work together to facilitate change and establish a culture of cooperation, participation, and innovation. We recognize the need to improve services for individuals and families by addressing their complex behavioral health needs. This is an ongoing expectation. We need to continually challenge ourselves by working to improve a system that pays particular attention to individuals and families who need us the most and may have the most difficult time accessing care.

Our consumers, their families and our service providers describe behavioral health care that works best by highlighting the following themes:

**Access.** Programs and care providers are most effective when they serve those with behavioral health needs without regard to Medi-Cal eligibility or immigration status. They provide a warm, inviting environment, and actively and successfully address the issues of transportation to and from services, wait times, availability after hours, services that are culturally and linguistically competent, and services that are performed where individuals live.

**Capacity.** Care providers are most appreciated when they are able to take the time to determine with the individual and his or her family the level and type of care that is needed and appropriate, coordinate necessary health, behavioral health and ancillary resources, and then are able to take the time to successfully partner with the individual and his or her family to work through the behavioral health issues.

**Integration.** Behavioral health care works best when health and behavioral health providers, allied service professionals, public systems such as law enforcement, education and social services, and private community and faith-based organizations work as a team. Effective services are the result of multiple services coordinated to a successful resolution.

We honor this input by envisioning a system of care that supports independence, hope, and healthy lives by making accessible behavioral health services that are responsive, integrated, compassionate and respectful.

Suzanne K. Tavano, PHN, Ph. D  
Behavioral Health Services Director

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# Needs Assessment

## Introduction

In 2019 CCBHS conducted a triennial quantitative and qualitative needs assessment of public mental health needs in preparation for developing the Fiscal Year 2020-23 MHSA Three Year Plan. This data driven analysis complements the CPPP, where interested stakeholders provided input on priority needs and suggested strategies to meet these needs. Data was obtained to determine whether CCBHS was doing the following:

a) reaching the people it is mandated to serve, b) appropriately allocating its resources to provide a full spectrum of care, and c) experiencing any significant workforce shortfalls.

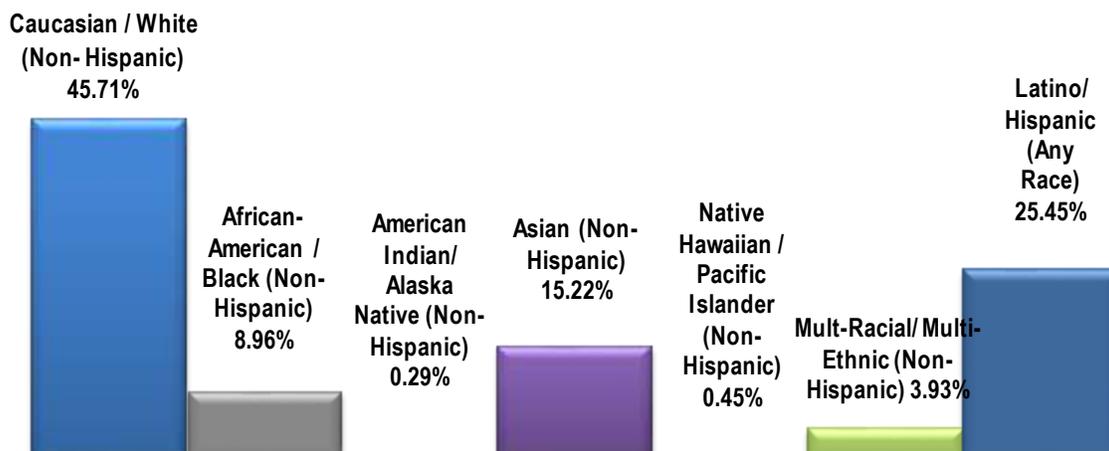
In 2019 Contra Costa Health Services (CCHS) also launched its Envision Health planning process to understand, think about, deliver and support health in Contra Costa County to collectively address changing realities. As part of this process CCBHS is working with the community and partners in planning for health realities for 10, 20 and even 30 years into the future.

## Contra Costa County Population Summary

According to the most recent 2018 U.S. Census Bureau estimates, the population size in Contra Costa County was estimated at 1,150, 215. It's estimated that about 9% of people in Contra Costa County are living in poverty and about 30% of the non - institutionalized residents have public health coverage, however with the passing of the Affordable Care Act the numbers of people eligible are foreseen to grow as Medi-Cal eligibility is considered for some cases to be up to 322% Federal Poverty Level (FPL). Information released by the State of California's Department of Finance projects that population size is expected to grow. Latino/Hispanic and Asian/ Pacific Islander communities will see larger population growth.

An estimate of current racial/ethnic demographic data is illustrated below in Figure 1. In addition, more than half of the population is 18 or older, with about 30% of the population being children. About a quarter of Contra Costa County residents are foreign born.

Figure 1: Contra Costa County 2019 Projected Racial/ Ethnic Populations



## Method

The data collected and used in this Needs Assessment included quantitative and qualitative data studies collected from various County sources, as well as State and other reports referenced in the report. The following areas of inquiry were identified in analyzing the information presented in this Needs Assessment:

- 1) The populations in Contra Costa County CCBHS intends to serve and which populations are being served.
- 2) The demographic composition of the Contra Costa County population.
- 3) How CCBHS is aligning its resources to provide a full spectrum of services at the appropriate level, while also being culturally and linguistically responsive.
- 4) How CCBHS is developing its workforce to address and implement identified service needs.
- 5) Identified service gaps and how CCBHS addresses these service gaps.

## Findings

Data analysis supports that overall, CCBHS is serving most clients/consumers/peers and families requiring services, and that CCBHS serves more eligible clients than most counties in California. This is based upon prevalence estimates and **penetration rates** (meaning proportion of people being served in CCBHS in comparison to total Medi-Cal eligible population in the County) of economically under privileged children with serious emotional disturbance and adults with a serious mental illness, as compared with other counties. Whether consumers are appropriately served (in ways that align with their cultural values and linguistic needs) is an issue that has been raised by community stakeholders and advocates and is something that warrants on-going assessment and evaluation. This has become even more relevant during the pandemic, as existing social and racial inequities have been exacerbated.

Particular findings revealed through this Needs Assessment include the following:

- 1) Persons who identify as Asian/Pacific Islander, and very young children are slightly under-represented when considering penetration rates in comparison to other demographic groups within Contra Costa County.
- 2) There continues to be an ongoing shortage of affordable housing and housing supports for those individuals and families affected by serious mental illness.
- 3) Based on data analysis and stakeholder input, there is a need to strengthen services that can support children, youth and adults who are most severely challenged by emotional disturbances or mental illness.
- 4) Suicide prevention, awareness, and training is needed throughout the County, with special consideration for youth and young adults.
- 5) Workforce analysis indicates a continued shortage of staff capable of prescribing psychotropic medications.
- 6) There are minimal career progression opportunities for the classifications of peer specialists and family partners.
- 7) Staff capacity for communicating in languages other than English continues to be a need, specifically for Spanish and Asian/Pacific Islander languages.

- 8) Persons identifying as LatinX / Hispanic and Asian/Pacific Islander are under-represented in the CCBHS workforce.
- 9) CCBHS is lacking a state-of-the-art electronic data management system to support more effective decision-making, evaluation of services and communication with stakeholders.

### **Recommendation**

CCBHS recognizes the importance of fielding programs and services that are responsive to clients and their families as well as the development of a workforce that can support and respond to the needs of those served. Input gathered through this data driven analysis complements the CPPP, where stakeholders, to include clients, family members, service providers, allied health and social service agencies and the community in general provide input in various methods to prioritize needs.

The above findings are addressed in this MHPA Three Year Program and Expenditure Plan Update for FY 2021-22. It is recommended that CCBHS work together with all stakeholders to make the very best of the resources provided by this Three-Year Plan.

The full Needs Assessment Report can be found at:

<https://cchealth.org/mentalhealth/mhpa/pdf/2019-Needs-Assessment-Report.pdf>

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## The Community Program Planning Process

Each year CCBHS utilizes a Community Program Planning Process (CPPP) to accomplish the following:

- Identify issues related to mental illness that result from a lack of mental health services and supports
- Analyze mental health needs
- Identify priorities and strategies to meet these mental health needs

**CPAW.** CCBHS continues to seek counsel from its ongoing stakeholder body, entitled the Consolidated Planning Advisory Workgroup (CPAW), which convenes on a monthly basis. Over the years CPAW members, consisting of consumers, family members, service providers and representative community members, have provided input to the Behavioral Health Services Director as each Three-Year Plan and yearly Plan Update has been developed and implemented. CPAW has recommended that the Three-Year Plan provide a comprehensive approach that links MHSA funded services and supports to prioritized needs, evaluates their effectiveness and fidelity to the intent of the Act, and informs future use of MHSA funds. CPAW has also recommended that each year's Community Program Planning Process build upon and further what was learned in previous years. Thus, the Three-Year Plan can provide direction for continually improving not only MHSA funded services, but also influencing the County's entire Behavioral Health Services Division. In addition, CPAW utilizes part of its monthly meeting time to be the planning and implementation resource for fielding each year's Community Forums.

### Community Forums Informing Fiscal Year 2021-22

With the onset of the COVID-19 pandemic in 2020, all stakeholder meetings and events shifted to a virtual platform. A total of six community planning events were held in multiple settings and about 351 people participated in the CPPP. Stakeholders continued to provide input and forum themes were focused on topics identified by the community as timely. They included:

- Evolution of the Peer Movement in Contra Costa – September 23, 2020
- Hope & Wellness in Our Diverse Communities – January 28, 2021

We also garnered community input through a collaboration with the Health Services COVID-19 Historically Marginalized Community Engagement Unit (HMCEU) and the workgroups which were established in 2020 through a partnership between Contra Costa Health Services, and the various divisions that fall under it; including BHS, as well as other County agencies, community-based organizations, and community members that banded together in response to assist communities in Contra Costa County disproportionately impacted by COVID-19. MHSA presentations & community discussion took place at the following HMCEU meetings:

- COVID-19 Aging & Older Adult Workgroup – March 10, 2021
- COVID-19 HMCEU Meeting – March 11, 2021
- COVID-19 African American Workgroup – March 11, 2021

We plan to present to the remaining groups in the upcoming months: COVID-19 Latino Workgroup, COVID-19 Asian/ Pacific Islander Workgroup and the COVID-19 Youth & Young Adult Workgroup.

An additional evening community forum was conducted entirely in Spanish and hosted in partnership with Visión y Compromiso and Contra Costa Health Services. The event was focused on education on the COVID-19 vaccine, as well as a presentation on the MHSA with an opportunity for community input. Additionally, mental health resources were shared with a focus on those which offer services in Spanish.

- *Nuestra Comunidad, Nuestro Bienestar* (Our Community, Our Wellbeing) – March 16, 2021

**Evolution of the Peer Movement in Contra Costa (9/23/2020)**

- *Event sponsored in partnership with Native American Health Center*
- *Total Registered:154*

*The community forum provided information on the MHSA, as well as guest speakers, storytelling, and space to allow for community input through Talking Circles. Interactive stretch breaks were included to address the virtual burn out. Presentations and healing space was led by the Native American Health Center (NAHC), BHS’s Office for Consumer Empowerment, and two peer advocates with a history in Contra Costa sharing information on Peer Respite and the importance of Peer Advocacy. The table below reflects 32 survey responses received.*

Race/Ethnicity	Affiliation	Age Range	Gender Identity	Sexual Orientation	Previously Attended a BHS Forum
American Indian/ Native American/ Alaska Native: 0%	Peer/Consumer/ Client: 62.5%	18-25 years: 0%	Female: 75%	Bisexual: 12.5%	Yes: 68%
Asian/ Pacific Islander: 3%	Family Member of a Peer/ Consumer/ Client: 37.5%	26-35 years: 9%	Male: 25%	Gay: 3%	No: 29%
Black/ African American: 19%	Service Provider: 41%	36-45 years: 37.5%	Transgender: 0%	Heterosexual/ Straight: 78%	Don't Know: 3%
Caucasian/White: 45%	CCBHS Staff: 28%	46-55 years: 16%	Gender-queer: 0%	Lesbian: 0%	
LatinX/ Hispanic: 19%	Other: 6%	56-65 years: 25%	Questioning: 0%	Queer: 0%	
Middle Eastern/ North African: 0%		66+ years: 12.5%	Decline to State: 0%	Questioning: 3%	
Prefer to Self- Describe: 10%				Decline to State: 3%	
Decline to State: 3%:					

**Talking Circles. The following questions were used to engage in small group sharing. Participants also had the chance to bring up other items in relation to behavioral health and wellness. The information is summarized on the following pages.**

1. If you could design a perfect program or service for you, what would it look like?
  - Supports like sports, music, instruments, dancing, acting, gardening, art and animals to connect and break down barriers. It helps people relax. Teambuilding and socializing. Use food when getting together, share a meal.
  - Include family members as part of the network of support
  - More wholistic approach, spiritual, meditation, medicine didn't work, felt sedated and turned to homeopathy-worked on inner self and outer self-improved. Also include more faith leaders and connections with communities.
  - Peer driven/led. Personal experience provides value and is effective versus people without experiences making decisions with just book knowledge. Peers understand, shared struggles in similar situations.
  - SPIRIT type program should be offered in high schools, so students understand mental health and self-care
  - Feel peer respites are needed in Contra Costa County.
  - Classes like WREACH should be more widely available. Learning how to tell your story is very important.
  - A program that removes police from being first responders. Having peers and behavior health responders operate as a team, would be first responders, operating 24 hours on rotating schedule. Would also consist of PET training, WRAP groups and other groups. Police would be called by team if needed.
  
2. When you were first connected to services or supports, what was the attitude of the service or wellness provider and was that helpful or not helpful?
  - Was part of large group in my Intensive Outpatient Program, felt there was not enough support due to group size, and staff to client ratio was unrealistic.
  - Trying to get services through school was difficult- felt put-off, no support and wasn't helpful. Staff weren't educated and informed on mental health.
  - Connected to SPIRIT Program at CC College, other staff and administrators had little to no understanding or knowledge of mental health education.
  - Felt unsupported, until connecting to Putnam (peer program), virtual services still helping a lot, also connected to NAHC. I haven't had a panic attack in 2 months.
  - Insurance often dictates experiences/ treatment/ access to treatment due to money, what they will/ won't cover, etc. All deserve quality.
  
3. Have you or your loved one ever received services or supports from a peer provider? If yes, how was it different from receiving services or supports from other behavioral health or wellness providers?
  - More personable, understanding
  - Taking SPIRIT and being able to share my story I feel like a weight is off my shoulders. I graduated from nursing school and had book knowledge, but none on peers. I never heard of it, I used to be so judgmental.
  - Peers offered hope. "When I talked to them, they never told me what I NEEDED TO DO they asked me WHAT I THOUGHT I OUGHT TO DO."
  - Peers are more of a warm handoff. Develop trust that therapy may work.

- Having peers alongside other mental health professional is so important. Peers told me “You are not alone!” “I’ve been there too and you can feel better.” They talked with me alone, helped me feel safe to ask questions I had about meeting with a psychiatrist. No judgement. They gave me hope and reached out to me after the appointment, offered emotional support and shared what I could do next. It was so important that they were part of my first experience. I went from hopeless to having hope, feeling that someone understood my fear.
4. Are you familiar with peer run respite centers? If there was a respite center for you to decompress for a few days that was run by peers; would you be interested?
- Support at respite needs to be diverse and safe. There should be some support to get there safely as well.
  - Peer support wasn’t available at time of crisis, but now is. When my loved one experiences crisis, it is very helpful.
  - Yes, and support having Peer Respite Centers! Needed in this County.
  - Yes, feels like a step down from crisis residential and step up from board and care
  - Would deter unnecessary visits to Psych emergency and reduce systematic trauma.
  - Sometimes just need a place to rest and get thoughts straightened out. It would be a safe place to recover in a crisis.
5. Other General Comments:
- Yoga and stretching really helped stay engaged during forum
  - Re-entry from jail to the outside; found many had mental health needs weren’t met. Incarcerated people need to get support that. Agencies inside jail system are not able to refer incarcerated people to resources outside jail system. It would be helpful so when they are released they connect with providers.
  - Families with loved ones who became incarcerated wonder why they have serious troubles and what was next. Mental health goes untreated, and a high percentage are African American males.
  - Wouldn’t it be nice if when Back to School happened each year, students and families would receive flyers on mental health resources, along with PE schedule, PTA info, sports program, etc.
  - Peer programs like Putnam and RI are ideal to provide a place for ALL individuals (including those recently released from incarceration). Helps combat loneliness/ isolation. COVID-19 is a current barrier to this.

**Hope & Wellness Community Forum (1/28/2021)**

- Event in partnership with SPIRIT Alumni-Chaplain Creekmore, BHS Office for Consumer Empowerment, Sojourner Truth Presbyterian Church, the BHS Self-Care Team, and Teacher & Chef Cindy Gershen.
- Total Registered: 89

The community forum provided information on the MHSA, as well as guest speakers, sharing about what supports their mental health and highlighting some of the various ways communities support their mental health, wellness, and recovery. Information and resources on mental health and wellness supports in the County were also included. Space for community input was allowed through Talking Circles. An interactive stretch break was included to address the virtual burn out. The table below reflects 22 survey responses received, as well as 54 responses received via a Zoom poll.

Race/Ethnicity	Affiliation	Age Range	Gender Identity	Sexual Orientation	Previously Attended a BHS Forum
American Indian/ Native American/ Alaska Native: 0%	Peer/ Consumer/ Client: 27%	18-25 years: 0%	Female: 68%	Bisexual: 9%	Yes: 59%
Asian/ Pacific Islander: 4.5%	Family Member of a Peer/ Consumer/ Client: 36%	26-35 years: 5%	Male: 23%	Gay: 0%	No: 34%
Black/ African American: 18%	Behavioral/ Mental Health Service Provider: 50%	36-45 years: 43%	Transgender: 4.5%	Heterosexual/ Straight: 86%	Don't Know: 7%
Caucasian/ White: 55%	Decline to State: 0%	46-55 years: 5%	Genderqueer: 0%	Lesbian: 0%	*Please note: These responses were collected via a Zoom Poll during the forum.
LatinX/ Hispanic: 9%	Other: 18%	56-65 years: 19%	Questioning: 0%	Queer: 0%	
Middle Eastern/ North African: 0%		66+ years: 24%	Decline to State: 4.5%	Questioning: 0%	
Prefer to Self- Describe: 9%		Decline to State: 5%		Decline to State: 5%	
Decline to State: 4.5%:				Prefer to Self- Describe: 0%	

**Talking Circles. The following questions were used to engage in small group sharing. Participants also had the chance to bring up other items in relation to behavioral health and wellness. The information is summarized below.**

1. What does mental health and wellness look like in your community?
  - Members of the community have really leaned into existing supports and are engaging in self-care and holistic health. Self-care activities include; reading books on wellness, focusing on healthy eating, practicing mindfulness, journaling, exercising.
  - Younger generations appear to be more vocal about mental health concerns.
  - Overall participants are extremely pleased and appreciative of the innovative and adaptive adjustments programs have made to continue services during COVID-19.
  - Virtual platforms, such as Zoom, have been invaluable to keeping people connected, linking folks to services and educating providers, consumers, and the rest of the

public.

- There has been notable effort to provide access to technology and provide education on how to use this technology so consumers can access services.
- Participants feel providers are very cognizant of the unique challenges COVID-19 and remote services has presented, and there has been an increase in intentional effort on their part to engage in outreach and to check in regularly and stay connected.
- Zoom has increased ease and frequency of access for those who were hesitant or had institutional or physical barriers to accessing services in person in the past.
- Technology has also allowed more coordination and communication between local government, community-based organizations, the State, community stakeholders, etc. For some, technology has been a challenge in receiving services.

## 2. What community supports are helpful or working well?

- Putnam Clubhouse, online services are offered throughout the entire day and into the evening to allow people to stay involved, stay connected, and reduce isolation. There have been successful efforts to get consumers access to the technology they need to stay connected (e.g., smartphones, Chromebooks) and staff has been educating consumers on how to use the technology.
- Leadership has recognized the strain on clinical staff and has provided and encouraged virtual staff self-care sessions.
- Notably, programs and resources designed to address food insecurity have really stepped up to the plate to address the challenges COVID-19 has exacerbated in this arena.
- While challenges persist, there was a strong consensus that resources and programs are working as well as possible and are doing their best, especially under the circumstances. These include but are not limited to: schools/teachers, food banks, churches, support groups, peer support workers, etc. While housing remains a challenging area, various housing services are among those that have been working hard with the tools they have.
- Participants also noted the tremendous work first responders do and the dedication they've demonstrated throughout this entire crisis over the last year.

## 3. What supports and services would you like to see more of during these challenging times?

- There is a call for folks unable to get into a hotel before because they didn't qualify, for example transition age youth (TAY) and adults without preexisting conditions to be given access to hotel rooms.
- Housing for high-risk groups severely mentally ill (SMI), substance use disorder (SUD), etc. needs to be expanded and prioritized.
- Need for more residential programs, crisis residentials, high quality board and cares, room and boards, etc., especially for those with SMI, SUD or co-occurring disorders
- Want leadership to explore how to utilize existing housing and housing development more creatively and effectively and prioritize this housing for the homeless population.

- There's a need for more hygiene support for the homeless population (e.g., facilities with showers, laundry, toiletry resources, etc.)
- More affordable housing and increase education and support services for those at risk of losing housing, or are looking for housing, as their issues might be easily resolved with this dedicated support.
- More virtual groups/fun activities for younger kids and pre-teens
- More resources for other languages (Tagalog, Farsi, etc.)
- More partnering between health systems (e.g., CCC, John Muir, Sutter, Kaiser, etc.).
- More integration not just within County and its contracted partners but also with other large healthcare systems.
- More programs who can safely operate outdoors.
- Ongoing gaps and challenges that are also salient for participants include: food Insecurity, transportation barriers, financial support for undocumented folks left out of stimulus checks, families addressing unique challenges related to COVID-19, racial equity and addressing systemic racism.

#### 4. What community groups or populations are most at risk?

- Concerns about the older adult population - at increased risk for isolation and less likely to be able to take advantage of virtual platforms as they are traditionally not as technologically savvy.
- Children and teens -this age group is dealing with challenges such as; remote learning, isolation from friend groups, spending more time in abusive or neglectful homes, physical, emotional, and/or developmental needs not being adequately addressed due to school closures, unique challenges for children from homes that don't have internet connection, have parents whose first language isn't English, come from homes with undocumented family members, increase in childhood mental health concerns related to all the above and a concern about increase in youth suicides as a result.
- People who are homeless or at risk of becoming homeless.
- Those with SMI, SUD or co-occurring behavioral health diagnoses.
- Low-income individuals and families.
- Individuals and families with language barriers.
- LGBTQI+
- Medically fragile Individuals
- Black, Indigenous, People of Color (BIPOC)

**COVID -19 Historically Marginalized Communities Engagement Unit and its Workgroups (3/10/2021 and 3/11/2021)**

- Event in partnership with Contra Costa Health Services
- Total Attendees: 96

The MHSA team provided an abbreviated version of the community forums at the HMCEU meetings. Information on the MHSA was provided, as well as space to allow for community input through small group discussions. The table below reflects a combined total of 10 survey responses received.

Race/Ethnicity	Affiliation	Age Range	Gender Identity	Sexual Orientation	Previously Attended a BHS Forum
American Indian/ Native American/ Alaska Native: 0%	Peer/ Consumer/ Client: 60%	18-25 years: 10%	Female: 100%	Bisexual: 0%	Yes: 20%
Asian/ Pacific Islander: 10%	Family Member of a Peer/ Consumer/ Client: 40%	26-35 years: 30%	Male: 0%	Gay: 0%	No: 70%
Black/ African American: 40%	Behavioral/ Mental Health Service Provider: 0%	36-45 years: 20%	Transgender: 0%	Heterosexual/ Straight: 100%	Don't Know: 0%
Caucasian/ White: 10%	Other Health Services Provider/ Staff: 30%	46-55 years: 20%	Genderqueer: 0%	Lesbian: 0%	Decline to State: 0%
LatinX/ Hispanic: 20%	Decline to State: 10%	56-65 years: 20%	Questioning: 0%	Questioning: 0%	
Middle Eastern/ North African: 10%	Other: 10%	66+ years: 0%	Decline to State: 0%	Decline to State: 0%	
Prefer to Self- Describe: 0%				Prefer to Self- Describe: 0%	
Decline to State: 10%:					

**Small Group Discussions. The following questions were used to engage in small group sharing. Participants also had the chance to bring up other items in relation to behavioral health and wellness. The information is summarized below.**

1. What does mental health and wellness look like in your community?
  - No barriers to treatment, especially for people of color & those with disabilities
  - No stigma
  - Opportunities to access safe outdoor spaces & to practice spirituality
  - Comprehensive resource hubs
2. What community supports are helpful or working well?
  - Telehealth
  - Mobile Crisis Services – including MCRT, H3 CORE, MHET
  - Hotlines – Crisis Center, 211, Access Line, Anonymous Hotlines
  - Non-Profit CBO's
  - Language Access – Crisis Center's Grief Groups in Spanish

- Older Adult Services
3. What supports and services would you like to see more of during these challenging times?
- Affordable Housing – with on-site services
  - More access to technology (including training)
  - Culturally appropriate care – including language access (and materials printed in multiple languages)
  - Mental Health Supports – including training and education
  - More virtual mental health services, especially for youth
  - More promotion of existing resources
  - More community crisis response services
  - Greater access to county funding & resources for CBO's
  - Specific mental health programs tailored toward the African American community and TAY of color
4. What community groups or populations are most at risk?
- Youth, including former foster youth
  - Teens – many have had to quit school to get jobs to support family
  - Seniors
  - Homeless population, including homeless youth
  - Immigrants, refugees, minorities and low- income people
  - Single mothers
  - People with disabilities
  - People with substance use disorders (SUD) – use is on the rise during COVID.

**Nuestra Comunidad, Nuestro Bienestar (Our Community, Our Wellbeing) (3/16/2021)**

- Event in partnership with Contra Costa Health Services and Visión y Compromiso
- Total Attendees: 12
- Conducted completely in Spanish

The virtual event provided a presentation and information on the COVID-19 vaccine and vaccinations efforts in Contra Costa. There was also a presentation on the MHSA and space to allow for community input through small discussion groups. Information on mental health resources aimed at serving Spanish speaking communities were also shared. The table below reflects 7 survey responses collected.

Race/Ethnicity	Affiliation	Age Range	Gender Identity	Sexual Orientation	Previously Attended a BHS Forum
American Indian/ Native American/ Alaska Native: 0%	Peer/ Consumer/ Client: 14%	18-25 years: 0%	Female: 86%	Bisexual: 14%	Yes: 57%
Asian/ Pacific Islander: 0%	Family Member of a Peer/ Consumer/ Client: 14%	26-35 years: 29%	Male: 14%	Gay: 0%	No: 43%
Black/ African American: 0%	Behavioral/ Mental Health Service Provider: 14%	36-45 years: 43%	Transgender: 0%	Heterosexual/ Straight: 72%	Don't Know: 0%
Caucasian/ White: 0%	Decline to State: 0%	46-55 years: 14%	Genderqueer: 0%	Lesbian: 0%	Decline to State: 0%
LatinX/ Hispanic: 100%	Other: 60%	56-65 years: 0%	Questioning: 0%	Queer: 0%	
Middle Eastern/ North African: 0%		66+ years: 14%	Decline to State: 0%	Questioning: 0%	
Prefer to Self- Describe: 0%		Decline to State: 0%		Decline to State: 0%	
Decline to State: 0%:				Prefer to Self- Describe: 14%	

**Small Group Discussions. The following questions were used to engage in small group sharing. Participants also had the chance to bring up other items in relation to behavioral health and wellness. The information is summarized below.**

1. What does mental health and wellness look like in your community?
  - Community supports
  - Events like this
  - Church.
2. What community supports are helpful or working well?
  - La Clinica
  - The Latina Center
  - Familias Unidas
  - Catholic Charities of the East Bay
  - The promotoras (health promoters) that are part of Health Services.

3. What supports and services would you like to see more of during these challenging times?
  - Education on Public Charge - it keeps changing. Many people are afraid to reach out for help. There needs to be more education on this topic.
  - Would like to have specific focus on Latino Mental Health support groups, similar to La Clinica, and done in community.
  - More support, especially in far east Contra Costa County. Very little Spanish speaking programs to support mental health and not much offered after Antioch. BART doesn't run past Antioch, makes access to mental health difficult
  - Would love to see yoga or other physical health classes offered, both in person and virtually in Spanish. This is being done in English, it would be great to offer in Spanish.
  - There is still a lot of stigma in the Latino community and not much understanding of mental health, wellness. There needs to be more education for the Spanish speaking communities on mental health.
  
4. What community groups or populations are most at risk?
  - In this County many people affected by COVID-19 are part of Latino community. Many were also financial providers – mothers, fathers, uncles, aunts and now family is struggling financially, along with toll on mental health.
  - Many of the children with only Spanish speaking parents, will need extra support returning to school.

**Summary.** The community program planning process identifies current and ongoing mental health service needs and provides direction for MHSA funded programs to address these needs. It also informs planning and evaluation efforts that can influence how and where MHSA resources can be directed in the future.

The full complement of MHSA funded programs and plan elements described in this document are the result of current as well as previous community program planning processes. Thus, this year's planning process builds upon previous ones. It is important to note that stakeholders did not restrict their input to only MHSA funded services but addressed the entire health and behavioral health system. The MHSA Three Year Program and Expenditure Plan operates within the laws and regulations provided for the use of the Mental Health Services Act Fund. Thus, the Three-Year Plan contained herein does not address all the prioritized needs identified in the community program planning process but does provide a framework for improving existing services and implementing additional programs as funding permits.

The following chapters contain programs and plan elements that are funded by the County's MHSA Fund, and will be evaluated by how well they address the Three-Year Plan's Vision and identified needs as prioritized by the Community Program Planning Process.

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# The Plan

## Community Services and Supports

Community Services and Supports is the component of the Three-Year Program and Expenditure Plan that refers to service delivery systems for mental health services and supports for children and youth, transition age youth (ages 16-25), adults, and older adults (over 60). Contra Costa County Behavioral Health Services utilizes MHSA funding for the categories of Full Service Partnerships and General System Development.

First approved in 2006 with an initial State appropriation of \$7.1 million, Contra Costa's budget has grown incrementally to approximately \$40.4 million for FY 2021-22 in commitments to programs and services under this component. The construction and direction of how and where to provide funding began with an extensive and comprehensive community program planning process whereby stakeholders were provided training in the intent and requirements of the Mental Health Services Act, actively participated in various venues to identify and prioritize community mental health needs, and developed strategies by which service delivery could grow with increasing MHSA revenues. The programs and services described below are directly derived from this initial planning process and expanded by subsequent yearly community program planning processes.

### Full Service Partnerships

Contra Costa Behavioral Health Services both operates and contracts with mental health service providers to enter into collaborative relationships with clients, called Full Service Partnerships. Personal service coordinators develop an individualized services and support plan with each client, and, when appropriate, the client's family to provide a full spectrum of services in the community necessary to achieve agreed upon goals. Children (0 to 18 years) diagnosed with a serious emotional disturbance, transition age youth (16 to 25 years) diagnosed with a serious emotional disturbance or serious mental illness, and adults and older adults diagnosed with a serious mental illness are eligible. These services and supports include, but are not limited to crisis intervention/stabilization services, mental health and substance use disorder treatment, including alternative and culturally specific treatments, peer and family support services, access to wellness and recovery centers, and assistance in accessing needed medical, housing, educational, social, vocational rehabilitation and other community services, as appropriate. A qualified service provider is available to respond to the client/family 24 hours a day, seven days a week to provide after-hours intervention. As per statute requirements, these services comprise the majority of the Community Services and Supports budget.

**Performance Indicators.** The rates of in-patient psychiatric hospitalization and psychiatric emergency service (PES) episodes for persons participating in Full Service Partnerships indicate whether Contra Costa's FSP programs promote less utilization of higher acute and more costly care. For FY 2019-20 data was obtained for 518

participants who were served by FSP programs. Use of PES and in-patient psychiatric hospitalization was compared before and after FSP participation, with the following results:

- A 60.8% decrease in the number of PES episodes
- A 71.9% decrease in the number of in-patient psychiatric hospitalizations
- A 49.7% decrease in the number of in-patient psychiatric hospitalization days

The following full service partnership programs are now established:

**Children.** The Children's Full Service Partnership Program is comprised of four elements, 1) personal services coordinators, 2) multi-dimensional family therapy for co-occurring disorders, 3) multi-systemic therapy for juvenile offenders, and 4) county operated children's clinic staff.

- 1) Personal Service Coordinators. Personal service coordinators are part of a program entitled Short Term Assessment of Resources and Treatment (START). Seneca Family of Agencies contracts with the County to provide personal services coordinators, a mobile crisis response team, and three to six months of short-term intensive services to stabilize the youth in their community and to connect them and their families with sustainable resources and supports. Referrals to this program are coordinated by County staff on a countywide assessment team, and services are for youth and their families who are experiencing severe stressors, such as out-of-home placement, involvement with the juvenile justice system, co-occurring disorders, or repeated presentations at the County's Psychiatric Emergency Services.
- 2) Mobile Crisis Response. Additional MHSA funding supports the expansion of hours that Seneca's mobile crisis response teams are available to respond to children and their families in crisis. This expansion began in FY 2017-18 and includes availability to all regions of the county. Seneca has two teams available from 7:00 A.M. until 10:00 P.M. with on call hours 24/7 and the ability to respond to the field during all hours if indicated and necessary.
- 3) Multi-dimensional Family Therapy (MDFT) for Co-occurring Disorders. Lincoln Child Center contracts with the County to provide a comprehensive and multi-dimensional family-based outpatient program for adolescents with a mental health diagnosis who are experiencing a co-occurring substance abuse issue. These youth are at high risk for continued substance abuse and other problem behaviors, such as conduct disorder and delinquency. This is an evidence-based practice of weekly or twice weekly sessions conducted over a period of 4-6 months that target the youth's interpersonal functioning, the parents' parenting practices, parent-adolescent interactions, and family communications with key social systems.
- 4) Multi-systemic Therapy (MST) for Juvenile Offenders. Community Options for Families and Youth (COFY) contracts with the County to provide home-based multiple therapist family sessions over a 3-5 month period. These sessions are based on nationally recognized evidence-based practices designed to decrease rates of anti-social behavior improve school performance and interpersonal skills and reduce out-of-home placements. The goal is to empower families to build a healthier environment through

the mobilization of existing child, family and community resources.

- 5) Children’s Clinic Staff. County clinical specialists and family partners serve all regions of the County and contribute a team effort to full service partnerships. Clinical specialists provide a comprehensive assessment on all youth deemed to be most seriously emotionally disturbed. The team presents treatment recommendations to the family, ensures the family receives the appropriate level of care, and family partners help families facilitate movement through the system.

The Children’s category is summarized below. Note that the total amount of these programs is funded by a combination of Medi-Cal reimbursed specialty mental health services and MHSA funds.

Amounts summarized below are the MHSA funded portion of the total cost for Children programming:

<b>Program/Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 2021-22</b>
Personal Service Coordinators	Seneca Family of Agencies (FSP)	Countywide	75	843,600
Multi- dimensional Family Therapy	Lincoln Child Center (FSP)	Countywide	60	874,417
Multi-systemic Therapy	Community Options for Family and Youth (FSP)	Countywide	65	650,000
Children’s Clinic Staff	County Operated	Countywide	Support for full service partners	516,518
<b>Total</b>			<b>200</b>	<b>\$2,884,535</b>

**Transition Age Youth.** Eligible youth (ages 16-25) are individuals who are diagnosed with a serious emotional disturbance or serious mental illness, and experience one or more of the risk factors of homelessness, co-occurring substance abuse, exposure to trauma, repeated school failure, multiple foster care placements, and experience with the juvenile justice system.

- 1) Fred Finch Youth Center is located in West County and contracts with CCBHS to serve West and Central County. This program utilizes the assertive community treatment model as modified for young adults that includes a personal service coordinator working in concert with a multi-disciplinary team of staff, including peer and family mentors, a psychiatric nurse practitioner, staff with various clinical specialties, to include co-occurring substance disorder and bilingual capacity. In addition to mobile mental health and psychiatric services the program offers a variety of services designed to promote wellness and recovery, including assistance finding housing, benefits advocacy, school and employment assistance, and support connecting with families.
- 2) Youth Homes Youth Homes is located in East County and contracts with CCBHS to serve Central and East County. This program emphasizes the evidence based

practice of integrated treatment for co-occurring disorders, where youth receive mental health and substance abuse treatment from a single treatment specialist, and multiple formats for services are available, to include individual, group, self-help and family.

Amounts summarized below are the MHSA funded portion for Transition Age Youth Full Service Partnership programming:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Transition Age Youth Full Service Partnership	Fred Finch Youth Center	West and Central County	70	1,503,789
Transition Age Youth Full Service Partnership	Youth Homes	Central and East County	30	726,662
County support costs				32,782
<b>Total</b>			<b>150</b>	<b>\$2,263,233</b>

**Adult.** Adult Full Service Partnerships provide a full spectrum of services and supports to adults over the age of 18 who are diagnosed with a serious mental illness, are at or below 200% of the federal poverty level and are uninsured or receive Medi-Cal benefits.

CCBHS contracts with Portia Bell Hume Behavioral Health and Training Center (Hume Center) to provide FSP services in the West and East regions of the County. Prior to COVID-19, the Hume contract was increased in order to provide enhanced services including housing flex funds as well as serving 40 additional clients. Mental Health Systems takes the lead in providing full service partnership services to Central County, while Familias Unidas contracts with the County to provide the lead on full service partnerships that specialize in serving the County's LatinX population whose preferred language is Spanish.

Amounts summarized below are the MHSA funded portion for Adult Full Service Partnership Programming:

<b>Program/ Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Full Service Partnership	Hume Center	West County	70 (Adult) 5 (Older Adult)	4,147,691
		East County	70 (Adult) 5 (Older Adult)	
Full Service Partnership	Mental Health Systems, Inc.	Central County	47 (Adult) 3 (Older Adult)	1,050,375
Full Service Partnership	Familias Unidas	West County	28 (Adult) 2 (Older Adult)	272,167
<b>Total</b>			<b>275</b>	<b>\$5,470,233</b>

**Additional Services Supporting Full Service Partners.** The following services are utilized by full service partners and enable the County to provide the required full spectrum of services and supports.

**Adult Mental Health Clinic Support.** CCBHS has dedicated clinicians at each of the three adult mental health clinics to provide support, coordination and rapid access for full service partners to health and mental health clinic services as needed and appropriate.

Rapid Access Clinicians offer drop-in screening and intake appointments to clients who have been discharged from the County Hospital or Psychiatric Emergency Services but who are not open to the county mental health system of care. Rapid Access Clinicians will then refer clients to appropriate services and, when possible, follow-up with clients to ensure a linkage to services was made. If a client meets eligibility criteria for Full Service Partnership services, the Rapid Access Clinician will seek approval to refer the client to Full Service Partnership services. Clinic management act as the gatekeepers for the Full Service Partnership programs, authorizing referrals and discharges as well as providing clinical oversight to the regional Full Service Partnership programs. Full Service Partnership Liaisons provide support to the Full Service Partnership programs by assisting the programs with referrals and discharges, offering clinical expertise, and helping the programs to navigate the County systems of care. Community Support Worker positions are stationed at all three adult clinics to support families of clients as they navigate and assist in the recovery of their loved ones.

Amounts summarized below are the MHPA funded portion for Adult Mental Health Clinic Support:

<b>Program/Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHPA Funds Allocated for FY 21-22</b>
FSP Support, Rapid Access	County Operated	West, Central, East County	Support for Full Service Partners	1,763,101
<b>Total</b>				<b>\$1,763,101</b>

**Assisted Outpatient Treatment.** In February 2015, the Contra Costa Board of Supervisors passed a resolution authorizing \$2.25 million of MHPA funds to be utilized on an annual basis for providing mental health treatment as part of an assisted outpatient treatment (AOT) program. The County implements the standards of an assertive community treatment team as prescribed by Assembly Bill 1421, and thus meet the acuity level of a full service partnership. This program provides an experienced, multi-disciplinary team who provides around the clock mobile, out-of-office interventions to adults, a low participant to staff ratio, and provides the full spectrum of services, to include health, substance abuse, vocational and housing services. Persons deemed eligible for assisted outpatient treatment are served, whether they volunteer for services, or are ordered by the court to participate. CCBHS contracts with Mental Health Systems, Inc. to provide the Assertive Community Treatment (ACT), while CCBHS has dedicated clinicians and administrative support within the Forensic Mental Health Clinic to 1) receive

referrals in the community, 2) conduct outreach and engagement to assist a referred individual, 3) conduct the investigation and determination of whether a client meets eligibility criteria for AOT, 4) prepare Court Petitions with supporting documentation and ongoing affidavits, 5) testify in court, 6) coordinate with County Counsel, Public Defender and law enforcement jurisdictions, 7) act as liaison with ACT contractor, and 8) participate in the development of the treatment plan.

Amounts summarized below are the MHSa funded portion for Assisted Outpatient Treatment programming:

<b>Program/ Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Assisted Outpatient Treatment	Mental Health Systems, Inc.	Countywide	70 (Adult) 5 (Older Adult)	2,136,653
Assisted Outpatient Treatment Clinic Support	County Operated	Countywide	Support for Assisted Outpatient Treatment	412,586
<b>Total</b>			<b>75</b>	<b>\$2,549,239</b>

**Wellness and Recovery Centers.** RI International contracts with the County to provide wellness and recovery centers situated in West, Central and East County to ensure the full spectrum of mental health services is available. These centers offer peer-led recovery-oriented, rehabilitation and self-help groups that teach self-management and coping skills. The centers offer Wellness Recovery Action Planning (WRAP), physical health and nutrition education, advocacy services and training, arts and crafts, and support groups.

Amounts summarized below are the MHSa funded portion for Wellness and Recovery Centers:

<b>Program/Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Recovery and Wellness Centers	RI International	West, Central, East County	200	1,002,791
<b>Total</b>			<b>200</b>	<b>\$1,002,791</b>

**Hope House - Crisis Residential Center.** The County contracts with Telecare to operate a 16-bed crisis residential facility. This is a voluntary, highly structured treatment program that is intended to support seriously mentally ill adults during a period of crisis and to avoid in-patient psychiatric hospitalization. It also serves consumers being discharged from the hospital and long-term locked facilities that would benefit from a step-down from institutional care in order to successfully transition back into community living. Services are designed to be short term, are recovery focused with a peer provider component, and treat co-occurring disorders, such as drug and alcohol abuse.

Amounts summarized below are the MHSA funded portion for the Crisis Residential Center programming:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Hope House - Crisis Residential Center	Telecare	Countywide	200	2,204,052
<b>Total</b>			<b>200</b>	<b>\$2,204,052</b>

**MHSA Housing Services.** MHSA funds for housing supports supplements that which is provided by CCBHS and the County’s Health, Housing and Homeless Services Division, and is designed to provide various types of affordable shelter and housing for low income adults with a serious mental illness or children with a severe emotional disorder and their families who are homeless or at imminent risk of chronic homelessness. Annual expenditures have been dynamic due to the variability of need, availability of beds and housing units, and escalating cost. Housing supports are categorized as follows; 1) temporary shelter beds, 2) augmented board and care facilities or homes, 3) scattered site, or master leased housing, 4) permanent supportive housing, and 5) a centralized county operated coordination team.

- 1) Temporary Shelter Beds. The County’s Health, Housing and Homeless Services Division operates a number of temporary bed facilities for adults and transitional age youth. CCBHS has a Memorandum of Understanding with the Health, Housing and Homeless Services Division that provides MHSA funding to enable individuals with a serious mental illness or a serious emotional disturbance to receive temporary emergency housing in these facilities. This agreement includes 400 bed nights per year for the Bissell Cottages and Appian House Transitional Living Programs, staff for the Calli House Youth Shelter, 23,360 bed nights for the Brookside and Concord temporary shelters, and 3,260 bed nights for the Respite Shelter in Concord.
- 2) Augmented Board and Care. The County contracts with a number of licensed board and care providers and facilities to provide additional funds to augment the rental amount received by the facility from the SSI rental allowance. These additional funds pay for facility staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community. An individualized services agreement for each person with a serious mental illness delineates needed supplemental care, such as assistance with personal hygiene, life skills, prescribed medication, transportation to health/mental health appointments, and connection with healthy social activities. Of these augmented board and care providers, there are currently seven that are MHSA funded, and augment their board and care with additional agreed upon care for persons with seriously mental illness. These include Divines, Modesto Residential, Oak Hill, Pleasant Hill Manor, United Family Care (Family Courtyard), Williams Board and Care Home, and Woodhaven. An eighth provider, Crestwood Healing Center, has 64 augmented board and care beds in Pleasant Hill, and has a 16-bed Pathways program that provides clinical mental health specialty services for up to a year (with a possible six month extension) for those

residents considered to be most compromised by mental health issues. During this three year period CCBHS will seek to maintain and increase the number of augmented board and care beds available for adults with serious mental illness.

- 3) Scattered Site Housing. Shelter, Inc. contracts with the County to provide a master leasing program, in which adults or children and their families are provided tenancy in apartments and houses throughout the County. Through a combination of self-owned units and agreements with landlords, Shelter, Inc. acts as the lessee to the owners and provides staff to support individuals and their families to move in and maintain their homes independently.
- 4) Permanent Supportive Housing. Until 2016 the County participated in a specially legislated state-run MHSA Housing Program through the California Housing Finance Agency (CalHFA). In collaboration with many community partners the County embarked on a number of one-time capitalization projects to create 56 permanent housing units for individuals with serious mental illness. These individuals receive their mental health support from CCBHS contract and county service providers. The sites include Villa Vasconcellos in Walnut Creek, Lillie Mae Jones Plaza in North Richmond, The Virginia Street Apartments in Richmond, Tabora Gardens in Antioch, Robin Lane apartments in Concord, Ohlone Garden apartments in El Cerrito, Third Avenue Apartments in Walnut Creek, Garden Park apartments in Concord, and scattered units throughout the County operated by Hope Solutions (formerly Contra Costa Interfaith Housing).

The aforementioned state-run program ended in 2016 and was replaced by the Special Needs Housing Program (SNHP). The County received and distributed \$1.73 million in heretofore state level MHSA funds in order to preserve, acquire or rehabilitate housing units, and recently added 5 additional units of permanent supportive housing at the St. Paul Commons in Walnut Creek. Due to COVID-19 challenges in program implementation of the SNHP, the Department of Health Care Services (DHCS) notified county mental health plans that the deadline to use funds was extended to June 30, 2021.

In July 2016 Assembly Bill 1618, or “**No Place Like Home**”, was enacted to dedicate in future years \$2 billion in bond proceeds throughout the State to invest in the development of permanent supportive housing for persons who are in need of mental health services and are experiencing homelessness or are at risk of chronic homelessness. Local applications for construction and/or re-purposing of residential sites are being developed and submitted to the state. For the first round of NPLH state funding Contra Costa was awarded funding in partnership with Satellite Affordable Housing Association for construction of 10 dedicated NPLH units for persons with serious mental illness at their Veteran’s Square Project in the East region of the County. For the second round Contra Costa applied for funding to construct permanent supportive housing units in the Central and West regions of the County. An award was granted to Resources for Community Development in the amount of \$6,000,163 for 13 NPLH Units at their Galindo Terrace development. In 2020, an

award was made by CCBHS to Resources for Community Development for the complete non-competitive allocation amount of \$2,231,574 for a combination project (use of both competitive and non-competitive funds) for a total amount of NPLH financing in the amount of \$14,456,028. If awarded the full amount of requested funds, this development would result in 29 dedicated NPLH units in Central County. Awards are expected in June of 2021. CCBHS is actively working to develop opportunities for participation in the fourth and final round of State NPLH permanent supportive housing funds under the current bond authority in order to add this valuable resource as part of the full spectrum of care necessary for recovery from mental illness.

- 5) Coordination Team. Mental Health Housing Services Coordinator and staff work closely with the Health, Housing and Homeless Services Division staff to coordinate referrals and placements, facilitate linkages with other Contra Costa mental health programs and services, and provide contract monitoring and quality control. A Chief of Supportive Housing Services position has been added to oversee the Coordination Team and MHSAs funded housing units.

Amounts summarized below are the MHSAs allocation for MHSAs funded housing services:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number of MHSAs beds, units budgeted</b>	<b>MHSAs Funds Allocated for FY 21-22</b>
Shelter Beds	County Operated	Countywide	75 beds (est.)	2,048,912
Augmented * Board and Care	Crestwood Healing Center	Countywide	80 beds	1,210,356
Augmented * Board and Care	Various	Countywide	335 beds	3,000,682
Scattered Site Housing	Shelter, Inc.	Countywide	119 units	2,420,426
Permanent Supportive Housing	Contractor Operated	Countywide	81 units	State MHSAs funded
Coordination Team	County Operated	Countywide	Support to Homeless Program	532,200
<b>Total Beds/Units</b>			<b>685 **</b>	<b>\$9,212,576</b>

\*Augmented Board and Care facility contracts vary in negotiated daily rate, and several contracts have both realignment as well as MHSAs as funding sources. Thus, the budgeted amount for FY 21-22 may not match the total contract limit for the facility and beds available. The amount of MHSAs funds budgeted are projections based upon the 1) history of actual utilization of beds paid by MHSAs funding, 2) history of expenditures charged to MHSAs, and 3) projected utilization for the upcoming year. CCBHS will continue to look for and secure additional augmented board and care beds. Annual Three-Year Plan Updates will reflect adjustments in budgeted amounts.

\*\* It is estimated that over 1,000 individuals per year are receiving temporary or permanent supportive housing by means of MHSAs funded housing services and supports. CCBHS is and will continue to actively participate in state and locally funded

efforts to increase the above availability of supportive housing for persons with serious mental illness.

**Non-FSP Programs (General System Development)**

General System Development is the service category in which the County uses Mental Health Services Act funds to improve the County’s mental health service delivery system for all clients who experience a serious mental illness or serious emotional disturbance, and to pay for mental health services for specific groups of clients, and, when appropriate, their families. Since the Community Services and Supports component was first approved in 2006, programs and plan elements included herein have been incrementally added each year by means of the community program planning process. These services are designed to support those individuals who need services the most.

Funds are now allocated in the General System Development category for the following programs and services designed to improve the overall system of care:

**Supporting Older Adults.** There are two MHSA funded programs serving the older adult population over the age of 60, 1) Intensive Care Management, and 2) IMPACT (Improving Mood: Providing Access to Collaborative Treatment).

- 1) Intensive Care Management. Three multi-disciplinary teams, one for each region of the County, provide mental health services to older adults in their homes, in the community, and within a clinical setting. The primary goal is to support aging in place and to improve consumers’ mental health, physical health and overall quality of life. Each multi-disciplinary team is comprised of a psychiatrist, a nurse, a clinical specialist, and a community support worker. The teams deliver a comprehensive array of care management services, linkage to primary care and community programs, advocacy, educational outreach, medication support and monitoring, and transportation assistance.
- 2) IMPACT. IMPACT is an evidence-based practice which provides depression treatment to older adults in a primary care setting who are experiencing co-occurring physical health impairments. The model involves short-term (8 to 12 visits) problem solving therapy and medication support, with up to one year follow-up as necessary. MHSA funded mental health clinicians are integrated into a primary treatment team.

Amounts summarized below are the MHSA funded portion for Older Adult Mental Health Program:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Intensive Care Management	County Operated	Countywide	237	3,036,899
IMPACT	County Operated	Countywide	138	381,744
<b>Total</b>			<b>375</b>	<b>\$3,418,643</b>

**Supporting Children and Young Adults.** There are two programs supplemented by MHSA funding that serve children and young adults: 1) Wraparound Program, and 2) expansion of the Early and Periodic Screening, Diagnosis and Treatment Program.

- 1) Wraparound Program. The County’s Wraparound Program, in which children and their families receive intensive, multi-leveled treatment from the County’s three children’s mental health clinics, was augmented in 2008 by family partners and mental health specialists. Family partners are individuals with lived experience as parents of children and adults with serious emotional disturbance or serious mental illness who assist families with advocacy, transportation, navigation of the service system, and offer support in the home, community, and county service sites. Family partners participate as team members with the mental health clinicians who are providing treatment to children and their families. Mental Health Specialists are non-licensed care providers, often in successful recovery with lived experience as a consumer or family member, who can address culture and language specific needs of families in their communities. These professionals arrange and facilitate team meetings between the family, treatment providers and allied system professionals.
- 2) EPSDT Expansion. EPSDT is a federally mandated specialty mental health program that provides comprehensive and preventative services to low-income children and adolescents that are conjointly involved with Children and Family Services. State realignment funds have been utilized as the up-front match for the subsequent federal reimbursement that enables the County to provide the full scope of services. This includes assessment, plan development, therapy, rehabilitation, collateral services, case management, medication support, crisis services, intensive home-based services (IHBS), and Intensive Care Coordination (ICC). Recently the Department of Health Care Services has clarified that the continuum of EPSDT services is to be provided to any specialty mental health service beneficiary who needs it. In addition, Assembly Bill 403 mandates statewide reform for care provided to foster care children, to include the County’s responsibility to provide Therapeutic Foster Care (TFC) services. This significant expansion of care responsibility, entitled Continuing Care Reform (CCR), will utilize MHSA funds as the up-front match for the subsequent federal reimbursement that enables the County to provide the full scope of services, and includes adding County mental health clinicians, family partners and administrative support.

The MHSA funded portion of the Children Wraparound Support/ EPSDT Support are summarized in the following:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Wraparound Support	County Operated	Countywide	Supports Wraparound Program	1,412,040
EPSDT Expansion	County Operated	Countywide	Supports EPSDT Expansion	686,418
<b>Total</b>				<b>\$2,098,458</b>

**Miller Wellness Center.** The Miller Wellness Center, adjacent to the Contra Costa Regional Medical Center, co-locates primary care and mental health treatment for both children and adults, and is utilized to divert adults and families from the psychiatric emergency services (PES) located at the Regional Medical Center. Through a close relationship with Psychiatric Emergency Services children and adults who are evaluated at PES can quickly step down to the services at the Miller Wellness Center if they do not need hospital level of care. The Miller Wellness Center will also allow for urgent same day appointments for individuals who either are not open to the Contra Costa Behavioral Health Services System of Care or have disconnected from care after previously been seen. The Miller Wellness Center is certified as a federally qualified health center, and as such, receives federal financial participation for provision of specialty mental health services. MHSAs funding is utilized to supplement this staffing pattern with two community support workers to act as peer and family partner providers, and a program manager.

The MHSAs allocation for the Miller Wellness Center is summarized below:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Supporting the Miller Wellness Center	County Operated	Countywide	Supports clients served by MWC	319,590
<b>Total</b>				<b>\$319,590</b>

**Concord Health Center.** The County’s primary care system staffs the Concord Health Center, which integrates primary and behavioral health care. Two mental health clinicians are funded by MHSAs to enable a multi-disciplinary team to provide an integrated response to adults visiting the clinic for medical services who have a co-occurring mental illness.

The MHSAs allocation for the Concord Health Center is summarized below:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Supporting the Concord Health Center	County Operated	Central County	Supports clients served by Concord Health Center	254,496
<b>Total</b>				<b>\$254,496</b>

**Liaison Staff.** CCBHS partners with CCRMC to provide Community Support Worker positions to liaison with Psychiatric Emergency Services (PES) in order to assist individuals experiencing a psychiatric crisis connect with services that will support them in the community. These positions are on the CCBHS Transition Team, and schedule regular hours at PES.

The allocation for the Liaison Staff is as follows:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Supporting Liaison Staff	County Operated	Countywide	Supports clients served by PES	145,907
<b>Total</b>				<b>\$145,907</b>

**Clinic Support.** County positions are funded through MHSA to supplement clinical staff implementing treatment plans at the adult clinics. These positions were created in direct response to identified needs surfaced in prior Community Program Planning Processes.

- 1) Resource Planning and Management. Dedicated staff at the three adult clinics assist consumers with money management and the complexities of eligibility for Medi-Cal, Medi-Care, Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) benefits. Money management staff are allocated for each clinic, and work with and are trained by financial specialists.
- 2) Transportation Support. The Community Program Planning Process identified transportation to and from clinics as a critical priority for accessing services. Toward this end one-time MHSA funds were purchased in prior years to purchase additional county vehicles to be located at the clinics. Community Support Workers have been added to adult clinics to be dedicated to the transporting of consumers to and from appointments.
- 3) Evidence Based Practices. Clinical Specialists, one for each Children’s clinic, have been added to provide training and technical assistance in adherence to the fidelity of treatment practices that have an established body of evidence that support successful outcomes.

The MHSA allocation for Clinic Support are as follows:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Resource Planning and Management	County Operated	Countywide	Supplements Clinic Staff	730,914
Transportation Support	County Operated	Countywide	Supplements Clinic Staff	285,397
Evidence Based Practices	County Operated	Countywide	Supplements Clinic Staff	381,744
<b>Total</b>				<b>\$1,398,055</b>

**Forensic Team.** Clinical specialists are funded by MHSA to join a multi-disciplinary team that provides mental health services, alcohol and drug treatment, and housing supports to individuals with serious mental illness who are either referred by the courts for diversion from incarceration, or on probation and at risk of re-offending and incarceration. These individuals were determined to be high users of psychiatric emergency services and other public resources, but very low users of the level and type of care needed. This team works very closely with the criminal justice system to assess referrals for serious mental illness, provide rapid access to a treatment plan, and work as a team to provide the appropriate mental health, substance abuse and housing services needed.

**Mobile Crisis Response Team (MCRT).** During the FY 2017-20 Three Year Plan the Forensic Team expanded its mobile crisis response capacity from fielding a mobile Mental Health Evaluation Team (MHET) with law enforcement to fielding a full Mobile

Crisis Response Team to respond to adult consumers experiencing mental health crises in the community. Mental health clinicians and community support workers will work closely with the County's Psychiatric Emergency Services and law enforcement, if necessary, to respond to residents in crises who would be better served in their respective communities. MHSA funds will be utilized to supplement funding that enables this team to respond seven days a week with expanded hours of operation and the addition of two positions.

The MHSA allocation for the Forensic Team are as follows:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Forensic Team	County Operated	Countywide	Support to the Forensic Team	381,744
MCRT	County Operated	Countywide	Supplements MCRT	1,244,646
<b>Total</b>				<b>\$1,626,390</b>

**Quality Assurance and Administrative Support.** MHSA funding supplements County resources to enable CCBHS to provide required administrative support, quality assurance and program evaluation functions for statutory, regulatory and contractual compliance, as well as management of quality of care protocols, such as fidelity to Assisted Outpatient Treatment and Assertive Community Treatment. County staff time and funding to support the mandated MHSA community program planning process are also included here. County positions have been incrementally justified, authorized and added each year as the total MHSA budget has increased.

The MHSA allocation for the following functions and positions are summarized below:

1) Quality Assurance.

<b>Function</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Medication Monitoring	241,158
Clinical Quality Management	726,568
Clerical Support	284,103
<b>Total</b>	
<b>\$1,251,829</b>	

2) Administrative Support.

<b>Function</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Program and Project Managers	923,730
Clinical Coordinator	120,643
Planner/Evaluators	478,080
Family Service Coordinator	108,333
Administrative and Financial Analysts	607,030
Clerical Support	347,017
Stakeholder Facilitation (contract)	15,000
ACT/AOT Fidelity Evaluation (contract)	100,000
<b>Total</b>	
<b>\$2,699,833</b>	

**Community Services and Supports (CSS) FY 21-22 Program Budget Summary**

<b>Full Service Partnership (FSP Programs)</b>		<b>Number to be Served: 700</b>	<b>\$27,349,760</b>
	Children	2,884,535	
	Transition Age Youth	2,263,233	
	Adults – Includes total funding listed in <i>Adult Full Service Partnership Programming</i> table and <i>Adult Mental Health Clinic Support</i> table.	7,233,334	
	Assisted Outpatient Treatment	2,549,239	
	Wellness and Recovery Centers	1,002,791	
	Crisis Residential Center	2,204,052	
	MHSA Housing Services	9,212,576	
<b>Non-FSP Programs (General System Development)</b>			<b>\$13,213,201</b>
	Older Adult Mental Health Program	3,418,643	
	Children’s Wraparound, EPSDT Support	2,098,458	
	Miller Wellness Center	319,590	
	Concord Health Center	254,496	
	Liaison Staff	145,907	
	Clinic Support	1,398,055	
	Forensic Team	1,626,390	
	Quality Assurance	1,251,829	
	Administrative Support	2,699,833	
	<b>Total</b>		<b>\$40,562,961</b>

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## Prevention and Early Intervention

Prevention and Early Intervention (PEI) is the component of the Three-Year Plan that refers to services designed to prevent mental illnesses from becoming severe and disabling. This means providing outreach and engagement to increase recognition of early signs of mental illness and intervening early in the onset of a mental illness.

First approved in 2009, with an initial State appropriation of \$5.5 million Contra Costa's Prevention and Early Intervention budget has grown incrementally to approximately \$9 million annually in commitments to programs and services. The construction and direction of how and where to provide funding for this component began with an extensive and comprehensive community program planning process that was similar to that conducted in 2005-06 for the Community Services and Support component. Underserved and at-risk populations were researched, stakeholders actively participated in identifying and prioritizing mental health needs, and strategies were developed to meet these needs. The programs and services described below are directly derived from this initial planning process, and expanded by subsequent yearly community program planning processes, to include current year.

New regulations for the PEI component went into effect on October 6, 2015. Programs in this component now focus their programming on one of the following seven PEI categories: 1) outreach for increasing recognition of early signs of mental illness; 2) prevention; 3) early intervention; 4) access and linkage to treatment; 5) improving timely access to mental health services for underserved populations; 6) stigma and discrimination reduction; and 7) suicide prevention. All the programs contained in this component help create access and linkage to mental health treatment, with an emphasis on utilizing non-stigmatizing and non-discriminatory strategies, as well as outreach and engagement to those populations who have been identified as historically underserved.

### Performance Indicators

The table below illustrates the reported number of individuals served in FY 2019-20 in the seven PEI categories.

PEI Program Component	FY 19-20 Estimated Numbers Served
Early Intervention	960
Outreach for Increasing Recognition of Early Signs of Mental Illness	2,105
Prevention	2,109
Stigma and Discrimination Reduction	465
Access and Linkage to Treatment	2,183
Suicide Prevention	21,577
Improving Timely Access to Mental Health Services for Underserved Populations	3,043
Total	32,442

Performance Indicators. PEI regulations also have new data reporting requirements that will enable CCBHS to report on the following performance indicators:

- 1) Outreach to Underserved Populations. Demographic data, such as age group, race/ethnicity and primary language enable an assessment of the impact of outreach and engagement efforts over time.
- 2) Linkage to Mental Health Care. Number of people connected to care, and average duration of reported untreated mental illness enable an assessment over time of impact of programs on connecting people to mental health care.

Demographic data was reported for individuals served in Contra Costa Behavioral Health Services' Prevention and Early Intervention Programs for FY 2019-20. Within the seven PEI categories several programs focused their service delivery on historically marginalized groups, such as immigrants, young children, underserved youth, older adults, Black, Indigenous, People of Color (BIPOC), and persons who identify as LGBTQI+.

The following table illustrates *primary populations* served in FY 2019-20 by Prevention and Early Intervention providers.

<b>Prevention and Early Intervention Cultural and Linguistic Providers</b>	
<b>Provider</b>	<b>Primary Population(s) Served</b>
Asian Family Resource Center	Asian / Pacific Islander (API) recent immigrant communities
Building Blocks for Kids (BBK)	African American / LatinX
Center for Human Development	African American / LGBTQI+
Child Abuse Prevention Council	LatinX
COPE / First Five	African American / LatinX
Hope Solutions (Interfaith Housing)	African American / LatinX
James Morehouse Project	African American / API / LatinX
Jewish Family Community Services of the East Bay	Afghan / Russian / Middle East (and other recent immigrants)
La Clinica	LatinX
Lao Family Development	API (and other recent immigrants)
Latina Center	LatinX
Lifelong (SNAP Program)	African American, Older Adults
Native American Health Center	Native American
People Who Care	African American / LatinX underserved youth
Rainbow Community Center	LGBTQI+, All Ages (youth – Older Adult)
RYSE	African American / LatinX/ LGBTQI+, underserved and Transition Aged Youth
STAND!	African American / LatinX

The following table summarizes estimated demographic groups as they were served by PEI programs in FY 2019-20. It should be noted that a significant number of participants declined to respond to demographic information and in general conducting surveys and self-reporting on behalf of clients served by PEI programs decreased, most likely due to COVID-19. The percentages listed are most likely higher than what is illustrated, based upon comparison from data collected in previous years.

<b>Demographic sub-group</b>	<b>% PEI clients served in FY 19-20</b>
Asian	6%
African American / Black	10%
Caucasian / White	23%
LatinX / Hispanic	12%
Multi-Racial	2%
Native American / Alaskan Native	1%
Native Hawaiian / Other Pacific Islander	2%
Other	<1%

In addition, at least 6% of persons served in PEI programs received services in their primary language of Spanish, while at least another 3% received services in other languages.

For FY 2019-20 PEI programs reported that, as a result of their referrals 883 persons engaged in mental health treatment and reported 4.5 weeks as the average length of time between referral and mental health service implementation. PEI programs estimated an average duration of untreated mental illness of 56 weeks for persons who were referred for treatment. Of the 32,442 individuals who received PEI services in FY 2019- 2020, 18% were Children & Transition Age Youth (TAY), 28% were Adults, 8% were Older Adults, and 46% either declined to state or did not make data available. It is estimated that in FY 2019-20, over 60% of PEI programs offered services that are geared toward young people between the ages of 0-25. Further information about PEI Aggregate Data and Programs can be found in the Annual PEI Evaluation Report posted on the Contra Costa MHSA site.

For the FY 2021-22 PEI programs are listed within the seven categories delineated in the PEI regulations.

### **Outreach for Increasing Recognition of Early Signs of Mental Illness**

Programs in this category provide outreach to individuals with signs and symptoms of mental illness so they can recognize and respond to their own symptoms. Outreach is engaging, educating and learning from potential primary responders. Primary responders include, but are not limited to, families, employers, law enforcement, school, community service providers, primary health care, social services and faith-based organizations.

Seven programs are included in this category:

- 1) Asian Family Resource Center (fiscal sponsor Contra Costa ARC) provides culturally sensitive education and access to mental health services for immigrant Asian communities, especially the Southeast Asian and Chinese population of Contra Costa County. Staff provide outreach, medication compliance education, community integration skills, and mental health system navigation. Early intervention services are provided to those exhibiting symptoms of mental illness, and participants are assisted in actively managing their own recovery process.
- 2) The Counseling Options Parenting Education (COPE) Family Support Center utilizes the evidence-based practices of the Positive Parenting Program (Triple P) to help

parents develop effective skills to address common child and youth behavioral issues that can lead to serious emotional disturbances. Targeting families residing in underserved communities this program delivers in English and Spanish a number of seminars, training classes and groups throughout the year.

- 3) First Five of Contra Costa, in partnership with the COPE Family Support Center, takes the lead in training families who have children up to the age of five. First Five also partners with the COPE Family Support Center to provide training in the Positive Parenting Program method to mental health practitioners who serve this at-risk population.
- 4) Hope Solutions (formerly Contra Costa Interfaith Housing) provides on-site services to formerly homeless families, all with special needs, at the Garden Park Apartments in Pleasant Hill, the Bella Monte Apartments in Bay Point, Los Medanos Village in Pittsburg, and supportive housing sites throughout the County. Services include coordination and assistance with accessing needed community resources, pre-school and afterschool programs, such as teen and family support groups, assistance with school preparation, and homework clubs. These services are designed to prevent serious mental illness by addressing domestic violence, substance addiction and inadequate life and parenting skills.
- 5) Jewish Family Community Services of the East Bay provides culturally grounded, community-directed mental health education and navigation services to refugees and immigrants of all ages in the Latino, Afghan, Bosnian, Iranian and Russian communities of Central and East County. Outreach and engagement services are provided in the context of group settings and community cultural events that utilize a variety of non-office settings convenient to individuals and families.
- 6) The Native American Health Center provides a variety of culturally specific methods of outreach and engagement to educate Native Americans throughout the County regarding mental illness, identify those at risk for developing a serious mental illness, and help them access and navigate the human service systems in the County. Methods include an elder support group, a youth wellness group, a traditional arts group, talking circles, Positive Indian Parenting sessions, and Gatherings of Native Americans.
- 7) The Latina Center serves Latino parents and caregivers in West Contra Costa County by providing culturally and linguistically specific twelve-week parent education classes to high-risk families utilizing the evidence-based curriculum of Systematic Training for Effective Parenting (STEP). In addition, the Latina Center trains parents with lived experience to both conduct parenting education classes and to become Parent Partners who can offer mentoring, emotional support, and assistance in navigating social service and mental health systems.

In addition, additional funding will be added for this Three-Year Plan to provide prevention and early intervention services to families with young children who are experiencing serious emotional disturbances. The Needs Assessment and Community Program Planning Process has identified 0-5 age children with serious emotional disturbances as underserved. The FY 2017-20 MHSa Three Year Plan substantially increased funding for

increasing treatment capacity in the Children’s System of Care. The FY 2021-22 MHSA Three Year Plan Update dedicates funding to provide outreach, engagement, training, education, and linkage to mental health care for families with young children who are exposed to violence, physical and emotional abuse, parental loss, homelessness, the effects of substance abuse, and other forms of trauma.

The allocation for the Outreach for Increasing Recognition of Early Signs of Mental Illness category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Asian Family Resource Center	Countywide	50	150,408
COPE	Countywide	210	253,238
First Five	Countywide	(numbers included in COPE)	84,214
Hope Solutions	Central and East County	200	385,477
Jewish Family Community Services of the East Bay	Central and East County	350	179,720
Native American Health Center	Countywide	150	250,257
The Latina Center	West County	300	125,538
0-5 Children Outreach RFP TBD	Countywide	TBD	125,000
<b>Total</b>		<b>1,260</b>	<b>\$1,553,852</b>

### **Prevention**

Programs in this category provide activities intended to reduce risk factors for developing a potentially serious mental illness, and to increase protective factors. Risk factors may include, but are not limited to, poverty, ongoing stress, trauma, racism, social inequality, substance abuse, domestic violence, previous mental illness, prolonged isolation, and may include relapse prevention for those in recovery from a serious mental illness.

Five programs are included in this category:

- 1) The Building Blocks for Kids Collaborative (fiscal sponsor Tides) located in the Iron Triangle of Richmond, train family partners from the community with lived mental health experience to reach out and engage at-risk families in activities that address family mental health challenges. Individual and group wellness activities assist participants make and implement plans of action, access community services, and integrate them into higher levels of mental health treatment as needed.
- 2) Vicente Alternative High School in the Martinez Unified School District provides career academies for at-risk youth that include individualized learning plans, learning projects, internships, and mental health education and counseling support. Students, school staff, parents and community partners work together on projects designed to develop leadership skills, a healthy lifestyle and pursuit of career goals.
- 3) People Who Care is an afterschool program serving the communities of Pittsburg and Bay Point that is designed to accept referrals of at-risk youth from schools, juvenile justice systems and behavioral health treatment programs. Various vocational

projects are conducted both on and off the program’s premises, with selected participants receiving stipends to encourage leadership development. A clinical specialist provides emotional, social and behavioral treatment through individual and group therapy.

- 4) Putnam Clubhouse provides peer-based programming for adults throughout Contra Costa County who are in recovery from a serious mental illness. Following the internationally recognized clubhouse model this structured, work focused programming helps individuals develop support networks, career development skills, and the self-confidence needed to sustain stable, productive, and more independent lives. Features of the program provide respite support to family members, peer-to-peer outreach, and special programming for transition age youth and young adults.
- 5) The RYSE Center provides a constellation of age-appropriate activities that enable at-risk youth in Richmond to effectively cope with the continuous presence of violence and trauma in the community and at home. These trauma informed programs and services include drop-in, recreational and structured activities across areas of health and wellness, media, arts and culture, education and career, technology, and developing youth leadership and organizing capacity. The RYSE Center facilitates several city and system-wide training and technical assistance events to educate the community on mental health interventions that can prevent serious mental illness as a result of trauma and violence.

The allocation for the Prevention category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Building Blocks for Kids	West County	400	224,602
Vicente	Central County	80	191,336
People Who Care	East County	200	229,795
Putnam Clubhouse	Countywide	300	631,672
RYSE	West County	2,000	503,019
<b>Total</b>		<b>2,980</b>	<b>\$1,780,424</b>

### **Early Intervention**

Early intervention provides mental health treatment for persons with a serious emotional disturbance or mental illness early in its emergence.

One program is included in this category:

- 1) The County operated First Hope Program serves youth who show early signs of psychosis or have recently experienced a first psychotic episode. Referrals are accepted from all parts of the County, and through a comprehensive assessment process young people, ages 12-25, and their families are helped to determine whether First Hope is the best treatment to address the psychotic illness and associated disability. A multi-disciplinary team provides intensive care to the individual and their family, and consists of psychiatrists, mental health clinicians, occupational therapists and employment/education specialists. These services are based on the Portland Identification and Early Referral (PIER) Model, and consists of multi-family group

therapy, psychiatric care, family psychoeducation, education and employment support, and occupational therapy.

The allocation for the Early Intervention category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>Funds Allocated for FY 21-22</b>
First Hope	Countywide	200	2,587,108
<b>Total</b>		<b>200</b>	<b>\$2,587,108</b>

### **Access and Linkage to Treatment**

Programs in this category have a primary focus on screening, assessment, and connecting children and adults as early as practicable to necessary mental health care and treatment.

Three programs are included in this category:

- 1) The James Morehouse Project (fiscal sponsor Bay Area Community Resources - BACR) at El Cerrito High School, a student health center that partners with community-based organizations, government agencies and local universities, provides a range of youth development groups designed to increase access to mental health services for at-risk high school students. These on-campus groups address mindfulness (anger/stress management), violence and bereavement, environmental and societal factors leading to substance abuse, peer conflict mediation and immigration/acclimation.
- 2) STAND! Against Domestic Violence utilizes established curricula to assist youth successfully address the debilitating effects of violence occurring both at home and in teen relationships. Fifteen-week support groups are held for teens throughout the County, and teachers and other school personnel are assisted with education and awareness with which to identify and address unhealthy relationships amongst teens that lead to serious mental health issues.
- 3) Experiencing the Juvenile Justice System. Within the County operated Children’s Services five mental health clinicians support families who are experiencing the juvenile justice system due to their adolescent children’s involvement with the law. Three clinicians are out stationed at juvenile probation offices. The clinicians provide direct short-term therapy and coordinate appropriate linkages to services and supports as youth transition back into their communities.

The allocation for the Access and Linkage to Treatment category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>Funds Allocated for FY 21-22</b>
James Morehouse Project	West County	300	105,987
STAND! Against Domestic Violence	Countywide	750	138,136
Experiencing Juvenile Justice	Countywide	300	381,744
<b>Total</b>		<b>1,350</b>	<b>\$625,867</b>

### **Improving Timely Access to Mental Health Services for Underserved Populations.**

Programs in this category provide mental health services as early as possible for

individuals and their families from an underserved population. Underserved means not having access due to challenges in the identification of mental health needs, limited language access, or lack of culturally appropriate mental health services. Programs in this category feature cultural and language appropriate services in convenient, accessible settings.

Six programs are included in this category:

- 1) The Center for Human Development fields two programs under this category. The first is an African American wellness group that serves the Bay Point community in East Contra Costa County. Services consist of culturally appropriate education on mental health issues through support groups and workshops. Participants at risk for developing a serious mental illness receive assistance with referral and access to County mental health services. The second program provides mental health education and supports for LGBTQ youth and their supports in East County to work toward more inclusion and acceptance within schools and in the community.
- 2) The Child Abuse Prevention Council of Contra Costa provides a 23-week curriculum designed to build new parenting skills and alter old behavioral patterns and is intended to strengthen families and support the healthy development of their children. The program is designed to meet the needs of Spanish speaking families in East and Central Counties.
- 3) La Clinica de la Raza reaches out to at-risk LatinX in Central and East County to provide behavioral health assessments and culturally appropriate early intervention services to address symptoms of mental illness brought about by trauma, domestic violence, and substance abuse. Clinical staff also provide psycho-educational groups that address the stress factors that lead to serious mental illness.
- 4) Lao Family Community Development provides a comprehensive and culturally sensitive integrated system of care for Asian and Southeast Asian adults and families in West Contra Costa County. Staff provide comprehensive case management services, to include home visits, counseling, parenting classes, and assistance accessing employment, financial management, housing, and other service both within and outside the agency.
- 5) Lifelong Medical Care provides isolated older adults in West County opportunities for social engagement and access to mental health and social services. A variety of group and one-on-one approaches are employed in three housing developments to engage frail, older adults in social activities, provide screening for depression and other mental and medical health issues, and linking them to appropriate services.
- 6) Rainbow Community Center provides a community based social support program designed to decrease isolation, depression and suicidal ideation among members who identify as lesbian, gay, bisexual, transgender, or who question their sexual identity. Key activities include reaching out to the community in order to engage those individuals who are at risk, providing mental health support groups that address isolation and stigma and promote wellness and resiliency, and providing clinical mental health treatment and intervention for those individuals who are identified as seriously mentally ill.

The allocation for the Improving Timely Access to Mental Health Services for Underserved Populations category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>Funds Allocated for FY 2021-22</b>
Child Abuse Prevention Council	Central and East County	120	128,862
Center for Human Development	East County	230	161,644
La Clínica de la Raza	Central and East County	3,750	288,975
Lao Family Community Development	West County	120	196,128
Lifelong Medical Care	West County	115	134,710
Rainbow Community Center	Countywide	1,125	782,141
<b>Total</b>		<b>5,460</b>	<b>\$1,692,460</b>

### **Stigma and Discrimination Reduction**

Activities in this category are designed to 1) reduce negative feelings, attitudes, beliefs, perceptions, stereotypes and/or discrimination related to having a mental illness, 2) increase acceptance, dignity, inclusion and equity for individuals with mental illness and their families, and 3) advocate for services that are culturally congruent with the values of the population for whom changes, attitudes, knowledge and behavior are intended.

The County operated Office for Consumer Empowerment (OCE) provides leadership and staff support to a number of initiatives designed to reduce stigma and discrimination, develop leadership and advocacy skills among consumers of behavioral health services, support the role of peers as providers, and encourage consumers to actively participate in the planning and evaluation of MHSA funded services. Staff from the OCE support the following activities designed to educate the community in order to raise awareness of the stigma that can accompany mental illness.

- 1) The PhotoVoice Empowerment Project enables consumers to produce artwork that speaks to the prejudice and discrimination that people with behavioral health challenges face. PhotoVoice’s vision is to enable people to record and reflect their community’s strengths and concerns, promote critical dialogue about personal and community issues, and to reach policymakers to effect change.
- 2) The Wellness Recovery Education for Acceptance, Choice and Hope (WREACH) Speakers’ Bureau forms connections between people in the community and people with lived mental health and co-occurring experiences, using face to face contact by providing stories of recovery and resiliency and current information on health treatment and supports. Other related activities include producing videos, public service announcements and educational materials.
- 3) The OCE facilitates Wellness Recovery Action Plan (WRAP) groups by providing certified leaders and conducting classes throughout the County. Staff employ the evidence-based WRAP system in enhancing the efforts of consumers to promote and advocate for their own wellness.
- 4) The Committee for Social Inclusion is an ongoing alliance of committee members that work together to promote social inclusion of persons who receive behavioral health

services. The Committee is project based, and projects are designed to increase participation of consumers and family members in the planning, implementation and delivery of services. Current efforts are supporting the integration of mental health and alcohol and other drug services within the Behavioral Health Services Division. In addition, OCE staff assist and support consumers and family members in participating in the various planning committees and sub-committees, Mental Health Commission meetings, community forums, and other opportunities to participate in planning processes.

- 5) Through the Each Mind Matters initiative California Mental Health Services Authority (CalMHSA) provides technical assistance to encourage the County’s integration of available statewide resources on stigma and discrimination reduction and suicide prevention. CCBHS partners via Memorandum of Understanding (MOU) with CalMHSA to link county level stigma and discrimination reduction efforts with statewide social marketing programs. This linkage will expand the County’s capacity via language specific materials, social media, and subject matter consultation with regional and state experts to reach diverse underserved communities, such as Hispanic, African American, Asian Pacific Islander, LGBTQ, Native American and immigrant communities. Primary focus will be to reach Spanish speaking Latina/o communities via social media and materials adapted specifically for this population.

The allocation for the Stigma and Discrimination Reduction category is below:

<b>Program</b>	<b>County/Contract</b>	<b>Region Served</b>	<b>Funds Allocated for FY 21-22</b>
OCE	County Operated	Countywide	218,861
CalMHSA	MOU	Countywide	78,000
<b>Total</b>			<b>\$296,861</b>

### **Suicide Prevention**

There are three plan elements that support the County’s efforts to reduce the number of suicides in Contra Costa County: 1) augmenting the Contra Costa Crisis Center, and 2) supporting a suicide prevention committee. Additional funds are allocated to dedicate staff trained in suicide prevention to provide countywide trainings, education and consultation for a host of entities such as schools, social service providers, criminal justice and first responder community-based organizations to know the signs of persons at risk of suicide, assess lethality and respond appropriately.

- 1) The Contra Costa Crisis Center provides services to prevent suicides by operating a certified 24-hour suicide prevention hotline. The hotline connects with people when they are most vulnerable and at risk for suicide, enhances safety, and builds a bridge to community resources. Staff conduct a lethality assessment on each call, provide support and intervention for the person in crisis, and make follow-up calls (with the caller’s consent) to persons who are at medium to high risk of suicide. MHSA funds enable additional paid and volunteer staff capacity, most particularly in the hotline’s trained multi-lingual, multi-cultural response.
- 2) A multi-disciplinary, multi-agency Suicide Prevention Committee has been established, and has published a countywide Suicide Prevention Strategic Plan. This

ongoing committee oversees the implementation of the Plan by addressing the strategies outlined in the Plan. These strategies include i) creating a countywide system of suicide prevention, ii) increasing interagency coordination and collaboration, iii) implementing education and training opportunities to prevent suicide, iv) implementing evidence-based practices to prevent suicide, and v) evaluating the effectiveness of the County's suicide prevention efforts. In 2021, a subcommittee was convened to address **Youth Suicide Prevention**. In the light of the pandemic, school-based providers and people living and working with youth have expressed great concern about their mental health during these challenging times. The group meets in the late afternoon in order to encourage participation of students and young people.

The allocation for the Suicide Prevention category is summarized below

<b>Plan Element</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>Funds Allocated for FY 21-22</b>
Contra Costa Crisis Center	Countywide	25,000	320,006
Suicide Prevention RFP TBD	Countywide	TBD	50,000
County Supported	Countywide	N/A	Included in PEI administrative cost
<b>Total</b>		<b>25,050</b>	<b>\$370,006</b>

#### **PEI Administrative Support**

Staff time has been allocated by the County to provide administrative support and evaluation of programs and plan elements that are funded by MHSA.

The allocation for PEI Administration is summarized below:

<b>Plan Element</b>	<b>Region Served</b>	<b>Yearly Funds Allocated</b>
Administrative and Evaluation Support	Countywide	158,090
<b>Total</b>		<b>\$158,090</b>

#### **Prevention and Early Intervention (PEI) Summary for FY 2021-22**

Outreach for Increasing Recognition of Early Signs of Mental Illness	1,553,852	
Prevention	1,780,424	
Early Intervention	2,587,108	
Access and Linkage to Treatment	625,867	
Improving Timely Access to Mental Health Services for Underserved Populations	1,692,460	
Stigma and Discrimination Reduction	296,861	
Suicide Prevention	370,006	
Administrative, Evaluation Support	158,090	
<b>Total</b>		<b>\$9,064,668</b>

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## Innovation

Innovation is the component of the Three-Year Program and Expenditure Plan that funds new or different patterns of service that contribute to informing the mental health system of care as to best or promising practices that can be subsequently added or incorporated into the system. Innovative projects for CCBHS are developed by an ongoing community program planning process that is sponsored by the Consolidated Planning Advisory Workgroup through its Innovation Committee.

Innovation Regulations went into effect October 2015. As before, innovative projects accomplish one or more of the following objectives: i) increase access to underserved groups, ii) increase the quality of services, to include better outcomes, iii) promote interagency collaboration, and iv) increase access to services. While Innovation projects have always been time-limited, the Innovation Regulations have placed a five-year time limit on Innovation projects. During FYs 2015-16 and 16-17, CCBHS staff and stakeholders reviewed and ensured that all existing and emerging Innovation projects complied with the Innovation Regulations. In the upcoming year, we anticipate the programs noted below will be sunsetting. We expect to work with the community to identify new innovation projects and will report our progress in the next Plan Update.

The following programs have been approved, implemented, and funds have been allocated for Fiscal Year 2021-22:

- 1) Partners in Aging. Older adults who are frail, homebound and suffer from mental health issues experience higher rates of isolation, psychiatric emergency interventions, and institutionalization that could be prevented. Field-based peer support workers engage older adults who have been identified by their IMPACT clinicians, primary care providers, or Psychiatric Emergency Services as individuals who need additional staff care in order to avoid repeated crises, engage in ongoing mental health treatment, increase their skills in the activities of daily living, and engage appropriate resources and social networks. The Partners in Aging Project began implementation in FY 2016-17. Project to sunset this fiscal year.
- 2) Overcoming Transportation Barriers. Transportation challenges provide a constant barrier to accessing mental health services. A comprehensive study was completed via the County's community program planning process, and a number of needs and strategies were documented. Findings indicated a need for multiple strategies to be combined in a systemic and comprehensive manner. These strategies include training consumers to independently navigate public transportation, providing flexible resources to assist with transportation costs, educating consumers regarding schedules, costs and means of various modes of public transportation, and creating a centralized staff response to coordinate efforts and respond to emerging transportation needs. Peer Specialists address these needs and provide a means to inform the mental health system of care regarding solutions for improving transportation access to care. The Overcoming Transportation Barriers Project began implementation in FY 2016-17. Project to sunset this fiscal year.
- 3) Center for Recovery and Empowerment (CORE). CCBHS recognizes substance

abuse/dependence in adolescence as it negatively affects physical, social, emotional and cognitive development. Early onset of alcohol or other drug use is one of the strongest predictors of later alcohol dependence. This is a priority because CCBHS does not have a coordinated system of care to provide treatment services to youth with addictions and co-occurring emotional disturbances. The CORE Project is an intensive outpatient treatment program offering three levels of care: intensive, transitional and continuing care to adolescents dually diagnosed with substance use and mental health disorders. Services will be provided by a multi-disciplinary team, and includes individual, group and family therapy, and linkage to community services.

- 4) Cognitive Behavioral Social Skills Training (CBSST). The project is designed to enhance the quality of life for the those residing in enhanced board & care homes by incorporating meaningful activity and skills into their daily routines and increasing overall functional improvement. Cognitive Behavioral Social Skills Training (CBSST) is an emerging practice with demonstrated positive results for persons with severe and persistent mental illness. The CBSST Project applies this therapeutic practice to the population of individuals that have been placed in augmented board and care facilities. The CBSST Project has a clinical team, consisting of a licensed clinician and peer support worker, to lead cognitive behavioral social skills training groups at board and care facilities. Adults with serious mental illness learn and practice skills that enable them to achieve and consolidate recovery-based skills, while decreasing the need for costly interventions such as PES admissions. Funds have been added to expand services to reach additional board & care residents.

The allocation for Innovation projects is summarized below:

<b>Project</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Partners in Aging	County Operated	Countywide	45	133,072
Overcoming Transportation Barriers	County Operated	Countywide	200	106,856
Center for Recovery and Empowerment (CORE)	County Operated	West	80	1,180,936
Cognitive Behavioral Social Skills Training (CBSST)	County Operated	Countywide	240	400,403
Administrative Support	County	Countywide	Innovation Support	364,363
<b>Total</b>			<b>565</b>	<b>\$2,185,630</b>

## Workforce Education and Training

Workforce Education and Training (WET) is the component of the Three-Year Plan that provides education and training, workforce activities, to include career pathway development, and financial incentive programs for current and prospective CCBHS employees, contractor agency staff, and consumer and family members who volunteer their time to support the public mental health effort. The purpose of this component is to develop and maintain a diverse mental health workforce capable of providing consumer and family-driven services that are compassionate, culturally and linguistically responsive, and promote wellness, recovery and resilience across healthcare systems and community-based settings.

CCBHS's WET Plan was developed and approved in May 2009, with subsequent yearly updates. The following represents funds and activities allocated in the categories of 1) Workforce Staffing Support, 2) Training and Technical Assistance, 3) Mental Health Career Pathway Programs, 4) Internship Programs, and 5) Financial Incentive Programs.

### Workforce Staffing Support

- 1) Workforce Education and Training Coordination. County staff are designated to develop and coordinate all aspects of this component. This includes conducting a workforce needs assessment, coordinating education and training activities, acting as an educational and training resource by participating in the WET Greater Bay Area Regional Partnership and state level workforce activities, providing staff support to County sponsored ongoing and ad-hoc workforce workgroups, developing and managing the budget for this component, applying for and maintaining the County's mental health professional shortage designations, applying for workforce grants and requests for proposals, coordinating intern placements throughout the County, and managing the contracts with various training providers and community based organizations who implement the various workforce education and training activities.
- 2) Supporting Family Members. For the Three Year Plan a cadre of volunteers are recruited, trained and supervised for the purpose of supporting family members and significant others of persons experiencing mental illness. Critical to successful treatment is the need for service providers to partner with family members and significant others of loved ones experiencing mental illness. Family members of consumers should be provided with assistance to enable them to become powerful natural supports in the recovery of their loved ones. Stakeholders continue to underscore the need to provide families and significant others with education and training, emotional support, and assistance with navigating the behavioral health system. CCBHS contracts with National Alliance on Mental Illness Contra Costa (NAMI CC) to recruit, train and develop family members with lived experience to act as subject matter experts in a volunteer capacity to educate and support other family members in understanding and best navigating and participating in the different systems of care.
- 3) Senior Peer Counseling Program. The Senior Peer Counseling Program within the CCBHS Older Adult Program recruits, trains and supports volunteer peer counselors

to reach out to older adults at risk of developing mental illness by providing home visits and group support. Two clinical specialists support the efforts aimed at reaching Latina/o and Asian American seniors. The volunteers receive extensive training and consultation support.

The MHSA funding for Workforce Staffing Support is summarized below:

<b>Program/Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>MHSA Funds Allocated for FY 21-22</b>
WET Coordination	County Operated	Countywide	140,658
Supporting Families	NAMI CC	Countywide	618,000
Senior Peer Counseling	County Operated	Countywide	238,986
<b>Total</b>			<b>\$997,644</b>

### **Training and Technical Support**

- 1) Staff Training. Various individual and group staff trainings will be funded that support the values of the MHSA. As a part of the MHSA community program planning process, staff development surveys, CCBHS's Training Advisory Workgroup and Reducing Health Disparities Workgroup, stakeholders identified six staff training and training-related themes: 1) Client Culture, 2) Knowledge and Skills, 3) Management, 4) Orientation, 5) Career Development, and 6) Interventions/Evidence Based Practices. Within these themes a number of training topics were listed and prioritized for MHSA funding in the Three-Year Plan.
- 2) NAMI Basics/ Faith Net/ Family to Family (De Familia a Familia)/ Conversations with Local Law Enforcement. NAMI CC will offer these evidence-based NAMI educational training programs on a countywide basis to family members, care givers of individuals experiencing mental health challenges, faith leaders/ communities, and local law enforcement. These training programs and classes are designed to support and increase knowledge of mental health issues, navigation of systems, coping skills, and connectivity with community resources that are responsive and understanding of the challenges and impact of mental illness. NAMI CC shall offer NAMI Basics and Family to Family/ De Familia a Familia in Spanish and Chinese languages. NAMI CC shall also offer Conversations with Local Law Enforcement. This shall allow for conversations between local law enforcement and consumers/families through CCBHS's Crisis Intervention Training (CIT) as well as other conversations in partnership with local law enforcement agencies throughout the County to enhance learning and dialogue between all groups in response to community concerns and mental health supports. The desired goal is to enhance information sharing and relationships between law enforcement and those affected by mental health.
- 3) Crisis Intervention Training. CCBHS partners with the County's Sherriff's Department to provide three-day Crisis Intervention Trainings twice a year for law enforcement officers so that they are better able to respond safely and compassionately to crisis situations involving persons with mental health issues. Officers learn from mental health professionals, experienced officers, consumers and family members who advise, problem-solve and support with verbal de- escalation skills, personal stories, and provide scenario-based training on responding to crises.

- 4) Mental Health First Aid Instructor Training. CCBHS works with the National Council to train staff to become certified instructors for Mental Health First Aid. These instructors will then provide Mental Health First Aid Training to community and faith - based organizations and agencies who are often first responders to community trauma, violence or natural disaster. Mental Health First Aid is a proprietary evidence based in-person training for anyone who wants to learn about mental illness and addictions, including risk factors and warning signs. This eight-hour training provides participants with a five-step action plan to help a person in crisis connect with professional, peer, social, and self-help care. Participants are given the opportunity to practice their new skills and gain confidence in helping others who may be developing a mental health or substance use challenge, or those in distress.

The MHSA funding allocation for Training and Technical Support is summarized below:

<b>Plan Element</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Staff Training	Various vendors	Countywide	238,203
NAMI Basics/ Faith Net/ Family to Family/ De Familia a Familia/ Conversations with Local Law Enforcement	NAMI-Contra Costa	Countywide	70,596
Crisis Intervention Training	County Sherriff's Department	Countywide	15,000
Mental Health First Aid	The National Council	Countywide	20,000
<b>Total</b>			<b>\$343,799</b>

### **Mental Health Career Pathway Program**

- 1) Service Provider Individualized Recovery Intensive Training (SPIRIT). SPIRIT is a college accredited recovery oriented, peer led classroom and experiential-based program for individuals with lived mental health experience as a consumer or a family member of a consumer. This classroom and internship experience leads to a certification for individuals who successfully complete the program and is accepted as the minimum qualifications necessary for employment within CCBHS in the classification of Community Support Worker. Participants learn peer provider skills, group facilitation, Wellness Recovery Action Plan (WRAP) development, wellness self-management strategies and other skills needed to gain employment in peer provider and family partner positions in both County operated and community-based organizations. The Office for Consumer Empowerment (OCE) offers this training annually and supplements the class with a monthly peer support group for those individuals who are employed by the County in various peer and family partner roles. The SPIRIT Program also provides support and assistance with placement and advancement for SPIRIT graduates consistent with their career aspirations.

The MHSA funding allocation for the Mental Health Career Pathway Program is summarized in the following:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Trained Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
SPIRIT	OCE County Staff Contra Costa College	Countywide	50	346,258 25,000
<b>Total</b>			<b>50</b>	<b>\$371,258</b>

### Internship Programs

1) Internships. CCBHS supports internship programs which place graduate level students in various County operated and community-based organizations. Particular emphasis is put on the recruitment of individuals who are bi-lingual and/or bi-cultural, individuals with consumer and/or family member experience, and individuals who can reduce the disparity of race/ethnicity identification of staff with that of the population served. CCBHS provides funding to enable approximately 75 graduate level students to participate in paid internships in both county operated and contract agencies that lead to licensure as a Marriage and Family Therapist (MFT), Licensed Clinical Social Worker (LCSW), Clinical Psychologist and Mental Health Nurse Practitioner. These County financed internships are in addition to and separate from the state level workforce education and training stipend programs that are funded by the California Office of Statewide Health Planning and Development. This state funded stipend program requires that participants commit to working in community public mental health upon graduation. The County’s assessment of workforce needs has determined that a combination of state and locally financed internships has enabled the County and its contractors to keep pace with the annual rate of turnover of licensed staff.

The MHSA funding allocation for Internship Programs is summarized below:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Trained</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Graduate Level Internships	County Operated	Countywide		252,350
Graduate Level Internships	Contract Agencies	Countywide		100,000
<b>Total</b>			<b>75</b>	<b>\$352,350</b>

### Financial Incentive Programs

1) Loan Repayment Program. For the Three-Year Plan CCBHS is continuing its County funded and administered Loan Repayment Program that addresses critical staff shortages, such as language need, psychiatrists, hard to fill and retain positions, and provides potential career advancement opportunities for CCBHS Community Support Workers and contract providers performing in the roles of peer provider and family partner. CCBHS partners with the California Mental Health Services Authority (CalMHSA) to administer a loan repayment program patterned after state level loan repayment programs but differing in providing flexibility in the amount awarded to each individual, and the County selecting the awardees based upon workforce need.

To maximize retention and recruitment, CCBHS will also participate in the Greater Bay Area Regional Partnership Program which is a partnership between the Bay Area counties, the Office of Statewide Health Planning and Development, and CalMHSA which will serve to enhance CCBHS's existing Loan Repayment Program and shall allow for a wider reach in addressing staffing and language needs.

The MHSA funding allocation for Financial Incentive Programs is summarized below:

<b>Program</b>	<b>County/ Contract</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 2021-22</b>
Loan Repayment	CalMHSA	Countywide	Variable	300,000
<b>Total</b>				<b>\$300,000</b>

**Workforce Education and Training (WET) Component Budget Authorization for  
FY 2021-22:**

Workforce Staffing Support	997,644
Training and Technical Assistance	343,799
Mental Health Career Pathways	371,258
Internship Program	352,350
Loan Forgiveness Program	300,000
<b>Total</b>	<b>\$2,365,051</b>

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## Capital Facilities/Information Technology

The Capital Facilities/Information Technology component of the Mental Health Services Act enables counties to utilize MHSAs funds on a one-time basis for major infrastructure costs necessary to i) implement MHSAs services and supports, and ii) generally improve support to the County's community mental health service system.

For the Three-Year Plan Contra Costa has one Information Technology Project.

### Information Technology

- 1) Electronic Mental Health Record System – Data Management. Contra Costa received approval from the State to utilize MHSAs funds to develop and implement an electronic mental health record system. The project has transformed the current paper and location-based system with an electronic system where clinical documentation can be centralized and made accessible to all members of a consumer's treatment team, with shared decision-making functionality. It replaced the existing claims system, where network providers and contract agencies would be part of the system and be able to exchange their clinical and billing information with the County. The electronic health record system now allows doctors to submit their pharmacy orders electronically, permit sharing between psychiatrists and primary care physicians to allow knowledge of existing health conditions and drug inter-operability and allows consumers to access part of their medical record, make appointments, and electronically communicate with their treatment providers.

For the upcoming three-year period CCBHS will set aside MHSAs Information Technology component funds to build into this electronic system CCBHS data management capability by means of ongoing and ad hoc reports. These reports will be electronically accessed via the Health Services' iSITE, and will depict a series of performance indicators, such as productivity, service impact, resource management, and quality assurance. This will enable more effective analysis, decision-making, communication and oversight of services by providing visibility of selected indicators that can influence the quality and quantity of behavioral health care that is provided.

### Capital Facilities

- 1) Capital Facilities Project. Funds have been set aside to support upcoming Capital Facilities projects that may arise in the upcoming cycle.

### Capital Facilities/ Information Technology (CFTN) Budget Authorization for FY 2021-22:

Electronic Mental Health Data Management System	125,000
Capital Facilities Projects	125,000
<b>Total</b>	<b>\$250,000</b>

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## The Budget

Previous chapters provide detailed projected budgets for individual MHSA plan elements, projects, programs, categories and components for FY 2021-22. The following table summarizes a budget estimate of total MHSA spending authority by component.

	<b>CSS</b>	<b>PEI</b>	<b>INN</b>	<b>WET</b>	<b>CF/TN</b>	<b>TOTAL</b>
FY 21-22	40,562,961	9,064,668	2,185,630	2,365,051	250,000	54,428,310

Appendix E, entitled *Funding Summaries*, provides a FY 2020-21 through FY 2022-23 Three Year Mental Health Services Act Expenditure Plan. This funding summary matches budget authority with projected revenues and shows sufficient MHSA funds are available to fully fund all programs, projects and plan elements for the duration of the three-year period. The following fund ledger depicts projected available funding versus total budget authority for FY 21-22:

<b>A. Estimated FY 2021-22 Available Funding</b>	<b>CSS</b>	<b>PEI</b>	<b>INN</b>	<b>WET</b>	<b>CF/TN</b>	<b>TOTAL</b>
1. Estimated unspent funds from prior fiscal years	18,176,875	5,743,210	4,608,780	5,647,684	318,996	34,495,545
2. Estimated new FY 21-22 funding	32,049,539	8,012,384	2,108,522	0	0	42,170,445
3. Transfers in FY 21-22						
4. Estimated available funding for FY 21-22	50,226,414	13,755,594	6,717,302	5,647,684	318,996	76,665,990
<b>B. Budget Authority for FY 21-22</b>	40,562,961	9,064,668	2,185,630	2,365,051	250,000	54,428,310
C. Estimated FY 21-22 Unspent Fund Balance	9,663,453	4,690,926	4,531,672	3,282,633	68,996	22,237,680

<b>Estimated Prudent Reserve for FY 21-22</b>	<b>7,579,248</b>
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### Notes.

1. The Mental Health Services Act requires that 20% of the total of new funds received by the County from the State MHSA Trust Fund be allocated for the PEI component. The balance of new funding is for the CSS component. The exception to this funding percentage mandate is for instances in which a County has Innovation (INN) projects; in which 5% combined PEI & CSS funding will be utilized to fund INN. CCBHS has existing INN projects and therefore the funding

percentages are divided as follows; 76% CSS, 19% PEI, and 5% INN. The estimated new funding for each fiscal year includes this distribution.

2. Estimated new funding year includes the sum of the distribution from the State MHSA Trust Fund and interest earned from the County's MHSA fund.
3. The County may set aside up to 20% annually of the average amount of funds allocated to the County for the previous five years for the Workforce, Education and Training (WET) component, Capital Facilities, Information Technology (CF/TN) component, and a prudent reserve. For this period the County has allocated no transfers in FY 2021-22.
4. The MHSA requires that counties set aside sufficient funds, entitled a Prudent Reserve, to ensure that services do not have to be significantly reduced in years in which revenues are below the average of previous years. The County's prudent reserve balance through June 30, 2021 is \$7,579,248, and includes interest earned. This amount is less than the estimated maximum allowed of \$13,188,000 as per formula stipulated in Department of Health Care Services Information Notice No. 19-037.
5. It is projected that the requested total budget authority for the Three-Year Plan period enables the County to fully fund all proposed programs and plan elements while maintaining sufficient funding reserves (prudent reserve plus unspent funds from previous years) to offset any reduction in state MHSA Trust Fund distribution.

## Evaluating the Plan

Contra Costa Behavioral Health Services is committed to evaluating the effective use of funds provided by the Mental Health Services Act. Toward this end a comprehensive program and fiscal review process has been implemented to a) improve the services and supports provided, b) more efficiently support the County's MHSA Three Year Program and Expenditure Plan, and c) ensure compliance with statute, regulations and policies.

During each three-year period, each of the MHSA funded contract and county operated programs undergoes a program and fiscal review. This entails interviews and surveys of individuals both delivering and receiving services, review of data, case files, program and financial records, and performance history. Key areas of inquiry include:

- Delivering services according to the values of the Mental Health Services Act.
- Serving those who need the service.
- Providing services for which funding was allocated.
- Meeting the needs of the community and/or population.
- Serving the number of individuals that have been agreed upon.
- Achieving the outcomes that have been agreed upon.
- Assuring quality of care.
- Protecting confidential information.
- Providing sufficient and appropriate staff for the program.
- Having sufficient resources to deliver the services.
- Following generally accepted accounting principles.
- Maintaining documentation that supports agreed upon expenditures.
- Charging reasonable administrative costs.
- Maintaining required insurance policies.
- Communicating effectively with community partners.

Each program receives a written report that addresses each of the above areas.

Promising practices, opportunities for improvement, and/or areas of concern will be noted for sharing or follow-up activity, as appropriate. The emphasis will be to establish a culture of continuous improvement of service delivery, and quality feedback for future planning efforts.

In addition, a MHSA Financial Report is generated that depicts funds budgeted versus spent for each program and plan element included in this plan. This enables ongoing fiscal accountability, as well as provides information with which to engage in sound planning.

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## Acknowledgements

We acknowledge that this document is not a description of how Contra Costa Behavioral Health Services has delivered on the promise provided by the Mental Health Services Act. It is, however, a plan for how the County can continually improve upon delivering on the promise. We have had the honor to meet many people who have overcome tremendous obstacles on their journey to recovery. They were quite open that the care they received literally saved their life. We also met people who were quite open and honest regarding where we need to improve. For these individuals, we thank you for sharing.

We would also like to acknowledge those Contra Costa stakeholders, both volunteer and professional, who have devoted their time and energy over the years to actively and positively improve the quality and quantity of care that has made such a difference in people's lives. They often have come from a place of frustration and anger with how they and their loved ones were not afforded the care that could have avoided unnecessary pain and suffering. They have instead chosen to model the kindness and care needed, while continually working as a team member to seek and implement better and more effective treatment programs and practices. For these individuals, we thank you, and feel privileged to be a part of your team.

The MHSA Staff

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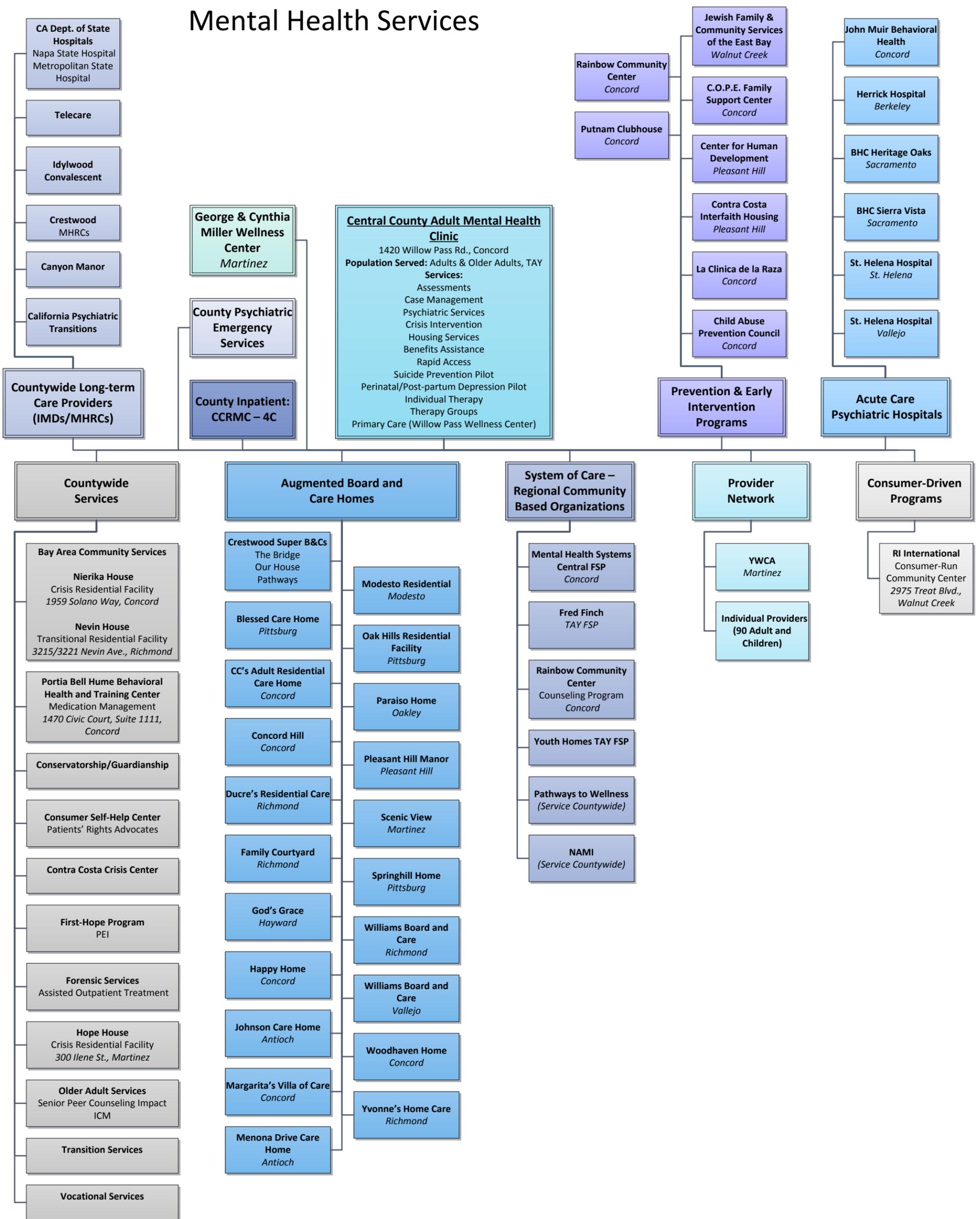
# **Appendix A**

## **Mental Health Service Maps**

Mental Health Services Act funded programs and plan elements are only a portion of the total funding that supports public mental health services provided by Contra Costa County employees and staff employed by contractors. The backbone of the Contra Costa Behavioral Health Services system of care is its three county operated Children's and three county operated Adult clinics that serve the Western, Central and Eastern regions of the county.

The following six service maps provide a visual picture, or architecture, of the constellation of types of Contra Costa Mental Health's programs, and thus enable the viewer to see the inclusion of MHSA funded services as part of the entire system of care.

# Central County Adult Mental Health Services



# Central County Children's Mental Health Services

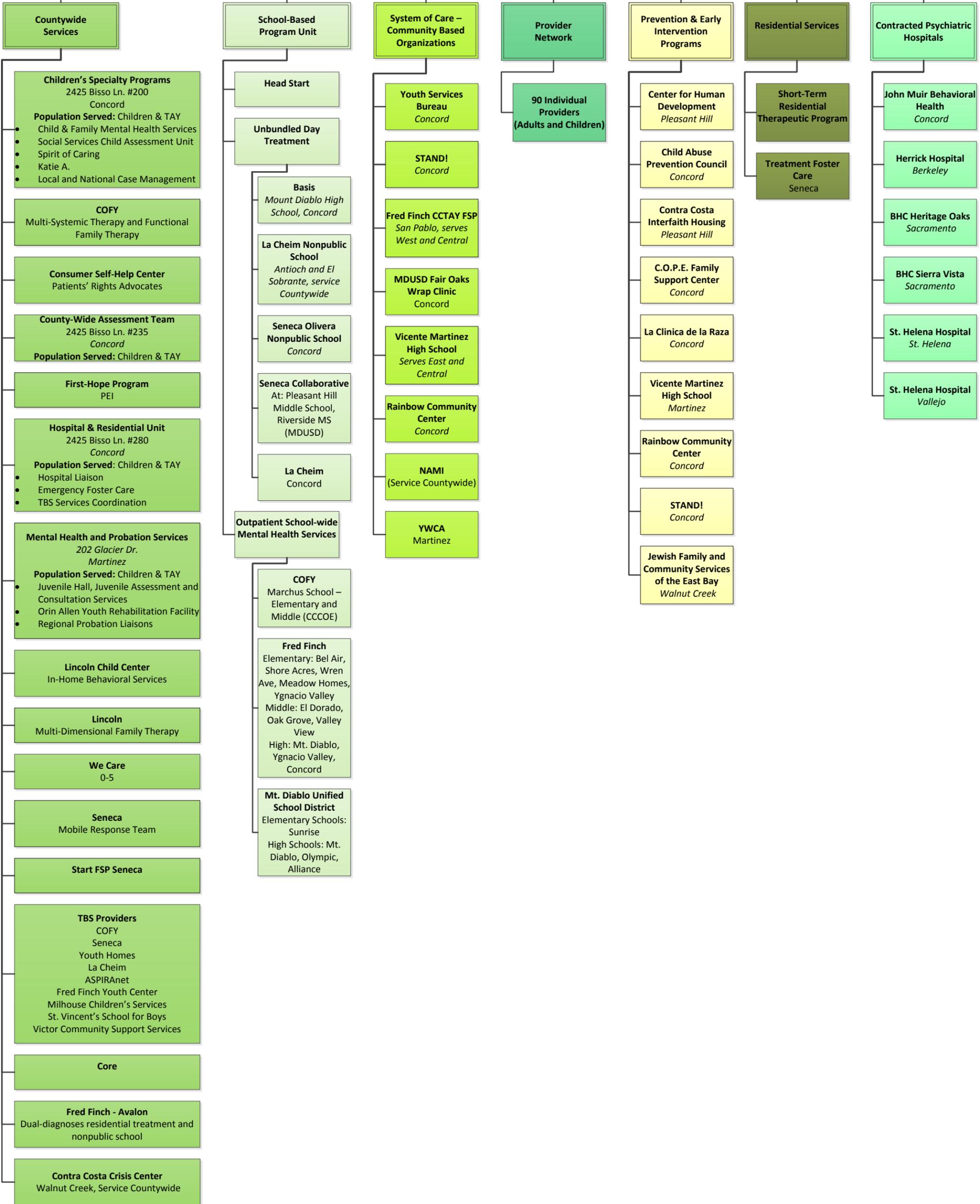
**Central County Children's Mental Health Clinic**  
 2425 Bisso, Ste. 200  
 Concord, CA 94520  
 Population Served: Children and TAY  
 Services:  
 Psychiatric Services  
 Outpatient Services  
 Parent Partners  
 Parent Project  
 PIP Program  
 Wrap Around Services  
 Cognitive Behavioral Therapy  
 Dialectical Behavior Therapy  
 Trauma Focused Cognitive Behavioral Therapy  
 Family Based Therapy for Eating Disorders

**George & Cynthia Wellness Center**  
 Martinez

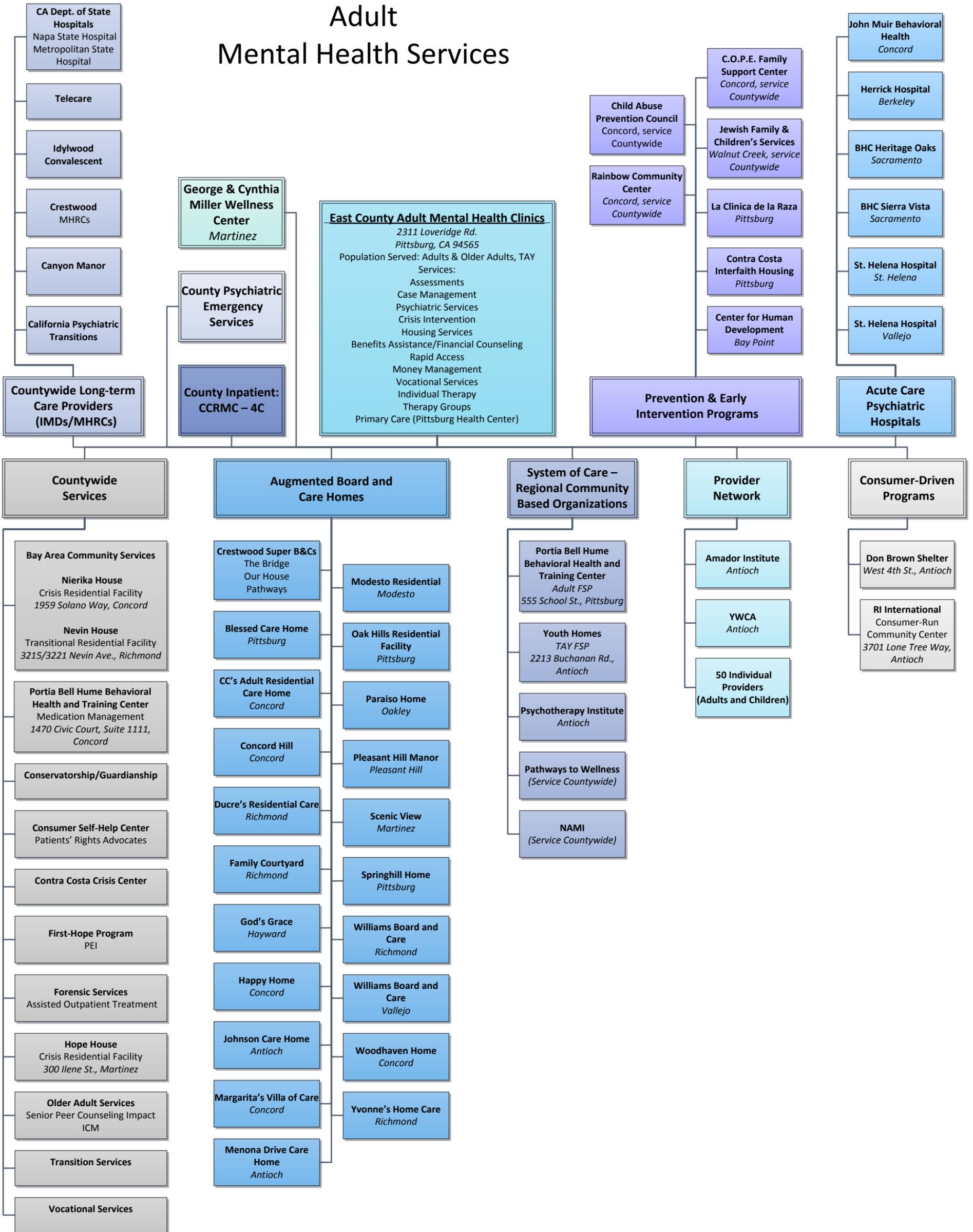
**County Psychiatric Emergency Services**

**Child-Parent Psychotherapy**

**Family-Based Treatment for Eating Disorder**



# East County Adult Mental Health Services



# East County Children's Mental Health Services

**Antioch Children's Behavioral Health**  
 2335 Country Hills Drive  
 Antioch, CA 94509  
 Population Served: Children and TAY  
 Services:  
 Head Start Program  
 Psychiatric Services  
 Outpatient Services  
 Parent Partners  
 Parent Project  
 Wrap Around Services  
 Cognitive Behavioral Therapy  
 Dialectical Behavior Therapy  
 Trauma Focused Cognitive Behavioral Therapy  
 Family Based Therapy for Eating Disorders  
 NAMI/Basics

**County Psychiatric Emergency Services**

**George & Cynthia Wellness Center**  
Martinez

**Child-Parent Psychotherapy**

**Family-Based Treatment for Eating Disorder**

**Countywide Services**

- Children's Specialty Programs**  
2425 Bisso Ln. #200  
Concord  
Population Served: Children & TAY  
  - Child & Family Mental Health Services
  - Social Services Child Assessment Unit
  - Spirit of Caring
  - Katie A.
  - Local and National Case Management
- COFY**  
(Multi-Systemic Therapy and Functional Family Therapy)
- Consumer Self-Help Center**  
(Patients' Rights Advocates)
- County-Wide Assessment Team**  
2425 Bisso Ln. #235  
Concord  
Population Served: Children & TAY
- First-Hope Program**  
(PEI)
- Hospital & Residential Unit**  
2425 Bisso Ln. #280  
Concord  
Population Served: Children & TAY  
  - Local and National Case Management
  - Hospital Liaison
  - TBS Services Coordination
- Mental Health and Probation Services**  
202 Glacier Dr.  
Martinez  
Population Served: Children & TAY  
  - Juvenile Hall, Juvenile Assessment and Consultation Services
  - Orin Allen Youth Rehabilitation Facility
  - Regional Probation Liaisons
- Lincoln Child Center**  
(In-Home Behavioral Services)
- Lincoln**  
(Multi-Dimensional Family Therapy)
- Lynn Center**
- Seneca**  
(Mobile Response Team)
- Start FSP Seneca**
- TBS Providers**  
COFY  
Seneca  
Youth Homes  
La Cheim  
ASPIRAnet  
Fred Finch Youth Center  
Milhouse Children's Services  
St. Vincent's School for Boys  
Victor Community Support Services
- CORE**
- Fred Finch - Avalon**  
Dual-diagnoses residential treatment and nonpublic school
- Contra Costa Crisis Center**  
Walnut Creek, Service Countywide
- Jewish Family and Community Services of the East Bay**  
Walnut Creek, service Countywide
- Foster Youth Mental Health**  
A Better Way, Seneca
- Wraparound Services**

**School-Based Program Unit**

- Head Start**
- Outpatient Services**
- Seneca Center**  
At: Riverview Middle School (Mount Diablo Unified School District)
- Outpatient School-wide Mental Health Services**
- Lincoln**  
Pittsburg Unified School District Elementary, Middle, and High Schools
- Mental Health Enhanced Classroom(s)**
- TBD**  
Elementary Schools: Foothill, Petite Academy  
Middle Schools: Black Diamond, Learning Academy

**System of Care – Regional Community Based Organizations**

- Community Health for Asian Americans**  
Antioch
- La Clinica**  
Oakley
- Amador Institute**  
Antioch
- Child Therapy Institute**  
Antioch
- Center for Psychotherapy**  
Antioch
- Youth Homes TAY FSP**  
Antioch
- NAMI**  
(Service Countywide)
- YWCA**  
Antioch

**Provider Network**

50 Individual Providers (Adults and Children)

**Prevention & Early Intervention Programs**

- Center for Human Development**  
Bay Point
- Contra Costa Interfaith Housing**  
Pittsburg
- La Clinica de la Raza**  
Pittsburg
- People Who Care**  
Pittsburg
- Rainbow Community Center**  
Concord, service Countywide
- STAND!**  
Antioch
- Child Abuse Prevention Council**  
Concord, service Countywide
- Jewish Family and Community Services of the East Bay**  
Walnut Creek

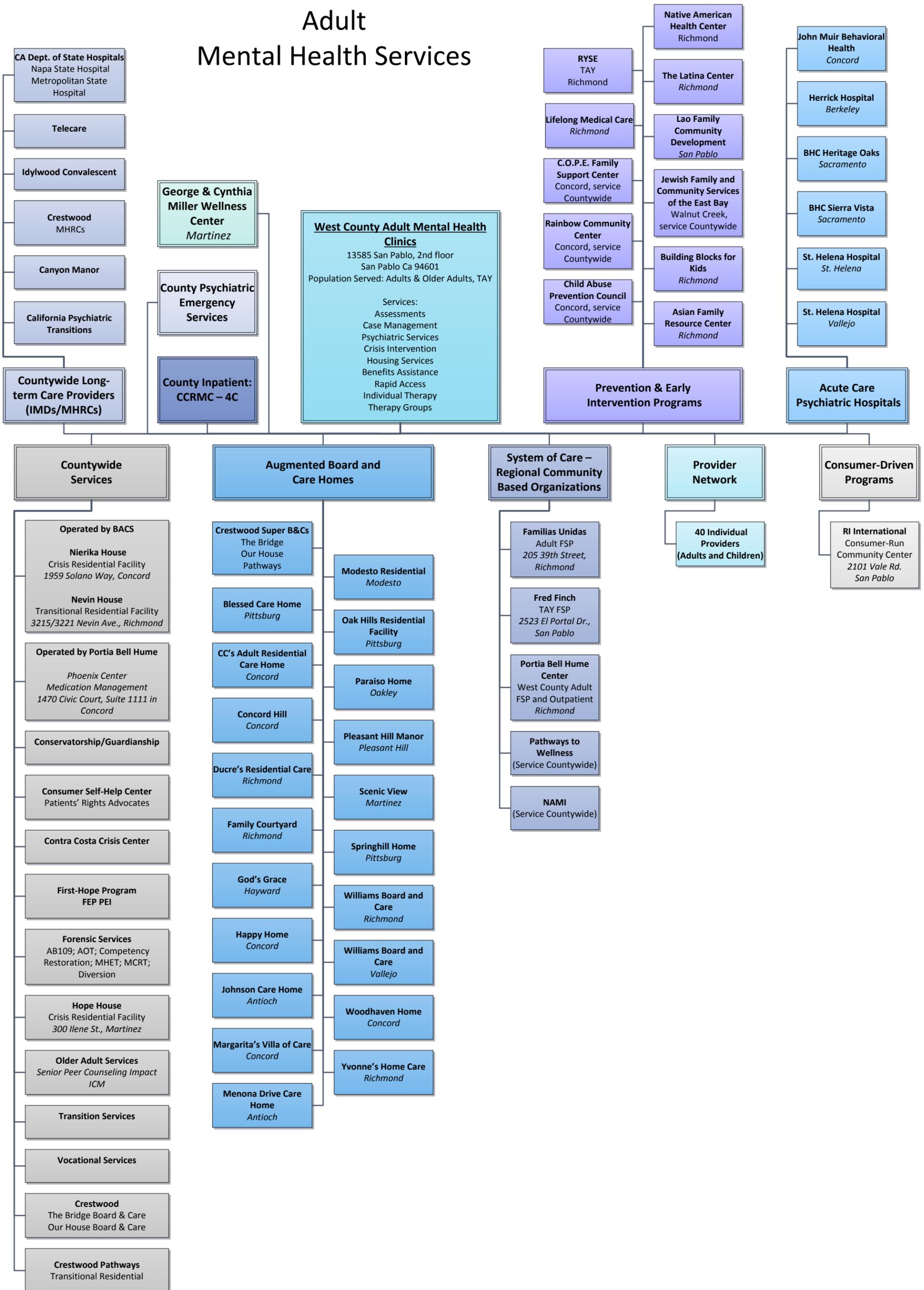
**Residential Services**

- Short-Term Residential Therapeutic Program**
- Treatment Foster Care**  
Seneca

**Contracted Psychiatric Hospitals**

- John Muir Behavioral Health**  
Concord
- Herrick Hospital**  
Berkeley
- BHC Heritage Oaks**  
Sacramento
- BHC Sierra Vista**  
Sacramento
- St. Helena Hospital - St. Helena**
- St. Helena Hospital - Vallejo**

# West County Adult Mental Health Services



# West County Children's Mental Health Services

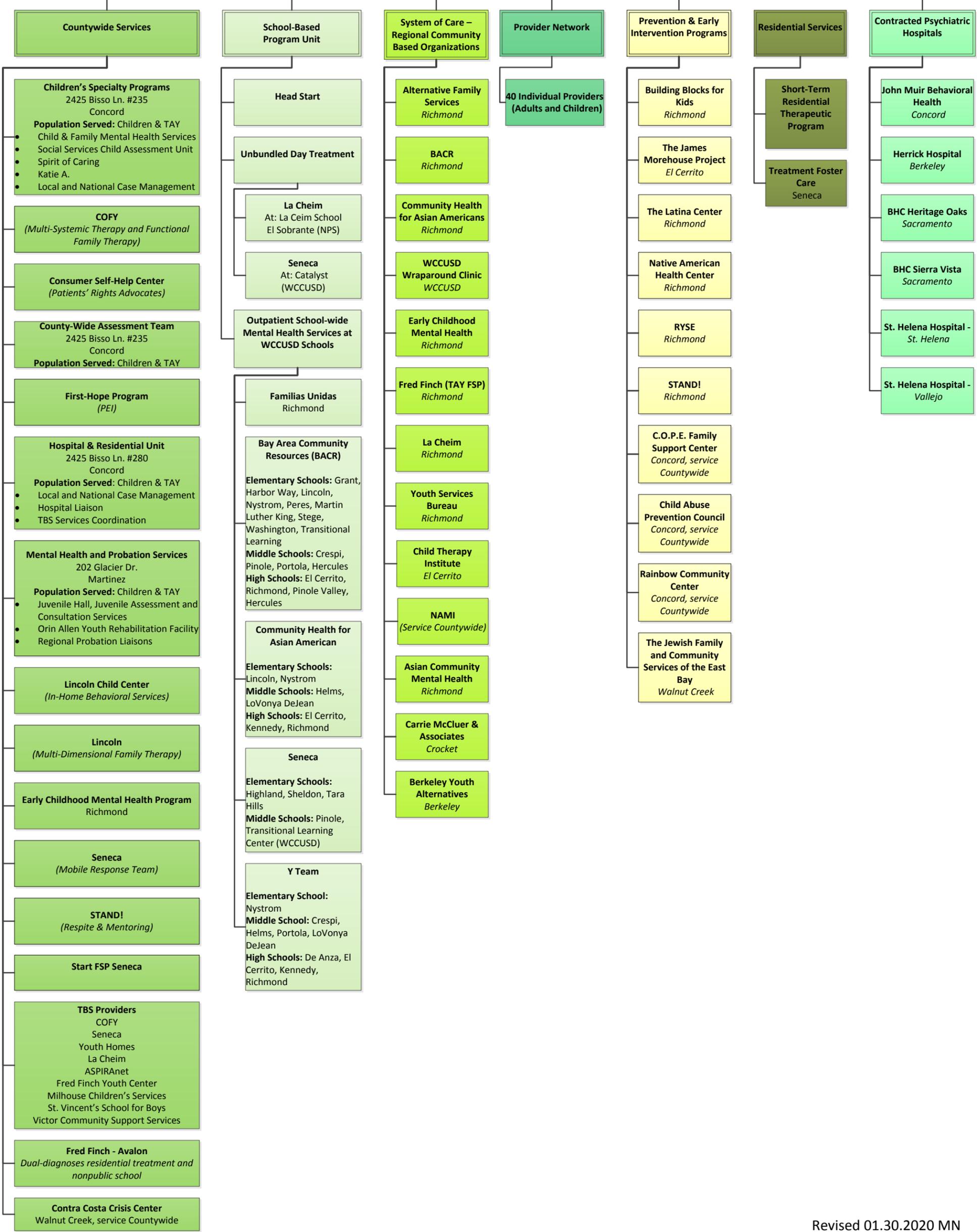
**West County Children's Mental Health Clinic**  
 303 41st Street  
 Richmond, CA  
**Population Served:** Children and TAY  
**Services:**  
 Psychiatric Services  
 Outpatient Services  
 Parent Partners  
 Wrap Around Services  
 Cognitive Behavioral Therapy  
 Dialectical Behavior Therapy  
 Trauma Focused Cognitive Behavioral Therapy  
 NAMI Basics

**County Psychiatric Emergency Services**

**George & Cynthia Wellness Center**  
Martinez

**Child-Parent Psychotherapy**

**Family-Based Treatment for Eating Disorder**



# Appendix B

## Program and Plan Element Profiles

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## **Asian Family Resource Center (AFRC)**

12240 San Pablo Ave, Richmond, CA 94805

Point of Contact: Sun Karnsouvong, [Skarnsouvong@arcofcc.org](mailto:Skarnsouvong@arcofcc.org)

### **1. General Description of the Organization**

AFRC provides multicultural and multilingual services, empowering the most vulnerable members of our community to lead healthy, productive, and contributing lives.

### **2. Program: Building Connections (Asian Family Resource Center) - PEI**

- a. Scope of Services: Asian Family Resource Center (AFRC), under the fiscal sponsorship of Contra Costa ARC, will provide comprehensive and culturally sensitive education and access to mental health services for Asian and Asian Pacific Islander (API) immigrant and refugee communities, especially the Southeast Asian and Chinese population of Contra Costa County. AFRC will employ multilingual and multidisciplinary staff from the communities which they serve. Staff will provide the following scope of services:
  - i. Outreach and Engagement Services: Individual and/or community outreach and engagement to promote mental health awareness, educate community members on signs and symptoms of mental illness, provide mental health workshops, and promote mental health wellness through community events. Engage community members in various activities to screen and assess for mental illness and/or assist in navigating them into the service systems for appropriate interventions: community integration skills to reduce MH stressors, older adult care giving skills, basic financial management, survival English communication skills, basic life skills, health and safety education and computer education, structured group activities (on topics such as, coping with adolescents, housing issues, aid cut-off, domestic violence, criminal justice issues, health care and disability services), mental health education and awareness, and health/mental health system navigation. AFRC, in collaboration with community-based organizations, will participate in 3-5 mental health and wellness events to provide wellness and mental health outreach, engagement, and education to immigrants and refugees in the Contra Costa County.
  - ii. Individual Mental Health Consultation: This service will also be provided to those who are exhibiting early signs of mental illness, to assess needs, identify signs/symptoms of mental health crisis/trauma, provide linkages/referrals, or assist in navigation into the mental health system, provide wellness support groups, access essential community resources, and linkage/referral to mental health services. Peer Navigators will be utilized to support participants in accessing services in a culturally sensitive manner. These services will generally be provided for a period of less than one year. AFRC will serve a minimum of 50 high risk and underserved Southeast

Asian community members within a 12-month period, 25 of which will reside in East County with the balance in West and Central County.

- iii. Translation and Case Management: AFRC staff will provide translation and case management services to identified mono-lingual consumers in the West County Adult Behavioral Health Clinic in San Pablo, CA. Services will include attending medical appointments, assisting with applications and forms, advocacy, and system navigation.
- b. Target Population: Asian and Pacific Islander immigrant and refugee communities (especially Chinese and Southeast Asian population) in Contra Costa County
- c. Payment Limit: FY 21-22: \$150,408
- d. Number served: FY 19-20: 583 high risk and underserved community members
- e. Outcomes:
  - Successful adaptation of services due to COVID-19 including telehealth, social distancing, mask wearing, and connecting participants to resources that were more difficult to access due to the pandemic.
  - All program participants received system navigation support for mental health treatment, Medi-Cal benefits, and other essential benefits.
  - Services are offered in the language of the consumer and outreach is conducted in areas frequented by those they are trying to engage.
  - Program collaborated with other service providers via zoom during the pandemic to share resources, information, and support.

## Bay Area Community Services (BACS)

629 Oakland Avenue, Oakland, CA 94611, <https://www.bayareacs.org/>

Point of Contact: Jamie Almanza, (510) 415-4672, [JAlmanza@bayareacs.org](mailto:JAlmanza@bayareacs.org)

### 1. General Description of the Organization

Bay Area Community Services' (BACS) mission is to uplift under-served individuals and their families by doing whatever it takes. BACS supports recovery for people experiencing psychiatric distress, through practical and therapeutic support. Their crisis residential programs are serene and home-like environments with around-the-clock care, supervision, and wellness & recovery support for individuals in crisis.

### 2. Program: Nierika & Nevin House: Crisis Residential Facility and Transitional Care - CSS

- a. Scope of Services: The County contracts with BACS to operate two programs: 1) Nierika House, a short-term crisis residential treatment program for adults living with a serious mental illness and dual diagnoses, located in Central County, and 2) Nevin House, a 16-bed facility in West County that provides transitional care in a therapeutic milieu for adults living with a co-occurring mental health and substance use disorders.

Nierika House is a 2-week crisis residential treatment program for adults with mental health and dual diagnoses. Clients are referred from the Contra Costa County liaison, either as a stepdown from an inpatient hospitalization or a step up from the community and a diversion from inpatient care. A combination of therapeutic and psychiatric services aims to reduce the level of crisis so that a client can return to a lower level of care. A 24-hour staffing ratio of 1 staff per 8 clients allows for clients receive intensive structure and support, without requiring a hospital stay.

Nevin House is a 16-bed facility in Richmond, CA through a collaborative with Contra Costa County Behavioral Health Services and serves adults with co-occurring mental health and substance use challenges.

- b. Target Population: Adults ages 18 to 59 who require crisis support to avoid psychiatric hospitalization or are discharging from the hospital or long-term locked facilities and need step-down care to transition back to community living.
- c. Payment Limit: FY 20-21 \$305, 355
- d. Number served: For FY 18-19: Capacity of 16 beds.
- e. Outcomes: To be determined.

## Building Blocks for Kids (BBK)

310 9<sup>th</sup> Street, Richmond, CA 94804, [www.bbk-richmond.org](http://www.bbk-richmond.org)  
Point of Contact: Sheryl Lane, (510) 232-5812, [slane@bbk-richmond.org](mailto:slane@bbk-richmond.org)

### 1. General Description of the Organization

Building Blocks for Kids (BBK) amplifies the voices of parents/caregivers of color and partners with them to advance equitable access and opportunities for all youth to have a quality education and all families to achieve emotional and physical well-being. We realize our goals through healing centered care, leadership development, and parent-led advocacy. BBK serves parents and primary caregivers living in West Contra Costa County that primarily represent low-income African-American, Latinx and immigrant populations.

### 2. Program: Not About Me Without Me - PEI

a. Scope of Services: Building Blocks for Kids Collaborative, a project of Tides Center, will provide diverse West County households with improved access to mental health education, and mental health support. The *Not About Me Without Me* prevention and early intervention work addresses MHSA's PEI goal of providing Prevention services to increase recognition of early signs of mental illness and intervening early in the onset of a mental illness.

Accordingly, the goals are three-fold: (1) working with families to ensure that they are knowledgeable about and have access to a network of supportive and effective mental health information and services; (2) reduce risk for negative outcomes related to untreated mental illness for parents/primary caregivers and children whose risk of developing a serious mental illness is significantly higher than average including cumulative skills-based training opportunities on effective parenting approaches; and, (3) train and support families to self-advocate and directly engage the services they need.

This work represents an evolution in our *Not About Me Without Me* approach to service provision by working toward a coordinated, comprehensive system that will support families in not just addressing mental illness and recovering from traumatic experiences but will fortify them to create community change. This system will continue to put resident interests and concerns at the fore and additionally be characterized by a model that enables organizations to work more effectively and responsively with underserved residents in the Richmond and West Contra Costa community; improve outcomes; reduce barriers to success; increase provider accountability and create a truly collaborative and healing environment using strategies that are non-stigmatizing and non-discriminatory.

- b. Target Population: Parents and caregivers and their families living in West Contra Costa County
- c. Payment Limit: FY 21-22: \$224,602
- d. Number served: In FY 19-20: 336 Individuals (includes outreach and education events).
- e. Outcomes:
  - During the COVID-19 pandemic, BBK pivoted to continue to engage the community. Staff transitioned into a virtual model. Programs was offered

- through Zoom meetings, phone calls, and videos on their Facebook page.
- 195 women participated in a total of 28 Black and LatinX Women's Peer Sanctuary groups where they received facilitated support for self-care, advocacy, personal goal setting and reclaiming positive cultural practices.
  - Family Engagement activities events, during which families are invited to spend an enjoyable and safe time with their families, were held at Monterey Pines Apartments. 87 people participated in Family Engagement activities, including: an informational session about the Welcome Home Baby Program, Mindfulness practices, Youth Service Bureau, Effective Ways of Communication through Community Circles, Census Information as well family bonding arts & crafts and games.
  - At the Health and Wellness free summer program, children under the age of 18 had access to free lunch Monday through Friday, Zumba classes and enrichment activities. BBK staff served an average of 90 children daily and altered their offerings to accommodate virtual programming to follow safety guidelines during the pandemic.
  - BBK partnered with Child Abuse Prevention Council to offer weekly evidence-based parenting classes (Nurturing Parenting) in Spanish and English. A total of 26 parents/caregivers graduated from the 22-week program and 146 adults participated in a parent-child skills development playgroup.

## Center for Human Development (CHD)

901 Sun Valley Boulevard, Suite 220, Concord, CA 94520, <http://chd-prevention.org/>  
Point of Contact: David Carrillo, (925) 349-7333, [david@chd-prevention.org](mailto:david@chd-prevention.org)

### 1. **General Description of the Organization**

Center for Human Development (CHD) is a community-based organization that offers a spectrum of Prevention and Wellness services for at-risk youth, individuals, families, and communities in the Bay Area. Since 1972 CHD has provided wellness programs and support aimed at empowering people and promoting growth.

Volunteers work side-by-side with staff to deliver quality programs in schools, clinics, and community sites throughout Contra Costa as well as nearby counties. CHD is known for innovative programs and is committed to improving the quality of life in the communities it serves.

### 2. **Program: African American Wellness Program and Youth Empowerment Program - PEI**

- a. Scope of Services: The African American Wellness Program (formerly African American Health Conductor Program) serves Bay Point, Pittsburg, and surrounding communities. The purpose is to increase emotional wellness; reduce stress and isolation; and link African American participants, who are underserved due to poor identification of needs and lack of outreach and engagement, to appropriate mental health services. Key activities include: outreach through community events; culturally appropriate education on mental health topics through Mind, Body, and Soul support groups; conduct community health education workshops in accessible and non-stigmatizing settings; and navigation assistance for culturally appropriate mental health referrals.

The Youth Empowerment Program provides LGBTQ youth and their allies in Antioch, Pittsburg, and surrounding East County communities with strength-based educational support services that build on youths' assets, raise awareness of mental health needs identification, and foster resiliency. Key activities include:

- a) Three weekly educational support groups that promote emotional health and well-being, increase positive identity and self-esteem, and reduce isolation through development of concrete life skills;
- b) one leadership group that meets a minimum of twice a month to foster community involvement; and
- c) linkage and referral to culturally appropriate mental health service providers in East County.

- b. Target Population: Wellness Program: African American residents in East County at risk of developing serious mental illness. Youth Empowerment Program: LGBTQ youth in East County
- c. Payment Limit: FY 21-22: \$161,644
- d. Number served: FY 19-20: 733 individuals were served in both programs combined
- e. Outcomes:
  - African American Wellness Program
    - Served 623 participants during FY 2019-20.
    - Moved to telehealth due to COVID-19.
    - Provided 9 clients with mental health referrals.
    - Participants were provided individualized services to help them to address the current issues they are facing

- Youth Empowerment Program
  - 110 individuals were served.
  - Staff facilitated 134 educational group sessions, trainings, and Leadership sessions and staff had 412 individual one-on-one meetings with youth. This is nearly double the number of individual check-ins and one-on-one meetings from the previous year.
  - Successfully Moved to telehealth due to COVID-19
  - Provided 6 clients with mental health referrals.
  - All Empowerment participants receive an emergency services “Safety Phone List”, including contact information for CHD’s Empowerment Program, Contra Costa Crisis Center, The Trevor Project, Planned Parenthood, Community Violence Solutions, STAND Against Violence, Runaway Hotline, Homeless Hotline, as well as having space to add information for trusted adults and friends. Additional referrals and linkages are provided as needed, and upon participant assent.

## **Central County Adult Mental Health Clinic (Contra Costa Behavioral Health Services)**

1420 Willow Pass Road, Suite 200, Concord, CA 94520,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Kennisha Johnson, Mental Health Program Manager, (925) 646-5480,  
[Kennisha.Johnson@CCHHealth.org](mailto:Kennisha.Johnson@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The Central Adult Mental Health Clinic operates within Contra Costa Mental Health's Adult System of Care, and provides assessments, case management, therapy, groups, psychiatric services, crisis intervention, peer support, housing services, and benefits assistance. Within the Adult Mental Health Clinic are the following MHPA funded programs and plan elements:

### **2. Plan Element: Adult Full Service Partnership Support - CSS**

Contra Costa Mental Health has dedicated clinical staff at each of the three adult mental health clinics to provide support, coordination and rapid access for full service partners to health and mental health clinic services as needed and appropriate. Rapid Access Clinicians offer drop-in screening and intake appointments to clients who have been discharged from the County Hospital or Psychiatric Emergency Services but who are not open to the county mental health system of care. Rapid Access Clinicians will then refer clients to appropriate services and, when possible, follow-up with clients to ensure a linkage to services was made. If a client meets eligibility criteria for Full Service Partnership services, the Rapid Access Clinician will seek approval to refer the client to Full Service Partnership services. Clinic management acts as the gatekeepers for the Full Service Partnership programs, authorizing referrals and discharges as well as providing clinical oversight to the regional Full Service Partnership programs. Full Service Partnership Liaisons provide support to the Full Service Partnership programs by assisting the programs with referrals and discharges, offering clinical expertise, and helping the programs to navigate the County systems of care.

### **3. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to 1) assist consumers in obtaining benefits they are entitled to, educate consumers on how to maximize use of those benefits and manage resources, and 2) provide transportation support for consumers and families.

- a. Clinic Target Population: Adults aged 18 years and older, who live in Central County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.
- b. Number Served: For FY 19-20: Approximately 2,418 Individuals.

## **Central County Children's Mental Health Clinic (Contra Costa Behavioral Health Services)**

2425 Bisso Lane, Suite 200, Concord, CA 94520,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Betsy Hanna, Psy.D, Mental Health Program Manager, (925) 521-5767,  
[Betsy.Hanna@CCHHealth.org](mailto:Betsy.Hanna@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health and Alcohol & Other Drugs into a single system of care. The Central Children's Mental Health Clinic operates within Contra Costa Behavioral Health's Children's System of Care, and provides psychiatric and outpatient services, family partners, and Wraparound services. Within the Children's Mental Health Clinic are the following MHSa funded plan elements:

### **2. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to assist consumers in the following areas:

- Family Partners and Wraparound Facilitation. The family partners assist families with advocacy, transportation assistance, navigation of the service system, and offer support in the home, community, and county service sites. Family partners support families with children of all ages who are receiving services in the children. Family partners are located in each of the regional clinics for children and adult services, and often participate on wraparound teams following the evidence-based model.
  - A Clinical Specialist in each regional clinic who provides technical assistance and oversight of evidence-based practices in the clinic.
  - Support for full service partners.
- a. Target Population: Children aged 17 years and younger, who live in Central County, are diagnosed with a serious emotional disturbance or serious mental illness and are uninsured or receive Medi-Cal benefits.
  - b. Number Served: For FY 19-20: Approximately 902 Individuals.

## **Child Abuse Prevention Council (CAPC)**

2120 Diamond Blvd #120, Concord, CA 94520, [www.capc-coco.org](http://www.capc-coco.org)

Point of Contact: Carol Carrillo, (925) 798-0546, [ccarrillo@capc-coco.org](mailto:ccarrillo@capc-coco.org)

### **1. General Description of the Organization**

The Child Abuse Prevention Council has worked for many years to prevent the maltreatment of children. Through providing education programs and support services, linking families to community resources, mentoring, and steering county-wide collaborative initiatives, CAPC has led Contra Costa County's efforts to protect children. It continually evaluates its programs to provide the best possible support to the families of Contra Costa County.

### **2. Program: The Nurturing Parenting Program - PEI**

- a. Scope of Services: The Child Abuse Prevention Council of Contra Costa provides an evidence-based curriculum of culturally, linguistically, and developmentally appropriate, Spanish speaking families in East County, and Central County's Monument Corridor. The 20- week curriculum immerses parents in ongoing training, free of charge, designed to build new skills and alter old behavioral patterns intended to strengthen families and support the healthy development of their children in their own neighborhoods. Developmental assessments and referral services are provided to each family served in the program using strategies that are non-stigmatizing and non-discriminatory. Families are provided with linkages to mental health and other services as appropriate. Providing the Nurturing Parenting Program (NPP) in the Monument Corridor of Concord and East County allows underserved parents and children access to mental health support in their own communities and in their primary language.
- b. Target Population: Latino children and their families in Central and East County.
- c. Payment Limit: FY 21-22: \$128,862
- d. Number served: In FY 19-20: 169 parents and children
- e. Outcomes:
  - Two 20-week classes in Central and East County serving parents and their children.
  - During the first semester of The Nurturing Parenting Program a total of 44 parents and 45 children enrolled in the program. A total of 29 parent and 36 children completed and graduated from the NPP successfully.
  - During the second semester of The Nurturing Parenting Program a total of 41 parents and 39 children enrolled in both regions. A total of 31 parents completed and graduated from the program despite the many challenges faced during the COVID-19 Shelter-in-Place.

- Staff modified sessions to meet parents needs during the pandemic and offered resources to families who lost their jobs, linked parents to internet access, and guided them on how to start using zoom to stay connected.
- All parent participants completed pre- and post-tests. All parents improved their scores on at least four out of five 'parenting constructs' (appropriate expectations, empathy, discipline, self-awareness, and empowerment).

## Community Options for Families and Youth, Inc. (COFY, Inc.)

3478 Buskirk Avenue, Suite 260, Pleasant Hill CA 94523, [www.cofy.org](http://www.cofy.org)

Point of Contact: David Bergesen, (925) 943-1794, [d.bergesen@cofy.org](mailto:d.bergesen@cofy.org) and Gabriel Eriksson (925) 943-1794, [g.eriksson@cofy.org](mailto:g.eriksson@cofy.org)

### 1. General Description of the Organization

Community Options for Families and Youth (COFY) is a multi-disciplinary provider of mental health services. COFY's mission is to work with youth whose high-intensity behaviors place them at risk of hospitalization or residential treatment. Their mental health clinicians work collaboratively with caregivers, educators, and social service professionals to help exasperated families restore empathic relationships and maintain placement for their children.

### 2. Program: Multisystemic Therapy (MST) – Full Service Partnership (FSP) - CSS

Multisystemic Therapy (MST) is an Evidence Based Program ecological model designed to work in home with family and caregivers. MST addresses complex clinical, behavioral, social, and educational problems experienced by the youth. Clients are referred by the Juvenile Probation Mental Health Liaisons, Probation Officers, and Regional Clinic Program Managers. The MST clinician primarily works with parents and caregivers to identify family goals as well as to target behaviors that put the adolescent into contact with Juvenile Probation. This intensive intervention model includes multiple sessions per week over a period of up to six months.

- a. Scope of Services: Services include but are not limited to outreach and engagement, case management, outpatient mental health services, crisis intervention, collateral services, flexible funds. COFY MST staff must be available to consumer on a 24/7 basis.
- b. Target Population: Children who have a serious emotional disturbance or serious mental illness; and have been identified as a juvenile offender or are at risk of involvement with Probation due to delinquent behavior. Services are county-wide.
- c. Payment Limit: FY 21-22 \$650,000
- d. Number served: In FY19-20 COFY FSP served 56 individuals.
- e. Outcomes:
  - Reduction in incidence of psychiatric crisis
  - Decrease in Juvenile Assessment and Consultation Services (JACS)

**Table 1. Pre- and post-enrollment utilization rates for 56 COFY FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	21	4	0.041	0.016	-59.7%
<i>Inpatient episodes</i>	4	0	0.008	0.00	-100.0%
<i>Inpatient days</i>	22	0	0.043	0.000	-100.0
<i>JACS Bookings</i>	40	22	0.078	0.090	-16.3%

## **Contra Costa Crisis Center**

P.O. Box 3364 Walnut Creek, CA 94598, [www.crisis-center.org](http://www.crisis-center.org)

Point of Contact: Tom Tamura, (925) 939-1916, x107, [TomT@crisis-center.org](mailto:TomT@crisis-center.org)

### **1. General Description of the Organization**

The mission of the Contra Costa Crisis Center is to keep people alive and safe, help them through crises, and connect them with culturally relevant resources in the community.

### **2. Program: Suicide Prevention Crisis Line**

#### **a. Scope of Services:**

- Contra Costa Crisis Center will provide services to prevent suicides throughout Contra Costa County by operating a nationally certified 24-hour suicide prevention hotline. The hotline lowers the risk of suicide by assuring 24-hour access to real time services rendered by a trained crisis counselor who not only assesses suicide and self-harm lethality and provides intervention, but links callers to numerous mental health treatment options. This linkage occurs via referral to culturally relevant mental health services as well as provides REAL TIME warm transfer to those services when appropriate. Because the hotline operates continuously regardless of time or day, all callers receive timely intervention and access to service WHEN THEY NEED IT and immediately upon their request. The Crisis Center's programs are implemented (including agency program and hiring policies, bylaws, etc.) in a welcoming and intentionally non-discriminatory manner. Much of our outreach activities and staff/volunteer training activities center around increased awareness of myriad mental health issues, as well as mental health services, consumer stigma reduction to increase community comfort at accessing services and in referring those in need.
- Key activities include: answering local calls to toll-free suicide hotlines, including a Spanish-language hotline; the Crisis Center will maintain an abandonment rate at or below national standard; assisting callers whose primary language other than English or Spanish through use of a tele-interpreter service; conducting a lethality assessment on each crisis call consistent with national standards; making follow-up calls to persons (with their consent) who are at medium to high risk of suicide with the goal of 99% one-month follow up survival rate; and training all crisis line staff and volunteers in a consistent and appropriate model consistent with AAS (American Association of Suicidology) certification. As a result of these service activities, >99% of people who call the crisis line and are assessed to be at medium to high risk of suicide will be survivors one month later; the Crisis Center will continuously recruit and train crisis line volunteers to a minimum pool of 25 multi-lingual/culturally competent individuals

within the contract year, Spanish-speaking counselors will be provided 80 hours per week.

- The Crisis Center will provide community outreach and education about how to access crisis services. Priority and vigorous outreach efforts are directed to underserved and hard to reach populations such as youth, elderly, isolated, persons with limited English, LGBTQ, etc. and focus changes as community needs emerge and are identified.
- The Crisis Center will offer grief support groups and postvention services to the community
- The Crisis Center will liaison with the County Coroner to provide referrals for grieving survivors (and mitigating contagion).
- In Partnership with County Behavioral Health, the Contra Costa Crisis Center will co-chair the Countywide Suicide Prevention Committee.

b. Target Population: Contra Costa County residents in crisis.

c. Payment Limit: FY 21-22: \$320,006

d. Number served: In FY19-20: 21,577 total calls were fielded.

e. Outcomes:

- Services provided in English and Spanish, and callers have access to the Language Line interpreter services in 240 languages.
- Upgraded to an advanced web-based phone system software in July 2019, allowing for remote work in case of a disaster, and increased the accuracy of calls answered, average speed to answer (in seconds), and abandonment rate measurements. This allowed calls to the 24-hour crisis lines to continue without interruption with staff and volunteers working either in the office or remotely due to COVID-19.
- 21,577 referrals were made to mental health services
- Managed an unprecedented increase in total call volume starting in March 2020 with callers needing referrals for health, food, housing, and financial assistance as well as experiencing feelings of high anxiety and stress.
- Provided a 54+ hour call center training for new call center staff and volunteers several times throughout the year

## **Counseling Options Parent Education (C.O.P.E.) Family Support Center**

3000 Citrus Circle, Suite 220, Walnut Creek, CA 94598, <http://copefamilysupport.org/>  
Point of Contact: Cathy Botello, Executive Director, (925) 689-5811,  
[cathy.botello@copefamilysupport.org](mailto:cathy.botello@copefamilysupport.org)

### **1. General Description of the Organization**

C.O.P.E.'s mission is to prevent child abuse by providing comprehensive support services to strengthen family relationships and bonds, empower parents, encourage healthy relationships, and cultivate nurturing family units to encourage an optimal environment for the healthy growth and development of parents and children through parent education.

### **2. Program: Positive Parenting Program (Triple P) Education and Support – PEI**

- a. Scope of Services: In partnership with First 5 Contra Costa Children and Families Commission and Contra Costa County Behavioral Health Services, C.O.P.E. is funded to deliver Positive Parenting Program classes to parents of children ages 0–17. The C.O.P.E Family Support Center will provide approximately 21 services using the evidence-based Triple P — Positive Parenting Program Level 2 Seminar, Level 3 Primary Care, Level 4 Group, Level 5 Pathways, Level 5 Enhanced, Level 5 Transitions, Level 5 Lifestyle multi-family support groups, at low or no cost to parents of children two to seventeen years of age.

The program utilizes an evidence based self-regulatory model that focuses on strengthening the positive attachment between parents and children by building a parent's capacity for the following five aspects:

- i. **Self-sufficiency** - having the ability to use one's own resources to independently solve problems and decrease reliance on others.
- ii. **Self-efficacy** - having the confidence in performing daily parenting tasks.
- iii. **Self-management** - having the tools and skills needed to enable change.
- iv. **Personal agency** - attributing the changes made in the family to own effort or the effort of one's child.
- v. **Problem-solving** - having the ability to apply principles and strategies, including creating parenting plans to manage current or future problems.

All classes are available in Spanish, Arabic, Farsi and/or English. To outreach to the community about the curriculum and benefits of Triple P Parenting, C.O.P.E. provides management briefings, orientation, and community awareness meetings to partner agencies. C.O.P.E. supports and organizes annual trainings for other partnering agencies, including pre-accreditation trainings, fidelity oversight and clinical and peer support to build and maintain a pool of Triple P practitioners.

- b. Target Population: Contra Costa County parents of children and youth with identified special needs. Our targeted population includes caregivers residing in underserved communities throughout Contra Costa County.

c. Payment Limit: FY 21-22: \$253,238

d. Number served: In FY 19-20: 235

e. Outcomes:

- Provided 21 Triple P Positive Parenting Group classes and seminars to groups in West, Central and East Contra Costa County.
- Enrolled 235 client family members in Triple P Parenting classes.
- Provided a Family Transitions Triple P training program and accredited 18 practitioners.
- Beginning in Mid-March 2020, COPE moved all Triple P classes to online using the Zoom video conferencing platform.
- Pre and Post Test Survey results indicate program participants showed a 37% decrease in depression, 41% decrease in anxiety, and 24% decrease in overall stress.
- Access and linkage to on-going treatment supported through warm hand off referrals for housing, vocational, legal, and mental health services.

## **Crestwood Behavioral Health, Inc.**

Contact Information: 550 Patterson Boulevard, Pleasant Hill, CA 94523,  
<https://crestwoodbehavioralhealth.com/>

Point of Contact: Travis Curran, Campus Administrator for Pleasant Hill Campus,  
(925) 938-8050, [tcurran@cbhi.net](mailto:tcurran@cbhi.net)

### **1. General Description of the Organization**

The mission at Crestwood Healing Center is to partner with Contra Costa County clients, employees, families, business associates, and the broader community in serving individuals affected by mental health issues. Together, they enhance quality of life, social interaction, community involvement and empowerment of mental health clients toward the goal of creating a fulfilling life. Clients are assisted and encouraged to develop life skills, participate in community-based activities, repair or enhance primary relationships, and enjoy leisure activities. A supportive, compassionate, and inclusive program increases motivation and commitment.

### **2. Program: The Pathway Program (Mental Health Housing Services – CSS)**

The Pathway Program provides psychosocial rehabilitation for 16 clients who have had little, if any, previous mental health treatment. The program provides intensive skills training to promote independent living. Many clients complete their high school requirements, enroll in college or are participating in competitive employment by the end of treatment.

#### **a. Scope of Services:**

- Case management
- Mental health services
- Medication management
- Crisis intervention
- Adult residential

b. Target Population: Adults aged 18 years and older, who live in Central County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.

c. Payment Limit: FY 21-22 \$1,053,963

d. Number served: For FY 19–20: Capacity of 64 beds at The Bridge in Pleasant Hill. Capacity of 30 beds at Our House in Vallejo.

e. Outcomes: To be determined.

## **Divine's Home**

2430 Bancroft Lane, San Pablo, CA 94806

Point of Contact: Maria Riforno, (510) 222-4109, [HHailey194@aol.com](mailto:HHailey194@aol.com)

### **1. General Description of the Organization**

The County contracts with Divine's Home, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Cares – MHSA Housing Services - CSS**

a. Scope of Services: Augmented residential services, including but not limited to:

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

b. Target Population: Adults aged 60 years and older, who live in Western Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.

c. Number served: For FY 19-20: Capacity of 6 beds.

## **East County Adult Mental Health Clinic (Contra Costa Behavioral Health Services)**

2311 Loveridge Road, Pittsburg, CA 94565,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Beverly Fuhrman, Program Manager, (925) 431-2621,  
[Beverly.Fuhrman@CCHealth.org](mailto:Beverly.Fuhrman@CCHealth.org)

### **1. General Description of the Organization**

East County Adult Mental Health Services operates within Contra Costa Mental Health's Adult System of Care. Services are provided within a Care Team model. Each Care Team is comprised of a core team of psychiatrists, therapists, and community support workers. Additional services may be provided by nurses, family support worker, and a substance abuse counselor. The initial assessment, Co-Visit, is provided jointly by a psychiatrist and a therapist where both mental health and medication needs are addressed at this initial visit. Other services include crisis intervention, individual/group therapy, case management, housing services, benefits assistance, vocational services, and linkage to community-based programs and agencies.

### **2. Plan Element: Adult Full Service Partnership Support - CSS**

Contra Costa Mental Health has dedicated clinicians at each of the three adult mental health clinics to provide support, coordination and rapid access for full service partners to health and mental health clinic services as needed and appropriate. Rapid Access Clinicians offer drop-in screening and intake appointments to clients who have been discharged from the County Hospital or Psychiatric Emergency Services but who are not open to the county mental health system of care. Rapid Access Clinicians will then refer clients to appropriate services and, when possible, follow-up with clients to ensure a linkage to services was made. If a client meets eligibility criteria for Full Service Partnership services, the Rapid Access Clinician will seek approval to refer the client to Full Service Partnership services. Clinic management act as the gatekeepers for the Full Service Partnership programs, authorizing referrals and discharges as well as providing clinical oversight to the regional Full Service Partnership programs. Full Service Partnership Liaisons provide support to the Full Service Partnership programs by assisting the programs with referrals and discharges, offering clinical expertise, and helping the programs to navigate the County systems of care.

### **3. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to assist consumers in 1) obtaining benefits they are entitled to, educate consumers on how to maximize use of those benefits and manage resources, and 2) provide transportation support for consumers and families.

- a. Clinic Target Population: Adults aged 18 years and older, who live in East County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.
- b. Number Served: For FY 19-20 Approximately 3,031 Individuals.

## **East County Children’s Mental Health Clinic (Contra Costa Behavioral Health Services)**

2335 Country Hills Drive, Antioch, CA 94509,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Christine Madruga, Program Manager, (925) 608-8736,  
[Christine.Madruga@CCHHealth.org](mailto:Christine.Madruga@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The East Children’s Mental Health Clinic operates within Contra Costa Behavioral Health’s Children’s System of Care, and provides psychiatric and outpatient services, family partners, and wraparound services. Within the Children’s Behavioral Health Clinic are the following MHSa funded plan elements:

### **2. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to assist consumers in the following areas:

- Family Partners and Wraparound Facilitation. The family partners assist families with advocacy, transportation assistance, navigation of the service system, and offer support in the home, community, and county service sites. Family partners support families with children of all ages who are receiving services in the clinic. Family partners are located in each of the regional clinics for children and adult services, and often participate on wraparound teams following the evidence-based model.
  - A Clinical Specialist/EBP Team Leader in each regional clinic who provides technical assistance, clinical consultation, and oversight of evidence-based practices in the clinic.
  - Support for full service partnership programs.
- a. Target Population: Children and youth aged 5 through 22 years, who live in East County, are diagnosed with a serious emotional disturbance or serious mental illness and are uninsured or receive Medi-Cal benefits.
  - b. Number Served: For FY 19-20: Approximately 861 Individuals.

## **Familias Unidas (formerly Desarrollo Familiar, Inc.)**

205 39<sup>th</sup> Street, Richmond, CA 94805, <http://www.familias-unidas.org/>

Point of Contact: Lorena Huerta, Executive Director, (510) 412-5930, [LHuerta@Familias-Unidas.org](mailto:LHuerta@Familias-Unidas.org).

### **1. General Description of the Organization**

Familias Unidas exists to improve wellness and self-sufficiency in Latino and other communities. The agency accomplishes this by delivering quality mental health counseling, service advocacy, and information/referral services. Familias Unidas programs include: mental health, education and prevention, and information/referrals.

### **2. Program: Familias Unidas – Full Service Partnership - CSS**

Familias Unidas provides a comprehensive range of services and supports in Contra Costa County to adults with serious emotional disturbance/serious mental illness who are homeless or at serious risk of homelessness. Services are based in West Contra Costa County.

#### **a. Scope of Services:**

- Services are provided using an integrated team approach, based on a modified Assertive Community Treatment (ACT) model of care. Services include:
- Outreach and engagement
- Case management
- Outpatient Mental Health Services, including services for individuals with co-occurring mental health & alcohol and other drug problems
- Crisis Intervention
- Collateral services
- Medication support (may be provided by County Physician)
- Housing support
- Flexible funds
- Contractor must be available to the consumer on a 24/7 basis

#### **b. Target Population:** Adults in West County, who are diagnosed with a serious mental illness, are homeless or at imminent risk of homelessness, are at or below 300% of the federally defined poverty level and are uninsured or receive Medi-Cal benefits.

#### **c. Payment Limit:** FY 21-22 \$272,167

#### **d. Number served:** For FY 19-20: 26 Individuals

#### **e. Outcomes:** For FY 19-20:

- Program participants will experience a net reduction in their Psychiatric Emergency Services utilization rate of at least 40% when the annual utilization rate for the clients' most recent 12 months of service, or total number of months the client has been enrolled for less than 12 months, is compared to the pre-enrollment rate.\*
- Program participants will experience a net reduction in their inpatient utilization rate of at least 60% when the annual utilization rate for the clients' most recent 12 months of service, or total number of months if a client has been enrolled for less than 12 months, is compared to the pre-enrollment rate.\*
- 75% of FSP participants placed into housing will receive housing support to maintain housing stability or be progressively placed into more independent living environments, as appropriate.

- 75% of FSP participants will rank Familias Unidas FSP services with a score of 4 or higher in the Client Satisfaction Questionnaire (CSQ-8), twice annually, or upon client discharge from the program.
- Less than 25% of active Familias Unidas FSPs will be arrested, or incarcerated post-enrollment measured at the end of the fiscal year.
- Collect baseline data utilizing an engagement in meaningful activity/quality of life assessment tool (tool to be determined).
- Decrease in incidence of psychiatric crisis
- Decrease of the incidence of restriction

**Table 1. Pre-and post-enrollment utilization rates for 26 Familias Unidas (Desarrollo Familiar, Inc.) FSP Participants enrolled in the FSP program during FY 19-20**

	No. pre-Enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	% change
<i>PES episodes</i>	28	20	0.093	0.071	-24.3%
<i>Inpatient episodes</i>	7	6	0.023	0.001	-9.1%
<i>Inpatient days</i>	39	56	0.130	0.198	-52.2%
<i>DET</i>	6	5	0.020	0.018	-11.7%

## First Five Contra Costa

1486 Civic Court, Concord CA 94520, <http://www.first5coco.org/>

Point of Contact: Wanda Davis, (925) 771-7328, [wdavis@firstfivecc.org](mailto:wdavis@firstfivecc.org)

### 1. General Description of the Organization

The mission of First 5 Contra Costa is to foster the optimal development of children, prenatal to five years of age. In partnership with parents, caregivers, communities, public and private organizations, advocates, and county government, First Five supports a comprehensive, integrated set of sustainable programs, services, and activities designed to improve the health and well-being of young children, advance their potential to succeed in school, and strengthen the ability of their families and caregivers to provide for their physical, mental, and emotional growth.

### 2. Programs: Triple P Positive Parenting Program - (PEI)

- a. Scope of Services: First Five Contra Costa and Contra Costa Behavioral Health jointly fund the Triple P Positive Parenting Program that is provided to parents of age 0 - 5 children. The intent is to reduce the maltreatment of children by increasing a family's ability to manage their children's behavior and to normalize the need for support to develop positive parenting skills. The Triple P program provides timely access to service by placing the classes throughout county and offering classes year-round. The Program has been proven effective across various cultures, and ethnic groups. Triple P is an evidence-based practice that provides preventive and intervention support. First 5 Contra Costa provides over-site of the subcontractor, works closely with the subcontractor on program implementation, identifying, recruiting, and on-boarding new Triple P Practitioners, management of the database, review of outcome measurements, and quality improvement efforts. The partnership is intended to provide *outreach for increasing recognition of early signs of mental illness*.
- b. Target Population: Contra Costa County parents of at risk 0–5 children.
- c. Payment Limit: FY 21-22: \$84,214
- d. Number Served: In FY 19-20: 189 client family members enrolled in C.O.P.E. Triple P Parenting classes
- e. Outcomes:
  - Delivered 15 classes and 2 seminar series throughout the county at various times and convenient locations to accommodate transportation barriers. (through partnership with C.O.P.E.)
  - Held 12 presentations and briefings to early childhood organizations as an engagement and recruitment tool
  - Offered case management support to parents as appropriate

## **First Hope (Contra Costa Behavioral Health Services)**

391 Taylor Boulevard, Suite 100, Pleasant Hill, CA, 94523 <http://www.firsthopeccc.org/>  
Point of Contact: Jude Leung, Mental Health Program Manager, 925-608-6550,  
[yatmingjude.leung@cchealth.org](mailto:yatmingjude.leung@cchealth.org)

### **1. General Description of the Organization**

Contra Costa Behavioral Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The First Hope program operates within Contra Costa Behavioral Health's Children's System of Care but is a hybrid program serving both children and young adults.

### **2. Program: First Hope: Early Identification and Intervention in Psychosis - PEI**

- a. Scope of Service: The mission of the First Hope program is to reduce the incidence of psychosis and the secondary disability of those developing a psychotic disorder in Contra Costa County through:
  - Early Identification of young people between ages 12 and 30 who are showing very early signs of psychosis and are determined to be at risk for developing a serious mental illness.
  - Engaging and providing immediate treatment to those identified as "at risk", while maintaining progress in school, work, and social relationships.
  - Providing an integrated, multidisciplinary team approach including psychoeducation, multi-family groups, individual and family therapy, case management, occupational therapy, supported education and vocation, family partnering, and psychiatric services within a single service model.
  - Outreach and community education with the following goals: 1) identifying all young people in Contra Costa County who are at risk for developing a psychotic disorder and would benefit from early intervention services; and 2) reducing stigma and barriers that prevent or delay seeking treatment through educational presentations.
  - In FY 18-19, the program expanded to offer Coordinated Specialty Care (CSC) services to First Episode Psychosis (FEP) young people ages 16-30, and their families, who are within 18 months of their first episode
- b. Target Population: 12–30-year-old young people and their families
- c. Total Budget: FY 21-22: \$2,587,099
- d. Staff: 27 FTE full time equivalent multi-disciplinary staff
- e. Number served: FY 19-20: 960
- f. Outcomes:
  - Helped clients manage Clinical High-Risk symptoms and maintain progress in school, work, and relationships.
  - One conversion out of 78 from clinical high risk to psychosis.
  - 104 First Hope clients had zero PES visits or hospitalizations.
  - Zero completed suicides in FY 19-20.

- Trained 13 new staff in the Coordinated Specialty Care (CSC) model and trained and certified all staff in MultiFamily Group Treatment (MFGT) and Cognitive Behavioral Therapy for Psychosis (CBTp).
- Reduced the stigma associated with symptoms.
- Long Term Public Health Outcomes:
  - Reduce conversion rate from Clinical High-Risk symptoms to schizophrenia.
  - Reduce incidence of psychotic illnesses in Contra Costa County.
  - Increase community awareness and acceptance of the value and advantages of seeking mental health care early.

## **Forensic Mental Health (Contra Costa Behavioral Health Services)**

1430 Willow Pass Road, Suite 100, Concord CA 94520

Point of Contact: Marie Scannell, Program Manager, (925) 288-3915,

[Marie.Scannell@CCHHealth.org](mailto:Marie.Scannell@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The Forensic Services team operates within Contra Costa Mental Health's Adult System of Care, and works closely with Adult Probation, *the courts, and local police departments.*

### **2. Program: Forensic Services - CSS**

The Forensics Services team is a multidisciplinary team comprised of mental health clinical specialists, registered nurses and community support workers. The purpose of the team is to engage and offer voluntary services to participants who are seriously and persistently mentally ill and are involved in the criminal justice system. Forensic Services hosts office hours at the three regional probation offices to enhance the opportunity for screening and service participation. The co-located model allows for increased collaboration among the participants, service providers, and Deputy Probation Officers.

The Forensic MHCS, CSWs, and nurses coordinate to offer Case Management services, individual therapy, and evidence-based group therapies (CBSST, Seeking Safety and WRAP). WRAP services are also provided on an individual basis. In addition, monthly Case Coordination meetings are held for each probation department (east, west, and central) with the Probation Officers, Forensic MH staff, and other community providers. These meetings are used to discuss and coordinate services for individual probationers that are facing challenges in engaging and utilizing services.

The forensic staff participates in continuation of care by initiating contacts with probationers while in custody. These contacts are both pre-release and during probation violations. In addition, the Forensic CSW and clinicians provides WRAP & CBSST groups in MDF. The Forensic MHCS located at east county probation has begun coordination of, and providing, services for the TAY population in conjunction with re-entry services.

AOT: The Forensic Mental Health Team (FMHT) manages and provides an Assistant Outpatient Treatment Program, aka Laura Law AB 1421. The FMHT works in conjunction with Mental Health Systems (MHS) to provide contracted services. All requests for potential AOT services come through the FMHT.

The FMHT is responsible to determine if the requestors meet the requirements as stated in the Welfare and Institution code and if the person for whom the request is being made meets the 9 criteria for eligible AOT services. The FMHT also provides linkage to other services for individuals that do not meet all the criteria for AOT.

The Forensic Team expanded its mobile crisis response capacity from fielding a mobile Mental Health Evaluation Team (MHET) to fielding a full Mobile Crisis Response Team to respond to adult consumers experiencing mental health crises in the community. Mental health clinicians and community support workers will work closely with the County's Psychiatric Emergency Services and law enforcement, if necessary, to respond to residents in crises who would be better served in their respective communities. MHSAs funds will be utilized to supplement funding that enables this team to respond seven days a week with expanded hours of operation and the addition of two positions.

- a. Scope of Services: Authorized in Fiscal Year 2011-12 four clinical specialists were funded by MHSAs to join Forensics Services Team. This team works very closely with the criminal justice system to assess referrals for serious mental illness, provide rapid access to a treatment plan, and work as a team to provide the appropriate mental health, substance abuse and housing services needed.
- b. Target Population: Individuals who are seriously and persistently mentally ill who are on probation and at risk of re-offending and incarceration.
- c. Budget: \$1,626,390
- d. MHSA-Funded Staff: 4.0 Full-time equivalent
- e. Number Served: For FY 19-20: 343

## **Fred Finch Youth Center**

2523 El Portal Drive, Suite 201, San Pablo, CA 94806, <https://www.fredfinch.org/>

Point of Contact: Julie Kinloch, Program Director, (510) 439-3130 Ext. 6107,  
[juliekinloch@fredfinch.org](mailto:juliekinloch@fredfinch.org)

### **1. General Description of the Organization**

Fred Finch seeks to provide innovative, effective, caring mental health and social services to children, young adults, and their families that allow them to build on their strengths, overcome challenges, and live healthy and productive lives. Fred Finch serves children, adolescents, young adults, and families facing complex life challenges. Many have experienced trauma and abuse; live at or below the poverty line; have been institutionalized or incarcerated; have a family member that has been involved in the criminal justice system; have a history of substance abuse; or have experienced discrimination or stigma.

### **2. Program: Contra Costa Transition Age Youth Full Service Partnership - CSS**

Fred Finch is the lead agency that collaborates with the Contra Costa Youth Continuum of Services, The Latina Center and Contra Costa Mental Health to provide a Full Service Partnership program for Transition Age Youth in West and Central Contra Costa County.

- a. Scope of Services: Services will be provided using an integrated team approach, based on a modified Assertive Community Treatment (ACT) model of care and the Individual Placement and Support (IPS) model designed to support our TAY with gaining and maintaining competitive employment. The team includes a Personal Service Coordinator working in concert with a multi-disciplinary team of staff, including a Peer Mentor and Family Partner, an Employment Specialist, a Psychiatric Nurse Practitioner, staff with various clinical specialties, including co-occurring substance disorder and bi-lingual capacity. Services include:

- Outreach and engagement
- Case management
- Outpatient Mental Health Services, including services for individuals with co-occurring mental health & alcohol and other drug problems
- Crisis Intervention
- Collateral
- Medication support (may be provided by County Physician)
- Housing support
- Flexible funds
- Referrals to Money Management services as needed
- Supported Employment Services
- Available to consumer on 24/7 basis

- a. Target Population: Young adults with serious mental illness or serious emotional disturbance. These young adults exhibit key risk factors of homelessness, limited English proficiency, co-occurring substance abuse, exposure to trauma, repeated school failure, multiple foster-care or family-caregiver placements, and experience with the juvenile justice system and/or Psychiatric Emergency Services. Fred Finch serves Central and West County.

- b. Payment Limit: FY 21-22 \$1,503,519

c. Number served: For FY 19-20:50

d. Outcomes: For FY 19/20:

- Reduction in incidence of psychiatric hospitalizations
- Increase in detention bookings
- School enrollment increased in the Fall and Housing decreased.
- Although Employment dropped somewhat, Competitive Employment remained steady.
- ANSA data: Individual Strengths and Depression Domains goals were met, exceeding the targeted goal percentage. Life Domain Functioning, Behavioral/Emotional Needs and Improvement in at least one Domain all decreased respectively and appear in range of meeting the stated goal.
- Continued contributing factors include: Active Socialization and Community building efforts that address communication/interpersonal skills, symptom management, identity development and holistic incorporation such as Workshops that target specific needs such as: Planned Parenthood (Healthy Sexuality) & Nutrition and bringing in 2018; New Laws, Immigration, Current Events Impact, etc. CCTAY continues to offer social outings, community connection, advocacy and participant led activities to promote confidence, build self-esteem, leadership and independent living skills, communication, etc. in order to increase overall treatment success and outcomes.

**Table 1. Pre- and post-enrollment utilization rates for 50 Fred Finch FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	% change
<i>PES episodes</i>	45	23	0.093	0.042	-55.2%
<i>Inpatient episodes</i>	25	5	0.051	0.009	-82.5%
<i>Inpatient days</i>	212	128	0.436	0.231	-47.0%
<i>DET Bookings</i>	0	1	0.000	0.004	+100.0%

## **George and Cynthia Miller Wellness Center (Contra Costa Behavioral Health Services)**

25 Allen Street, Martinez CA 94553, <https://cchealth.org/centers/mwc.php>

Point of Contact: Thomas Tighe, Mental Health Program Manager, (925) 890-5932,  
[Thomas.Tighe@CCHHealth.org](mailto:Thomas.Tighe@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The George and Cynthia Miller Wellness Center is a Federally Qualified Health Center under the Contra Costa Health Services Hospital and Clinics Division.

### **2. Program: George and Cynthia Miller Wellness Center (Formerly the Assessment and Recovery Center) - CSS**

- a. Scope of Services: The George and Cynthia Miller Wellness Center (Miller Wellness Center) provides a number of services to the Contra Costa Behavioral Health Services' system of care consumers that includes the diversion of children and adults from Psychiatric Emergency Services (PES). Children and adults who are evaluated at PES may step-down to the Miller Wellness Center if they do not need hospital level of care. The Miller Wellness Center offers urgent same-day appointments for individuals who are not open to the Contra Costa Mental Health System, or who have disconnected from care after previously being seen. Services include brief family therapy, medication refills, substance abuse counseling, and general non-acute assistance. In addition, the Center provides appointments for patients post psychiatric inpatient discharge. This provides the opportunity for a successful transition that ensures that medications are obtained, and appointments are scheduled in the home clinic. The behavioral health service site is located in a Federally Qualified Health Center with separate entrances from the physical health side.
- b. Target Population: Children and adults who are being diverted from PES, transition from inpatient, and consumers not yet connected to the outpatient system of care.
- c. Total Budget: \$319,590
- d. Staff funded through MHSA: 3 FTE – A Program Manager, and two Community Support Workers.
- e. Number Served: To Be Determined
- f. Outcomes: To Be Determined

## Hope Solutions (formerly Contra Costa Interfaith Housing)

Contact Information: 399 Taylor Blvd. Ste. 115, Pleasant Hill, CA, 94530,  
<https://www.hopesolutions.org>

Point of Contact: Sara Marsh, (925) 944-2244, [smarsh@hopesolutions.org](mailto:smarsh@hopesolutions.org)

### 1. General Description of the Organization

Hope Solutions provides permanent, affordable housing and vital, on-site support services to homeless and at-risk families and individuals in Contra Costa County. By providing services on-site at the housing programs where individuals and families live, we maximize timeliness and access to services. This model also minimizes the discriminatory barriers to support, due to lack of transportation or other resources.

### 2. Program: Strengthening Vulnerable Families

#### a. Scope of Services:

- The Strengthening Vulnerable Families program provides support services at 5 locations. All these locations house vulnerable adults and/or families with histories of homelessness, mental health challenges and/or substance abuse problems. Case management was provided on-site and in-home for all residents requesting this support. Youth enrichment/afterschool programming was provided at all family housing sites. The total number of households offered services under this contract was 286, including the following sites:
  - Garden Park Apartments (Pleasant Hill) – 27 units permanent supportive housing for formerly homeless families with disabilities
  - Lakeside Apartments (Concord) – 124 units of affordable housing for low-income families and individuals (including 12 units of permanent supportive housing for formerly homeless residents with disabilities).
  - Bella Monte Apartments (Bay Point) – 52 units of affordable housing for low-income families and individuals
  - Los Medanos Village (Pittsburg) – 71 units of affordable housing for low-income families and individuals
  - MHSA funded housing (Concord, Pittsburg) - 12 residents in 3 houses.
- In addition to case management, Hope Solutions also provides property management and maintenance for the 12 units of MHSA housing.
- Hope Solutions also agreed to participate with helping to host a community forum on permanent supportive housing during the year.

b. Target Population: Formerly homeless/at-risk families and youth.

c. Payment Limit: FY 21-22: \$385,477

d. Number served: In FY 19-20: 433 clients

e. Outcomes:

- Provided 8 parenting support groups, 8 sessions/group at the 4 housing sites for a total of 67 group sessions and least 83 participants.
- Provided 4350 hours of support services with on-site case management to 275 families/433 individuals.
- After the Shelter-in-Place order many residents lost their jobs. Working remotely, case managers assisted 23 residents to access unemployment resources, and 33 residents to access COVID funds to subsidize rents. At Lakeside 12 undocumented families were also assisted to receive the COVID California state funds designated for immigrants.
- Staff also organized food resources for families with limited funds and delivered food to over 100 households to help keep residents safe. Case managers also distributed activity bags to youth including crayons, activity booklets, and hand sanitizer/PPE. Masks were distributed to over 100 families as needed, and education and support was offered regarding the stay-at-home order and the COVID19 virus.
- Provided 2914 hours of service to 181 youth at youth enrichment centers in the four housing sites. Activities included afterschool programming, summer programming, educational advocacy, and a teen support group.
- 99% (277/281) of families maintained their housing. 96% (104/108) of families at risk for eviction remained housed. 98% (243/248) of families requesting assistance with concrete resources had their request fulfilled (e.g., access to food, employment, transportation, healthcare, and mental health resources).
- 100% (8/8) of the residents who attended the wellness/harm-reduction group sessions reported using the coping strategies they learned in the groups.
- 77% (33/43) of youth who were assessed with the Social Skills Index Survey (SSIS) improved their skill score over the year.
- 87% (71/82) of youth that participate in the afterschool academic and tutoring program achieved at least four new CA Academic benchmarks.
- 86% (62/72) of grades K through 5 children achieved progress with their reading skills
- 100% (4/4) of Teen Club youth participants completed end of year surveys and showed improved self-concept/self-esteem.
- 88% (75/85) of parents who received educational advocacy/coaching reported having an improved/positive experience working with school personnel.

## **James Morehouse Project (JMP) at El Cerrito High (fiscal sponsor of Bay Area Community Resources)**

540 Ashbury Avenue, El Cerrito, CA 94530, <http://www.jamesmorehouseproject.org/>

Point of Contact: Jenn Rader, (510) 231-1437, [jenn@jmhops.org](mailto:jenn@jmhops.org)

### **1. General Description of the Organization**

The James Morehouse Project (JMP) works to create positive change within El Cerrito High School through health services, counseling, youth leadership projects and campus-wide school climate initiatives. Founded in 1999, the JMP assumes youth have the skills, values, and commitments to create change in their own lives and the life of the school community. The JMP partners with community and government agencies, local providers, and universities.

### **2. Program: James Morehouse Project (JMP) - PEI**

- a. Scope of Services: The James Morehouse Project (JMP), a school health center at El Cerrito High School (fiscal sponsor: BACR), offers access to care and wellness through a wide range of innovative youth development programs for 300 multicultural youth in West Contra Costa County. Through strategic partnerships with community-based agencies, local universities, and county programs, JMP offers three main program areas that include: Counseling & Youth Development, Restorative School-Wide Activities, and Medical & Dental Services. Key activities designed to improve students' well-being and success in school include: AOD Prevention; Migrations/Journeys (immigration/acclulturation); Bereavement Groups (loss of a loved one); Culture Keepers (youth of color leadership); Discovering the Realities of Our Communities (DROC – environmental and societal factors that contribute to substance abuse); Peer Conflict Mediation; and Dynamic Mindfulness.

As an on-campus student health center, the JMP is uniquely situated to maximize access and linkage to mental health services for young people from underserved communities. The JMP connects directly with young people at school and provides timely, ongoing, and consistent services to youth on-site. Because the JMP also offers a wide range of youth development programs and activities, JMP space has the energy and safety of a youth center. For that reason, students do not experience stigma around coming into the health center or accessing services.

- b. Target Population: At-risk students at El Cerrito High School
- c. Payment Limit: FY 21-22: \$105,987
- d. Numbers Served: FY 19-20: 405 young people
- e. Outcomes:
- With the help of a team that included 8 clinical interns, JMP served 405 young people participated in 23 different groups and/or individual counseling.
  - Referred 17 young people to mental health services.

- Altered services to accommodate remote support with COVID-19 including partnering with community-based partners like the Seneca MRT in crisis situations.
- COVID-19 related needs were addressed through case management, including working with young people and families around challenges with distance learning (e.g., accessing Wi-Fi, troubleshooting tech challenges), and securing cash assistance and accessing other resources (e.g., food, legal assistance).
- Stronger connection to caring adults/peers (build relationships with caring adult(s), peers) for participating youth.
- Increased well-being (diminished perceptions of stress/anxiety, improvement in family/loved-one relationships, increased self-confidence, etc.) for participating youth.
- Strengthened connection to school (more positive assessment of teacher/staff relationships, positive peer connections, ties with caring adults) for participating youth.

## **Jewish Family & Community Services East Bay (JFCS East Bay)**

1855 Olympic Boulevard, #200, Walnut Creek, CA 94596, <https://jfcs-eastbay.org/>  
Point of Contact: Lisa Mulligan, (925) 927-2000, [lmulligan@jfcs-eastbay.org](mailto:lmulligan@jfcs-eastbay.org)

### **1. General Description of the Organization**

Rooted in Jewish values and historical experiences, and inspired by the diverse communities the agency serves, JFCS East Bay promotes the well-being of individuals and families by providing essential mental health and social services to people of all ages, races, and religions. Established in 1877, JFCS East Bay's long tradition of caring directly impacts the lives of approximately 6,000 Alameda and Contra Costa residents each year. The agency provides services in three main program areas: Refugees & Immigrants, Children & Parents, and Adults & Seniors. Woven throughout these services is a comprehensive volunteer program.

### **2. Program: Community Bridges - PEI**

- a. Scope of Services: During the term of this contract, Jewish Family & Community Services East Bay will assist Contra Costa Behavioral Health to implement the Mental Health Services Act (MHSA), Prevention and Early Intervention Program "Reducing Risk of Developing Mental Illness" by providing Outreach and Engagement to Underserved Communities with the Community Bridges Program, providing culturally grounded, community-directed mental health education and navigation services to 200 to 300 refugees and immigrants of all ages and sexual orientations in the Afghan, Syrian, Iranian, Iraqi, African, and Russian communities of central Contra Costa County. Prevention and early intervention-oriented program components include culturally and linguistically accessible mental health education; early assessment and intervention for individuals and families; and health and mental health system navigation assistance. Services will be provided in the context of group settings and community cultural events, as well as with individuals and families, using a variety of convenient non-office settings such as schools, senior centers, and client homes. In addition, the program will include mental health training for frontline staff from JFCS East Bay and other community agencies working with diverse cultural populations, especially those who are refugees and immigrants.
- b. Target Population: Immigrant and refugee families of Contra Costa County at risk for developing a serious mental illness.
- c. Payment Limit: FY 21-22: \$179,720
- d. Number served: FY 19-20: 311
- e. Outcomes:
  - Provided culturally and linguistically appropriate care to all consumers served
  - Served 311 people, including 135 frontline staff and 176 clients.

- Completed three out of four planned trainings for the year. The fourth training was cancelled due to COVID-19. All three trainings were held via Zoom and had high attendance. In total, 135 service providers from the community were trained, exceeding the target of training 75 frontline staff. 96% of respondents reported a better understanding of recognizing stress and risk factors after the training and 91% of respondents reported a better understanding of when to refer clients to specialized services.
- Provided mental health education classes to 16 Russian-speaking seniors, parenting workshops to 16 Afghan parents, bilingual/bicultural case management to 160 clients (including 85 children ages 18 and under and 75 adults ages 18 and older and provided bicultural individual therapy services to 25 Dari-speaking clients.
- 100% of the 75 adult case management clients reported upon exit they were able to independently seek help for mental health services, knew how to link to the appropriate persons within the county health care system or other community resources for resolution of health or mental health issues, and had an increased understanding of health and mental health care systems in Contra Costa County.
- 81% of participants in the Russian Mental Health classes reported a better understanding of when and how to seek help, 93% reported an increased ability to recognize stress and risk factors in themselves and/or family members, and 93% reported feeling more supported after coming to the group.
- 100% of participants in the Afghan Parenting Workshops reported they learned useful skills to become a more effective parent, had a better understanding of when and how to seek help, and felt more supported after coming to the group. 87.5% reported having an increased ability to recognize stress and risk factors in themselves and/or family members.

## **Juvenile Justice System – Supporting Youth (Contra Costa Behavioral Health Services)**

202 Glacier Drive, Martinez, CA 94553

Point of Contact: Steve Blum, (925) 957-2739, [steven.blum@cchealth.org](mailto:steven.blum@cchealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The staff working to support youth in the juvenile justice system operate within Contra Costa Behavioral Health's Children's System of Care.

### **2. Program: Mental Health Probation Liaisons and Orin Allen Youth Ranch**

**Clinicians - PEI** County behavioral health clinicians strive to help youth experiencing the juvenile justice system become emotionally mature and law-abiding members of their communities. Services include: screening and assessment, consultation, therapy, and case management for inmates of the Juvenile Detention Facility and juveniles on probation, who are at risk of developing or struggle with mental illness or severe emotional disturbance.

- a. **Scope of Services:** *Orin Allen Youth Rehabilitation Facility (OAYRF)* provides 100 beds for seriously delinquent boys ages 13-21, who have been committed by the Juvenile Court. OAYRF provides year-round schooling, drug education and treatment, Aggression Replacement Training, and extracurricular activities (gardening, softball). Additionally, the following mental health services are provided at OAYRF: psychological screening and assessment, crisis assessment and intervention, risk assessment, individual therapy and consultation, family therapy, psychiatric, case management and transition planning.
- b. *Mental Health Probation Liaison Services (MHPLS)* has a team of three mental health probation liaisons stationed at each of the three field probation offices (in East, Central, and West Contra Costa County). The mental health probation liaisons are responsible for assisting youth and families as they transition out of detention settings and return to their communities. Services include: providing mental health and social service referrals, short term case management, short term individual therapy, short term family therapy. Additionally, the mental health probation liaisons are responsible for conducting court-ordered mental health assessments for youth within the county detention system.
- c. Target Population: Youth in the juvenile justice system in need of mental health support
- d. Payment Limit: FY 21-22: \$381,744
- e. Staff: 5 Mental Health Clinical Specialists: 3 probation liaisons, 2 clinicians at the Ranch
- f. Number Served: FY 19-20: 300+
- g. Outcomes:
  - Help youth address mental health and substance abuse issues that may underlie problems with delinquency.

- Increased access to mental health services and other community resources for at risk youth.
- Provide referrals, short-term therapy, and short-term case management to help decrease symptoms of mental health disturbance.
- Increase family and youth help-seeking behavior; decrease stigma associated with mental illness.
- Work with Probation, families, and youth to decrease out-of-home placements and rates of recidivism.
- Help youth and families increase problem-solving skills

## La Clínica de la Raza

PO Box 22210, Oakland, CA, 94623, <https://www.laclinica.org/>

Point of Contact: Laura Zepeda Torres, (510) 535 2911, [lztorres@laclinica.org](mailto:lztorres@laclinica.org)

### **1. General Description of the Organization**

With 35 sites spread across Alameda, Contra Costa, and Solano Counties, La Clínica delivers culturally and linguistically appropriate health care services to address the needs of the diverse populations it serves. La Clínica is one of the largest community health centers in California.

### **2. Program: Vías de Salud and Familias Fuertes - PEI**

- a. Scope of Services: La Clínica de La Raza, Inc. (La Clínica) will implement Vías de Salud (Pathways to Health) to target Latinos residing in Central and East Contra Costa County with a goal of: a) 3,000 depression screenings; b) 250 assessment and early intervention services provided by a Behavioral Health Specialist to identify risk of mental illness or emotional distress, or other risk factors such as social isolation; and c) 1,250 follow-up support/brief treatment services to adults covering a variety of topics such as depression, anxiety, isolation, stress, communication and cultural adjustment. La Clínica's PEI program category is Improving Timely Access to Services for Underserved Populations.

Contractor will also implement Familias Fuertes (Strong Families), to educate and support Latino parents and caregivers living in Central and East Contra Costa County so that they can support the strong development of their children and youth. The project activities will include: 1) Screening for risk factors in youth ages 0-18 (750 screenings); 2) 75 Assessments (includes child functioning and parent education/support) with the Behavioral Health Specialist will be provided to parents/caretakers of children ages 0-18; 3) Three hundred (300) follow up visits with children/families to provide psychoeducation/brief treatment regarding behavioral health issues including parent education, psychosocial stressors/risk factors and behavioral health issues. The goal is to be designed and implemented to help create access and linkage to mental health treatment, be designed, implemented, and promoted in ways that improve timely access to mental health treatment services for persons and/or families from underserved populations, and be designed, implemented, and promoted using strategies that are non-stigmatizing and non-discriminatory.

- b. Target Population: Contra Costa County Latino residents at risk for developing a serious mental illness.
- c. Payment Limit: FY 21-22: \$288,975
- d. Number served: FY 19-20: 922
- e. Outcomes:
  - Vías de Salud:
    - Offered 3623 depression screenings (120% of yearly target), 296 assessments and early intervention services (118% of yearly target), and 1238 follow-up support/brief treatment services (99% of yearly target).
    - Programming pivoted to telehealth as needed during COVID-19

- Familias Fuertes:
  - Offered 661 screenings for youth (88% of yearly target), 113 assessments for youth (105% of yearly target), and 333 follow-up visits with families (111% of yearly target).
  - Programming pivoted to telehealth as needed during COVID-19

## Lao Family Community Development

1865 Rumrill Boulevard, Suite #B, San Pablo, CA 94806, <https://lfc.org/>  
Point of Contact: Kathy Chao Rothberg, (510) 215-1220, [krothberg@lfc.org](mailto:krothberg@lfc.org) and Brad Meyer, (510) 215-1220, [bmeyer@lfc.org](mailto:bmeyer@lfc.org)

### **1. General Description of the Organization**

Founded in 1980, Lao Family Community Development, Inc. (LFCD) annually assists more than 15,000 diverse refugee, immigrant, limited English, and low-income U.S. born community members in achieving long-term financial and social self-sufficiency. LFCD operates in 3 Northern California counties delivering timely, linguistically, and culturally appropriate services using an integrated service model that addresses the needs of the entire family unit, with the goal of achieving self-sufficiency in one generation.

### **2. Program: Health and Well-Being for Asian Families - PEI**

- a. Scope of Services: Lao Family Community Development, Inc. provides a comprehensive and culturally sensitive Prevention and Early Intervention Program that combines an integrated service system approach for serving underserved Asian and South East Asian adults throughout Contra Costa County. The program activities designed and implemented include: comprehensive case management; evidence based educational workshops using the Strengthening Families Curriculum; and peer support groups. Strategies used reflect non-discriminatory and non-stigmatizing values. We will provide outreach, education, and support to a diverse underserved population to facilitate increased development of problem-solving skills, increase protective factors to ensure families emotional well-being, stability, and resilience. We will provide timely access, referral, and linkage to increase client's access to mental health treatment and health care providers in the community based, public, and private system. LFCD provides in language outreach, education, and support to develop problem solving skills, and increase families' emotional well-being and stability, and help reduce the stigmas and discriminations associated with experiencing mental health. The staff provides a client centered, family focused, strength-based case management and planning process, to include home visits, brief counseling, parenting classes, advocacy, and referral to other in-house services such as employment services, financial education, and housing services. These services are provided in clients' homes, other community-based settings, and the offices of LFCD in San Pablo.
- b. Target Population: South Asian and South East Asian Families at risk for developing serious mental illness.
- c. Payment Limit: FY 21-22: \$196,128
- d. Number served: In FY 19-20: 128
- e. Outcomes:
  - A total of 125 clients completed the Pre LSNS assessment and 125 clients

completed the Post LSNS assessments. The average progression was 8 with a high correlation between the participant's progression and level of participation in monthly social peer support groups activities and workshops.

- 98% (125 of 128 respondents) of the participants were satisfied with the program services, and 2% (3 of 128 respondents) were somewhat satisfied with the program services.
- 101 clients were referred to mental health services.
- Held 16 Strengthening Families Program (SFP) workshops (2 workshops per month from August 2019 to March 2020). Due to COVID-19 there were no SFP event from April to May 2020.
- Facilitated 6 different thematic peer support groups/events during the FY
- Provided case management and system navigation for 128 community members

## The Latina Center

3701 Barrett Avenue #12, Richmond, CA 94805, <https://thelatinacenter.org/>  
Point of Contact: Miriam Wong, (510) 233-8595, [mwong@thelatinacenter.org](mailto:mwong@thelatinacenter.org)

### **1. General Description of the Organization**

The Latina Center is an organization of and for Latinas that strive to develop emerging leaders in the San Francisco Bay Area through innovative training, support groups and leadership programs. The mission of The Latina Center is to improve the quality of life and health of the Latino Community by providing leadership and personal development opportunities for Latina women.

### **2. Program: Our Children First/Primero Nuestros Niños - PEI**

- a. Scope of Services: The Latina Center (TLC) provides culturally and linguistically specific parenting education and support to at least 300 Latino parents and caregivers in West Contra Costa County that 1) supports healthy emotional, social, and educational development of children and youth ages 0-15, and 2) reduces verbal, physical and emotional abuse. The Latina Center enrolls primarily low-income, immigrant, monolingual/bilingual Latino parents and grandparent caregivers of high-risk families in a 12-week parenting class using the Systematic Training for Effective Parenting (STEP) curriculum or PECES in Spanish (Padres Eficaces con Entrenamiento Eficaz). Parent Advocates are trained to conduct parenting education classes, and Parent Partners are trained to offer mentoring, support, and systems navigation. TLC provides family activity nights, creative learning circles, cultural celebrations, and community forums on parenting topics.
- b. Target Population: Latino Families and their children in West County at risk for developing serious mental illness.
- c. Payment Limit: FY 21-22 \$125,538
- d. Number served: For FY 19-20: 314
- e. Outcomes:
  - Served a total of 314 parents (parenting sessions, mental health workshops, psycho-educational therapy, support groups).
  - Additionally, provided 30 learning circles with activities reaching 424 children.
  - Outreach efforts reached 1,031 individuals and enrolled 42 people into their programs.
  - Parenting classes were held in 4 community-based locations: Cesar Chavez Elementary School, Mira Vista Elementary, Richmond Charter Academy, and The Latina Center. All classes completed the 10-week sessions, 6 sessions online.
  - 286 parents (244 women and 42 men) registered for the parenting class and completed a pre-survey in Spanish.
  - Based on the responses to the pre-survey, The Latina Center made at least 28 referrals.

- Held 6 Mental Health Workshops in 3 locations (The Latina Center, St Cornelius Catholic Church and Montalvin Elementary School) for 130 participants; 94 participants completed pre- and post-surveys.
- Before the workshop, 65% of parents said they did know what mental illnesses are; 35% did not know. After the workshop, 96.9% understood what mental illnesses are; 3.1% did not understand. Before the workshop, 57.5% knew any symptoms of mental illness and 42.5% did not. After the workshop, 81.3% stated they knew signs and symptoms and 18.8% did not.

## Lifelong Medical Care

2344 6<sup>th</sup> Street, Berkeley, CA 94710, <https://www.lifelongmedical.org/>

Point of Contact: Kathryn Stambaugh, (510) 981-4156, [kstambaugh@lifelongmedical.org](mailto:kstambaugh@lifelongmedical.org)

### **1. General Description of the Organization**

Founded in 1976, LifeLong Medical Care (LifeLong) is a multi-site safety-net provider of comprehensive medical, dental, behavioral health and social services to low-income individuals and families in West Contra Costa and Northern Alameda counties. In 2017, LifeLong provided approximately 300,000 health care visits to 61,000 people of all ages and cultural backgrounds.

### **2. Program: Senior Network and Activity Program (SNAP) - PEI**

- a. Scope of Services: LifeLong's PEI program, SNAP, brings therapeutic drama, art, music, and wellness programs to isolated and underserved primarily African American older adults living in Richmond. SNAP encourages lifelong learning and creativity, reduces feelings of depression and social isolation, and connects consumers with mental health and social services as needed. All services are designed with consumer input to promote feelings of wellness and self-efficacy, reduce the effects of stigma and discrimination, build community connections, and provide timely access to underserved populations who are reluctant or unable to access other mental health and social services.

SNAP provides services on-site at three low-income housing locations in West County, including weekly group activities, one-on-one check-ins, and case management. Activities vary based on consumer interests, but may include choir, theater, art, board games, word games, special events, and holiday celebrations. Services also include quarterly outings, screening for depression and isolation, information and referral services, and outreach to invite participation in group activities and develop a rapport with residents.

Services are designed to improve timely access to mental health treatment services for persons and/or families from underserved populations, utilizing strategies that are non-stigmatizing and non-discriminatory. The expected impact of these services includes: reducing isolation and promoting feelings of wellness and self-efficacy; increasing trust and reducing reluctance to revealing unmet needs or accepting support services; decreasing stigma and discrimination among underserved populations; and improving quality of life by reducing loneliness and promoting friendships and connections with others.

- b. Target Population: Seniors in low-income housing projects at risk for developing serious mental illness.
- c. Payment Limit: FY 21-22: \$134,710
- d. Number served: FY 19-20: 150

e. Outcomes:

- Prior to Shelter-in-Place, an average of 10 onsite events were held per month (including, creative movement, exercise, bilingual songs, discussion groups, tai chi, walking groups, Spanish classes, and arts & crafts, as well as memorial events for residents who passed away and an outing to visit a participant in the hospital). There was also a health fair held in the fall of 2019. The second planned health fair was cancelled due to COVID-19.
- With COVID-19 services shifted to mainly virtual (telephone and Zoom) interactions and there was an increased emphasis on food distribution. Distribution of masks and PPE, as well as outreach to at-risk older-adult consumers was prioritized.
- Registered 24 people for Meals on Wheels and made 289 deliveries of meals and/or groceries during April-June.
- The Annual survey was adapted to a shorter telephone survey due to COVID-19 and they documented 41 responses. Results were very positive, with all respondents reporting that they were very (79%) or somewhat (21%) satisfied with SNAP overall. 100% were satisfied with the food distribution portion of SNAP during Shelter-in-Place.

## Lincoln

1266 14<sup>th</sup> Street, Oakland CA 94607, <http://lincolnfamilies.org/>

Point of Contact: Allison Staulcup Becwar, LCSW President & CEO, (510) 867-0944, [allisonbecwar@lincolnfamilies.org](mailto:allisonbecwar@lincolnfamilies.org)

### **1. General Description of the Organization**

Lincoln was founded in 1883 as the region's first volunteer-run, non-sectarian, and fully integrated orphanage. As times and community needs evolved, Lincoln's commitment to vulnerable children remained strong. In 1951, Lincoln began serving abused, neglected and emotionally challenged children. Today, as a highly respected provider of youth and family services, Lincoln has a continuum of programs to serve children and families impacted by poverty and trauma throughout Alameda and Contra Costa Counties. Their therapeutic school and community-based services include early intervention to intensive programming and focus on family strengthening, educational achievement and youth positive outlook.

### **2. Program: Multi-Dimensional Family Therapy (MDFT) – Full Service Partnership - CSS**

Multidimensional Family Therapy (MDFT), an evidence-based practice, is a comprehensive and multi-systemic family-based outpatient program for adolescents with co-occurring substance use and mental health issues who may be at high risk for continued substance abuse and other challenging behaviors, such as emotional dysregulation, defiance and delinquency. Working with the youth and their families, MDFT helps youth develop more effective coping and problem-solving skills for better decision making, and helps the family improve interpersonal functioning as a protective factor against substance abuse and related problems. Services are delivered over 5 to 7 months, with weekly or twice-weekly, face-to-face contact, either in the home, the community or in the clinic.

#### a. Scope of Services:

- Services include but are not limited to:
- Outreach and engagement
- Case management
- Outpatient Mental Health Services
- Crisis Intervention
- Collateral Services
- Group Rehab
- Flexible funds
- Contractor must be available to consumer on 24/7 basis

#### b. Target Population: Children in West, Central and East County experiencing co-occurring serious mental health and substance abuse challenges. Youth and their families can be served by this program.

#### c. Payment Limit: FY 21-22 \$874,417

#### d. Number Served: The program served 69 clients in FY19-20.

#### e. Outcomes: For FY 19-20:

- Reduction in delinquency or maintained positive functioning in community involvement
- Improvement in emotional functioning

**Table 1. Pre- and post-enrollment utilization rates for 69 Lincoln Child Center participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	7	1	0.012	0.002	-83.2%
<i>Inpatient episodes</i>	3	0	0.005	0.000	-100.0%
<i>Inpatient days</i>	12	0	0.020	0.000	-100.0%
<i>JACS Bookings</i>	46	13	0.077	0.025	-66.8%

## **PH Senior Care, LLC (Pleasant Hill Manor)**

40 Boyd Road, Pleasant Hill CA, 94523

Point of Contact: Evelyn Mendez-Choy, (925) 937-5348, [emendez@northstarsl.com](mailto:emendez@northstarsl.com)

### **1. General Description of the Organization**

The County contracts with Pleasant Hill Manor, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Cares – MHSA Housing Services - CSS**

#### **a. Scope of Services: Augmented residential services, including but not limited to:**

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

#### **b. Target Population: Adults aged 60 years and older, who live in Western, Central, and Eastern Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.**

#### **c. Number served: For FY 19-20: Capacity of 26 beds.**

## **Mental Health Services Act Housing Services (Contra Costa Health, Housing, and Homeless Services – H3)**

2400 Bisso Lane, Suite D2, Concord, CA 94520, <https://cchealth.org/h3/>  
Point of Contact: Jenny Robbins, LCSW, Housing and Services Administrator,  
(925) 608-6000, [Jenny.Robbins@CCHealth.org](mailto:Jenny.Robbins@CCHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division partners with the Health, Housing and Homeless Division to provide permanent and temporary housing with supports for person experiencing a serious mental illness and who are homeless or at risk of being homeless.

### **2. Program: Homeless Programs - Temporary Shelter Beds - CSS**

The County's Health Housing and Homeless Services Division operate a number of temporary bed facilities in West and Central County for transitional age youth and adults. CCBHS, maintains a Memorandum of Understanding with the Health Housing and Homeless Services Division that provides additional funding to enable up to 64 individuals with a serious mental illness per year to receive temporary emergency housing for up to four months.

- a. Target Population: Individuals who are severely and persistently mentally ill or seriously emotionally disturbed; and are homeless.
- b. Total MHSA Portion of Budget: \$2,048,912
- c. Number Served: FY 19-20: 75 beds fully utilized for 365 days in the year.

### **3. Program: Permanent Housing - CSS**

Having participated in a specially legislated MHSA Housing Program through the California Housing Finance Agency the County, in collaboration with many community partners, the County completed a number of one-time capitalization projects to create 50 permanent housing units for individuals with serious mental illness. These individuals receive their mental health support from Contra Costa Behavioral Health contract and county service providers. The sites include Villa Vasconcellos in Walnut Creek, Lillie Mae Jones Plaza in North Richmond, The Virginia Street Apartments in Richmond, Robin Lane apartments in Concord, Ohlone Garden apartments in El Cerrito, Third Avenue Apartments in Walnut Creek, Garden Park apartments in Concord, and scattered units throughout the County operated by Hope Solutions (formerly Contra Costa Interfaith Housing).

- a. Target Population: Individuals who are severely and persistently mentally ill or seriously emotionally disturbed and are homeless or at risk of homelessness.
- b. Total MHSA Portion of Budget: One Time Funding Allocated.
- c. Number Served: FY 19-20: 50 units.

### **4. Program: Coordination Team - CSS**

The CCBHS Health Housing and Homeless Services Coordinator and staff work closely with County's Homeless Services Division staff to coordinate referrals and placements, facilitate linkages with other Contra Costa mental health programs and services, and provide contract monitoring and quality control of 26 augmented board and care providers to provide permanent supportive housing for chronically homeless disabled individuals.

- a. Target Population: Individuals who are severely and persistently mentally ill or seriously emotionally disturbed and are homeless or at risk of homelessness.

- b. Total FTE: 4.0 FTE
- c. Total MHSA Portion of Budget: \$532,200
- d. Number Served: FY 19-20: Approximately 700 individuals per year receive permanent or temporary supportive housing by means of MHSA funded housing services.

## **Mental Health Systems, Inc.**

2280 Diamond Boulevard, #500, Concord, CA 94520,

<https://www.mhsinc.org/listing/contra-costa-action-team/>

Point of Contact: Mark Tiano, (925) 481-6014, [mark.tiano@mhsinc.org](mailto:mark.tiano@mhsinc.org)

### **1. General Description of the Organization**

Mental Health Systems (MHS) provides mental health services and substance abuse treatment designed to improve the lives of individuals, families and communities. MHS operates over 80 programs throughout central and southern California and has recently contracted with Contra Costa Behavioral Health to provide Assisted Outpatient Treatment/Assertive Community Treatment services to residents of Contra Costa County.

### **2. Program: MHS Contra Costa ACTION Team - CSS**

- a. Mental Health Systems, Inc. (MHS) will provide Assisted Outpatient Treatment (AOT) services and subsequent Assertive Community Treatment (ACT) Full Service Partnership (FSP) services for up to 75 eligible adults in Contra Costa County. Program services shall meet the requirements of AB 1421 (Laura's Law) while respecting the choice, autonomy and dignity of individuals struggling with the symptoms of serious mental illness (SMI) and/or co-occurring substance abuse disorders. The program will be identified as the Contra Costa ACTION Team and the Mental Health Services Act (MHSA) will fund services. The program will be inclusive of outreach, engagement and support in the investigatory process of AOT determination and the subsequent provision of ACT services. MHS' FSP program model will incorporate an ACT Team whose multidisciplinary members will provide intensive community-based services to adults with SMI and co-occurring substance abuse disorders, who a) establish an AOT court settlement agreement, b) are court-ordered to receive these services, or c) meet the criteria and agree to voluntarily accept services. Target Population: Adults diagnosed with serious mental illness and co-occurring substance abuse disorders, who a) establish an AOT court settlement agreement, b) are court-ordered to receive these services, or c) meet the criteria for FSP services and agree to voluntarily accept services.
- b. Payment Limit: FY 21-22 \$2,136,653
- c. Number Served: The program served 68 clients during the 17-18 fiscal year, 115 clients during the 18-19 fiscal year, and 84 clients during 19-20 fiscal year.
- d. Outcomes: For FY 19/20
  - ACT treatment adherence was 37% compared to 51% during SIP orders
  - Consumers receiving ACT services had a decrease in crisis episodes
  - Consumers had a decrease in psychiatric hospitalizations
  - Consumers had a decrease in jail bookings
  - 72% of consumers obtained or maintained housing while in ACT.

**Table 1. Pre-and post-enrollment utilization rates for 84 Mental Health Systems AOT/ACT/FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-Enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	259	133	0.335	0.138	-58.9%
<i>Inpatient episodes</i>	54	18	0.070	0.019	-73.3%
<i>Inpatient days</i>	556	199	0.718	0.206	-71.4%
DET Bookings	70	24	0.090	0.025	-72.6 %

**3. Program: MHS Contra Costa Central FSP – CSS**

a. The Adult Full Service Partnership (FSP) joins the resources of Mental Health Systems, Inc. (MHS) and Costa County Behavioral Health Services, and utilizes a modified assertive community treatment model.

MHS’s FSP program includes collaborative services with the Contra Costa Adult Forensic Team to case manage consumers who are on Contra Costa County Probation. The program serves adults who reside in Contra Costa County, who have been charged with non-violent felonies or misdemeanors, and who experience a serious mental illness/serious emotional disturbance. Services use an integrated multi-disciplinary team approach, based on a modified Assertive Community Treatment (ACT) model of care. Services include outreach and engagement, case management, outpatient mental health services, including services for individuals with co-occurring mental health and alcohol and other drug problems, crisis intervention, medication support, housing support, flexible funds, vocational services, educational services, and recreational and social activities. MHS’s staff are available to consumers on a 24/7 basis. Target Population: Adults in Central County who are diagnosed with a serious mental illness, are at or below 300% of the federally defined poverty level, and are uninsured or receive Medi-Cal benefits.

b. Payment Limit: FY 21-22 \$1,050,375

c. Number Served: FY 19-20: 39 Individuals

d. Outcomes:

- Reduction in incidence of psychiatric hospitalizations
- Decrease in detention bookings

**Table 1. Pre-and post-enrollment utilization rates for 39 Mental Health Systems FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-Enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	122	37	0.290	0.084	-71.0%
<i>Inpatient episodes</i>	22	6	0.052	0.014	-73.9%
<i>Inpatient days</i>	319	102	0.760	0.232	-69.4%
DET Bookings	18	5	0.043	0.011	-73.4

## **Modesto Residential Living Center, LLC.**

1932 Evergreen Avenue, Modesto CA, 95350

Point of Contact: Dennis Monterosso, (209) 530-9300, [info@modestoRLC.com](mailto:info@modestoRLC.com)

### **1. General Description of the Organization**

The County contracts with Modesto Residential, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Care – MHSA Housing Services - CSS**

The County contracts with Modesto Residential Living Center, a licensed board and care provider, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

#### **a. Scope of Services: Augmented residential services, including but not limited to:**

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

#### **b. Target Population: Adults aged 18 years to 59 years who lived in Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits and accepted augmented board and care at Modesto Residential Living Center.**

#### **c. Number served: For FY 19-20: Capacity of 6 beds.**

## **National Alliance on Mental Illness Contra Costa (NAMI CC)**

2151 Salvio Street, Suite V, Concord, CA 94520, <http://www.namicontracosta.org/>

Point of Contact: Gigi Crowder, (925) 942-0767, [Gigi@namicontracosta.org](mailto:Gigi@namicontracosta.org)

### **1. General Description of the Organization**

NAMI CC has been assisting people affected by mental illness for over 30 years now. Services provide support, outreach, education, and advocacy to those affected by mental illness. NAMI's office is located in central Contra Costa County and the program has partnerships with other community and faith based organizations throughout the county that allow them to utilize their space and meet with people in their communities.

### **2. Program: Family Volunteer Support Network (FVSN) - WET**

NAMI CC will recruit, train and manage a network of volunteers with lived experience to support families and loved ones of people experiencing mental health issues. These volunteers will be an extended support network of resources, while assisting families in navigating the behavioral health system. This group of subject matter experts will help families gain a basic understanding of various mental health and substance abuse issues, learn to advocate for themselves or their loved one's needs and become a network to other families experiencing similar situations.

- a. Scope of Services: Operate a main site in the Central region of the county and utilize satellite sites to extend outreach to other regions for the purpose of conducting volunteer training, support groups, and other educational activities that will build and maintain a cadre of volunteers.
  - Continuously recruit volunteers from all county regions, communities, economic levels, age groups, cultures, race/ethnicities and sexual preferences
  - Partner with organizations who specifically prepare individuals for volunteer service in community, such as CCBHS's SPIRIT program.
  - Develop and maintain training curriculum as defined in Service Work Plan that prepares volunteers for their role in supporting family members and loved ones of persons experiencing mental health issues.
  - Establish partnerships with CCBHS and community and faith-based organizations; as well as ethnic and culturally specific agencies to coordinate family support efforts, assist CCBHS's connectivity with families of consumers, stay abreast and adapt to current and future needs. Key CCBHS partnerships include the Family Partner (Children's System of Care), Family Support Worker (Adult System of Care) Programs, and the Office for Consumer Empowerment.
- b. Target Population: Family members and care givers of individuals with lived mental health issues.
- c. Payment Limit: FY 21-22: \$618,000
- d. Number Served: FY 19-20: 700 individuals
- e. Outcomes:
  - In FY 2019-2020, 560 individuals participated in FVSN training; of those 80 individuals completed FVSN training. Additionally, there were 40 existing active volunteers, as well as a 13 person board. Over 1,500 calls for support or resources were received in the first half of the year.

**3. Program: Family Psycho Education Program (Family to Family: Spanish and Mandarin/Cantonese, FaithNet, NAMI Basics, and Conversations with Local Law Enforcement) - WET**

- a. Scope of Services: Family to Family is an evidence based NAMI educational training program offered throughout the county in Spanish, Mandarin and Cantonese languages to family members and caregivers of individuals experiencing mental health challenges. This training is designed to support and increase a family member's/care giver's knowledge of mental health, its impact on the family, navigation of systems, connections to community resources, and coping mechanisms. NAMI FaithNet is an interfaith resource network of NAMI members, friends, clergy and congregations of all faith traditions who wish to encourage faith communities to be welcoming and supportive of persons and families living with mental illness. NAMI Basics is aimed to give an overview about mental health, how best to support a loved one at home, at school and when in getting medical care. The course is taught by a trained team of individuals and loved ones with lived experience. Conversations with Local Law Enforcement will serve to support the dialogue between local law enforcement and consumers/families through CCBH's Crisis Intervention Training (CIT). NAMI CC will also host six other conversations in partnership with local law enforcement agencies throughout the County to enhance learning and dialogue between all groups in response to community concerns and mental health supports. The desired goal is to enhance information sharing and relationships between law enforcement and those affected by mental health.
- For Family to Family (Mandarin/Cantonese) and De Familia a Familia (Spanish); provide training program to help address the unique needs of the specified population, helping to serve Spanish, Mandarin and Cantonese speaking communities to help families develop coping skills to address challenges posed by mental health issues in the family, and develop skills to support the recovery of loved ones.
  - For NAMI Basics, provide instruction related to the mental health concepts, wellness and recovery principles, symptoms of mental health issues; as well as education on how mental illness and medications affect loved ones.
  - For the FaithNet program, implement a mental health spirituality curriculum targeting faith leaders and the faith-based communities in the County, who have congregants or loved ones with severe and persistent mental illness. The goals are to implement training to equip faith leaders to have a better understanding of mental health issues; and their roles as first responders at times and replace misinformation about mental health diagnoses, treatment, medication, etc. with accurate information.
  - For Conversations with Local Law Enforcement, support dialogue between local law enforcement and consumers/families through CCBH's Crisis Intervention Training (CIT) throughout the County to enhance learning and dialogue between all groups in response to community concerns and mental health supports. The desired goal is to enhance information sharing and relationships between law enforcement and those affected by mental health.
  - Create partnerships with CCBHS, local law enforcement agencies, community/faith-based organizations as well as ethnic and culturally specific agencies in order to

- coordinate family support efforts, ensure CCBHS connectivity with families of consumers, and stay abreast and be adaptive to current and future needs.
- All training will be augmented by utilizing sites, such as faith centers, community based organizations, and community locations throughout the county on an as needed basis in order to enable access to diverse communities with the goal of reaching the broadest audiences
- b. Target Population: Family members, care givers and loved ones of individuals with mental health challenges, as well as faith communities, local law enforcement, and the overall community who would like to learn more about supporting those with mental health challenges.
- c. Payment Limit: FY 21–22: \$70,596
- d. Number served: For FY 19-20: 780 individuals participated in training, workshops, and events.
- e. Outcomes:
- Deliver six Family-to-Family (Spanish, at least one in Mandarin/Cantonese) (12) week trainings during fiscal year.
  - Deliver four NAMI Basics (6) session trainings during fiscal year, with at least one in Spanish.
  - Hold four FaithNet events during fiscal year.
  - Deliver six Conversations with Local Law Enforcement in partnership with local law enforcement agencies and individuals or families affected by mental health issues throughout the County to enhance learning and dialogue between all groups in response to community concerns and mental health supports.
  - All trainings will educate individuals on how to manage crises, solve problems, communicate effectively, learn the importance of self-care, and assist in developing confidence and stamina to provide support with compassion, and learn about the impact of mental illness on the family.
  - Feedback will inform decision making. Member participation surveys will be created, administered and collected on a regular basis. Information collected will be analyzed to adjust methods to better meet the needs of all involved. Surveys will gauge participant knowledge, and level of confidence and understanding of mental health, advocacy and the public mental health system.

## **Native American Health Center (NAHC)**

2566 MacDonald Avenue, Richmond, CA, 94804, <http://www.nativehealth.org/>  
Point of Contact: Anthony Guzman, (510) 434-5483, [anthonyg@nativehealth.org](mailto:anthonyg@nativehealth.org) and  
Catherine Nieva-Duran, (510) 434-5483, [catherinen@nativehealth.org](mailto:catherinen@nativehealth.org)

### **1. General Description of the Organization**

The Native American Health Center (NAHC) serves the California Bay Area Native Population and other under-served populations. NAHC has worked at local, state, and federal levels to deliver resources and services for the urban Native American community and other underserved populations, to offer medical, dental, behavioral health, nutrition, perinatal, substance abuse prevention, HIV/HCV care coordination and prevention services.

### **2. Program: Native American Wellness Center – PEI**

a. Scope of Services: NAHC provides outreach for the increasing recognition of early signs of mental illness. NAHC provides mental health prevention groups and quarterly events for Contra Costa County Community Members. These activities help develop partnerships that bring consumers and mental health professionals together to build a community that reflects the history and values of Native American people in Contra Costa County. Community-building activities done by NAHC staff, community members, and consultants, include: an elder's support group, youth wellness group (including suicide prevention and violence prevention activities). Quarterly cultural events and traditional arts groups including: basket weaving, beading, quilting, health and fitness coaching and drumming. Other activities include: Positive Indian Parenting to teach life and parenting skills, Talking Circles that improve communication skills and address issues related to mental health, including domestic violence, individual and historical trauma, and Gathering of Native Americans (GONA) to build a sense of belonging and cohesive community. Expected outcomes include increases in social connectedness, communication skills, parenting skills, and knowledge of the human service system in the county. Program Staff conduct cultural competency trainings for public officials and other agency personnel. Staff assist with System Navigation including individual peer meetings, referrals to appropriate services (with follow-up), and educational sessions about Contra Costa County's service system.

b. Target Population: Native American residents of Contra Costa County (mainly west region), who are at risk for developing a serious mental illness.

c. Payment Limit: FY 21-22: \$250,257

d. Number served: FY 19-20: 68

e. Outcomes:

- Hosted weekly prevention groups to serve the needs, empower, uplift, motivate, and connect with potential first responders
- Made 16 behavioral health related referrals during this contract year
- Held 11 community-based events and trainings in FY 19-20, including Mental Health First Aid

## **Oak Hills Residential Facility**

141 Green Meadow Circle, Pittsburg, CA 94565

Point of Contact: Rebecca Lapasa, (925) 709-8853, [Rlapasa@yahoo.com](mailto:Rlapasa@yahoo.com)

### **1. General Description of the Organization:**

The County contracts with Oak Hills, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Cares – MHSA Housing Services - CSS**

- a. Scope of Services: Augmented residential services, including but not limited to:
  - Medication management
  - Nutritional meal planning
  - Assistance with laundry
  - Transportation to psychiatric and medical appointments
  - Improving socialization
  - Assist with activities of daily living (i.e., grooming, hygiene, etc.)
  - Encouraging meaningful activity
  - Other services as needed for individual residents
- b. Target Population: Adults aged 18 years to 59 years who live in Western, Central, and Eastern Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.
- c. Number Served: For FY 19-20: Capacity of 6 beds.

**Office for Consumer Empowerment (OCE)  
(Contra Costa Behavioral Health Services)**

1340 Arnold Drive, Suite 200, Martinez, CA 94553

Point of Contact: Jennifer Tuipulotu, (925) 957-5206, [Jennifer.Tuipulotu@cchealth.org](mailto:Jennifer.Tuipulotu@cchealth.org)

**1. General Description of the Organization**

The Office for Consumer Empowerment is a County operated program that supports the entire Behavioral Health System and offers a range of trainings and supports by and for individuals who have experience receiving behavioral health services. The goals are to increase access to wellness and empowerment knowledge for participants of the Behavioral Health System.

**2. Program: Reducing Stigma and Discrimination – PEI**

**a. Scope of Services**

- The PhotoVoice Empowerment Project enables consumers to produce artwork that speaks to the prejudice and discrimination that people with behavioral health challenges face. PhotoVoice’s vision is to enable people to record and reflect their community’s strengths and concerns, promote critical dialogue about personal and community issues, and to reach policymakers to effect change.

- The Wellness and Recovery Education for Acceptance, Choice and Hope (WREACH)

Speakers’ Bureau forms connections between people in the community and people with lived mental health and co-occurring experiences, using face to face contact by providing stories of recovery and resiliency and current information on health treatment and supports. Other related activities include producing videos, public service announcements and educational materials.

- The OCE facilitates Wellness Recovery Action Plan (WRAP) groups by providing certified leaders and conducting classes throughout the County. Staff employ the evidence-based WRAP system in enhancing the efforts of consumers to promote and advocate for their own wellness
- The Committee for Social Inclusion is an ongoing alliance of committee members that work together to promote social inclusion of persons who receive behavioral health services. The Committee is project based, and projects are designed to increase participation of consumers and family members in the planning, implementation, and delivery of services. Current efforts are supporting the integration of mental health and alcohol and other drug services within the Behavioral Health Services Division. In addition, OCE staff assist and support consumers and family members in participating in the various planning committees and sub-committees, Mental Health Commission meetings, community forums, and other opportunities to participate in planning processes.

- Staff provides outreach and support to peers and family members to enable them to actively participate in various committees and sub-committees throughout the system. These include the Mental Health Commission, the Consolidated Planning and Advisory Workgroup and sub-committees, and Behavioral Health Integration planning efforts. Staff provides mentoring and instruction to consumers who wish to learn how to participate in community planning processes or to give public comments to advisory bodies.
- b. Target Population: Participants of public mental health services, their families, and the public.
  - c. Total MHSA Funding for FY 21-22: \$218,861
  - d. Staff: Three
  - e. Number Served: FY 19-20: 400+
  - f. Outcomes:
    - Committee for Social Inclusion convened 11 in-person and virtual meetings open to the community
    - PhotoVoice convened 6 subcommittee meetings open to the community, held Recovery Month exhibition, and trained Health, Housing and Homeless Services (H3) staff to facilitate classes for Homelessness Awareness Month exhibition
    - WRAP coordinated recertification of 17 Community Support Workers as facilitators and certification of an additional 11 CSWs as first-time facilitators.
    - WREACH convened 6 subcommittee meetings open to the community.
- 3. Program: Mental Health Career Pathway Program - WET**
- a. Scope of Services: The Service Provider Individualized Recovery Intensive Training (SPIRIT) Program is a recovery-oriented peer led classroom and experientially based college accredited program that prepares individuals to become providers of service. Certification from this program is a requirement for many Community Support Worker positions in Contra Costa Behavioral Health. Staff provide instruction and administrative support and provide ongoing support to graduates.
  - b. Target Population: Participants of public mental health services, their families and the general public.
  - c. Total MHSA Funding for FY 21-22: \$346,258
  - d. Staff: 3 full-time equivalent staff positions.
  - e. Numbers Served: FY 19-20: 45 Students completed the SPIRIT course.
  - f. Outcomes:
    - All graduates received a certificate of completions that is accepted as the minimum qualifications necessary for employment within CCBHS in the classification of Community Support Worker.
    - Graduates learned peer provider skills, group facilitation, Wellness Recovery Action Plan (WRAP) development, wellness self-management strategies and other skills needed to gain employment in peer provider and family partner positions in both County operated and community-based organizations.

- Monthly peer support groups continue to be made available for individuals who are employed by the County in various peer and family partner roles.
- All SPIRIT graduates are provided support and assistance with placement and advancement consistent with their career aspirations.
- SPIRIT 2019 class graduated 45 students.
- SPIRIT Vocational placed 49 students in internships, 26 graduates into paid positions, and 3 graduates into volunteer positions in 2019.

**4. Program: Overcoming Transportation Barriers – INN**

- a. Scope of Services: The Overcoming Transportation Barriers program is a systemic approach to develop an effective consumer-driven transportation infrastructure that supports the entire mental health system of care. The goals of the program are to improve access to mental health services, improve public transit navigation, and improve independent living and self-management skills among peers. The program targets peers and caregivers throughout the mental health system of care.
- g. Target Population: Participants of public mental health services and their families; the general public.
- h. Total MHSA Funding for FY 21-22: \$76,536
- i. Staff: 11 full-time equivalent staff positions.
- j. Outcomes:
  - Overcoming Transportation Barriers convened 6 in-person and virtual subcommittee meetings open to the community.

## **Older Adult Mental Health (Contra Costa Behavioral Health Services)**

2425 Bisso Lane, Suite 100, Concord, CA 94520,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Heather Sweeten-Healy, (925)-521-5620,  
[Heather.Sweeten-Healy@cchealth.org](mailto:Heather.Sweeten-Healy@cchealth.org) or Ellie Shirgul, (925)-521-5620,  
[Ellen.Shirgul@cchealth.org](mailto:Ellen.Shirgul@cchealth.org)

### **1. General Description of the Organization**

The Older Adult Mental Health Clinic is in the Adult System of Care and provides mental health services to Contra Costa's senior citizens, including preventive care, linkage and outreach to under-served at risk communities, problem solving short-term therapy, and intensive care management for severely mentally ill individuals.

### **2. Program: Intensive Care Management - CSS**

The Intensive Care Management Teams (ICMT) provide mental health services to older adults in their homes, in the community and within a clinical setting. Services are provided to Contra Costa County residents with serious psychiatric impairments who are 60 years of age or older. The program provides services to those who are insured through Medi-Cal, dually covered under Medi-Cal and Medicare, or uninsured. The primary goal of these teams is to support aging in place as well as to improve consumers' mental health, physical health, prevent psychiatric hospitalization and placement in a higher level of care, and provide linkage to primary care appointments, community resources and events, and public transportation in an effort to maintain independence in the community. Additionally, the teams provide services to those who are homeless, living in shelters, or in residential care facilities. There are three multi-disciplinary Intensive Care Management Teams, one for each region of the county that increases access to resources throughout the county.

### **3. Program: Improving Mood Providing Access to Collaborative Treatment (IMPACT) - CSS**

IMPACT is an evidence-based practice which provides depression treatment to individuals age 55 and over in a primary care setting. The IMPACT model prescribes short-term (8 to 12 visits) Problem Solving Therapy and medication consultation with up to one year of follow-up as necessary. Services are provided by a treatment team consisting of licensed clinicians, psychiatrists, and primary care physicians in a primary care setting. The target population for the IMPACT Program is adults age 55 years and older who are receiving health care services at a federally qualified health center. The program focuses on treating older adults with late-life depression and co-occurring physical health impairments, such as cardio-vascular disease, diabetes, or chronic pain. The primary goals of the Impact Program are to prevent more severe psychiatric symptoms, assist clients in accessing community resources as needed, reducing stigma related to accessing mental health treatment and providing access to therapy to this underserved population.

### **4. Program: Senior Peer Counseling - WET**

This program reaches out to isolated and mildly depressed older adults in their home environments and links them to appropriate community resources in a culturally competent manner. Services are provided by Senior Peer Volunteers, who are trained and supervised by the Senior Peer Counseling Coordinators. The Latino Senior Peer

Counseling Program is recognized as a resource for this underserved population. This program serves older adults age 55 and older who are experiencing aging issues such as grief and loss, multiple health problems, loneliness, depression and isolation.

Primary goals of this program are to prevent more severe psychiatric symptoms and loss of independence, reduce stigma related to seeking mental health services, and increase access to counseling services to this underserved population.

- a. Target Population: Depending on program, Older Adults aged 55 or 60 years and older experiencing serious mental illness or at risk for developing a serious mental illness.
- b. Total Budget: Intensive Care Management - \$2,995,707; IMPACT - \$392,362; Senior Peer Counseling - \$238,986.
- c. Staff: 28 Full time equivalent multi-disciplinary staff.
- d. Number served: For FY 19-20: It is estimated that ICMT served 305 individuals; IMPACT served 440 individuals; Senior Peer Counseling Program trained and supported 22 volunteers and served 112 individuals. Actual number served may be higher, as the data made available reflects services prior to the shelter in place issued in March 2020.
- e. Outcomes: For IMPACT and ICM: Changes in Level of Care Utilization System (LOCUS) scores, reductions in Psychiatric Emergency Service visits, reductions in hospitalizations, decreased Patient Health Questionnaire (PHQ-9) scores, and reduced isolation, which is assessed by the PEARLS (ICM only). The SPC Program has implemented the Depression Anxiety Stress Scales (DASS) that will be administered at intake, and at the end of counseling to assess levels of anxiety and depression.

#### **5. Program: Partners in Aging - INN**

Partners in Aging is an Innovation Project that was implemented on September 1<sup>st</sup>, 2016. Partners in Aging adds up to two Community Support Workers, up to 3 Student Interns and 8 hours/week of Psychiatric Services to the IMPACT program. The project is designed to increase the ability of the IMPACT program to reach out to underserved older adult populations, including outreach at Psychiatric Emergency Services. Through Partners in Aging, IMPACT has provided more comprehensive services, including providing linkage to Behavioral Health, Ambulatory Care, and community resources. Peer support, rehab, and in-home and in-community coaching will allow the skills learned through psychotherapy to be practiced in the community.

- a. Scope of Services: Community Support Workers and Student Interns provided linkage, in-home and in-community peer support, and health/mental health coaching to consumers open to or referred to the IMPACT program. In addition, the CSW and Student Intern provide outreach to staff at Psychiatric Emergency Services. They are available to meet with consumers at PES that meet the criteria for IMPACT to provide outreach, and linkage to services. The Student Intern conducts intakes, assessments, and provides individual psychotherapy. Additionally, a Geropsychiatrist will be available 8 hours/week to provide consultation, and in-person evaluations of IMPACT clients.
- b. Target Population: The target population receiving health care services at the Federally Qualified Health Center for the IMPACT Program is adults age 55 years and older. The program focuses on treating older adults with late-life depression or anxiety

and co-occurring physical health impairments, such as cardio-vascular disease, diabetes, or chronic pain. Partners in Aging also focused on providing outreach and services to older adults who are experiencing both mental health symptoms and alcohol or drug misuse.

- c. Annual Payment Limit: \$133,072
- d. Number served: For FY 19-20: 27 individuals
- e. Outcomes: Reductions in Level of Care Utilization System (LOCUS) scores, reductions in Psychiatric Emergency Service visits, reductions in hospitalizations, and decreased Patient Health Questionnaire (PHQ-9) scores would indicate the effectiveness of this program. We are also utilizing the PEARLS to measure outcomes related to Partners in Aging.

## **People Who Care (PWC) Children Association**

2231 Railroad Avenue, Pittsburg, 94565,

<http://www.peoplewhocarechildrenassociation.org/>

Point of Contact: Constance Russell, (925) 427-5037, [pwc.cares@comcast.net](mailto:pwc.cares@comcast.net)

### **1. General Description of the Organization**

People Who Care Children Association has provided educational, vocational and employment training programs to young people ages 12 through 21 years old, since 2001. Many are at risk of dropping out of school and involved with, or highly at risk of entering, the criminal juvenile justice system. The mission of the organization is to empower youth to become productive citizens by promoting educational and vocational opportunities, and by providing training, support and other tools needed to overcome challenging circumstances.

### **2. Program: PWC Afterschool Program - PEI**

- a. Scope of Services: Through its After School Program, People Who Care (PWC) will provide Prevention services through providing work experience for 200+ multicultural at-risk youth residing in the Pittsburg/Bay Point and surrounding East Contra Costa County communities, as well as programs aimed at increasing educational success among those who are either at- risk of dropping out of school or committing a repeat offense. Key activities include job training and job readiness training, mental health support and linkage to mental health counseling, as well as civic and community service activities.
- b. Target Population: At risk youth with special needs in East Contra Costa County.
- c. Payment Limit: FY 21-22: \$229,795
- d. Number served: FY 19-20: 207
- e. Outcomes:
  - After Shelter-in-Place started, organized online tournaments to keep students engaged and connected. 40 students participated in each week-long and 2 week-long competition.
  - During the Green Jobs Bridge program (virtual adaptation of existing/pre-covid program) a total of 12 unduplicated, and 78 duplicated students participated in the program. More than 50% of participants did not re-offend during the participation in the program
  - Students participated in a weeklong simulation in which they had to utilize skills and learning from personal finance lesson taught to make financial and life decisions in an open simulation combining all finance-oriented modules (Budgeting and Saving, finding an apartment, choosing and balancing a bank account, getting a credit card, fixing your credit, online banking, time management and health, paying and filing taxes, intro to investing for retirement, risk vs. return, and diversification). The goal was to have the highest net worth by the end of a week's time. The winner went from \$0 and homeless to home-owning, college-educated with 250k in the bank. Majority of participants showed an increase in school day attendance and decrease in school tardiness.

## **Portia Bell Hume Behavioral Health and Training Center (Hume Center)**

555 School Street, Pittsburg, CA 94565, <https://www.humecenter.org/>

Point of Contact: Reynold Fujikawa, Community Support Program East, (925) 384-7727, [rfujikawa@humecenter.org](mailto:rfujikawa@humecenter.org)

3095 Richmond Parkway #201, Richmond, CA 94806, <https://www.humecenter.org/>

Point of Contact: Margaret Schiltz, Community Support Program West, (510) 944-3781, [mschiltz@humecenter.org](mailto:mschiltz@humecenter.org)

### **1. General Description of the Organization**

The Hume Center is a Community Mental Health Center that provides high quality, culturally sensitive and comprehensive behavioral health care services and training. The agency strives to promote mental health, reduce disparities and psychological suffering, and strengthen communities and systems in collaboration with the people most involved in the lives of those served. They are committed to training behavioral health professionals to the highest standards of practice, while working within a culture of support and mutual respect. They provide a continuity of care in Contra Costa that includes prevention and early intervention, behavioral consultation services, outpatient psychotherapy and psychiatry, case management, Partial Hospitalization services, and Full Service Partnership (FSP) Programs. Their FSPs are located in East and West county.

### **2. Program: Adult Full Service Partnership - CSS**

The Adult Full Service Partnership is a collaborative program that joins the resources of Hume Center and Contra Costa County Behavioral Health Services.

#### **a. Goal of the Program:**

- Prevent repeat hospitalizations
- Transition from institutional settings
- Attain and/or maintain medication compliance
- Improve community tenure and quality of life
- Attain and/or maintain housing stability
- Attain self-sufficiency through vocational and educational support
- Strengthen support networks, including family and community supports
- Limit the personal impact of substance abuse on mental health recovery

#### **b. Referral, Admission Criteria, and Authorization:**

- i. Referral: To inquire about yourself or someone else receiving our Full Service Partnership Services in our Community Support Program (CSP) East program, please call our Pittsburg office at (925) 432-4118. For services in our CSP West program, please contact our Richmond office at (510) 778-2816.
- ii. Admission Criteria: This program serves adult aged 26 and older who are diagnosed with severe mental illness and are:
  - Frequent users of emergency services and/or psychiatric emergency services
  - Homeless or at risk of homelessness
  - Involved in the justice system or at risk of this
  - Have Medi-Cal insurance or are uninsured
- iii. Authorization: Referrals are approved by Contra Costa Behavioral Health Division.

- c. Scope of Services: Services will be provided using an integrated team approach called Community Support Program (CSP). Our services include:
- Community outreach, engagement, and education to encourage participation in the recovery process and our program
  - Case management and resource navigation for the purposes of gaining stability and increasing self-sufficiency
  - Outpatient Mental Health Services, including services for individuals with co-occurring mental health & alcohol and other drug problems
  - Crisis Intervention, which is an immediate response to support a consumer to manage an unplanned event and ensure safety for all involved, which can include involving additional community resources
  - Collateral services, which includes family psychotherapy and consultation. These services help significant persons to understand and accept the consumer's condition and involve them in service planning and delivery.
  - Medication support, including medication assessment and ongoing management (may also be provided by County Physician)
  - Housing support, including assisting consumers to acquire and maintain appropriate housing and providing skill building to support successful housing. When appropriate, assist consumers to attain and maintain MHA subsidized housing.
  - Flexible funds are used to support consumer's treatment goals. The most common use of flexible funds is to support housing placements through direct payment of deposit, first/last month's rent, or unexpected expenses in order to maintain housing.
  - Vocational and Educational Preparation, which includes supportive services and psychoeducation to prepare consumers to return to school or work settings. This aims to return a sense of hope and trust in themselves to be able to achieve the goal while building the necessary skills, support networks, and structures/habits.
  - Recreational and Social Activities aim to assist consumers to decrease isolation while increasing self-efficacy and community involvement. The goal is to assist consumers to see themselves as members of the larger community and not marginalized by society or themselves.
  - Money Management, which is provided by sub-contractors, aims to increase stability for consumers who have struggled to manage their income. Services aim to increase money management skills to reduce the need for this service.
  - 24/7 Afterhours/Crisis Line is answered during non-office hours so that consumers in crisis can reach a staff member at any time. Direct services are provided on weekends and holidays as well.
- d. Target Population: Adults diagnosed with severe mental illness in East, Central and West County who are diagnosed with a serious mental illness, are at or below 300% of the federally defined poverty level and are uninsured or receive Medi-Cal benefits.
- e. Payment Limit: For FY 21/22 (East and West CSP): \$4,147,691
- f. Number served: For FY 19/20: 59 individuals (East); and 60 individuals (West)
- g. Outcomes: For FY 19/20 (East):
- Reduction in incidence of psychiatric crisis
  - Reduction of the incidence of restriction
  - For FY (West): 1. Reduction in incidence of psychiatric crisis 2. Reduction of the

incidence of restriction

**Table 1. Pre- and post-enrollment utilization rates for 59 Hume East FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	271	80	0.389	0.113	-70.9%
<i>Inpatient episodes</i>	41	11	0.059	0.016	-0.043%
<i>Inpatient days</i>	308	164	0.443	0.232	-47.6%
<i>DET Bookings</i>	24	7	0.034	0.010	-71.3%

**Table 1. Pre- and post-enrollment utilization rates for 60 Hume West FSP participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	117	71	0.174	0.104	-40.1%
<i>Inpatient episodes</i>	16	5	0.024	0.007	-69.2%
<i>Inpatient days</i>	148	173	0.220	0.254	-15.3%
<i>DET Bookings</i>	14	3	0.021	0.004	-78.9%

## **Primary Care Clinic Behavioral Health Support (Contra Costa Behavioral Health Services)**

3052 Willow Pass Road, Concord, CA 94519,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Kelley Taylor, Ambulatory Care Clinic Supervisor, (925) 681-4100,  
[Kelley.Taylor@CCHealth.org](mailto:Kelley.Taylor@CCHealth.org)

### **1. General Description of the Organization**

Behavioral health clinicians staff the county Primary Care Health Centers in Concord. The goal is to integrate primary and behavioral health care. Two mental health clinicians are part of a multi-disciplinary team with the intent to provide timely and integrated response to those at risk, and/or to prevent the onset of serious mental health functioning among adults visiting the clinic for medical reasons.

### **2. Plan Element: Clinic Support - CSS**

- a. Scope of Services: Perform brief mental health assessment and intervention with adults, children, and their families. Provide short term case management, mental health services, individual and family support, crisis intervention, triage, coordination of care between primary care and Behavioral Health Services. Tasks also include linkage to schools, probation, social services and community services and lead groups at County Primary Care Center.
- b. Target Population: Adults in central county, who present at the clinic for medical reasons
- c. Number Served: For FY 19/20: 200+.
- d. Outcomes: Improve overall health for individuals through decrease medical visit and increase coping with life situations.

## **Putnam Clubhouse**

3024 Willow Pass Road #230, Concord CA 94519, <https://www.putnamclubhouse.org/>  
Point of Contact: Tamara Hunter, (925) 691-4276, (510) 926-0474,  
[tamara@putnamclubhouse.org](mailto:tamara@putnamclubhouse.org)

### **1. General Description of the Organization**

Putnam Clubhouse provides a safe, welcoming place, where participants (called members), recovering from mental illness, build on personal strengths instead of focusing on illness.

Members work as colleagues with peers and a small staff to maintain recovery and prevent relapse through work and work-mediated relationships. Members learn vocational and social skills while doing everything involved in running The Clubhouse.

### **2. Program: Preventing Relapse of Individuals in Recovery - PEI**

#### **a. Scope of Services:**

- i. Project Area A: Putnam Clubhouse's peer-based programming helps adults recovering from psychiatric disorders access support networks, social opportunities, wellness tools, employment, housing, and health services. The work-ordered day program helps members gain prevocational, social, and healthy living skills as well as access vocational options within Contra Costa. The Clubhouse teaches skills needed for navigating/accessing the system of care, helps members set goals (including educational, vocational, and wellness), provides opportunities to become involved in stigma reduction and advocacy. Ongoing community outreach is provided throughout the County via presentations and by distributing materials, including a brochure in both English and Spanish. The Young Adult Initiative provides weekly activities and programming planned by younger adult members to attract and retain younger adult members in the under-30 age group. Putnam Clubhouse helps increase family wellness and reduces stress related to caregiving by providing respite through Clubhouse programming and by helping Clubhouse members improve their independence.
- ii. Project Area B: Putnam Clubhouse assists the Office for Consumer Empowerment (OCE) by providing career support through hosting Career Corner, an online career resource for mental health consumers in Contra Costa County and holding countywide career workshops.
- iii. Project Area C: Putnam Clubhouses assists Contra Costa County Behavioral Health in several other projects, including organizing community events and by assisting with administering consumer perception surveys.
- iv. Project Area D: Putnam Clubhouse assists Contra Costa County Behavioral Health in implementing the Portland Identification and Early Referral (PIER) program for individuals at risk of psychosis, First Hope, by providing logistical and operational support.

- b. Target Population: Contra Costa County residents with identified mental illness and their families.
- c. Payment Limit: FY 21-22: \$631,672
- d. Number served: In FY 19-20: 456
- e. Outcomes:
  - 456 unduplicated members (target: 300) spent 57,290 hours engaged in Clubhouse programming activities (target: 40,000 hours). 55 newly enrolled Clubhouse members (target: 70) participated in at least one Clubhouse activity
  - Members helped prepare and eat 30,938 meals at the Clubhouse (target: 9,000). This is significantly higher than in past years due in large part to the implementation of a food pantry in response to COVID-19.
  - 1,543 rides were provided to members to and from Clubhouse activities, job interviews, medical appointments, and more.
  - 1,403 in-home outreach visits were provided.
  - 131 postings (target 124) were made on the Career Corner Blog and 4 career workshops were held (target 4).
  - Three community events were held with 378, 389, and 397 people in attendance respectively. The latter was held virtually due to COVID-19.
  - Assisted the implementation of the Portland Identification and Early Referral (PIER) program for individuals at risk of psychosis, First Hope, by providing logistical and operational support.
  - Survey data demonstrated positive outcomes in terms of consumer and caregiver satisfaction, respite, well-being, decreased hospitalizations, increased referrals, etc.

## **Rainbow Community Center**

2118 Willow Pass Road, Concord, CA 94520, <https://www.rainbowcc.org/>  
Point of Contact: Kiku Johnson, (925) 692-0090, [kikujohnson@rainbowcc.org](mailto:kikujohnson@rainbowcc.org)

### **1. General Description of the Organization**

The Rainbow Community Center of Contra Costa County builds community and promotes well-being among Lesbian, Gay, Bisexual, Transgender, Queer, and Questioning (LGBTQ) people and our allies. Services are provided in our main office in Concord, our satellite location in West County, and in East County by arrangements with partner organizations.

### **2. Programs: Outpatient Behavioral Health and Training, and Community-Based Prevention and Early Intervention - PEI**

#### **a. Scope of Services:**

- i. Outpatient Services: Rainbow works with LGBTQ mental health consumers to develop a healthy and un-conflicted self-concept by providing individual, group, couples, and family counseling, as well as case management and linkage/brokerage services. Services are available in English, Spanish, and Portuguese
  - ii. Pride and Joy: Three-tiered prevention and early intervention model. Tier One: outreach to hidden groups, isolation reduction and awareness building. Tier Two: Support groups and services for clients with identified mild to moderate mental health needs. Tier Three: Identification and linkage of clients with high levels of need and who require system navigation support. Services are aimed at underserved segments of the LGBTQ community (seniors, people living with HIV, and community members with unrecognized health and mental health disorders).
  - iii. Youth Development: Three tiered services (see above) aimed at LGBTQ youth as a particularly vulnerable population. Programming focuses on building resiliency against rejection and bullying, promoting healthy LBGTQ identity, and identifying and referring youth in need of higher levels of care. Services are provided on-site and at local schools.
  - iv. Inclusive Schools: Community outreach and training involving school leaders, staff, parents, CBO partners, faith leaders and students to build acceptance of LGBTQ youth in Contra Costa County schools, families, and faith communities.
- b. Target Population: LGBTQ community of Contra Costa County who are at risk of developing serious mental illness.
- c. Payment Limit: FY 21-22: \$782,141
- d. Number served: FY 19-20: 941
- e. Outcomes:
- Implemented a Training and Curriculum Manager position with a seasoned SOGIE (Sexual Orientation, Gender Identity and Expression) national trainer and published educational curriculum writer that joined the staff in March 2020. This enabled Rainbow to launch within the two months of the state's Shelter-in-Place

orders, a meaningful update to culturally informed work through virtual SOGIE workshops and trainings.

- Rainbow's Inclusive School Coalition served the following four districts: Mt. Diablo, Pittsburg, Acalanes, West Contra Costa Unified.
- Offered services to LGBTQ seniors, adults, and youth through their various tiered services

## **RI International, Inc. (formerly Recovery Innovations)**

3701 Lone Tree Way, Antioch, CA 94509 (East County)  
2975 Treat Boulevard C-8, Concord, CA 94518 (Central County)  
2101 Vale Road #300, San Pablo, CA 94806 (West County),

<https://riinternational.com/our-services/california/contra-costa/>

Point of Contact: Lisa Finch, Recovery Services Administrator, (925) 494-4008,  
[Lisa.Finch@RIinternational.com](mailto:Lisa.Finch@RIinternational.com)

### **1. General Description of the Organization**

RI International was founded as META Services, an Arizona non-profit corporation. It has developed and provided a range of traditional mental health and substance abuse services for adults with long term mental health and addiction challenges. RI International pioneered an innovative initiative: the creation of the new discipline of Peer Support Specialist. This experience has transformed the RI International workforce to one in which Peer Support Specialists and professionals work together on integrated teams to deliver recovery-based services. The RI International experience has had a global impact on the mental health field serving as a demonstration that recovery from mental illness and/or addiction is possible. Based on transformation experience, RI International operates recovery-based mental health services in over 20 communities in five states and one location in New Zealand. RI International has provided recovery training and transformation consultation in 27 states and five countries abroad.

### **2. Program: RI International Wellness Cities – CSS**

RI International provides Adult Wellness Cities that serve individuals or *citizens* experiencing mental and/or behavioral health challenges in west, central and east Contra Costa County. Wellness Cities provide a variety of wellness and recovery-related classes and groups, one-on-one coaching, vocational opportunities, links to community resources, and recreational opportunities in a peer supported environment. The classes, groups and coaching are recovery-oriented and facilitated by peer recovery coaches. Coaches work with citizens to establish individualized goals, a wellness recovery action plan (WRAP), self-help and coping skills, support networks and a commitment to overall wellness. All services provided are related to at least one of the nine dimensions of wellness; physical, emotional, intellectual, social, spiritual, occupational, home and community living, financial and recreation/leisure. Participants seeking services become citizens of the city. Citizens develop a 6 month partnership with RI International and are assigned a Peer Recovery Coach who has experienced their own success in recovery by obtaining education, coping skills, self-management and/or sobriety. They share what they have learned and walk alongside each citizen on their individualized and strength-based path to recovery.

Other services provided are case management support by the Recovery Care Coordinator. The position assists individuals with linkages that provide independence, education and support in the community. The Employment Services Coordinator also helps RI citizens that are ready in their path to recovery with support of positive employment opportunities; whether it be paid or volunteer work.

#### **a. Scope of Services:**

- Peer and family support

- Personal recovery planning using the seven steps of Recovery Coaching
  - Monthly one on one coaching and meaningful outcome tracking
  - Workshops, education classes, evidence-based IMR groups, community based activities using the 9 Dimensions of Wellness (physical, emotional, intellectual, social, spiritual, occupational, home/community living, financial, recreation/leisure)
  - Community outreach and collaboration
  - Assist participants to coordinate medical, mental health, medication and other community services through Care Coordination
  - Supportive employment program through the use of an Employment Specialist position as well as the Employment Prep & Placement (E3P) Program
  - Wellness Recovery Action Plan (WRAP) classes
  - Snacks and lunch meals during weekdays for participants
  - Further enhance services by providing transportation to community based activities using the 9 Dimensions of Wellness (physical, emotional, intellectual, social, spiritual, occupational, home/community living, financial, recreation/leisure)
  - Community Outreach and Collaboration with Mental Health Partners and Providers – NAMI, Hume, Project Homeless Connect, WREACH, SPIRIT, CORE, etc.
  - Links to Resources - Assist participants to coordinate medical, mental health, medication, housing, and other community services
  - SPIRIT Program – obtain attendance records from the OCE and process reimbursement (stipend) for SPIRIT students.
- b. Target Population: Adult mental health participants in Contra Costa County. RI International services will be delivered within each region of the county through Wellness Cities located in Antioch, Concord and San Pablo.
- c. Annual MHSA Payment Limit: FY 21-22 \$1,002,791
- d. Number served: 250 individuals
- e. Outcomes: For FY 19-20, RI International served a total of 221 citizens either in person or virtually, of which 164 were active up until March 2020 when the Shelter-in-Place (SIP) Order took effect. After the SIP Order took effect, 122 remained active via a virtual setting. Outcomes and adaptations of services during FY 19-20 are as follows:
- About 168 developed a WRAP plan.
  - About 208 met with a Recovery Coach at least once a month, either in person or virtually.
  - About 209 individuals participated in a Wellness City Town Hall Meeting.
- During Shelter-in-Place Services
- Daily check-ins with participants via phone call/text
  - Food delivery and links to food banks with pick-up and delivery if needed
  - Mask making and delivery
  - Care package distribution that included hygiene products, activity booklets, games, wellness tool reminders, resources in response to COVID-19 and additional mental health support ideas and links
  - Online groups
  - Social Inclusion – Collaborated with virtual meeting in June 2020
  - Supported Putnam Clubhouse with meal/paint supplies delivery for Community Partners Picnic

## **RYSE Center**

205 41<sup>st</sup> Street, Richmond, CA 94805, <https://rysecenter.org/>

Point of Contact: Kanwarpal Dhaliwal, (925) 374-3401, [Kanwarpal@rysecenter.org](mailto:Kanwarpal@rysecenter.org)

### **1. General Description of the Organization**

RYSE is a youth center in Richmond that offers a wide range of activities, programs, and classes for young people including media arts, health education, career and educational support, and youth leadership and advocacy. RYSE operates within a community behavioral health model and employs trauma informed and healing centered approaches in all areas of engagement, including one-on-one, group and larger community efforts. In these areas, RYSE focuses on the conditions, impact, and strategies to name and address community distress, stigma, and mental health inequities linked to historical trauma and racism, as well as complex, chronic trauma. This focus enables RYSE to provide culturally relevant, empathetic, and timely community mental health and wellness services, resources, and supports across all our program areas and levels of engagement.

### **2. Program: Supporting Youth – PEI**

#### **a. Scope of Services:**

- i. Trauma Response and Resilience System (TRRS): Develop and implement Trauma and Healing Learning Series for key system partners, facilitate development of a coordinated community response to violence and trauma, evaluate impact of trauma informed practice, provide critical response and crisis relief for young people experiencing acute incidents of violence (individual, group, and community-wide).
- ii. Health and Wellness: Support young people (ages 13 to 21) from the diverse communities of West County to become better informed (health services) consumers and active agents of their own health and wellness, support young people in expressing and addressing the impact of stigma, discrimination, and community distress; and foster healthy peer and youth-adult relationships. Activities include mental health counseling and referrals, outreach to schools, workshops and ‘edutainment’ activities that promote inclusion, healing, and justice, youth assessment and implementation of partnership plans (Chat it Up Plans).
- iii. Inclusive Schools: Facilitate collaborative work with West Contra Costa schools and organizations working with and in schools aimed at making WCCUSD an environment free of stigma, discrimination, and isolation for LGBTQ students. Activities include assistance in provision of LGBTQ specific services, conducting organizational assessments, training for adults and students, engaging students in leadership activities, and providing support groups at target schools, etc.

b. Target Population: West County Youth at risk for developing serious mental illness.

c. Payment Limit: FY 21-22: \$503,019

d. Number served: FY 19-20: 865 young people

e. Outcomes:

- 283 new members enrolled, for a total of 613 unduplicated members attending. Since March 2020. An additional 322 youth participants (not unduplicated) who are not formally enrolled as members took part via virtual program offerings.
- Health and wellness content promoted via social media (Instagram Live videos and TikTok) also engaged youth in the community, with over 2,000 views.
- Supported students across WCCUSD to respond to distance learning policies, surveyed over 282 youth about distance learning needs and ideas, organized a Youth Town Hall for over 100 participants on distance learning, and participated in local, statewide, and national forums to share youth experiences.
- Created a Youth COVID-19 Care Fund, providing direct cash disbursements to nearly 200 youth and their families, as well as assisted the City of Richmond with establishing a community-guided Richmond Rapid Response Fund
- 107 young people completed Education, Career, Let's Get Free or Case Management Plans
- 22 young people completed Community Service requirements with support from RYSE.
- Engaged at least 33 young people who came to RYSE through reentry/transition from juvenile confinement in the Hire Up, Rysing Professionals, and Side Hustle programming
- 23 young men, ages 15-18, completed the Hidden Genius Project (HGP), a 15-month intensive Tech Literacy and Skill-Building program for Black-identified males in the areas of computer science and entrepreneurship.
- Engaged over 326 young people through an arts-based healing program.

## Seneca Family of Agencies

3200 Clayton Road, Concord, CA, 94519, <http://www.senecafoa.org/>  
Point of Contact: Jennifer Blanza, Program Director (415) 238-9945,  
[jennifer\\_blanza@senecacenter.org](mailto:jennifer_blanza@senecacenter.org)

### 1. **General Description of the Organization**

Seneca Family of Agencies is a leading innovator in the field of community-based and family-based service options for emotionally troubled children and their families. With a continuum of care ranging from intensive crisis intervention, to in-home wraparound services, to public school-based services, Seneca is one of the premier children's mental health agencies in Northern California.

### 2. **Program: Short Term Assessment of Resources and Treatment (START) - Full Service Partnership - CSS**

Seneca Family of Agencies (SFA) provides an integrated, coordinated service to youth who frequently utilize crisis services, and may be involved in the child welfare and/or juvenile justice system. START provides three to six months of short term intensive services to stabilize the youth in their community, and to connect them and their families with sustainable resources and supports. The goals of the program are to 1) reduce the need to utilize crisis services, and the necessity for out-of-home and emergency care for youth enrolled in the program, 2) maintain and stabilize the youth in the community by assessing the needs of the family system, identifying appropriate community resources and supports, and ensuring their connection with sustainable resources and supports, and 3) successfully link youth and family with formal services and informal supports in their neighborhood, school and community.

#### a. Scope of Services:

- Outreach and engagement
- Linkage
- Assessment
- Case management
- Plan development
- Crisis Intervention
- Collateral
- Flexible funds
- Contractor must be available to consumer on 24/7 basis

#### b. Target Population: The target population for the program includes youth with a history of multiple psychiatric hospitalizations and crisis interventions, imminent risk of homelessness, who have a serious mental illness and/or are seriously emotionally disturbed, and are not being served, or are being underserved, by the current mental health system. Youth in the program can be Medi-Cal eligible or uninsured.

#### c. Payment Limit: FY 21- 22 \$ 843,600

#### d. Number served: Number served in FY 19-20: 43 individuals

#### e. Outcomes:

- Establish linkage with ongoing resources/support.
- Reduction in incidence of psychiatric crisis
- Reduction of the incidence of restriction

**Table 1. Pre-and post-enrollment utilization rates for 43 Seneca Start FSP Participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	127	23	0.316	0.097	-69.4%
<i>Inpatient episodes</i>	10	3	0.025	0.013	-49.3%
<i>Inpatient days</i>	67	32	0.167	0.134	-19.3%

## **SHELTER, Inc.**

PO Box 5368, Concord, CA 94524, <https://shelterinc.org/>

Point of Contact: John Eckstrom, Chief Executive Office, (925) 957-7595,  
[john@shelterinc.org](mailto:john@shelterinc.org)

### **1. General Description of the Organization**

The mission of SHELTER, Inc. is to prevent and end homelessness for low-income, homeless, and disadvantaged families and individuals by providing housing, services, support, and resources that lead to self-sufficiency. SHELTER, Inc. was founded in 1986 to alleviate Contra Costa County's homeless crisis, and its work encompasses three main elements: 1) prevent the onset of homelessness, including rental assistance, case management, and housing counseling services, 2) ending the cycle of homelessness by providing housing plus services including employment, education, counseling and household budgeting to help regain self-sufficiency and 3) providing permanent affordable housing for over 200 low-income households, including such special needs groups as transition-age youth, people with HIV/AIDS, and those with mental health disabilities.

### **2. Program: Supportive Housing - CSS**

SHELTER, Inc. provides a master leasing program, in which adults or children and their families are provided tenancy in apartments and houses throughout the County. Through a combination of self-owned units and agreements with landlords SHELTER, Inc. acts as the lessee to the owners and provides staff to support individuals and their families move in and maintain their homes independently. Housing and rental subsidy services are provided to residents of the County who are homeless and that have been certified by Contra Costa Behavioral Health as eligible. This project is committed to providing housing opportunities that provide low barriers to obtaining housing that is affordable, safe and promotes independence to MHSA consumers.

#### **a. Scope of Services.**

- Provide services in accordance with the State of California Mental Health Service Act (MHSA) Housing Program, the Contra Costa County Behavioral Health Mental Health Division's Work Plan, all State, Federal and Local Fair Housing Laws and Regulations, and the State of California's Landlord and Tenants Laws.
- Provide consultation and technical support to Contra Costa Behavioral Health with regard to services provided under the housing services and rental subsidy program.
- Utilize existing housing units already on the market to provide immediate housing to consumers through master leasing and tenant based services.
- Acquire and maintain not less than 100 master-leased housing units throughout Contra Costa County.
- Negotiate lease terms and ensure timely payment of rent to landlords.
- Leverage housing resources through working relationships with owners of affordable housing within the community.
- Integrate innovative practices to attract and retain landlords and advocate on behalf of consumers.
- Leverage other rental subsidy programs including, but not limited to, Shelter Plus Care and HUD Housing Choice Voucher (Section 8).

- Reserve or set aside units of owned property dedicated for MHSA consumers.
  - Ensure condition of leased units meet habitability standards by having Housing Quality Standard (HQS) trained staff conduct unit inspections prior to a unit being leased and annually as needed.
  - Establish maximum rent level to be subsidized with MHSA funding to be Fair Market Rent (FMR) as published by US Department of Housing and Urban Development (HUD) for Contra Costa County in the year that the unit is initially rented or meeting rent reasonableness utilizing the guidelines established by HUD and for each year thereafter.
  - Provide quality property management services to consumers living in master leased and owned properties.
  - Maintain property management systems to track leases, occupancy, and maintenance records.
  - Maintain an accounting system to track rent and security deposit charges and payments.
  - Conduct annual income re-certifications to ensure consumer rent does not exceed 30% of income minus utility allowance. The utility allowance used shall be in accordance with the utility allowances established by the prevailing Housing Authority for the jurisdiction that the housing unit is located in.
  - Provide and/or coordinate with outside contractors and SHELTER, Inc. maintenance staff for routine maintenance and repair services and provide after-hours emergency maintenance services to consumers.
  - Ensure that landlords adhere to habitability standards and complete major maintenance and repairs.
  - Process and oversee evictions for non-payment of rent, criminal activities, harmful acts upon others, and severe and repeated lease violations.
  - Work collaboratively with full service partnerships and/or County Mental Health Staff around housing issues and provide referrals to alternative housing options.
  - Attend collaborative meetings, mediations and crisis interventions to support consumer housing retention.
  - Provide tenant education to consumers to support housing retention.
- b. Target Population: Consumers eligible for MHSA services. The priority is given to those who are homeless or imminently homeless and otherwise eligible for the full service partnership programs.
- c. Annual Payment Limit: \$2,420,426
- d. Number served: For FY 19-20 Shelter, Inc. served 118 consumers.
- Outcomes: Quality of life: housing stability.
    - i. Goal: 70% of MHSA Consumers residing in master leased housing shall remain stably housed for 18 months or longer.
    - ii. Goal: 70% of MHSA Consumers residing in SHELTER, Inc. owned property shall remain stably housed for 12 months or longer.
    - iii. Capacity of 119 Units.

## **STAND! For Families Free of Violence**

1410 Danzig Plaza #220, Concord, CA 94520, <http://www.standffov.org/>

Point of Contact: Reina Sandoval Beverly, (925) 676-2845, [reinasb@standffov.org](mailto:reinasb@standffov.org)

### **1. General Description of the Organization**

STAND! For Families Free of Violence (STAND) is a provider of comprehensive domestic violence and child abuse services in Contra Costa County, offering prevention, intervention, and treatment programs. STAND builds safe and strong families through early detection, enhanced support services, community prevention, education, and empowerment to help individuals rebuild their lives. STAND enlists the efforts of residents, organizations, and institutions, all of whom are partners in ending family violence. STAND is a founding member of the "Zero Tolerance for Domestic Violence Initiative", a cross-sector organization working for fifteen years to help end domestic violence, sexual assault, and childhood exposure to violence.

### **2. Program: "Expect Respect" and "You Never Win with Violence" - PEI**

a. Scope of Services: STAND provides services to address the effects of teen dating violence/domestic violence and helps maintain healthy relationships for at-risk youth in the County. STAND uses two evidence-based, best-practice programs: "Expect Respect" and "You Never Win with Violence" to impact youth behavior by preventing future violence and enhancing positive mental health outcomes for students already experiencing teen dating violence. Primary prevention activities include educating middle and high school youth about teen dating through the 'You Never Win with Violence' curriculum, and providing school personnel, service providers and parents with knowledge and awareness of the scope and causes of dating violence. The program strives to increase knowledge and awareness about healthy adolescent dating relationships. Secondary prevention includes conducting 20 gender-based, 15-week support groups for youth. Each school site has a system for referring youth to the support groups. Youth experiencing or at-risk for teen dating violence will demonstrate: (1) increased knowledge of the difference between healthy/unhealthy teen dating relationships, 2) increased sense of belonging to positive peer groups, 3) enhanced understanding that violence does not have to be "normal", and 4) an increased knowledge of their rights and responsibilities in a dating relationship.

b. Target Population: Middle and high school students at risk of dating violence.

c. Payment Limit: FY 21-22: \$138,136

d. Number served: FY 19-20: 1778

e. Outcomes:

- *You Never Win with Violence* presentations to 1445 middle and high school youth (during 55 presentations) in Contra Costa County
- 17 *Expect Respect* groups reached 146 participants
- Offered 17 10-week long gender-based support groups
- Trained adult allies (teachers and other school personnel)

## Telecare Corporation

300 Ilene Street, Martinez, CA 94553, <https://www.telecarecorp.com/>

Point of Contact: Clearnise Bullard, Program Administrator, (925) 313-7980,

[cbullard@telecarecorp.com](mailto:cbullard@telecarecorp.com) or Caitlin Young, Clinical Director,

[chyoung@telecarecorp.com](mailto:chyoung@telecarecorp.com)

### 1. **General Description of the Organization**

Telecare Corporation was established in 1965 in the belief that persons with mental illness are best able to achieve recovery through individualized services provided in the least restrictive setting possible. Today, they operate over 145 programs staffed by more than 5,000 employees in California, Oregon, Washington, Arizona, Nebraska, North Carolina, Texas, New Mexico and Pennsylvania and provide a broad continuum of services and supports, including Inpatient Acute Care, Inpatient Non -Acute/Sub-Acute Care, Crisis Services, Residential Services, Assertive Community Treatment (ACT) services, Case Management and Prevention services.

### 2. **Program: Hope House Crisis Residential Facility - CSS**

Telecare Corporation operates Hope House, a voluntary, highly structured 16-bed Short-Term Crisis Residential Facility (CRF) for adults between the ages of 18 and 59. Hope House serves individuals who require crisis support to avoid hospitalization or are discharging from the hospital or long-term locked facilities and need step-down care to transition back to community living. The focus is client-centered and recovery-focused and underscores the concept of personal responsibility for the resident's illness and independence. The program supports a social rehabilitation model, which is designed to enhance an individual's social connection with family and community so that they can move back into the community and prevent a hospitalization. Services are recovery based and tailored to the unique strengths of each individual resident. The program offers an environment where residents have the power to make decisions and are supported as they look at their own life experiences, set their own paths toward recovery, and work towards the fulfillment of their hopes and dreams. Telecare's program is designed to enhance client motivation to actively participate in treatment, provide clients with intensive assistance in accessing community resources, and assist clients develop strategies to maintain independent living in the community and improve their overall quality of life. The program's service design draws on evidence-based practices such as Wellness Action and Recovery Planning (WRAP), motivational interviewing, and integrated treatment for co-occurring disorders.

#### a. Scope of Services:

- Individualized assessments, including, but not limited to, psychosocial skills, reported medical needs/health status, social supports, and current functional limitations within 72 hours of admission.
- Psychiatric assessment within 72 hours of admission.
- Treatment plan development with 72 hours of admission.
- Therapeutic individual and group counseling sessions on a daily basis to assist clients in developing skills that enable them to progress towards self-sufficiency and to reside in less intensive levels of care.
- Crisis intervention and management services designed to enable the client to cope with the crisis at hand, maintaining functioning status in the community, and prevent further decompensation or hospitalization.

- Medication support services, including provision of medications, as clinically appropriate, to all clients regardless of funding; individual and group education for consumers on the role of medication in their recovery plans, medication choices, risks, benefits, alternatives, side effects and how these can be managed; supervised self-administration of medication based on physician's order by licensed staff; medication follow-up visit by a psychiatrist at a frequency necessary to manage the acute symptoms to allow the client to safely stay at the Crisis Residential Program, and to prepare the client to transition to outpatient level of care upon discharge.
  - Co-occurring capable interventions, using the Telecare Co-Occurring Education Group materials for substance use following a harm reduction modality as well as availability of weekly AA and NA meetings in the community.
  - Weekly life skills groups offered to develop and enhance skills needed to manage supported independent and independent living in the community.
  - A comprehensive weekly calendar of activities, including physical, recreational, social, artistic, therapeutic, spiritual, dual recovery, skills development and outings.
  - Peer support services/groups offered weekly.
  - Engagement of family in treatment, as appropriate.
  - Assessments for involuntary hospitalization, when necessary.
  - Discharge planning and assisting clients with successful linkage to community resources, such as outpatient mental health clinics, substance abuse treatment programs, housing, full-service partnerships, physical health care, and benefits programs.
  - Follow-up with client and their mental health service provider following discharge to ensure that appropriate linkage has been successful.
  - Daily provision of healthy meals and snacks for residents.
  - Transportation to services and activities provided in the community, as well as medical and court appointments, if the resident's case manager or county worker is unavailable, as needed.
- b. Target Population: Adults ages 18 to 59 who require crisis support to avoid psychiatric hospitalization or are discharging from the hospital or long-term locked facilities and need step-down care to transition back to community living.
- c. Payment Limit: FY 21-22 \$2,270,174
- d. Number served: FY19 - 20 Unduplicated client count of 226.
- e. Outcomes:
- Reduction in severity of psychiatric symptoms: Discharge at least 90% of clients to a lower level of care.
  - Consumer Satisfaction: Maintain an overall client satisfaction score of at least 4.0 out of 5.0.

## **United Family Care, LLC (Family Courtyard)**

2840 Salesian Avenue, Richmond, CA 94804

Point of Contact: Juliana Taburaza, (510) 235-8284, [JuTaburaza@gmail.com](mailto:JuTaburaza@gmail.com)

### **1. General Description of the Organization**

The County contracts with United Family Care, LLC (Family Courtyard), a licensed board and care provider, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Care Housing Services - CSS**

a. Scope of Services: Augmented residential services, including but not limited to:

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

b. Target Population: Adults aged 60 years and older who live in Western, Central, and Eastern Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.

c. Number served: For FY 19-20: Capacity of 50 beds.

## **Vicente Martinez High School - Martinez Unified School District**

925 Susana Street, Martinez, CA 94553, <http://vmhs-martinez-ca.schoolloop.com/>

Point of Contact: Lori O'Connor, (925) 335-5880, [loconnor@martinez.k12.ca.us](mailto:loconnor@martinez.k12.ca.us)

### **1. General Description of the Organization**

The PEI program at Vicente Martinez High School and Briones School (co-located on the same campus) offers an integrated mental health focused experience for 10th - 12<sup>th</sup> grade at-risk students of all cultural backgrounds. Students are provided a variety of experiential and leadership opportunities that support social, emotional, and behavioral health, career exposure and academic growth while also encouraging, linking, and increasing student access to direct mental health services.

### **2. Program: Vicente Martinez High School & Briones School - PEI**

- a. Scope of Services: Vicente Martinez High School and Briones School provide students of all cultural backgrounds an integrated, mental health focused, learning experience. Key services include student activities that support:
- individualized learning plans
  - mindfulness and stress management interventions
  - team and community building
  - character, leadership, and asset development
  - place-based learning, service projects that promote hands-on learning and intergenerational relationships
  - career-focused exploration, preparation, and internships
  - direct mental health counseling
  - timely access and linkage to direct mental health counseling

Services support achievement of a high school diploma, transferable career skills, college readiness, post-secondary training and enrollment, democratic participation, social and emotional literacy, and mental/behavioral health. All students also have access to a licensed Mental Health Counselor for individual and group counseling.

Students enrolled in Vicente and Briones have access to the variety of programs/services that meet their individual learning goals. Classes have a maximum of 23 students and are led by teachers and staff who have training in working with at-risk students and using restorative justice techniques. Students regularly monitor their own progress through a comprehensive advisory program designed to assist them in becoming more self-confident through various academic, leadership, communication, career, and holistic health activities.

- b. Target Population: At-risk high school students in Central County

c. Payment Limit: FY 21-22: \$191,336

d. Number served: FY 19-20: 245

e. Outcomes:

- 97% of the Vicente student body and 54% of Briones students participated in PEI activities.
- All seniors participated in service-learning hours. A minimum of 15 hours is

usually required. Due to the school closure because of COVID-19 some students didn't complete all hours but were given a waiver for these hours.

- All students were offered mental health counseling and there was one full time mental health counselor on campus daily.
- Staff organized and hosted 70 different types of activities and events to enrich the curricula.
- Vicente was again a recipient of the Model Continuation High School Recognition through the California Department of Education and the California Continuation Education Association.
- All students were given the opportunity to apply, interview and participate in career- focused internships.
- At least 70% of students who participated in four or more services and who had had chronic absenteeism increase their attendance rate by 5%.

## **West County Adult Mental Health Clinic (Contra Costa Behavioral Health Services)**

13585 San Pablo Avenue, 2<sup>nd</sup> Floor, San Pablo CA 94806,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Robin O'Neill, Mental Health Program Manager, (510) 215-3700,  
[Robin.ONeill@CCHHealth.org](mailto:Robin.ONeill@CCHHealth.org)

### **1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The East Adult Mental Health Clinic operates within Contra Costa Mental Health's Adult System of Care, and provides assessments, case management, psychiatric services, crisis intervention, housing services, and benefits assistance. Within the Adult Mental Health Clinic are the following MHSa funded programs and plan elements:

### **2. Plan Element: Adult Full Service Partnership Support - CSS**

Contra Costa Mental Health has dedicated clinicians at each of the three adult mental health clinics to provide support, coordination and rapid access for full service partners to health and mental health clinic services as needed and appropriate. Rapid Access Clinicians offer drop-in screening and intake appointments to clients who have been discharged from the County Hospital or Psychiatric Emergency Services but who are not open to the county mental health system of care. Rapid Access Clinicians will then refer clients to appropriate services and, when possible, follow-up with clients to ensure a linkage to services was made. If a client meets eligibility criteria for Full Service Partnership services, the Rapid Access Clinician will seek approval to refer the client to Full Service Partnership services. Clinic management acts as the gatekeepers for the Full Service Partnership programs, authorizing referrals and discharges as well as providing clinical oversight to the regional Full Service Partnership programs. Full Service Partnership Liaisons provide support to the Full Service Partnership programs by assisting the programs with referrals and discharges, offering clinical expertise, and helping the programs to navigate the County systems of care.

### **3. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to 1) assist consumers in obtaining benefits they entitled to, educate consumers on how to maximize use of those benefits and manage resources, and 2) provide transportation support for consumers and families.

- a. Clinic Target Population: Adults aged 18 years and older who live in West County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.
- b. Total Number Served: For FY 19-20: Approximately 2,500 Individuals.

**West County Children’s Mental Health Clinic  
(Contra Costa Behavioral Health Services)**

13585 San Pablo Avenue, 1<sup>st</sup> Floor, San Pablo CA 94806,  
<https://cchealth.org/mentalhealth/#simpleContained4>

Point of Contact: Chad Pierce, Mental Health Program Manager, (510) 374-7208,  
[Chad.Pierce@CCHealth.org](mailto:Chad.Pierce@CCHealth.org)

**1. General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The West Children’s Mental Health Clinic operates within Contra Costa Mental Health’s Children’s System of Care, and provides psychiatric and outpatient services, family partners, and wraparound services. Within the Children’s Mental Health Clinic are the following MHSa funded plan elements:

**2. Plan Element: Clinic Support - CSS**

General Systems Development strategies are programs or strategies that improve the larger mental health system of care. These programs and strategies expand and enhance the existing service structure to assist consumers in the following areas: Family Partners and Wraparound Facilitation. The family partners assist families with advocacy, transportation assistance, navigation of the service system, and offer support in the home, community, and county service sites. Family partners support families with children of all ages who are receiving services in the children. Family partners are located in each of the regional clinics for children and adult services, and often participate on wraparound teams following the evidence-based model. A Clinical Specialist in each regional clinic who provides technical assistance and oversight of evidence-based practices in the clinic. Support for full service partners.

- a. Target Population: Children aged 17 years and younger, who live in West County, are diagnosed with a serious emotional disturbance or serious mental illness, and are uninsured or receive Medi-Cal benefits
- b. Number Served: For FY 19-20: Approximately 536 Individuals.

## **Williams Board and Care**

430 Fordham Drive, Vallejo CA, 94589

Point of Contact: Frederick Williams, (707) 731-2326, [Fred\\_Williams@b-f.com](mailto:Fred_Williams@b-f.com) or  
Katrina Williams, (707) 731-2326

### **1. General Description of the Organization**

The County contracts with Williams Board and Care, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Care - Housing Services - CSS**

a. Scope of Services: Augmented residential services, including but not limited to:

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

b. Target Population: Adults aged 18 years to 59 years who live in Western, Central, and Eastern Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.

c. Number served: For FY 19-20: Capacity of 6 beds.

## Woodhaven

3319 Woodhaven Lane, Concord, CA 94519

Point of Contact: Milagros Quezon, (925) 349-4225, [Rcasuperprint635@comcast.net](mailto:Rcasuperprint635@comcast.net)

### **1. General Description of the Organization**

The County contracts with Woodhaven, a licensed board and care operator, to provide additional staff care to enable those with serious mental illness to avoid institutionalization and enable them to live in the community.

### **2. Program: Augmented Board and Care - Housing Services - CSS**

a. Scope of Services: Augmented residential services, including but not limited to:

- Medication management
- Nutritional meal planning
- Assistance with laundry
- Transportation to psychiatric and medical appointments
- Improving socialization
- Assist with activities of daily living (i.e., grooming, hygiene, etc.)
- Encouraging meaningful activity
- Other services as needed for individual residents

b. Target Population: Adults aged 18 years to 59 years who live in Western, Central, and Eastern Contra Costa County, are diagnosed with a serious mental illness and are uninsured or receive Medi-Cal benefits.

c. Number served: For FY 19-20: Capacity of 4 beds.

## Youth Homes, Inc.

3480 Buskirk Avenue #210, Pleasant Hill, CA 94523, <https://www.youthhomes.org/>  
Point of Contact: Cameron Safarloo, (925) 933-2627, [camerons@youthhomes.org](mailto:camerons@youthhomes.org), Chief Executive Officer or Byron Iacuanello, Clinical Director, (925) 324-6114, [byroni@youthhomes.org](mailto:byroni@youthhomes.org)

### 1. **General Description of the Organization**

Youth Homes, Inc. is committed to serving the needs of abused and neglected children and adolescents in California's San Francisco Bay Area. Youth Homes provides intensive residential treatment programs and community-based counseling services that promote the healing process for seriously emotionally abused and traumatized children and adolescents.

### 2. **Program: Transition Age Youth Full Service Partnership – CSS**

Youth Homes implements a full-service partnership program using a combination of aspects of the Integrated Treatment for Co-Occurring Disorders model (also known as Integrated Dual Disorders Treatment – IDDT) and aspects of the Assertive Community Treatment (ACT) model. These models are recognized evidence-based practices for which the Substance Abuse and Mental Health Services Administration (SAMHSA) has created a tool kit to support implementation. The Assertive Community Treatment (ACT) model continues to be the strongest model of services to keep those with serious mental illnesses out of institutional care (hospital or criminal justice system) through intensive, coordinated multidisciplinary treatment. Integrated Treatment for Co-Occurring Disorders is an evidence-based practice for treating clients diagnosed with both mental health and substance abuse disorders. Youth Homes is committed to advancing training and integration of the ACT and IDDT models into daily practice. Participants in the Youth Homes FSP program are assigned a team of providers, so consumers do not get lost in the health care system, excluded from treatment, or confused by going back and forth between separate mental health and substance abuse programs. Each client will have a primary clinician/case manager to facilitate treatment. The team may also include a life skills coach, substance abuse specialist, youth advocate, psychiatrist, nurse, or family clinician depending on the need of the client. Employment, education and life skills workshops and individual coaching occur weekly through Youth Homes' Stepping Stones program, which is an integral part of Youth Homes' TAY Services. It is not expected that all full service partners will be experiencing a substance use issue; however, for those who have co-occurring issues, both disorders can be addressed by one team of providers. Although the program has office space in Antioch and in Pleasant Hill, the bulk of all meetings and support services occur in the community, in homes, parks, and other community locations which are part of the young adult consumer's natural environments.

#### a. **Scope of Services (FSP):**

- Outreach and engagement
- Case management
- Outpatient Mental Health Services, including services for individuals with co-occurring mental health & alcohol and other drug problems
- Crisis Intervention
- Collateral
- Medication support (may be provided by County Physician)

- Housing support
  - Flexible funds
  - Money Management
  - Vocational Services
  - Contractor must be available to consumer on 24/7 basis
- b. Target Population: Young adults ages 16 to 25 years with serious emotional disturbance/serious mental illness, and who are likely to exhibit co-occurring disorders with severe life stressors and are from an underserved population. Services are based in East Contra Costa County as well as Central Contra Costa County.
- c. Annual MHSA Payment Limit (FSP): \$726,662
- d. Number served FSP: For FY 19-20: 32 individuals
- e. Outcomes FSP: For FY 19-20:
- Reduction in incidence of psychiatric crisis
  - Reduction of the incidence of restriction

**Table 1. Pre- and post-enrollment utilization rates for 32 Youth Homes FSP Participants enrolled in the FSP program during FY 19-20**

	No. pre-enrollment	No. post-enrollment	Rate pre-enrollment	Rate post-enrollment	%change
<i>PES episodes</i>	124	62	0.376	0.162	-56.8%
<i>Inpatient episodes</i>	34	15	0.103	0.039	-61.9%
<i>Inpatient days</i>	330	188	1.000	0.492	-50.8%
<i>DET Bookings</i>	11	5	0.033	0.013	-60.7%

# Appendix C

## Glossary

**AB 1421 or Laura's Law - Assembly Bill 1421.** Enacted in 2002, to create an assisted outpatient treatment program for any person who is suffering from a mental disorder and meets certain criteria. The program operates in counties that choose to provide the services. Adoption of this law enables a court, upon a verified petition to the court, to order a person to obtain and participate in assisted outpatient treatment. The bill provides that if the person who is the subject of the petition fails to comply with outpatient treatment, despite efforts to solicit compliance, a licensed mental health treatment provider may request that the person be placed under a 72-hour hold, based on an involuntary commitment. The law would be operative in those counties in which the county board of supervisors, by resolution, authorized its application and made a finding that no voluntary mental health program serving adults, and no children's mental health program, would be reduced as a result of the implementation of the law.

**ACT - Assertive Community Treatment.** An intensive and highly integrated approach for community mental health service delivery. It is an outpatient treatment for individuals whose symptoms of mental illness result in serious functioning difficulties in several major areas of life, often including work, social relationships, residential independence, money management, and physical health and wellness. Its mission to promote the participants' independence, rehabilitation, and recovery, and in so doing to prevent homelessness, unnecessary hospitalization, and other negative outcomes. It emphasizes out of the office interventions, a low participant to staff ratio, a coordinated team approach, and typically involves a psychiatrist, mental health clinician, nurse, peer provider, and other rehabilitation professionals.

**ADA - Americans with Disabilities Act.** Prohibits discrimination against people with disabilities in several areas, including employment, transportation, public accommodations, communications and access to state and local government' programs and services.

**AOD – Alcohol and Other Drugs.** Is an office like Mental Health that is part of the division of Behavioral Health Services. Behavioral Health Services is under the Health Services Department.

**AOT - Assisted Outpatient Treatment.** A civil court ordered mental health treatment for persons demonstrating resistance to participating in services. Treatment is modeled after assertive community treatment, which is the delivery of mobile, community-based care by multidisciplinary teams of highly trained mental health professionals with staff-to-client ratios of not more than one to ten, and additional services, as specified, for adults with the most persistent and severe mental illness. AOT involves a service and delivery process that has a clearly designated personal services coordinator who is responsible for providing or assuring needed services. These include complete assessment of the client's needs, development with the client of a personal services plan, outreach and consultation with the family and other significant persons, linkage with all appropriate community services, monitoring of the quality and follow through of

services, and necessary advocacy to ensure each client receives those services which are agreed to in the personal services plan. AOT is cited under AB 1421 or Laura's Law.

**APA - American Psychological Association.** The mission of the APA is to promote the advancement, communication, and application of psychological science and knowledge to benefit society and improve lives.

**BHS - Behavioral Health Services.** Is a grouping of Contra Costa Mental Health and Alcohol and Other Drug Services which make up the division of BHS. BHS is under the Health Services Department.

**Board and Care - Augmented Board and Care.** A facility licensed by the State also contract with Contra Costa Mental Health to receive additional funding to provide a therapeutic environment and assist residents gain their independence through recovery and wellness activities. Extra staff time is devoted to create a home-like atmosphere, often with shared housekeeping activities, and provide or coordinate a variety of therapeutic, educational, social and vocational activities. Persons who experience severe and persistent mental illness are eligible.

**BOS - Board of Supervisors.** Appointed body that is responsible for; 1) appointing most County department heads, except elected officials, and providing for the appointment of all other County employees, 2) providing for the compensation of all County officials and employees, 3) creating officers, boards and commissions as needed, appointing members and fixing the terms of office, 4) awarding all contracts except those that are within the authority delegated to the County Purchasing Agent, 5) adopting an annual budget, 6) sponsoring an annual audit made of all County accounts, books, and records, 7) supervising the operations of departments and exercising executive and administrative authority through the County government and County Administrator 8) serving as the appellate body for Planning and Zoning issues, 9) serving as the County Board of Equalization (the Board has created an Assessment Appeals Board to perform this function

**Brown Act.** Established in 1953; ensures the public's right to attend and participate in meetings of local legislative bodies. It declares that the California public commissions, boards and councils and the other public agencies in this state exist to aid in the conduct of the people's business. Actions should be taken openly and their deliberations be conducted openly. The people should remain informed so that they may retain control over the instruments they have created. The Brown Act has been interpreted to apply to email communication as well.

**CalMHSA - California Mental Health Services Authority.** The mission of CalMHSA is to provide member counties a flexible, efficient, and effective administrative/fiscal structure focused on collaborative partnerships and pooling efforts in 1) development and implementation of common strategies and programs, 2) fiscal integrity, protections, and management of collective risk, 3) accountability at state, regional, and local levels.

**CAO - County Administrator's Officer.** The County Administrator's Office is responsible for; 1) staffing the Board of Supervisors and Board committees, 2)

overseeing implementation of Board directives, 3) planning, monitoring, and overseeing County operations, 4) ensuring that Board policies are carried out in the most efficient, cost-effective, and service oriented manner, 5) supervising appointed Department Heads and performing general administrative duties, 6) preparing the annual budget, 7) administering the County's labor management relations program, including managing the collective bargaining process, grievance investigations, providing training and counseling to managers and employees, as well as problem resolution

**Case Management.** Refers to a service in which a mental health clinician develops and implements a treatment plan with a consumer. This treatment plan contains a diagnosis, level of severity, agreed upon goals, and actions by the consumer, the case manager, and other service providers to reach those goals. The mental health clinician provides therapy and additionally takes responsibility for the delivery and/or coordination of both mental and rehabilitation services that assist the consumer reach his/her goals.

**CASRA - California Association of Social Rehabilitation Agencies.** A statewide non-profit organization that service clients of the California public mental health system. Member agencies provide a variety of services to enhance the quality of life and community participation of youth, adults and older adults living with challenging mental health issues.

**CBHDA – California Behavioral Health Director’s Association.** A non-profit advocacy association representing the behavioral health directors from each of California’s 58 counties, as well as two cities (Berkeley and Tri-City). Through advocacy, lobbying and education efforts, CBHDA promotes the reduction of individual and community problems related to unaddressed behavioral health issues. CBHDA regularly brings together behavioral health professionals to discuss ways to inform public policy and improve the delivery of behavioral health services.

**CBO - Community Based Organization.** An agency or organization based in the community that is often a non-profit.

**CCMH - Contra Costa Mental Health.** One of 58 counties, the City of Berkeley, and the Tri-Cities area East of Los Angeles legislatively empowered to engage in a contract, or Mental Health Plan, with the state to perform public mental health services. This enables Contra Costa County to utilize federal, state, county and private funding for these mental health services. The Mental Health Services Act is one source of state funding. CCMH is divided into a Children’s System of Care and an Adult and Older Adult System of Care.

**CFO - Chief Financial Officer.** Abbreviation used to describe term.

**CF/TN - Capital Facilities/Information Technology.** The title of one of five components of the MHSA. This component enables a county to utilize MHSA funds for one-time construction projects and/or installation or upgrading of electronic systems, such as mental health records systems.

**CHHS – California Health and Human Services Agency.** The agency which oversees twelve departments and five offices that provides a range of health care services, social services, mental health services, alcohol and drug services, income assistance, and public health services to Californians. More than 33,000 people work for departments in CHHS at state headquarters in Sacramento, regional offices throughout the state, state institutions and residential facilities serving the mentally ill and people with developmental disabilities.

**CIBHS - California Institute for Behavioral Health Solutions.** A non-profit agency that helps health professionals, agencies and funders improve the lives of people with mental health and substance use challenges through policy, training, evaluation, technical assistance, and research.

**Clinical Specialist.** In the context of this document, refers to a licensed or registered intern in the specialties of social work, marriage and family therapy, psychology, psychiatric nurse practitioner, licensed professional clinical counselor, or psychiatrist. A Clinical Specialist is capable of signing a mental health consumer's treatment plan that can enable the County to bill Medi-Cal for part of the cost to deliver the service.

**Clubhouse Model.** A comprehensive program of support and opportunities for people with severe and persistent mental illness. In contrast to traditional day-treatment and other day program models, Clubhouse participants are called "members" (as opposed to consumers, patients, or clients) and restorative activities focus on their strengths and abilities, not their illness. The Clubhouse is unique in that it is not a clinical program, meaning there are no therapists or psychiatrists on staff. All participation in a clubhouse is strictly on a voluntary basis. Members and staff work side-by-side as partners to manage all the operations of the Clubhouse, providing an opportunity for members to contribute in significant and meaningful ways. A Clubhouse is a place where people can belong as contributing adults, rather than passing their time as patients who need to be treated. The Clubhouse Model seeks to demonstrate that people with mental illness can successfully live productive lives and work in the community, regardless of the nature or severity of their mental illness.

**COLA - Cost of Living Adjustment.** Abbreviation used to describe term.

**Community Forum.** In this context a community forum is a planned group activity where consumers, family members, service providers, and representatives of community, cultural groups or other entities are invited to provide input on a topic or set of issues relevant to planning, implementing or evaluating public services.

**Conservatorship -** A probate conservatorship is a court proceeding where a judge appoints a responsible person (called a conservator) to care for another adult who cannot care for him/herself or his/her finances.

**Consumer.** In this context consumers refer to individuals and their families who receive behavioral health services from the County, contract partners, or private providers. Consumers are also referred to as clients, patients, participants or members.

**Co-Occurring Disorders or Dual Diagnosis.** Refers to more than one behavioral and/or medical health disorder that an individual can experience and present for care and treatment. Common examples are an individual with a substance abuse disorder coupled with a mental health diagnosis, or a developmental disability, such as autism, coupled with a thought disorder.

**CPAW - Consolidated Planning Advisory Workgroup.** An ongoing advisory body appointed by the Contra Costa Mental Health Director that provides advice and counsel in the planning and evaluation of services funded by MHSA. It is also comprised of several sub-committees that focus on specific areas, such as stigma reduction, homelessness, and services to the four age groups. It is comprised of individuals with consumer and family member experience, service providers from the County and community based organizations, and individuals representing allied public services, such as education and social services.

**CPPP - Community Program Planning Process.** This a term used in regulations pertaining to the Mental Health Services Act. It means the process to be used by the County to develop Three-Year Expenditure Plans, and updates in partnership with stakeholders to 1) identify community issues related to mental illness resulting from lack of community services and supports, including any issues identified during the implementation of the Mental Health Services Act, 2) Analyze the mental health needs in the community, and 3) identify and re-evaluate priorities and strategies to meet those mental health needs.

**CSS - Community Services and Supports.** The title of one of five components funded by the MHSA. It refers to mental health service delivery systems for children and youth, transition age youth, adults, and older adults. These services and supports are similar to those provided in the mental health system of care that is not funded by MHSA. Within community services and supports are the categories of full service partnerships, general system development, outreach and engagement, and project based housing programs.

**CSW – Community Support Worker.** Peer Provider in Contra Costa County public mental health system.

**CTYA – Children’s, Teens, and Young Adults.** Abbreviation used to describe term.

**Cultural Competence.** In this context, refers to equal access to services of equal quality provided, without disparities among racial/ethnic, cultural, and linguistic populations or communities.

**DHCS - Department of Health Care Services.** The mission of DHCS is to provide Californians with access to affordable, integrated, high-quality health care, including medical, dental, mental health, substance use treatment services and long term care. Our vision is to preserve and improve the overall health and well-being of all Californians.

**DSM IV - Diagnostic and Statistical Manual of Mental Disorders Fifth Edition.** The

handbook used by health care professionals to diagnosis mental disorders. *DSM* contains descriptions, symptoms, and other criteria for diagnosing mental disorders

**Dual Diagnosis.** See **Co-Occurring Disorders.**

**Employment or Vocational Services.** A continuum of services and supports designed to enable individuals to get and keep a job. It includes 1) pre-vocational services, such as removing barriers to employment, 2) employment preparation, to include career counseling and education, training and volunteer activity support, 3) job placement, to include job seeking, placement assistance and on-the-job training, and 4) job retention, to include supported employment.

**EPIC System.** A nationwide computer software company that offers an integrated suite of health care software centered on a database. Their applications support functions related to patient care, including registration and scheduling; clinical systems for doctors, nurses, emergency personnel, and other care providers; systems for lab technicians, pharmacists, and radiologists; and billing systems for insurers.

**EPSDT - Early and Periodic Screening, Diagnosis and Treatment.** A federally mandated specialty mental health program that provides comprehensive and preventative services to low income children and adolescents that are also involved with Children and Family Services.

**Evidence Based Practices.** This term refers to treatment practices that follow a prescribed method that has been shown to be effective by the best available evidence. This evidence is comprised of research findings derived from the systematic collection of data through observation and experiment, and the formulation of questions and testing of hypotheses.

**Family Partners.** Also referred to as Parent Partners, this professional brings lived experience as a family member of an individual with a serious mental illness to their provision of services. They often participate as a member of a multi-disciplinary team providing mental health treatment, and assist families understand, acquire and navigate the various services and resources needed. In Contra Costa County, Family or Parent Partners have a job classification of Community Support Worker.

**Family-to-Family Training.** An educational course for family, caregivers and friends of individuals living with mental illness. Taught by trained volunteer instructors from NAMI CC it is a free of cost twelve week course that provides critical information and strategies related to caregiving, and assists in better collaboration with mental health treatment providers.

**Federal Poverty Level.** This is a total household income amount that the federal government provides an annual guideline that defines whether individuals are living above or below the poverty level. For example, a family of four is determined to live under the poverty level if their total income in 2014 is \$23,850.

**51/50 – Fifty One Fifty.** Refers to the Welfare and Institutions Code of California for the temporary, involuntary psychiatric commitment of individuals who present a danger

to themselves or others due to signs of mental illness.

**FY- Fiscal Year.** A fiscal year is a specified 12-month period used for accounting and reporting purposes. In Contra Costa County, the fiscal year runs from July 1<sup>st</sup> of one year to June 30<sup>th</sup> of the next year.

**Focus Groups.** In this context, refers to a small group (usually 8-15) of individuals to provide input, advice and counsel on practices, policies or proposed rulemaking on matters that affect them. Often these individuals are grouped by similar demographics or characteristics in order to provide clarity on a particular perspective.

**Forensics.** In this context, refers to the term used for individuals involved in the legal court system with mental health issues.

**4C.** Term used to refer to Psychiatric Ward of Contra Costa County Regional Medical Center.

**FSP - Full Service Partnership.** A term created by the MHSA as a means to require funding from the Act to be used in a certain manner for individuals with serious mental illness. Required features of full service partnerships are that there be a written agreement, or individual services and supports plan, entered into with the client, and when appropriate, the client's family.

This plan may include the full spectrum of community services necessary to attain mutually agreed upon goals. The full spectrum of community services consists of, but is not limited to, mental health treatment, peer support, supportive services to assist the client, and when appropriate the client's family, in obtaining and maintaining employment, housing, and/or education, wellness centers, culturally specific treatment approaches, crisis intervention/stabilization services, and family education services.

Also included are non-mental health services and supports, to include food, clothing, housing, cost of health care and co-occurring disorder treatment, respite care, and wrap-around services to children. The County shall designate a personal service coordinator or case manager for each client to be the single point of responsibility for services and supports, and provide a qualified individual to be available to respond to the client/family 24 hours a day, seven days a week.

The Full Service Partnership category is part of the Community Services and Supports (CSS) component of the MHSA. At least 50% of the funding for CSS is to go toward supporting the County's full service partnership category.

**General System Development.** A term created by the MHSA, and refers to a category of services funded in the Community Services and Supports component, and are similar to those services provided by community public mental health programs authorized in the Welfare and Institutions Code. MHSA funded services contained in the general system development category are designed to improve and supplement the county mental health service delivery system for all clients and their families.

**Greater Bay Area Regional Partnership.** Regional partnership means a group of County approved individuals and/or organizations within geographic proximity that acts as an employment and education resource for the public mental health system. These individuals and/or organizations may be county staff, mental health service providers, clients, clients' family members, and any individuals and/or organizations that have an interest in developing and supporting the workforce of the public mental health system. The Greater Bay Area Regional Partnership refers to an ongoing effort of individuals and/or organizations from the twelve county greater California bay area regions.

**HSD - Health Services Department.** The largest department of County government. The mission of HSD is to care for and improve the health of all people in Contra Costa County with special attention to those who are most vulnerable to health problems. Behavioral Health Services is one of the nine divisions under HSD.

**HIPAA - Health Information Portability and Accountability Act.** Enacted into law in 1996 and provides the following; 1) the ability to transfer and continue health insurance coverage for millions of American workers and their families when they change or lose their jobs, 2) reduce health care fraud and abuse, 3) mandates industry-wide standards for health care information on electronic billing and other processes, and 4) requires the protection and confidential handling of protected health information

**HPSA - Health Professional Shortage Area.** A geographic area, population, or facility with a shortage of primary care, dental, or mental health providers and services. The Health Resources and Services Administration (HRSA) and State Primary Care Offices (PCOs) work together using public, private, and state-provided data to determine when such a shortage qualifies for designation as a HPSA.

**H3 – Health, Housing and Homeless Services Division.** Division under Health Services that partners with Behavioral Health Services and focuses on the integration of housing and homeless services across this County's health system. It coordinates health and homeless services across county and in the community; and works with key partners to develop strategies to address the community's health and social needs.

**IMD – Institution for Mental Disease.** Any institution that, by its overall character is a facility established and maintained primarily for the care and treatment of individuals with mental diseases. The guidelines used to evaluate if the overall character of a facility is that of an IMD are based on whether the facility: 1) Is licensed or accredited as a psychiatric facility; 2) Is under the jurisdiction of the state's mental health authority; 3) Specializes in providing psychiatric/psychological care and treatment, which may be ascertained if indicated by a review of patients' records, if an unusually large proportion of the staff has specialized psychiatric/psychological training, or if a facility is established and/or maintained primarily for the care and treatment of individuals with mental diseases; or 4) Has more than 50 percent of all its patients admitted based on a current need for institutionalization as a result of mental diseases.

**IMPACT - Improving Mood Providing Access to Collaborative Treatment.** This refers to an evidence based mental health treatment for depression utilized specifically for older adults, and is provided in a primary care setting where older adults are

concurrently receiving medical care for physical health problems. Up to twelve sessions of problem solving therapy with a year follow up is provided by a licensed clinical therapist, with supervision and support from a psychiatrist who specializes in older adults. The psychiatrist assesses for and monitors medications as needed, and both the clinician and psychiatrist work in collaboration with the primary care physician.

**INN - Innovation.** A component of the MHSA that funds new or different patterns of service that contribute to informing the mental health system of care as to best or promising practices that can be subsequently added or incorporated into the system. These innovative programs accomplish one or more of the following objectives; 1) increase access to underserved groups, 2) increase the quality of services, to include better outcomes, 3) promote interagency collaboration, and 4) increase access to services. All new Innovation programs shall be reviewed and approved by the Mental Health Services Oversight and Accountability Commission. The Act states that five per cent of a County's revenues shall go for Innovation.

**Iron Triangle.** Refers to the central area of the city of Richmond that is bordered on three sides by railroad tracks. The communities within this area have a high number of households living below the poverty level, and have a high need for social services, to include public mental health.

**Laura's Law.** See **AB 1421**.

**LCSW - Licensed Clinical Social Worker.** Abbreviation used to describe term. See **Clinical Specialist**.

**LGBTQ - Lesbian, Gay, Bi-sexual, Transgender, Questioning.** Persons in these groups express norms different than the heterosexism of mainstream society, and often experience stigmatism as a result. Lesbian refers to women whose primary emotional, romantic, sexual or affectional attractions are to other women. Gay refers to men whose primary emotional, romantic, sexual or affectional attractions are to other men. Bi-sexual refers to men or women whose primary emotional, romantic, sexual, or affectional attractions are to both women and men. Transgender is a term that includes persons who cross-dress, are transsexual, and people who live substantial portions of their lives as other than their birth gender. People who are transgender can be straight, gay, lesbian or bi-sexual. Questioning refers to someone who is questioning their sexual and/or gender orientation.

**Licensed Clinical Specialist.** In this context, refers to the term a County civil service classification that denotes a person meeting minimum mental health provider qualifications, to include possessing a license to practice mental health treatment by the California Board of Behavioral Sciences (BBS). An intern registered by BBS also qualifies. A licensed clinical specialist or registered intern can sign mental health treatment plans that qualify for federal financial participation through the Medi-Cal program.

**LMFT - Licensed Marriage Family Therapist.** Abbreviation used to describe term. See **Clinical Specialist**.

**LPS – Lanterman Petris Short Act.** The LPS Act refers to Sections 5150, 5151 and 5152 of the Welfare and Institutions Code (WIC). It is a California law governing the involuntary civil commitment of individuals who - due to mental illness - pose a danger to self or others, or who are gravely disabled and require inpatient psychiatric care. It was named for its co-authors — Assembly member Frank Lanterman and Senators Nicholas C. Petris and Alan Short. The intent of the LPS Act is to end inappropriate lifetime commitment of people with mental illness and firmly establish the right to due process in the commitment process while significantly reducing state institutional expense.

**LRP - Loan Repayment Program.** Abbreviation used to describe term.

**MDFT - Multi-Dimensional Family Therapy.** An evidence based comprehensive and multi-systemic family-based outpatient or partial hospitalization program for substance-abusing adolescents, adolescents with co-occurring substance use and mental disorders, and those at high risk for continued substance abuse. Treatment is delivered in a series of 12 to 16 weekly or twice weekly 60 to 90 minute sessions. Treatment focuses on the social interaction areas of parents and peers, the parents' parenting practices, parent-adolescent interactions in therapy, and communications between family members and key social systems, such as school and child welfare.

**Medi-Cal.** California's version of the federal Medi-Caid program, in which health and mental health care can be provided by public health and mental health entities to individuals who do not have the ability to pay the full cost of care, and who meet medical necessity requirements. The federal Medi-Caid program reimburses states approximately half of the cost, with the remainder of the cost provided by a variety of state and local funding streams, to include the MHSA.

**Mental Health Career Pathway Program.** Programs designed to educate, train, recruit prepare, and counsel individuals for entry into and advancement in jobs in the public mental health system. These programs are a category listed as part of the Workforce Education and Training (WET) component of the MHSA.

**MHP - Mental Health Plan.** An agreement each county has with the state detailing the services that are to be provided.

**Mental Health Professional Shortage Designations.** Term used by the federal Human Resource Services Administration (HRSA) to determine areas of the country where there is a verified shortage of mental health professionals. These geographical areas are then eligible to apply for a number of federal programs where financial incentives in recruiting and retention are applied to address the workforce shortage.

**MH – Mental Health.** Abbreviation used for term.

**MHC - Mental Health Commission.** A group of individuals, often with lived experience as a consumer and/or family member of a consumer, who are appointed as representatives of the County's Board of Supervisors to provide 1) oversight and monitoring of the County's mental health system, 2) advocacy for persons with serious

mental illness, and 3) advise the Board of Supervisors and the mental health director.

**MHLAP - Mental Health Loan Assumption Program.** A program that makes payments to an educational lending institution on behalf of an employee who has incurred debt while obtaining an education, provided the individual agrees to work in the public mental health system for a specified period of time and in a capacity that meets the employer's workforce needs. The MHLAP is funded by the MHSA in the Workforce Education and Training component.

**MHSA - Mental Health Services Act or Proposition 63.** Was voted into law by Californians in November 2004. This Act combines prevention services with a full range of integrated services to treat the whole person, with the goal of self-sufficiency for those who may have otherwise faced homelessness or dependence on the state for years to come. The MHSA has five components; community services and supports, prevention and early intervention, innovation, workforce education and training, and capital facilities and technology. An additional one percent of state income tax is collected on incomes exceeding one million dollars and deposited into a Mental Health Services Fund. These funds are provided to the County based upon an agreed upon fair share formula.

**MHSA Three Year Plan - Mental Health Services Act Three Year Program and Expenditure Plan.** Each County prepares and submits a three year plan, which shall be updated at least annually; known as the **Plan or Annual Update** and approved by the County's Board of Supervisors. The plan will be developed with local stakeholders by means of a community program planning process, and will include programs and funding planned for each component, as well as providing for a prudent reserve. Each plan or update shall indicate the number of children, adults and seniors to be served, as well as reports on the achievement of performance outcomes for services provided.

**MHSIP - Mental Health Statistics Improvement Program.** Is a survey used in Contra Costa as required by DHCS. QI staff elicit feedback from survey sites regarding barriers to acceptable response rates, and based on this, implemented a variety of strategies including training a substantial volunteer workforce to assist with participant recruitment and survey completion.

**MHSOAC - Mental Health Services Oversight and Accountability Commission.** Established by the MHSA to provide state oversight of MHSA programs and expenditures, and is responsible for annually reviewing and approving each county mental health program for expenditures pursuant to the components of Innovation and Prevention and Early Intervention.

**Money Management.** Term that refers to services that can encompass all aspects of assisting an individual plan and manage financial benefits and resources. It can include counseling on the interplay of work and other sources of income on Medi-Cal, Medicare, Social Security Disability Income (SSDI), and Supplemental Security Income (SSI). It can include becoming a conservator of funds for an individual who has been deemed to be unable to manage their own funds.

**MST - Multi-Systemic Therapy.** An evidence based mental health service that is a community-based, family driven treatment for antisocial/delinquent behavior in youth. The focus is on empowering parents and caregivers to solve current and future problems, and actively involves the entire ecology of the youth; family, peers, school and the neighborhood.

**NAMI - National Alliance on Mental Illness.** The nation's largest grassroots mental health organization dedicated to building better lives for the millions of Americans affected by mental illness. NAMI advocates for access to services, treatment, supports and research and is steadfast in its commitment to raise awareness and build a community for hope for all of those in need. NAMI is the foundation for hundreds of NAMI State Organizations, NAMI Affiliates and volunteer leaders who work in local communities across the country to raise awareness and provide essential and free education, advocacy and support group programs. In Contra Costa County, there is a NAMI Contra Costa Office or NAMI CC.

**Needs Assessment.** Refers to part of the community program planning process (CPPP) where the mental health services and supports needs of the community are identified and assessed. This includes identifying populations, age groups and communities that remain unserved, underserved or inappropriately served.

**NOFA – Notice of Funding Availability.** Abbreviation used to describe term.

**NPLH – No Place Like Home or Proposition 2.** Allows the state to approve the use of the MHSA Funds to build and rehabilitate housing for those with mental illness who are homeless or at-risk of becoming homeless.

**OCE – Office for Consumer Empowerment.** A Contra Costa County operated program under the Behavioral Health Services division that offers a range of trainings and supports by and for individuals who have experience receiving mental health services. The goal is to increase access to wellness and empowerment for consumers; and to engage in their own individual recovery and become active in the community. This office leads the SPIRIT, WREACH, and WRAP programs.

**OSHPD - Office of Statewide Health Planning and Development.** A state department that assists California improve the structure and function of its healthcare delivery systems and promote healthcare accessibility. OSHPD is the state entity responsible for the implementation of various MHSA state level funded workforce education and training programs, such as the mental health loan assumption program, psychiatric residency programs, and several graduate stipend and internship programs.

**Outreach and Engagement.** In this context, is a MHSA term that is a community services and support category, and a category in which prevention and early intervention services can be provided. Services are designed to reach out and engage individuals in mental health care which have a serious mental illness, or are at risk of developing a serious mental illness. These are individuals who have not sought services in a traditional manner due to cultural or linguistic barriers.

**Peer Provider.** Term that refers to a professional who brings lived experience as a mental health consumer to their provision of services. They often participate as a member of a multi-disciplinary team providing mental health treatment, and assist consumers and their families understand, acquire and navigate the various services and resources needed. In Contra Costa County, Peer Providers have a job classification of Community Support Worker.

**PEI - Prevention and Early Intervention.** A term created by the MHSA, and refers to a component of funding in which services are designed to prevent mental illnesses from becoming severe and disabling. This means providing outreach and engagement to increase recognition of early signs of mental illness, and intervening early in the onset of a mental illness. Twenty percent of funds received by the MHSA are to be spent for prevention and early intervention services.

**PES - Psychiatric Emergency Services.** A unit of the Contra Costa County Regional Medical Center located next door to the Emergency Room in the county hospital in Martinez. It operated 24 hours a day, seven days a week, and consists of psychiatrists, nurses and mental health clinicians who are on call and available to respond to individuals who are brought in due to a psychiatric emergency. Persons who are seen are either treated and released, or admitted to the in-patient psychiatric hospital ward.

**PhotoVoice Empowerment Program.** The County sponsors classes designed to enable individuals to create artwork consisting of a photograph and a personally written story that speak to or represent the challenges of prejudice, discrimination and ignorance that people with behavioral health challenges face. These artworks are then displayed in the community to educate, raise awareness and reduce stigma.

**PIER Model - Portland Identification and Early Referral Model.** This is an evidence based treatment developed by the PIERS Institute of Portland, Maine. It is an early intervention program for youth, ages 12-25 which are at risk for developing psychosis. It is a multi-disciplinary team approach consisting of a structured interview to assess risk for psychosis, multi-family group therapy, psychiatric care, family psycho-education, supported education and employment, and occupational therapy.

**PSC - Personal Service Coordinators.** Refers to a mental health clinician or case manager who develops and implements an individual services and support plan with an individual diagnosed with a serious mental illness, and who is part of a full service partner program under the MHSA. This plan contains a diagnosis, level of severity, agreed upon goals, and actions by the consumer, the personal services coordinator, and other service providers to reach those goals. The personal service coordinator provides therapy, and additionally takes responsibility for the delivery and/or coordination of both mental health and rehabilitation services that assist the consumer reach his/her goals.

**PTSD - Post-Traumatic Stress Disorder.** An emotional illness that that is classified as an anxiety disorder, and usually develops as a result of a terribly frightening, life-threatening, or otherwise highly unsafe experience. PTSD sufferers re-experience the traumatic event or events in some way, tend to avoid places, people, or other things that

remind them of the event (avoidance), and are exquisitely sensitive to normal life experiences (hyper arousal).

**Public Health Services.** A division under Health Services whose mission is to promote and protect the health and well-being of individuals, families and community in Contra Costa County.

**Public Mental Health System.** This term is used to describe the public system that is in place to provide mental health services. There are 64 counties and 2 cities that receive MHSA funds to support their public mental health system. Each county's system is uniquely structured where services are provided by county staff or through contractors; such as community based organizations and other agencies.

**Pre-Vocational Employment Services.** These are services that enable a person to actively engage in finding and keeping a job. Often the services remove barriers to employment services, such as counseling on how working affects benefits, stabilizing medications, obtaining a driver's license or general education diploma, and resolving immigration or other legal issues.

**Prudent Reserve.** Term created by the MHSA, and refers to a County setting aside sufficient MHSA revenues in order to ensure that services do not have to be significantly reduced in years in which revenues are below the average of previous years.

**Psychiatric Residency.** Physicians who specialize in psychiatry complete a four year residency program at one of several schools of psychiatry, such as that located at the University of California at San Francisco. This is essentially a paid work study arrangement, where they practice under close supervision and concurrently take coursework. At the final residency year the psychiatrist can elect to work in a medical setting, teach, do research, or work in a community mental health setting.

**QA/ QI - Quality Assurance and Quality Improvement.** Entities in Contra Costa County responsible for monitoring the Mental Health Plan's effectiveness by providing oversight and review of clinics, organizations, and clinicians providing services to consumers. The goals are to perform program development and coordination work to implement and maintain a quality management program that effectively measures, assesses, and continuously improves the access to and quality of care and services provided to the County's mental health consumers. The Quality Management Coordinator is responsible for Chairing and facilitating the Quality Improvement Committee (QIC) and ensuring members receive timely and relevant information.

**RFA - Request for Application.** Abbreviation used to describe term.

**RFI - Request for Information.** Abbreviation used to describe term.

**RFP - Request for Proposal.** Abbreviation used to describe term.

**RFQ - Request for Qualifications.** Abbreviation used to describe term.

**RHD - Reducing Health Disparities.** Abbreviation used to describe term.

**SAMHSA - Substance Abuse and Mental Health Services Administration.** The agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities.

**SB - Senate Bill.** Abbreviation used to describe term.

**SNHP – Special Needs Housing Program.** Allows local governments to use MHSAs and other local funds to provide financing for the development of permanent supportive rental housing that includes units dedicated for individuals with serious mental illness, and their families, who are homeless or at risk of homelessness.

**SNF - Skilled Nursing Facility.** A special facility or part of a hospital that provides medically necessary services from nurses, physical and occupational therapists, speech pathologists and audiologists. A SNF aims to prevent hospitalizations, optimize antipsychotic medication use, and serve as an intermediate step into the community.

**STRTP – Short Term Residential Treatment Program.** A residential treatment model that serves youth who have high-level mental health needs or are seriously emotionally disturbed. The goal of STRTPs is to focus on stabilizing high-needs youth to allow an expedient and successful transition to a home setting.

**SED - Seriously Emotionally Disturbed.** Children from birth up to age eighteen with serious emotional disturbance are persons who currently or at any time during the past year have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within the Diagnostic and Statistical Manual and results in functional impairment which substantially interferes with or limits the child's role or functioning in family, school, or community activities.

**SMI - Serious Mental Illness.** Adults with a serious mental illness are persons eighteen years and older who, at any time during a given year, have a diagnosable mental, behavioral, or emotional disorder that meet the criteria of the Diagnostic and Statistical Manual, and the disorder has resulted in functional impairment which substantially interferes with or limits one or more major life activities.

**SOC – System of Care.** Term used to refer to this county's public mental health system.

**SPIRIT - Service Provider Individualized Recovery Intensive Training.** A recovery oriented, peer led classroom and experiential-based, college accredited educational program for individuals with lived experience as a consumer of mental health services. It is sponsored by Contra Costa Mental Health and Contra Costa Community College, and successful completion satisfies the minimum qualifications to be considered for employment by the County as a Community Support Worker.

**Stakeholders.** Stakeholders is a term defined in the California Code of Regulations to

mean individuals or entities with an interest in mental health services, including but not limited to individuals with serious mental illness and/or serious emotional disturbance and/or their families, providers of mental health and/or related services such as physical health care and/or social services, educators and/or representatives of education, representatives of law enforcement, and any organization that represents the interests of individuals with serious mental illness and/or serious emotional disturbance and/or their families.

**Stigma and Discrimination.** In this context, refers to the negative thoughts and/or behaviors that form an inaccurate generalization or judgment, and adversely affects the recovery, wellness and resiliency of persons with mental health issues. These thoughts and behaviors can include any person who has an influence on a person's mental health well-being, to include the person experiencing the mental health issue.

**SUD - Substance Use Disorder.** A disorder in which the use of one or more substances leads to a clinically significant impairment or distress. Although the term substance can refer to any physical matter, substance abuse refers to the overuse of, or dependence on, a drug leading to effects that are detrimental to the individual's physical and mental health, or the welfare of others. The disorder is characterized by a pattern of continued pathological use of a medication, non-medically indicated drug or toxin which results in repeated adverse social consequences related to drug use, such as failure to meet work, family, or school obligations, interpersonal conflicts, or legal problems.

**STEP - Systematic Training for Effective Parenting.** A parent education program published as a series of books developed and published by the psychologists Don Dinkmeyer Sr., Gary D. McKay and Don Dinkmeyer Jr. The publication was supplemented by an extensive concept for training and proliferation. STEP has reached more than four million parents and has been translated into several languages. It provides skills training for parents dealing with frequently encountered challenges with their children that often result from autocratic parenting styles. STEP is rooted in Adlerian psychology and promotes a more participatory family structure by fostering responsibility, independence, and competence in children; improving communication between parents and children; and helping children learn from the natural and logical consequences of their own choices.

**Supported Employment.** Supported employment is a federal vocational rehabilitation term that means competitive work for individuals with the most significant disabilities that occurs in integrated work settings, or settings in which individuals are working toward competitive work. Such work is consistent with the strengths, resources, priorities, concerns, abilities, capabilities, interests, and informed choice of the individuals. Supported employment usually means that a professional support person, or job coach, assists the individual in a competitive work setting until assistance is no longer needed.

**Supportive Housing.** A combination of housing and services intended as a cost-effective way to help people live more stable, productive lives. Supportive housing is widely believed to work well for those who face the most complex challenges—individuals and families confronted with homelessness and who also have very low

incomes and/or serious, persistent issues that may include substance abuse, addiction or alcoholism, mental illness, HIV/AIDS, or other serious challenges to a successful life. Supportive housing can be coupled with such social services as job training, life skills training, alcohol and drug abuse programs, community support services, such as child care and educational programs, and case management to populations in need of assistance. Supportive housing is intended to be a pragmatic solution that helps people have better lives while reducing, to the extent feasible, the overall cost of care.

**TAY - Transition Age Youth.** A term meaning individuals who are between the age of 16 years and 25 years of age. Specific mental health programs that address this age group are in the adult system of care, and were designed to assist in the transition of services from the children's system of care, where individuals stop receiving services at 18.

**Triple P - Positive Parenting Program.** An evidence based practice designed to increase parents' sense of competence in their parenting abilities. It is a multilevel system of family intervention that aims to prevent severe emotional and behavioral disturbances in children by promoting positive and nurturing relationships between parent and child. Improved family communication and reduced conflict reduces the risk that children will develop a variety of behavioral and emotional problems.

**WET - Workforce Education and Training.** A term created by the MHSA, and refers to the component of the MHSA that funds programs and service that assist in the recruitment and retention of a skilled and culturally competent mental health workforce.

**WIC - Welfare and Institutions Code.** Regulations set that address services relating to welfare, dependent children, mental health, handicapped, elderly, delinquency, foster care, Medi-Cal, food stamps, rehabilitation, and long-term care, to name a few.

**WRAP - Wellness Recovery Action Plan.** An evidence-based practice that is used by people who are dealing with mental health and other kinds of health challenges, and by people who want to attain the highest possible level of wellness. It was developed by a group of people who have a lived experience with mental health difficulties and who were searching for ways to resolve issues that had been troubling them for a long time. WRAP involves listing one's personal resources and wellness tools, and then using those resources to develop action plans to use in specific situations.

**Wraparound Services.** An intensive, individualized care management process for children with serious emotional disturbances. During the wraparound process, a team of individuals who are relevant to the well-being of the child or youth, such as family members, other natural supports, service providers, and agency representatives collaboratively develop an individualized plan of care, implement this plan, and evaluate success over time. The wraparound plan typically includes formal services and interventions, together with community services and interpersonal support and assistance provided by friends and other people drawn from the family's social networks. The team convenes frequently to measure the plan's components against relevant indicators of success. Plan components and strategies are revised when outcomes are not being achieved.

**WREACH - Wellness Recovery Education for Acceptance, Choice and Hope.** The WREACH Speaker's Bureau is designed to reduce the stigma that consumers and family members often face in the workplace, behavioral and physical health care systems, and in their communities. The WREACH program forms connections between people in the community and people with lived mental health and co-occurring disorders experiences by providing opportunities for sharing stories of recovery and resiliency, and sharing current information on health treatment and supports. Workshops are held to teach people and their families how to write and present their recovery and resilience stories. These individuals are then connected with audiences that include behavioral health providers, high school and college staff and students, law enforcement, physical health providers and the general community.

# Appendix D

## MHSA COUNTY COMPLIANCE CERTIFICATION

County: Contra Costa

X Annual Plan Update

Local Mental Health Director	Program Lead
Name: Suzanne Tavano, PHN, Ph. D	Name: Jennifer Bruggeman, LMFT
Telephone Number: 925-957-5150	Telephone Number: 925-313-9579
E-mail: Suzanne.Tavano@cchealth.org	E-mail: Jennifer.Bruggeman@cchealth.org
Local Mental Health Mailing Address:	
Contra Costa Behavioral Health Services Administration 1340 Arnold Drive, Suite 200 Martinez, CA 94553	

I hereby certify that I am the official responsible for the administration of county mental health services in and for said county and that the County has complied with all pertinent regulations and guidelines, laws and statutes of the Mental Health Services Act in preparing and submitting this Three-Year Program and Expenditure Plan, Annual Update or Annual Revenue and Expenditure Report, including stakeholder participation and non-supplantation requirements.

This Three Year Program and Expenditure Plan or Annual Update has been developed with the participation of stakeholders, in accordance with Welfare and Institutions Code Section 5848 and Title 9 of the California Code of Regulations section 3300, Community Planning Process. The draft Three Year Program and Expenditure Plan or Annual Update was circulated to representatives of stakeholder interests and any interested party for 30 days for review and comment and a public hearing was held by the local mental health board. All input has been considered with adjustments made, as appropriate. The Three Year Program and Expenditure Plan, attached hereto, was adopted by the County Board of Supervisors on \_\_\_\_\_, 2021.

Mental Health Services Act funds are and will be used in compliance with Welfare and Institutions Code section 5891 and Title 9 of the California Code of Regulations section 3410, Non-Supplant.

All documents in the attached plan are true and correct.

\_\_\_\_\_  
 Suzanne Tavano, PHN, Ph. D  
 Contra Costa Behavioral Health Services Director

\_\_\_\_\_  
 Date

# MHSA COUNTY FISCAL ACCOUNTABILITY CERTIFICATION

County/City: Contra Costa County

X Annual Plan Update

<b>Local Mental Health Director</b>	<b>County Auditor-Controller / City Financial Officer</b>
Name: Suzanne Tavano, PHN, Ph. D	Name: Monica Nino
Telephone Number: 925-957-5150	Telephone Number: 925-655-2075
E-mail: Suzanne.Tavano@cchealth.org	E-mail: Monica.Nino@cao.cccounty.us
Local Mental Health Mailing Address:	
Contra Costa Behavioral Health Services Administration 1340 Arnold Drive, Suite 200 Martinez, CA 94553	

I hereby certify that the Three-Year Program and Expenditure Plan, Annual Update or Annual Revenue and Expenditure Report is true and correct and that the County has complied with all fiscal accountability requirements as required by law or as directed by the State Department of Health Care Services and the Mental Health Services Oversight and Accountability Commission, and that all expenditures are consistent with the requirements of the Mental Health Services Act (MHSA), including Welfare and Institutions Code (WIC) sections 5813.5, 5830, 5840, 5847, 5891, and 5892; and Title 9 of the California Code of Regulations sections 3400 and 3410. I further certify that all expenditures are consistent with an approved plan or update and that MHSA funds will only be used for programs specified in the Mental Health Services Act. Other than funds placed in a reserve in accordance with an approved plan, any funds allocated to a county which are not spent for their authorized purpose within the time period specified in WIC section 5892(h), shall revert to the state to be deposited into the fund and available for counties in future years.

I declare under penalty of perjury under the laws of this state that the foregoing and the Three-Year Program and Expenditure Plan, Annual Update or Annual Revenue and Expenditure Report is true and correct to the best of my knowledge.

Suzanne Tavano, PHN, Ph. D  
 Contra Costa Behavioral Health Services Director

\_\_\_\_\_  
 Signature Date

I hereby certify that for the fiscal year ended June 30, \_\_\_\_\_, the County/City has maintained an interest-bearing local Mental Health Services (MHS) Fund (WIC 5892(f)); and that the County's/City's financial statements are audited annually by an independent auditor and the most recent audit report is dated \_\_\_\_\_ for the fiscal year ended June 30, \_\_\_\_\_. I further certify that for the fiscal year ended June 30, \_\_\_\_\_, the State MHSA distributions were recorded as revenues in the local MHS Fund; that County/City MHSA expenditures and transfers out were appropriated by the Board of Supervisors and recorded in compliance with such appropriations; and that the County/City has complied with WIC section 5891(a), in that local MHS funds may not be loaned to a county general fund or any other county fund.

I declare under penalty of perjury under the laws of this state that the foregoing, and if there is a revenue and expenditure report attached, is true and correct to the best of my knowledge.

\_\_\_\_\_  
 County Auditor Controller / City Financial Officer (PRINT)

\_\_\_\_\_  
 Signature Date

<sup>1</sup> Welfare and Institutions Code Sections 5847(b)(9) and 5899(a)  
 Three-Year Program and Expenditure Plan, Annual Update, and RER Certification (07/22/2013)

# Appendix E

## Mental Health Services Act FY 2021-22 Plan Update Funding Summary

County: Contra Costa

Date: 7/12/2021

	MHSA Funding					Total
	A	B	C	D	E	
	Community Services and Supports	Prevention and Early Intervention	Innovation	Workforce Education and Training	Capital Facilities and Technological Needs	
<b>A. FY 2020/21 Funding</b>						
1. Unspent Funds from Prior Fiscal Years	32,393,398	5,478,778	4,403,254	2,058,784	818,996	45,153,210
2. <b>Projected</b> New FY2020/21 Funding	51,891,639	12,972,910	3,413,923			68,278,472
3. Transfer in FY2020/21	6,200,000			6,200,000		12,400,000
4. Available Funding for FY2020/21	78,085,037	18,451,688	7,817,177	8,258,784	818,996	113,431,682
<b>B. Projected FY20/21 MHSA Expenditures</b>	46,363,705	10,371,108	1,902,054	1,794,671	506,784	60,938,322
<b>C. Estimated FY2021/22 Funding</b>						
1. Unspent Funds from Prior Fiscal Years	32,648,606	8,288,002	5,953,164	6,500,006	322,348	53,712,126
2. Estimated New FY2021/22 Funding	32,049,539	8,012,384	2,108,522			42,170,445
3. Transfer in FY2021/22						
4. Estimated Available Funding for FY2021/22	64,698,145	16,300,386	8,061,686	6,500,006	322,348	95,882,571
<b>D. Budgeted FY2021/22 Expenditures</b>	40,562,961	9,064,668	2,185,630	2,365,051	250,000	54,428,310

<b>H. Estimated Local Prudent Reserve Balance</b>	
1. Estimated Local Prudent Reserve Balance on June 30, 2020	7,579,248

<b>I. Estimated Beginning Balance for FY 2020/21</b>	
1. Estimated Unspent Funds from Fiscal Year 2019/20	45,153,209
2. Estimated Local Prudent Reserve Balance on June 30, 2020	7,579,248
<b>3. Estimated Total Beginning Balance</b>	<b>52,732,457</b>

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Community Services and Supports (CSS) Component Worksheet**

County: Contra Costa

Date: July 13, 2021

	<b>Fiscal Year 2020/21</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
	<b>Total Mental Health Expenditures</b>	<b>CSS Funding</b>	<b>Medi-Cal FFP</b>	<b>1991 Realignment</b>	<b>Behavioral Health Subaccount</b>	<b>Other Funding</b>
<b>FSP Programs</b>						
1. Children	5,625,217	5,625,217				
2. Transition Age Youth	3,207,892	3,207,892				
3. Adults	7,741,837	7,741,837				
4. Assisted Outpatient Treatment	2,625,061	2,625,061				
5. Wellness and Recovery Centers	1,290,630	1,290,630				
6. Crisis Residential Center	4,048,637	4,048,637				
7. MHSA Housing Services	10,296,661	10,296,661				
8.						
9.						
10.						
<b>Non-FSP Programs (General System Development)</b>						
1. Older Adult Mental Health Program	3,642,705	3,642,705				
2. Children's Wraparound Support/EPSTD Support	1,790,947	1,790,947				
3. Miller Wellness Center	303,354	303,354				
4. Clinic Support	635,968	635,968				
5. Forensic Team	187,497	187,497				
6. Concord Health Center	254,496	254,496				
7. Liaison Staff	61,479	61,479				
8. Quality Assurance	531,016	531,016				
9.						
10.						
<b>CSS Administration</b>	4,120,308	4,120,308				
<b>CSS MHSA Housing Program Assigned Funds</b>						
<b>Total CSS Program Estimated Expenditures</b>	46,363,705	46,363,705	0	0	0	0
<b>FSP Programs as Percent of Total</b>	75.1%					

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Community Services and Supports (CSS) Component Worksheet**

	Fiscal Year 2021/22					
	A	B	C	D	E	F
	Estimated Total Mental Health Expenditures	Estimated CSS Funding	Estimated Medi-Cal FFP	Estimated 1991 Realignment	Estimated Behavioral Health Subaccount	Estimated Other Funding
<b>FSP Programs</b>						
1. Children	2,884,535	2,884,535				
2. Transition Age Youth	2,263,233	2,263,233				
3. Adults	7,233,334	7,233,334				
4. Assisted Outpatient Treatment	2,549,239	2,549,239				
5. Wellness and Recovery Centers	1,002,791	1,002,791				
6. Crisis Residential Center	2,204,052	2,204,052				
7. MHSA Housing Services	9,212,576	9,212,576				
8.						
9.						
10.						
<b>Non-FSP Programs (General System Development)</b>						
1. Older Adult Mental Health Program	3,418,643	3,418,643				
2. Children's Wraparound Support/EPSSDT Support	2,098,458	2,098,458				
3. Miller Wellness Center	319,590	319,590				
4. Clinic Support	1,398,055	1,398,055				
5. Forensic Team	1,626,390	1,626,390				
6. Concord Health Center	254,496	254,496				
7. Liaison Staff	145,907	145,907				
8. Quality Assurance	1,251,829	1,251,829				
9.						
10.						
<b>CSS Administration</b>	2,699,833	2,699,833				
<b>CSS MHSA Housing Program Assigned Funds</b>						
<b>Total CSS Program Estimated Expenditures</b>	40,562,961	40,562,961		0	0	0
<b>FSP Programs as Percent of Total</b>	67.4%					

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Prevention and Early Intervention (PEI) Component Worksheet**

County: Contra Costa

Date: July 13, 2021

	Fiscal Year 2020/21					
	A	B	C	D	E	F
	Estimated Total Mental	Estimated PEI Funding	Estimated Medi-Cal FFP	Estimated 1991	Estimated Behavioral	Estimated Other Funding
<b>PEI Programs - Prevention</b>						
1. Outreach for Increasing Recognition of Early Signs of Mental Illness	1,230,509	1,230,509				
2. Prevention	1,676,408	1,676,408				
3. Access and Linkage to Treatment	135,804	135,804				
4. Improving Timely Access to Mental Health Services for Underserved Population	1,661,780	1,661,780				
5. Stigma and Discrimination Reduction	1,289,690	1,289,690				
6. Suicide Prevention	373,468	373,468				
7.						
8.						
9.						
10.						
<b>PEI Programs - Early Intervention</b>						
1. First Hope	3,807,679	3,807,679				
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
<b>PEI Administration</b>	195,770	195,770				
<b>PEI Assigned Funds</b>	0					
<b>Total PEI Program Estimated Expenditures</b>	10,371,108	10,371,108	0	0	0	0

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Prevention and Early Intervention (PEI) Component Worksheet**

	Fiscal Year 2021/22					
	A	B	C	D	E	F
	Estimated Total Mental Health Expenditures	Estimated PEI Funding	Estimated Medi-Cal FFP	Estimated 1991 Realignment	Estimated Behavioral Health Subaccount	Estimated Other Funding
<b>PEI Programs - Prevention</b>						
1. Outreach for Increasing Recognition of Early Signs of Mental Illness	1,553,852	1,553,852				
2. Prevention	1,780,424	1,780,424				
3. Access and Linkage to Treatment	625,867	625,867				
4. Improving Timely Access to Mental Health Services for Underserved Population	1,692,460	1,692,460				
5. Stigma and Discrimination Reduction	296,861	296,861				
6. Suicide Prevention	370,006	370,006				
7.						
8.						
9.						
10.						
<b>PEI Programs - Early Intervention</b>						
1. First Hope	2,587,108	2,587,108				
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
<b>PEI Administration</b>	158,090	158,090				
<b>PEI Assigned Funds</b>						
<b>Total PEI Program Estimated Expenditures</b>	<b>9,064,668</b>	<b>9,064,668</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Innovations (INN) Component Worksheet**

	<b>Fiscal Year 2020/21</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
	<b>Estimated Total Mental Health</b>	<b>Estimated INN Funding</b>	<b>Estimated Medi-Cal FFP</b>	<b>Estimated 1991 Realignment</b>	<b>Estimated Behavioral Health</b>	<b>Estimated Other Funding</b>
<b>INN Programs</b>						
1. Coaching to Wellness	272,062	272,062				
2. Partners in Aging	139,152	139,152				
3. Overcoming Transportation Barriers	18,609	18,609				
4. CORE	715,060	715,060				
5. CBSST	217,878	217,878				
6.						
7.						
8.						
9.						
10.						
<b>INN Administration</b>	539,293	539,293				
<b>Total INN Program Estimated Expenditures</b>	1,902,054	1,902,054	0	0	0	0

	<b>Fiscal Year 2021/22</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
	<b>Estimated Total Mental Health Expenditures</b>	<b>Estimated INN Funding</b>	<b>Estimated Medi-Cal FFP</b>	<b>Estimated 1991 Realignment</b>	<b>Estimated Behavioral Health Subaccount</b>	<b>Estimated Other Funding</b>
<b>INN Programs</b>						
1. CBSST	400,403	400,403				
2. CORE	1,180,936	1,180,936				
3. Overcoming Transportation Barriers	106,856	106,856				
5. Partners in Aging	133,072	133,072				
6.						
7.						
8.						
9.						
10.						
<b>INN Administration</b>	364,363	364,363				
<b>Total INN Program Estimated Expenditures</b>	2,185,630	2,185,630	0	0	0	0

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health Services Act  
Expenditure Plan  
Workforce, Education and Training (WET) Component Worksheet**

	<b>Fiscal Year 2020/21</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
	<b>Estimated Total Mental Health</b>	<b>Estimated WET Funding</b>	<b>Estimated Medi-Cal FFP</b>	<b>Estimated 1991 Realignment</b>	<b>Estimated Behavioral Health</b>	<b>Estimated Other Funding</b>
<b>WET Programs</b>						
1. Workforce Staffing Support	704,180	704,180				
2. Training and Technical Support	497,077	497,077				
3. Mental Health Career Pathway Program	25,534	25,534				
4. Internship Programs	567,880	567,880				
5. Financial Incentive Programs						
6.						
7.						
8.						
9.						
10.						
<b>WET Administration</b>						
<b>Total WET Program Estimated Expenditures</b>	1,794,671	1,794,671	0	0	0	0

	<b>Fiscal Year 2021/22</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
	<b>Estimated Total Mental Health Expenditures</b>	<b>Estimated WET Funding</b>	<b>Estimated Medi-Cal FFP</b>	<b>Estimated 1991 Realignment</b>	<b>Estimated Behavioral Health Subaccount</b>	<b>Estimated Other Funding</b>
<b>WET Programs</b>						
1. Workforce Staffing Support	997,644	997,644				
2. Training and Technical Support	343,799	343,799				
3. Mental Health Career Pathway Program	371,258	371,258				
4. Internship Programs	352,350	352,350				
5. Financial Incentive Programs	300,000	300,000				
6.						
7.						
8.						
9.						
10.						
<b>WET Administration</b>						
<b>Total WET Program Estimated Expenditures</b>	2,365,051	2,365,051	0	0	0	0

**FY 2020-21 Through FY 2021-22 Three-Year Mental Health  
Services Act Expenditure Plan  
Capital Facilities/Technological Needs (CFTN) Component  
Worksheet**

County: Contra Costa

Date: July 13, 2021

	<b>Fiscal Year 2020/21</b>					
	A	B	C	D	E	F
	Estimated Total Mental Health Expenditures	Estimated CFTN Funding	Estimated Medi-Cal FFP	Estimated 1991 Realignment	Estimated Behavioral Health Subaccount	Estimated Other Funding
<b>CFTN Programs - Capital Facilities Projects</b>						
1. Capital Facilities Projects	256,784	256,784				
2.						
3.						
<b>CFTN Programs - Technological Needs Projects</b>						
1. Electronic Health Records System - Administrative Support	250,000	250,000				
2.						
3.						
<b>CFTN Administration</b>						
<b>Total CFTN Program Estimated Expenditures</b>	506,784	506,784	0	0	0	0

	<b>Fiscal Year 2021/22</b>					
	A	B	C	D	E	F
	Estimated Total Mental Health Expenditures	Estimated CFTN Funding	Estimated Medi-Cal FFP	Estimated 1991 Realignment	Estimated Behavioral Health Subaccount	Estimated Other Funding
<b>CFTN Programs - Capital Facilities Projects</b>						
1. Capital Facilities Projects	125,000	125,000				
2.						
3.						
<b>CFTN Programs - Technological Needs Projects</b>						
1. Electronic Health Records System - Administrative Support	125,000	125,000				
2.						
3.						
<b>CFTN Administration</b>						
<b>Total CFTN Program Estimated Expenditures</b>	250,000	250,000	0	0	0	0

# Appendix F



**PUBLIC COMMENT AND  
PUBLIC HEARING  
MHSA Three Year Program and  
Expenditure Plan Update  
Fiscal Year 2021-2022**

# MHSA Three Year Program and Expenditure Plan Update Fiscal Year 2021-2022 Online Posting



## Mental Health Services

- Crisis Services
- Problem Resolution Process
- Mental Health Services Act (MHSA)**
- Wellness & Education
- Workforce Education & Training
- Laura's Law
- CoCo LEAD Plus
- Presumptive Transfer
- Links
- Newsletter
- Internship Program
- Training Opportunities
- Provider Services
- Network Provider Resources
- Clinical Documentation Forms
- Suicide Prevention Committee
- Mental Health Commission

### Related Links

- Information Blocking
- Quality Improvement & Quality Assurance (Q/QA)
- Outcome Measures
- Consolidated Planning Advisory Workgroup (CPAW)
- Behavioral Health Services
- Alcohol & Other Drugs

### Popular Pages

- COVID-19 Vaccine Info
- Community Resources Directory
- MyChart - Patient Website

[HOME](#) > [BEHAVIORAL HEALTH](#) > [MENTAL HEALTH](#) > MENTAL HEALTH SERVICES ACT (MHSA) IN CONTRA COSTA COUNTY

## Mental Health Services Act (MHSA) in Contra Costa County

Contra Costa County Behavioral Health Services (CCBHS) Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan integrates the components of Community Services and Supports, Prevention and Early Intervention, Innovation, Workforce Education and Training, and Capital Facilities/Information Technology.

This Plan describes county operated and contract programs that are funded by MHSA, what they will do, and how much money will be set aside to fund these programs. Also, the plan will describe what will be done to evaluate their effectiveness and ensure they meet the intent and requirements of the Mental Health Services Act.

California approved Proposition 63 in November, 2004, and the Mental Health Services Act became law. The Act provides significant additional funding to the existing public mental health system, and combines prevention services with a full range of integrated services to treat the whole person. With the goal of wellness, recovery and self-sufficiency, the intent of the law is to reach out and include those most in need and those who have been traditionally underserved. Services are to be consumer driven, family focused, based in the community, culturally and linguistically competent, and integrated with other appropriate health and social services. Funding is to be provided at sufficient levels to ensure that counties can provide each child, transition age youth, adult and senior with the necessary mental health services, medications and support set forth in their treatment plan. Finally, the Act requires this Three Year Plan be developed with the active participation of local stakeholders in a community program planning process.

Attached is a [form](#) and [instructions](#) should an individual wish to request a review of any issues related to:

- The MHSA Community Program Planning Process.

### LATEST INFORMATION

PUBLIC NOTICE: Contra Costa Behavioral Health Services has posted the [Prevention and Early Intervention \(PEI\) Evaluation Report FY 19-20](#) and [Innovation Annual Report FY 2019-2020 \(State\)](#) for 30 day public comment. Please use these public comment forms [English/Spanish](#) to make any public comment. The public comment begins on Friday May 28th, 2021 and ends on Monday June 28th, 2021.

PUBLIC NOTICE: The 30 day public comment period for the MHSA Plan Update FY 21-22 has begun. Please use these [public comment forms](#) | [Spanish](#) to make any public comment. The public comment begins on Tuesday, May 4, 2021 and ends on Thursday, June 3, 2021.

- [MHSA 21-22 Annual Plan Update – Draft](#)
- [21-22 MHSA Plan Overview | Spanish](#)
- [2020-2023 MHSA Three Year Program and Expenditure Plan.](#)
- [MHSA Three Year Plan \(20-23\) Summary | Spanish](#)

### LINKS & RESOURCES

- [Hope & Wellness Community Forum](#)
- [2020 MHSA Virtual Supports](#)
- [2019 Needs Assessment Report](#)
- [MHSA Plan Update FY 2019-2020](#)
- Find Mental Health Services in [West County](#), [East County](#) and [Central County](#)
- [Consolidated Planning Advisory Workgroup \(CPAW\)](#)
- [County Behavioral Health Director's Association of California, Mental Health Services Act](#)
- [ARCHIVE »](#)

Community Resources Directory  
 MyChart - Patient Website  
 Coronavirus (COVID-19)

- The MHSA Community Program Planning Process.
- Consistency between approved MHSA plans and program implementation.
- The provision of MHSA funded mental health services.

• [ARCHIVE](#) »

Community Services & Supports

Prevention & Early Intervention

Innovation

Workforce Education & Training

Capital Facilities/Information Technology

## Community Services and Supports

Community Services and Supports is the component of the Three-Year Program and Expenditure Plan that refers to service delivery systems for mental health services and supports for children and youth, transition age youth (ages 16-25), adults, and older adults (over 60). Contra Costa County Mental Health utilizes MHSA funding for the categories of Full Service Partnerships and General System Development.

First approved in 2006 with an initial State appropriation of \$7.1 million Contra Costa's budget has grown incrementally to \$31.5 million annually in commitments to programs and services under this component. The construction and direction of how and where to provide funding began with an extensive and comprehensive community program planning process whereby stakeholders were provided training in the intent and requirements of the Mental Health Services Act, actively participated in various venues to identify and prioritize community mental health needs, and developed strategies by which service delivery could grow with increasing MHSA revenues.

### For more information:

Mental Health Services Act  
 Contra Costa Mental Health Administration  
 1340 Arnold Drive, Suite 200  
 Martinez, CA 94553 [\[Map & Directions\]](#)  
[MHSA@cchealth.org](mailto:MHSA@cchealth.org)

[\[ help with PDF files \]](#)



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### Emergency Information

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**CONTRA COSTA  
MENTAL HEALTH COMMISSION**

**CONTRA COSTA  
MENTAL HEALTH  
COMMISSION**

1340 Arnold Drive, Suite 200  
Martinez, CA 94553

Ph (925) 313-9553

Fax (925) 957-5156

[cchealth.org/mentalhealth/mhc](http://cchealth.org/mentalhealth/mhc)

Current (2021) Members of the Contra Costa County Mental Health Commission

Graham Wiseman, District II (Chair); Barbara Serwin, District II (Vice Chair); Supervisor Candace Andersen, BOS Representative, District II; Douglas Dunn, District III; Laura Griffin, District V; Kathy Maibaum, District IV; Leslie May, District V; Joe Metro, District V; Alana Russaw, District IV; Geri Stern, District I; Gina Swirsding, District I; Diane Burgis, Alternate BOS Representative for District III

**Mental Health Commission (MHC)**

Wednesday, July 7<sup>th</sup>, 2021 ◊ 4:30 pm - 6:30 pm

**VIA: Zoom Teleconference:**

<https://cchealth.zoom.us/j/6094136195>

**Meeting number:** 609 413 6195

**Join by phone:**

1 646 518 9805 US

**Access code:** 609 413 6195

**AGENDA**

- I. Call to Order/Introductions (10 minutes)**
- II. Public Comments (5 minutes)**
- III. Commissioner Comments (5 minutes)**
- IV. Chair Comments/Announcements (5 minutes)**
  - **Mental Health Commission 2021 Retreat October 6, 2021 from 3:30 – 6:30 PM**
  - **Site Visit Program sign-ups in early August**
- V. APPROVE June 2<sup>nd</sup>, 2021 Meeting Minutes (5 minutes)**
- VI. RECEIVE Presentation of State Hospital plans to reduce patient population, Commissioner Douglas Dunn, Contra Costa Mental Health Commission (10 minutes)**
- VII. RECEIVE Behavioral Health Services Director's Report, Dr. Suzanne Tavano (10 minutes)**
- VIII. Adjourn @ 5:20 pm.**

*-- The Public Hearing will follow the MHC meeting --*

**(Agenda continued on Page Two)**



The Contra Costa County Mental Health Commission is appointed by the Board of Supervisors to advise them on all matters related to the county's mental health system, in accordance with mandates set forth in the California State Welfare & Institutions Code, Sections 5604 (a)(1)-5605.5. Any comments or recommendations made by the Mental Health Commission or its individual members do not represent the official position of the county or any of its officers. The Commission is pleased to make special accommodations, if needed, please call ahead at (925) 313-9553 to arrange.



## **Mental Health Commission (MHC) Draft Agenda (Page Two)**

Wednesday, July 7<sup>th</sup>, 2021 ◊ 4:30 pm - 6:30 pm

### **Call to Order the Public Hearing on the 2021-2022 Mental Health Services Act Plan Update**

- I. Opening Comments by the Chair of the Mental Health Commission**
- II. 2021-2022 Mental Health Services Act (MHSA) Plan Update by Jennifer Bruggeman, LMFT, Program Manager, Mental Health Services Act (MHSA), Contra Costa County Behavioral Health Services**
- III. Public Comment**

In the interest of time and equal opportunity, speakers are requested to **please adhere to a 3-minute time limit, per person**. In accordance with the **Brown Act**, if a member of the public addresses an item not on the agenda, no response, discussion, or action on the item will occur, except for the purpose of clarification.
- IV. Commissioner Comments**
- V. DEVELOP a list of Comments and Recommendations to the County Mental Health Administration and to the Board of Supervisors**
- VI. Adjourn Public Hearing**

Authority for Public Hearing: California Welfare and Institutions Code (WIC) § 5848

- (a) Each three-year program and expenditure plan and update shall be developed with local stakeholders, including adults and seniors with severe mental illness, families of children, adults, and seniors with severe mental illness, providers of services, law enforcement agencies, education, social services agencies, veterans, representatives from veterans' organizations, providers of alcohol and drug services, health care organizations, and other important interests. Counties shall demonstrate a partnership with constituents and stakeholders throughout the process that includes meaningful stakeholder involvement on mental health policy, program planning, and implementation, monitoring, quality improvement, evaluation, and budget allocations. A draft plan and update shall be prepared and circulated for review and comment for at least 30 days to representatives of stakeholder interests and any interested party who has requested a copy of the draft plans.
- (b) The mental health board established pursuant to [Section 5604](#) shall conduct a public hearing on the draft three year program and expenditure plan and annual updates at the close of the 30-day comment period required by subdivision (a). Each adopted three-year program and expenditure plan and update shall include any substantive written recommendations for revisions. The adopted three-year program and expenditure plan or update shall summarize and analyze the recommended revisions. The mental health board shall review the adopted plan or update and make recommendations to the county mental health department for revisions.
- (c) The plans shall include reports on the achievement of performance outcomes for services pursuant to Part 3 (commencing with [Section 5800](#) ), Part 3.6 (commencing with [Section 5840](#) ), and Part 4 (commencing with [Section 5850](#) ) funded by the Mental Health Services Fund and established jointly by the State Department of Health Care Services and the Mental Health Services Oversight and Accountability Commission, in collaboration with the County Behavioral Health Directors Association of California.

**MENTAL HEALTH COMMISSION**  
**(Hosts a Public Hearing for the Mental Health Services Act (MHSA) Plan Update FY 2021-2022)**  
**MONTHLY MEETING AND PUBLIC HEARING MINUTES**  
**July 7<sup>th</sup>, 2021 – Draft**

Agenda Item / Discussion	Action /Follow-Up
<p><b>I. Call to Order / Introductions</b>  Cmsr. B. Serwin, Mental Health Commission (MHC Vice-Chair, called the meeting to order @ 4:34 pm</p> <p><u>Members Present:</u>  Vice-Chair, Cmsr. Barbara Serwin, District II  Cmsr. Candace Andersen, District II  Cmsr. Douglas Dunn District III  Cmsr. Laura Griffin, District V  Cmsr. Kathy Maibaum, District IV  Cmsr. Leslie May, District V  Cmsr. Joe Metro, District V  Cmsr. Alana Russaw, District IV  Cmsr. Geri Stern, District I  Cmsr. Gina Swirsding, District I</p> <p><u>Members Absent:</u>  Chair- Cmsr. Graham Wiseman, District II</p> <p><u>Presenters:</u>  Jennifer Bruggeman (Program Manager, Mental Health Services Act)  Cmsr. Douglas Dunn District III (Chair, Legislative Committee, NAMI Contra Costa)  Dr. Suzanne Tavano (Director of Behavioral Health Services)</p> <p><u>Other Attendees:</u>  Angela Beck  Gigi Crowder  Paul Cumming  La'Tanya Dandie  Lisa Finch  Jessica Hunt  Kennisha Johnson  Lynda Kaufmann  Cheryl Metro  Lucy Nelson  Susan Norwick-Horrocks  Theresa Pasquini  Pamela Perls  Dom Pruett (Supv. Candace Andersen's ofc)  Stephanie Regular  Lauren Rettagliata  Jennifer Tuipulotu  Sandy Young</p>	<p>Meeting was held via Zoom platform</p>
<p><b>II. PUBLIC COMMENT:</b></p> <ul style="list-style-type: none"> <li>(Gigi Crowder) I am the Executive Director of NAMI (National Alliance on Mental Illness). I have felt myself spending more time working in the role of Public Defender (PD) than advocacy support and education person with NAMI. I know you all have a criminal justice subcommittee. I would like to know what efforts you have underway. Yesterday was one of the most difficult days I have experienced as Executive Director, supporting a young man in court who lives with mental health. I even wrote a treatment plan, hoping he would be released</li> </ul>	

on OR. We have some major disparities as it relates to who is in prison when they live with a mental health challenge in this county. Our NAMI presentation will be with Stephanie Regular from the PD's office because I had no idea just how tragic it is for families who have loved ones that live with mental health challenges that are arrested and treated without medication and all of the support in place. I would like to connect with the chair for the committee. I am starting a "Free Xavier Hughes" campaign. There is no reason in the world he should have had such a high bail amount set that made it cost prohibitive for him to ever see the light of day for a family that could not afford it. I want to work with that committee and will do whatever I need to do to support efforts to stop criminalizing people who live with mental health challenges. (B. Serwin) I am so glad you stepped forward, Commissioner Geri Stern is the Chair of the Justice Systems committee and is here today. (G. Stern) I just sent contact information to Gigi on chat.

- (Pamela Perls) I am from the Contra Costa Developmental Disability Counsel, as a liaison, as we are very interested in the MHC's work. I read, initially, with great interest that the Sheriff's office was beginning some kind of a mental health response team. I continued reading the article in the East Bay Times and luckily got to quote from an interview with Gigi (Crowder) which explained that, in fact, the Sheriff's office had not consulted with them at all. This was all going to be after the fact, after people with mental health issues had encountered police, this is meant to be a follow up. It is rather disingenuous. I wanted to bring the article to your attention. It was on 7/5/21. (Sent link/added in chat: <https://enewspaper.eastbaytimes.com?selDate=20210705&goTo=B01&artid=3>). From the little I know of your organization (I have now attended four meetings), that you are working very hard on the mental health response team, which would be **instead of**, law enforcement response. This seems totally misplaced and very disingenuous in the way he presented. Thank you. (S. Tavano) I wasn't aware there was a press release and, I think the one thing I would add is, while the Sheriff's office did receive funding through AB 109 for the MET (Mental Health Evaluation Team) officer, there remains to be the need for clarification surrounding the MET clinician, this wasn't factored into the AB 109 budget. We are currently stretching to help cover. I would also add is the MET, as Gigi pointed out, are not intended to be mobile crisis units, they are very specific in the ways that were just described. That is why we are doing the whole improvement event around community-based crisis intervention and have not included the MET Teams in that conversation because they are not really mobile crisis.
- (La'Tanya Dandie) I am in Richmond and applied for the Commission seat (Dist. I), mainly because we don't have a person of color that represents West County that helps and knows what is going on (boots on the ground), knowing the people out there that are visiting, people that understand what is going on in the community, not just with people of color but everyone. We lack many services in West County. We lack a lot of representation in West County and do not have anyone to stand up and speak out and speak to the needs for West County, especially in Richmond. I am just here to listen and see what other services we can get out to our district, even if I don't take the seat, I am still going to take on the responsibility of the mental health issues we are having in West County. I have been waiting very patiently to come on our side, and they haven't. It has taken a very long time. I am also the corresponding secretary for the State of California Democratic Party for the Disability Caucus, so I know a lot of things going on and I want to be that person. I want to be there for those people because we are not getting the services and resource that are needed, especially for the people of color and in West County.
- (Gigi Crowder) I wanted to speak again, only because my name was referenced in that article and I am happy to hear that Dr. Tavano was unaware of the Sheriff's press release, because we are conducting a robust effort t in this county and to

<p>see that press release and to get a call from a report did (kind of) rock me a bit. I feel we are being transparent in what we are trying to lift up and it just felt like it was disingenuous. I has a lot to do with the fact that the Sheriff's office will be asking for funding for that in the Measure X meeting, which I will be attending at 5:00 o'clock. We need to have a more collaborative effort. It states Behavioral Healthcare partners with the Sheriff's office for MET and there is a picture of a county staff person. I was taken aback by the fact that we have this robust effort in place, and this made it feel as if it was happening an individual were not aware. Thank you Dr. Tavano for sharing your concerns . Thank you, Pamela, for bringing it to our attention, as a lot of us are volunteering to create better services, as well as alternative services and we are just not in a place where the Sheriff should approach/ask for funding. That will not help us get to our shared goal of supporting these individuals in a way that makes a difference and supports their families as well.</p>	
<p><b>III. COMMISSIONER COMMENTS</b></p> <ul style="list-style-type: none"> <li>(Cmsr. Gina Swirsding) I am aware of what is going in Richmond, I live in Richmond. We will be meeting with Antoine they will be going around to different areas and speaking to mental illness. Michelle Milam told me about this, so I will be attending those. In the past, being a commissioner as long as I have, many of the regional people of color (specifically, African American) were reaching out with pastors in the area. The churches were reaching out to those and have attended many of those meetings, as well. There is a lot going on out there as far as outreach. The Hispanic community (the majority) is done in schools when they were open. I do believe it hard for people of color to be in the system. They tend to not trust; I am speaking of consumers. I understand why, I feel the same way sometimes too and I am not a person of color. I think, in general, those with mental illness have a hard time trusting anyone in general.</li> </ul>	
<p><b>IV. CHAIR COMMENTS/ANNOUNCEMENTS:</b></p> <ul style="list-style-type: none"> <li>MHC 2021 Retreat October 6, 2021 from 3:30 – 6:30 PM: We will resume our tradition of an annual retreat this year. It is scheduled on Wednesday, October 6, our standing meeting date, and will be held at 3:00 (or 3:30) to 6:30 PM. It will overlap with our usual meeting but will start an hour to an hour and a half early. More details to come.</li> <li>Site Visit Program (SVP) sign-ups in early August: As we have been discussing, our site visit program site visits will start up in September. The first step is for commissioners to sign up for specific sites to visit. Please keep an eye open for an email from Angela in early August regarding writing a list of sites to sign up for. We will be signing up for September, October, November, and December site visits to get through the rest of the calendar year and will be on a first come, first served basis. (Cmsr. J. Metro) I have a comment on this. I think we should be careful to remind the commissioners of conflict of interest if they should have (or had in past) any family members within those facilities. We may want to discuss whether or not it is in the county's best interest to have commissioner (sort of) canvas that particular facility. (Response: B. Serwin) Thank you. I will raise that with the Quality-of-Care team that is working on the SVP because that has not come up and I do appreciate that.</li> </ul>	
<p><b>V. APPROVE June 2<sup>nd</sup>, 2021 Meeting Minutes</b></p> <ul style="list-style-type: none"> <li>(Cmsr. C. Andersen) One question (clarification) in the minutes, we indicated we were going to be voting on the attendance by law changes at today's meeting. It is the very final item in the minutes, but it is not on today's agenda. I wanted to ensure we had not voted at the last meeting on this item. The only reason I bring this up, is the Internal Operations committee meeting (IO) on Monday, we are</li> </ul>	<p><b>Agenda and minute can be found at:</b>  <a href="https://cchealth.org/mentalhealth/mhc/agendas-minutes.php">https://cchealth.org/mentalhealth/mhc/agendas-minutes.php</a></p>

<p>considering the one referenced in the letter to me, but I do not have anything for the actual item where we are looking at the attendance issue. I am just curious what happened after that because the minutes are not reflecting if you did.</p> <p>(RESPONSE: A. Beck) Yes. There were three separate attendance by law changes to be voted on; two of which were forwarded to Sarah Kennard and the letter. There is a proposal from Commissioner May, that was not voted on due to time constraints. It was pushed to this meeting, but because of the time constraints due to the public hearing, it is not able to be on the agenda tonight and it will be voted on next month.</p> <p>(Cmsr. C. Andersen) Okay. Right now, it is on the agenda for IO and I will check with Julie to see if we have the other two attendance by law changes, but we may just postpone the whole attendance issue until we have all three resolved. We will, though, be discussing on Monday, the issue of the letter regarding recruitment and appointment of commissioners and that will be on the IO agenda.</p> <ul style="list-style-type: none"> <li>• June 2<sup>nd</sup>, 2021 Minutes reviewed. <b>Motion:</b> D. Dunn moved to approve the minutes as written. Seconded by L. May. <b>Vote: 10-0-0</b> <b>Ayes:</b> B. Serwin (Vice-Chair), C. Andersen, D. Dunn, L. Griffin. K. Maibaum, L. May, J. Metro, A. Russaw, G. Stern, G. Swirsding <b>Abstain:</b> None</li> </ul>	
<p><b>VI. RECEIVE Presentation of State Hospital plans to reduce patient population, Commissioner Douglas Dunn, Contra Costa Mental Health Commission</b></p> <p>For the Commission and for those that are also on this call, to bring you up to date on what is happening with the Department of State Hospitals (DSH) Plan. The big issue has been what to do with the 1600 person wait list for an incompetent to stand trial (IST) bed at a state hospital. What has been driving with is the fact that the American Civil Liberties Union and Public Defenders Association had a lawsuit filed back in 2015, alleging the following civil rights violations:</p> <ul style="list-style-type: none"> <li>• Lack of time in inadequate evaluation,</li> <li>• Lack of treatment to restore them to competency to stand trial, so they can timely proceed to trial or, otherwise, resolve criminal charges.</li> </ul> <p>In this vein, there have been further late breaking judicial developments. Just this past June 16, the first appellate district court of California, voted 3-0 that persons declared ISD are incompetent to stand trial, have to be transferred to a state hospital bed within 28 days. There is a larger judicial decision that is expected sometime in October of this year. To prepare for this, the DHS, through the governor's proposed May 2021 state budget revision, proposed the following:</p> <p>To stop accepting any and all LPS conservatorship as of July 21 and have all existing LPS conservatees, including Murphy Conservatorship conservatees, discharged in one-third per year steps by June 30, 2024. The number of persons involved statewide is approximately 1000, the number from Contra Costa County to be involved (my latest information states) at least 25 to 40. These are our most vulnerable residents. If Behavioral Health more detailed/recent information, be sure to share.</p> <p>When I speak to the Murphy conservatorship, it is different from a civil LPS conservatorship. In addition to not being able to provide for food, clothing, or shelter, they must have either murdered or severely injured someone, or violently threatened to severely injure or kill a person. This involves the district attorney's felony charge(s). One other piece of the Murphy conservatorship for incompetent to stand trial: for two consecutive years, they cannot understand their criminal charges against them and/or cannot rationally participate with defense counsel in their own defense. To fight back against this proposal, there was a furious, all out, late 11<sup>th</sup> hour writing advocacy campaign by many organizations, including NAMI Contra Costa,</p>	<p>Documentation regarding this agenda item were shared to the Mental Health Commission and included as handouts in the meeting packet and is available on the MHC website under meeting agenda and minutes: <a href="https://cchealth.org/mentalhealth/mhc/agendas-minutes.php">https://cchealth.org/mentalhealth/mhc/agendas-minutes.php</a></p>

NAMI California, and the California State Association of Counties and other Sacramento entities (this should all be in your packets). Bottom line, we got the State Legislature to agree to reject Governor Newsom's May revised proposal, but State budget trailer language is just beginning to be made and per the California State Association of Counties and the California Behavioral Health Director's Association, there are on-going negotiations which Dr. Tavano will briefly talk about.

The possible impact on Contra Costa County, if any of this proposal is adapted, could be another \$15 mil - \$25 mil plus annually. This would include locked facility treatment services and house costs to Contra Costa County. There are further MHC meetings on this issue, Thursday, July 15<sup>th</sup> (1:30 to 3:00 PM) at the MHSA-Finance Committee will be looking at this from a financial perspective; and on Tuesday, July 27<sup>th</sup>, the Justice Committee will be looking at this issue from a criminal justice perspective.

**Comments and Questions:**

- (Cmsr. L. May) You stated they want to discharge by thirds with the final discharge of what date? (D. Dunn) June 30, 2024.

**VII. RECEIVE Behavioral Health Services Director's Report, Dr. Suzanne Tavano, PhD., Director of Behavioral Health Services**

Just a few updates this month.

- Crisis Stabilization Unit for youth as the alternative to the current PES: We continue to meet about every two weeks. There have been a couple of architectural renderings. We are still working to get an update, but we have incorporated the feedback received from the community. There is a finite amount of space and the goal is to have separate rooms for the youth rather than one big dormitory, still have a day room common area, etc. We feel the architect is getting close with meeting all the criteria and still have some sense of openness and areas for families to meet and family conferencing, etc. We are hoping everything will continue to move forward and construction will be completed in a year. We want to ensure the design will meet the site specification requirements of the State Department of Healthcare Services, we will start sharing. We just wanted to assure we are incorporating all the feedback from all prior community meetings from various venues have been incorporated.
- Thank you, Commissioner Dunn, for raising the issue regarding the state hospitals. When the state decided to include this the state budget, initially, it took us by surprise. There had not been a lot of conversations about this. Realigning state hospital responsibilities to the county on short notice is not really going to work. There have been conversations, we know there will be some changes. The real focus is on the clients/detainees who have felony charges that are found to be incompetent to stand trial. Their length of stay in detention centers around the state is excessively long. The real focus is how to provide the care when it is needed, rather than keeping people in jails. If that effort is successful, then some of those other looming serious concerns about the LPS conserved clients, etc. Hopefully this will be taken off the table, but what it will need is for the state hospital system to start working with closely with each county on alternatives, community resources, etc. We will see how this all moves forward. We are keeping our eye on all different moving parts. For our county, it is not an issue, but for other counties, those with misdemeanor charges and are found incompetent to stand trial, it is not uncommon for them to be referred to a state hospital. In Contra Costa, that is not a situation, so we are not as concerned about for us. Certainly, those on LPS conservatorship, the Murphy Conservatorships and the Felony IST are all big areas. We know, anticipating ahead, that would be more resources quite honestly. Those

resources will range from residential treatment facilities to housing and the outpatient continuum down the line.

- Cal AIM: The whole reform of the Medicaid program in California. That is all progressing. The state has submitted different waiver requests, plans, etc. However, the discussions / negotiations are ongoing regarding what documentation is going to look like, will it be required, etc. The biggest help right now is the payment reform of Cal AIM. It will move us out of a cost-based system to a fee for service system. I know that sounds either insignificant or people don't quite understand what it means. It is really a big deal. Along with that, they have provided 300 claim codes for the counties to review, which was done and responded back. It will be a system change all the way through from request for service, how managed and what can be provided, when, what will the documentation be? Concurrently, how will we get paid for those services.
- We have been consulting externally regarding how our contracts are written, the contract language and working with county council. We want our contract to really be in good shape for the next fiscal year (2022-2023) to coincide with some of the Cal AIM implementation.

**Comments and Questions:**

- (Cmsr. L. May) You stated the architect is close to completing the renderings? When are they expecting the building to be complete? (Dr. Tavano) Again, with construction, you never really know but the update I received this afternoon is within a year.
- (Cmsr. L. May) My second question to you is: The number of people Cmsr. Dunn reported to be released into Contra Costa County, how are you preparing? How is this county preparing to handle those 40 people that could be under LPS or Murphy? What are we planning to do? Our record is quite poor on homeless and providing mental health services to the people that in most need. (RESPONSE: Dr. Tavano) We are not there at this time. This is the first proposal out of the gate, and we are hoping it doesn't come to that. Again, I really believe the focus is on what can the state and the counties collectively/corroboratively do to address the felony IST population. If there is some success with that, then hopefully this issue about LPS conserved persons, doesn't become the issue that it sounded like might be a month ago. We are not planning for that now because we are ready to see what will actually happen with the state. We can anticipate one way or another that we will need to build out the resources in the community.
- (Cmsr. G. Swirsding) In January/February the county does the 'homeless count', did we do that this year? I usually find out when I go to a city council meeting and I have participated before. I was wondering, did they do it this year because of COVID? (RESPONSE: Dr. Tavano) I honestly don't remember for this year.
- (Cmsr. G. Swirsding) People who are Medicare/MediCal, they are required to work, how would people with severe mental illness fulfill that requirement? (RESPONSE: Dr. Tavano) It is not a requirement for MediCal, employment is not a requirement, it might be when you get to other disability benefits, but not for the health insurance component.
- (La'Tanya Dandie) I want to refer back to the 40 potential mental health conservatees may be released at a particular time, to ensure we start working on processes of how we are going to continue to get them mental health services. If they are released without services and resources and step out into the community, there are those who will not and may not understand the things they are going through once they get out. Understanding that, because the process and what has been occurring with mental health in each community, we don't have the resources to ensure these folks are taken care of, and once back into the community and no resources, it is very likely they will end up back in the system because they won't have the resources to carry them into the things they need to do to keep them out of the system. Instead of waiting to see if that

process is going to happen, I feel it is a process that needs to start NOW. If we have something in place that is shaky, at least we have something to put together. Waiting for the last moment is like waiting to see if someone will have a mental break/episode when it happens and try to take care of it at point. We need to see it as it goes and not as it comes. (RESPONSE: Dr. Tavano) This is really a complicated discussion and what is going on in the improvement event surrounding mobile crisis, really brings a lot of these issues to light, as it is to say about 'alternate destinations' which are crisis residential programs, adult transitional residential programs, etc. It is already being focused on now by way of that improvement process. We already knew going into it and will just keep moving forward as it all evolves. I was the Director of Jail Psychiatric Services in San Francisco in the 1970s and 1980s and the state hospitals had just started in the late 1960s releasing people to the community and I witnessed, first-hand, the beginning of real significant homelessness in California, and the Bay Area in particular, and the criminalization of people with mental behavioral health issues. I am very in tune with that. It is part of a larger planning process. Hopefully the LPS piece doesn't happen because we are working very hard and every county is echoing the same, we cannot do this short-term, we can't do it without adequate funding from the state and we don't want to add to what started in the 60s. Please let's slow down and plan it out and ensure there are resources. Outpatient services is one thing, but all the transitional residential treatment and housing that will be needed.

- (La'Tanya Dandie) Whatever takes place, I want West County to be at the top of the list because a lot of those services that are already in place are not in place in West County. If that can be looked at, it could be piloted (as to what is needed and what isn't needed). I believe West County should be at the top of the 'food chain' because it is definitely needed out where we are.  
(RESPONSE: Dr. Tavano) Thank you, I appreciate that. If you look at where are two current crisis residential programs are, here in Central County. I just had this conversation with a group of managers in behavioral health about West and East. You are on the radar, thank you.
- (Stephanie Regular) I wanted to make a particular correction regarding Dr. Tavano's comments that misdemeanors are not going to the DSH in the county, because I think it is very important the commission be aware of what is happening, as well as Dr. Tavano, as this information is not reaching her. Misdemeanors are, very much so, going to the DSH and being committed. We are one of the very few counties in the state that is committing our misdemeanants to the DSH and, post-pandemic, we were one of four counties sending misdemeanants to the DSH. The company that we are keeping is Riverside, Kern and San Bernardino County. We were the fourth county. So, once they make it to the DSH, they are committed on the recommendation of our county Behavioral Health to go. Usually, they have maxed out before they get there so they sit in custody and are released with nothing because there was a recommendation they go to the state hospital, but we did have someone go this year and just recently returned a few months ago. He was only charged with misdemeanors. We are paying our county, we fund that bed, it is \$626 a day for the bed. (RESPONSE: Dr. Tavano) For misdemeanor IST individuals, that is on us. Thank you, I will look into that. I wasn't aware of many coming from Contra Costa. I know the state highlighted San Bernardino and Solano County as the highest utilizers.

**VIII. Adjourned Mental Health Commission Meeting at 5:29 pm**

**PUBLIC HEARING**  
**Mental Health Services Act (MHSA) Plan Update FY 2021-2022)**  
**July 7<sup>th</sup>, 2021 – Draft**

Agenda Item / Discussion	Action /Follow-Up
<p><b>I. Opening Comments by the Chair of the Mental Health Commission</b>  Cmsr. B. Serwin, Mental Health Commission (MHC Vice-Chair, called the Public Hearing to order @ 5:30 pm  Thank you very much to Jennifer Bruggeman, the Program Manager of MHSA and your team for the tremendous efforts you have put into making such a strong effort to ensure you bring the input from people from all over the county from various different perspectives over the past three years; and the strong analysis you have done for the extra effort you have had to expend to work through the issues of COVID and the impact it has had on your budget and the needs of our constituency.</p>	<p>Meeting was held via Zoom platform</p>
<p><b>II. 2021-2022 Mental Health Services Act (MHSA) Plan Updated by Jennifer Bruggeman, LMFT, Program Manager, Mental Health Services Act (MHSA), Contra Costa County Behavioral Health Services</b></p> <p>MHSA 3-year Plan 2021-2022 Annual Update Overview: I wanted to present just a few notes to provide context to this plan overview for those who are new to the process.</p> <p>Along with all other counties in California, we had an option to take an extension on completing our 2023 3-Year Plan in order to figure out some of the implications of COVID, so instead of completing in the Spring, as we normally do, our plan was not completed until late last fall of 2020. It was finally approved by the Board of Supervisors past February. We wanted to get back to our normal timeline and schedule. We started this plan update very shortly after, completing it in April, presented to the Consolidated Planning Advisory Workgroup (CPAW) and posted on our website for a 30-day public comment in May, as well as presented to the MHSA-Finance committee in June. So, we are before the commission today. The plan is more of a snapshot in time, rather than a real-time document. This was put together several months ago. Particularly, in regard to the budget, we were working off fiscal projections we had from many months ago. We are aware there will be changes, in a good way as we anticipate there will be more money available to counties than previously predicted.</p> <p>New items to our plan updated:</p> <ul style="list-style-type: none"> <li>• Supportive Housing <ul style="list-style-type: none"> <li>• Updates to No Place Like Home participation</li> <li>• Supportive Housing Services Team</li> <li>• Ongoing Goal – to increase on-site permanent supportive housing services and supports</li> </ul> </li> <li>• Early Childhood Mental Health <ul style="list-style-type: none"> <li>• RFP awarded to Early Childhood Prevention &amp; Intervention Coalition (ECPIC)</li> <li>• Services will include: Outreach, In-Home Support &amp; Parenting Classes for families with children ages 0-5</li> <li>• Funding: \$125K /yr.</li> <li>• Prevention &amp; Early Intervention (PEI) enhancement to Children’s System of Care</li> </ul> </li> <li>• Suicide Prevention <ul style="list-style-type: none"> <li>• RFP awarded to Contra Costa Crisis Center</li> <li>• Suicide Prevention Hospital Follow Up Program</li> <li>• \$50K annual funding</li> <li>• Prevention and Early Intervention (PEI) enhancement to countywide suicide prevention efforts</li> </ul> </li> </ul>	<p>The Plan Update Overview was presented as a PowerPoint presentation to the Public Discussion forum. The Presentation and full plan update was also included as handouts in the meeting packet and is available on the MHC website under meeting agenda and minutes: <a href="https://cchealth.org/mentalhealth/mhc/agendas-minutes.php">https://cchealth.org/mentalhealth/mhc/agendas-minutes.php</a></p>

- Mental Health Career Pathways
  - Expand Loan Repayment Program to Community Support Workers (Peer Providers) and Mental Health Clinical Specialists
  - Goals of increasing retention and language capacity among workforce
  - Workforce Education and Training (WET) – Greater Bay Area Regional Partnership with CalMHSA & Office for Statewide Health Planning & Development (OSHPD)
- Looking Ahead to the Upcoming year
  - Innovation – Three of the existing projects sunseting; new proposals TBD
  - Community Crisis Response – Community Crisis Initiative & RIE’s continue; implementation of additional MCRT team
  - Certified Peer Counselor Initiative – effective 1/1/22
  - Housing – continued focus, top priority
- Community Program Planning (CPP) MHSA Presentations and Events
  - Sep. 2020 Evolution of the Peer Movement
  - Jan. 2021 Hope & Wellness in Diverse Communities
  - Mar. 2021 Historically Marginalized Community Engagement (HMCE) Workgroup
  - Mar. 2021 Older Adult HMCE Workgroup
  - Mar. 2021 African American HMCE Workgroup
  - Mar. 2021 Nuestra Comunidad, Nuestro Bienestar (Our Community, Our Wellbeing)
- Summary of Community Program Planning Process (CPPP)
  - Total Number of Participants: Approx. 350
  - Participants included: Providers (County & CBO), Community Members, Peers, Family Members, Community Partners & Advocates
  - Increased participation from diverse communities and peers & family members
  - Events were free & open to the public
- Summary of Community Feedback from CPPP Prioritizing Needs – We had four basic questions we posed to participants during the small group discussion time at all of our events.
  - What does wellness look like in your community?
    - ◊ No barriers to treatment, especially for people of color & those with disabilities
    - ◊ No stigma
    - ◊ Opportunities to access safe outdoor spaces & to practice spirituality
    - ◊ Comprehensive resource hubs
  - What’s working well?
    - ◊ Telehealth
    - ◊ Mobile Crisis Services – including MCRT, H3 CORE, MHET
    - ◊ Hotlines – Crisis Center, 211, Access Line, Anonymous Hotlines
    - ◊ Non-Profit CBO’s
    - ◊ Language Access – Crisis Center’s Grief Groups in Spanish
    - ◊ Older Adult Services
  - What are the service gaps? What’s missing?
    - ◊ Affordable Housing – with on-site services
    - ◊ More access to technology (including training)
    - ◊ Culturally appropriate care – including language access (and materials printed in multiple languages)
    - ◊ Mental Health Supports – including training and education
    - ◊ More virtual mental health services, especially for youth
    - ◊ More promotion of existing resources
    - ◊ More community crisis response services
    - ◊ Greater access to county funding & resources for CBO’s

<ul style="list-style-type: none"> <li>◇ Specific mental health programs tailored toward the African American community and TAY of color</li> <li>◇ Peer respite centers</li> <li>◇ Re-entry support services</li> <li>• What populations are most at risk? <ul style="list-style-type: none"> <li>◇ Youth, including former foster youth</li> <li>◇ Teens – many have had to quit school to get jobs to support family</li> <li>◇ Seniors</li> <li>◇ Homeless population, including homeless youth</li> <li>◇ Immigrants, refugees, minorities and low- income people</li> <li>◇ Single mothers</li> <li>◇ People with disabilities</li> <li>◇ People with substance use disorders (SUD) – use is on the rise during COVID</li> </ul> </li> <li>• Proposed FY 21-22 Budget <ul style="list-style-type: none"> <li>• Projected FY 21-22 budget of \$54.4m</li> <li>• Unspent Fund balance \$29.1m</li> <li>• Prudent Reserve remains unchanged at \$7m</li> </ul> </li> <li>• 2020-23 Fund Ledger <ul style="list-style-type: none"> <li>• Estimated fund balance as of July 1, 2020 .....52.7m</li> <li>• Anticipate FY 20-21 Revenue inclusive of interest earned ..... +50.6m</li> <li>• Proposed budget for FY 20-21 ..... - <u>61.9m</u></li> <li>• Estimated Ending balance as of July 1, 2021.....41.4m</li> <li>• Estimated Unspent Fund for FY 21-22 ..... + 41.4m</li> <li>• Anticipated FY 21/22 Revenue inclusive of interest earned .....42.1m</li> <li>• Proposed budget for FY 21-22 ..... - <u>54.4m</u></li> <li>• Estimated fund balance as of July 1, 2022 .....29.1m</li> <li>• Estimated Unspent Fund FY 22-23 ..... + 29.1m</li> <li>• Anticipated FY 22-23 Revenue inclusive of Interest Earned .....36.4.m</li> <li>• Proposed budget for FY 22-23 ..... - <u>54.1m</u></li> <li>• Estimated fund balance as of July 1, 2023 .....11.4m <ul style="list-style-type: none"> <li>◇ This, of course, does not reflect any upcoming potential budget increases we were recently made aware of, which are still being finalized. Anything that results from that, as said earlier, you will see reflected in next years plan. The \$11.4million fund balance as of July 1, 2023 is inclusive of the Prudent Reserve. Again, we may see changes to that if these revenue projections change.</li> </ul> </li> </ul> </li> <li>• How can the community provide input? <ul style="list-style-type: none"> <li>• View the Plan on CC Behavioral Health Website: <a href="https://cchealth.org/bhs/">https://cchealth.org/bhs/</a></li> <li>• Provide a Public Comment online, by email or by phone: <a href="https://cchealth.org/bhs/mhsa@cchealth.org">https://cchealth.org/bhs/mhsa@cchealth.org</a>; 925-313-9525</li> <li>• Public Hearing Mental Health Commission meeting</li> <li>• MHSA Consolidated Planning &amp; Advisory Workgroup (CPAW) meetings</li> <li>• Community Forums</li> </ul> </li> </ul>	
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<p><b>III. PUBLIC COMMENT:</b></p> <ul style="list-style-type: none"> <li>• (Lauren Rettagliata) I would like to put forward a motion that the MHC recommends to the Board of Supervisors (BoS) there be a cost-of-living allowance of three percent (3%) given this year to each of the non-county providers in the MHSA Plan for 2021-2022. That is due to the amount of MHSA funding that will be received is enough to cover the Cost-of-Living Increase given last year. I believe cost-of-living allowances are so very important, especially for those who are down in the lower brackets. What happens is so many of the people get very good training, they are excellent at what they do and then have to, for economic reasons, move on and go to another field of employment or</li> </ul>	
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they leave the contract provider and enter into the county system. There is a large discrepancy between the amount of money you make as a contracted provider vs a county provider. That is my recommendation to the MHC.

- (Teresa Pasquini) – submitted via email /read by Cmsr. B. Serwin for the record: I will not be able to attend today’s Public Hearing on the MHSA Plan update for 2021, as the Measure X CAB meeting will be taking place at the same time and will be focusing on criminal justice issues. I hope to learn how the county justice partners plan to support the growing needs for housing the IST and LPS Conservatorship populations in our county. A question often heard in all state and local meetings for criminal justice reform is “divert to where and what?” I will be looking for that answer from the Measure X presenters tonight. And I urge the MH Commission to consider the grave needs of this population in the discussion tonight. Commissioner Dunn and NAMI Contra Costa have done an excellent job of advocating for this dire need that will impact Contra Costa’s behavioral health continuum.

I hope to see the MHC take a more active role in the Measure X process moving forward. This is a community process that will be advising the Board of Supervisors on how to expend an additional sales tax of 0.5% for 20 years. This ballot measure was generously approved by Contra Costa citizens based on the promise of generating an estimated \$81 million per year for “essential services including the regional hospital, community health centers, emergency response, safety-net services, early childhood services and protection of vulnerable populations...” I respectfully remind the Commission that the SMI adult population is a very “vulnerable population” and is considered the population with the greatest health disparity according to the National Council of Behavioral Health, “People with serious mental illness die an average of 15 to 30 years younger than those without. This difference represents the largest health disparity in the U.S., larger than gender, racial or socioeconomic differences. And unlike some of the other gaps that are slowly closing it isn’t shrinking.”

How does this MHSA Plan update address that disparity? Has the MHC analyzed the budgeting process for the SPMH clients, specifically? All available funding streams should be part of the MHC’s analysis of our county’s needs and how to meet those needs. And, that process of analysis must be transparently shared with our community in order to make sound advisory decisions. I appreciate the MHSA/Finance Committee’s attention to this important part of the Commission’s mandated duties. But I worry about our progress in meeting the health and housing gaps with the current budget and within this plan update.

The Measure X funds are not as restricted as MHSA and realignment and could be used to leverage and augment existing mental health funding that is considered to be inadequate and was “underfunded from the start.” MHSA funding is very prescriptive and is literally the only funding entitlement for the most vulnerable WIC 5600.3 SMI population. It must be protected for that specific population. All other funding streams are divided among multiple vulnerable populations, some of which have entitlements that do not exist for the SMI SPMH population which is funded “only to the extent resources are available.”

In defining “vulnerable populations” it is critical that we have access to all data that quantifies and qualifies the identified gaps and how they are being filled by the safety net. We have multiple needs assessments, and stakeholder prioritization processes that have identified housing as the number one need for the SMI population of Contra Costa. The most recent “Needs Assessment” states, “There continues to be an ongoing shortage of affordable housing and housing supports for those individuals and families affected by serious mental illness.”

And it states, “Housing Affordability and Homelessness -As most other counties in the Bay Area, Contra Costa County also struggles with affordable housing and

an increase in homelessness. Based on the 2018 Point in Time (PIT) Count conducted by the Health, Housing, and Homeless Services Division (H3) of Contra Costa County, homelessness has continued to increase in Contra Costa County. MHSA funds in Contra Costa County currently provide over \$7 million in housing support for individuals and families with a serious mental health illness. However, the continued rise in housing affordability creates a challenge to identify and secure housing in general. BHS continues to explore methods to support further housing efforts, specifically for those experiencing mental health challenges specifically through No Place Like Home (NPLH) efforts as well as through the MHSA.”

And, from the Need Assessment Recommendations:

As housing continues to be the top need throughout the State, it is essential to fund more Supportive Housing models designed to offer mental health support services for the most vulnerable populations affected by mental health challenges. Specifically, for youth with systems involvement, such as foster care, BHS is working to support the creation of a Short-Term Residential Treatment Facility (STRTP) that can assist children with high need for serious emotional disturbances, to be able to remain in Contra Costa County versus an out of county placement. It is recommended BHS continue to apply for No Place Like Home (NPLH) funding to obtain more funding for permanent supportive housing, as well as continue to retain and recruit more augmented board and care homes. Furthermore, BHS should continue its ongoing goal to repurpose the Oak Grove site through NPLH funds, as well as additional MHSA County funds to house and provide on-site treatment for transition aged youth; as well as other populations that are affected by mental health. It is recommended that continued support for flexible housing funds continue to provide flexibility.”

While the gaps are clearly acknowledged, the solutions are not clearly defined. How will we create more Board and Care beds? Do we even know how many we need? And there appears to be a forgotten population in these recommendations, specifically those SMI adults who are at risk of homelessness, placed out of county or currently placed in roach infested placements.

Who is the “most vulnerable” population in Contra Costa or Contra Costa residents placed out of Contra Costa? While the multiple stakeholders, advisory bodies and Community Planning Processes capture the wishes, hopes and dreams of those who attend, it excludes the wishes and needs of the CCC clients who are conserved and placed in out of county facilities.

I urge the MHC and will urge the Measure X committee to explore how the county will specially and strategically create Housing That Heals for the adult specialty MH population. I greatly appreciate that the BHS Housing Chief has been hired this past year. I am still hoping to see a Value Stream Mapping Process that will evaluate the continuum of housing needs for this most vulnerable population. Peer Respite Centers are part of that continuum, but they are not permanent and will not meet the unique needs of many SMI clients.

We need a specific Housing That Heals plan of action for Contra Costa included in this MHSA plan update. And a specific request for funding from Measure X that will support this plan and finally lead to action that will bring our loved one’s home.

**IV. COMMISSIONER COMMENT:**

- (L. May) I looked at Page 6, it states “expand loan repayment program to community support workers, peer providers and mental health clinical specialists.” Does the county have their own loan, along with the federal loan repayment program? (RESP: J. Bruggeman) We do have a loan repayment program. Previously it was available to psychiatrists and we have tried to expand on that. We had an opportunity to join in this Regional Bay Area Partnership and

leverage some funding that way. It was really kind of a cost neutral situation for us, which was good. We have been able to open it up a little more. It should be available to those designated positions who would be county employees or working with our contracted CBOs.

- (L. May) I hope everyone received the typewritten statement that Teresa Pasquini completed. It should have been in the packets that everyone received. I was wanting to see if Dr. Tavano received? Could you speak to Page 2 where she states apparent County Behavioral Health Director's Association of California, DSH negotiations summary, Dr. Suzanne Tavano, CC BHS Director, June 29, 2021. Is this a piggyback and is she piggybacking off what you were speaking to the LPS or is she adding to what you have said? (RESP: Dr. Tavano) Yes, thank you Commissioner May. They are two separate issues I think, so the page you, are referencing goes back to the state hospital discussion? It overlaps with the discussion regarding the MHSA Plan. They are not connected.
- (D. Dunn) Jennifer, thank you for letting the public know about the \$6m-\$7m in MHSA funding that was used in blended programs to cover for the shortfall in realignment funding from the last fiscal year. With the economy improving, will that funding be repaid back into MHSA going forward? Or not? And if so, how not? (RESP: J. Bruggeman) That is a great question Commissioner Dunn. I would have to defer to Dr. Tavano on that. I am unsure what the strategy will be, but I am certainly happy to talk to our finance team and get more clarification unless Dr. Tavano has more information (RESP: Dr. Tavano) The three-year plan was built on projections. Predominantly, Mike Geiss's projections because we never really got them directly from the State. When Jennifer talks about point in time, our plan was built on the point-in-time, when it looked like our state economy was tanking. So that is why we had to come back. Remember the original plan from January includes millions of dollars in supported housing, because it included expansion of some of these CBO programs, etc. Those are the things we had to trim back in order to meet the budget projections we were given to work with for 2021-2022. Jennifer and I were in a conversation with some of the finance folks this morning and asked the question "Do we know, at this point, how much additional service staff funding is actually going to be received for this current year?" If these current projections hold true, and can confirm we are set to receive additional funds, then we would open the plan back up for consideration by the community about what we might start adding back in. What I would add, because I sit in the middle of all the advocacy, there is really strong advocacy for a lot of different things and I think it will come to the community, the stakeholders, really honing in where we make future investments. That will be part of the planning process.
- (L. May) The issue I am trying to understand, last year many CBOs received extensive COVID money. What I am trying to understand, the money they received from the county, did the county provide extra money or did this come from the federal government. I am going back to what I have been saying all along: It looks pretty on paper "service gaps more access to technology" and spoke of the populations at risk and there was another question. From the reports I'm getting and what I have heard, as well as being out in the community, the services the CBOs provided were not near as much as before COVID, but during COVID they received money to purchase laptops, tablets, cell phones and technology so that the services could continue, be more intense and often, you could have more one-on-one's and as many groups as you want to. These are the services during a pandemic that should have been provided. When I look at the budget and things don't add up. That is what I was saying in the notes from the last meeting. There needs to be some time kind of inspection and accountability within these agencies. Where is the money? What happened to the money to provide this? Why is it that they have to keep coming to the county and the county has to divie up the money for this and that? There is just no accountability. Dr. Tavano, this is where I am having a problem with this.

Why is the county scrambling from money and 'borrowing from Peter to pay Paul' and stretching to take care of the needs, yet the CBOs getting paid through county to provide the services, they got a lot of money from other resources last year and they did not improve on their services last year. Their services went down, the fact is a lot of what you see now, the reactions and behaviors, the criminal behaviors...it is almost like a COVID rage, being in lockdown for a year and people are acting out. Had we been able to provide services, these companies, provided services to the people who needed them the most during that time, I don't believe we would see so much of this 'craziness' going on. Just within this county itself, it is ridiculous what is going on. They received money along with the county funds. Why is it the county always has to scrape and try to figure out where we are going to get money to do this? Taking it from this program or the other. These CBOs received money, at least three times the amount of what they normally would receive and they are still coming to the county. How is there a check and balance performed? Is it possible?

(RESP: Dr. Tavano) It is possible because we are looking at the level of services being provided. We knew, in the heart of the pandemic that people were not going to be out, or seeking as many services, etc. The goal was to stabilize the BH workforce throughout the entire system so, as we move out of the pandemic, we are not behind the game, we have providers. There is a major state-wide issue going on regarding not having an adequate BH workforce for a variety of reason. Many people have left the public sector for private practice so they can be 100% telehealth and the money is higher. We did not want to lose providers, we wanted to preserve the system so that service could continue to happen. I cannot address all those points, but in terms of the \$6mil that was used to stabilize our existing CBOs that are partially funded with MHSA dollars, it was to be able to provide the local dollars to match with the federal to bring in the MediCAL. That is what it was about, not for other programs, it was to serve to match and get the federal funding to bring them back to the county.

- (Lauren Rettagliata) I was hoping, Suzanne, that you could explain, I was concerned and wondering, since when the contracted providers put in their bid for service (what they will need to provide the service), they are actually calculating that on what is the least amount of money they can get by to pay for a peer provider or someone in clinical social work. That is why I was concerned about having a cost of living for these people. Maybe my concern is misplaced, I equate when you set forth a budget when you are a provider to the county, you calculate your fee for service on what you can charge per person. I still think a cost-of-living allowance may help us keep our well-trained people at positions providing services for those who are seriously mentally ill. MHSA is there for those with a serious mental illness. Not mental health issues or challenges, but those who are seriously ill. (RESP: Dr. Tavano) Thank you. Again, with Cal AIM, the whole landscape is going to change because we will no longer be cost-based. Everything county providers do and CBO providers do, it will be based on the service actually provided. It will change the way of doing business. I believe it will drive increased focus on quality and outcome measures.
- (B. Serwin) Jennifer, I know housing is always at the top of the list. I was wondering if you could break down, what are the top three ways in which MHSA budget addresses housing as a top priority. (RESP: J. Bruggeman) In the plan, the CSS section, there is a whole section on MHSA and the different types of housing that MHSA does fund. The different types of BACs, scattered site housing, individual units, permanent supporting housing, the various 'no place like home' efforts and also having this coordination team. With that, there is some new staffing around that. There was some MHSA funded housing that was previously managed by H3 and now it will be brought back with more oversight. Those are the primary ways. In addition, some of the FSP programs and the AOT program has housing flex funds and are able to provide some housing for their clients as well. There are a number of ways and it does go into detail, but it is never

<p>enough. We realize, especially at the BAC level, the inventory we have is truly not sufficient. We are hoping to expand and build on that.</p> <ul style="list-style-type: none"> <li>• (L. May) I would just like to ask Jennifer Bruggeman (or anyone), RII is leaving the county. What happens? Have you found someone else to take that over? What happens to the funding they requested for wellness recovery centers? What is going to happen with those clients and that money? (RESP: J. Bruggeman) Thank you, Commissioner May, that is a great question and that is something that happened after we drafted this plan, so it's not reflected in this plan. We were given notification that RI was going to basically vacating their contract just about 30-days before the end of the fiscal year. Fortunately, Putnam Clubhouse has agreed to take over. A lot of work has been happening behind the scenes. They are literally taking over as of July 1. The contract take some time to fully execute and it is just about there. They are going to take the entirety of the consumers that participated in the three RI sites located across the county, as well as the staff and the same contract payment limit. The name has been changed, it will be different than the existing Putnam Clubhouse as they want to reflect the model RI had in place and they held a town hall to get input from the community and consumers to see what they wanted. In fact, Sandy is here and can address that. (Dr. Tavano) If I can add, RI has been a great partner and it was with regret they decided to close the programs they are operating throughout California, because they are still a great peer provider agency but they have increasingly moved into crisis intervention at a national level and decided to close down the non-crisis programs in California. We were thrilled Putnam was there and available. We have already been talking with Putnam regarding some of their concepts, reaching further into different areas in the county.</li> <li>• (Sandy Young) You both have summed it up. We have been trying to avoid language (however difficult) regarding taking over or anything like that, 'acquiring' as it is alarming for the clients and participants ('citizens' is a proprietary term to RI). We consider ourselves the new management of those programs. Even the concept, the language of 'wellness cities' will changing because, again, that is proprietary to RI. We are really excited. Again, the attention is not to alter these programs so that they become clubhouses. That is not the goal, although there will be some sprinkling of our flavor and what we do. In those programs, there is a lot of development we are working on. Lisa Finch is here and manages the three sites. As people have already mentioned, we plan to include the communities in talking about what they want. A lot of the curriculum belonged to RI and some is WRAP (things we all share) and then, as they are taking all of their materials with them, it actually creates an opportunity for a change in what the participants get to do. It is not a repetition of material, like receiving the same certificate over and over. There is a lot of excitement about the program development that is coming. Yes, we know there is a need regarding housing, but it is are so many other things on the table.</li> <li>• (Dr. Tavano) We met with some of the Board Members of Putnam over a year and a half ago, because the concept of the community is a wonderful concept. We asked if there was any readiness to move forward and be a part of a 'no place like home' application.</li> </ul>	
<p><b>V. DEVELOP a list of Comments and Recommendations to the County Mental Health Administration and to the Board of Supervisor</b></p>	<p>This agenda item not addressed for Plan updates, only full 3-year plan.</p>
<p><b>VI. Adjourned Public Meeting at 6:29 pm</b></p>	

# **Contra Costa Behavioral Health Services Administration Response to Public Comments, Public Hearing and Mental Health Commission Comments and Recommendations**

As per Section 5848 of the California Welfare and Institutions Code the County shall summarize and analyze any substantive relevant written recommendations for revisions by the public and/or the Mental Health Commission to the Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan.

## **I. 30 Day Public Comment Period**

No written public comments were received.

## **II. Public Hearing**

The following comments were provided by participants in the public hearing:

- A recommendation to put forward a motion that the Mental Health Commission (MHC) recommends to the Board of Supervisors (BOS) there be a 3% Cost of Living Allowance (COLA) to Community Based Organizations (CBOs) to maintain staff retention.
  - Most Behavioral Health Services (BHS) contracts are not MHSA funded. Do stakeholders wish to use MHSA to fund a 3% COLA across the board? This is something to consider.
- A lengthy written comment card was provided and summarized by the MHC Chair. The comments stressed that the seriously mentally ill (SMI) population is very vulnerable and has a shorter life expectancy than the non-SMI population. This is the greatest health disparity in the US. How does MHSA plan to address this? Housing for this community is critical. Gaps are clearly acknowledged, but solutions not clearly defined. MHSA needs to fund more supportive housing, including more augmented board & care homes and should follow up on the Oak Grove project though use of No Place Like Home (NPLH) funds.

## **III. Mental Health Commission Comments**

Upon completion of the Public Comment period MHC members provided individual comments. A summary of commissioner comments and BHS Administration responses are as follows:

- Question: Clarifying questions were asked about the Loan Repayment Program.
  - Response included clarification that the loan repayment program is now open to Community Support Workers and Mental Health Clinical Specialists, in addition to psychiatrists. Payments are made directly to the lender.
- Question: Will the \$6-7M in MHSA unspent funds that was used last year (to address losses in Re-alignment funds for MHSA contracts that have blended funding) be reimbursed to MHSA?
  - Response: The Three Year Plan was built on budget projections made at a time when the state economy looked very bleak. Original Plan from January 2020 (pre COVID) had much more new funding for housing and expansion of CBOs. That had to be trimmed back in order meet COVID budget projections. We are in conversation with Finance. The community will be notified of any changes as they occur and are encouraged to participate in the community program planning process to help decide where future investments should be.
- Comment: CBOs got extensive COVID related funds. Did that come from the County or the federal government? They spent lots of money on laptops and other things while their services decreased. There is no accountability. Why should the county have to pay them more? We are robbing Peter to pay Paul.
  - Response included the County perspective that during COVID, consumers/clients

did not come out as much to receive services. In order to preserve services and stabilize the behavioral health workforce, unspent funds were used as a match to help leverage fee for service dollars.

- Question: When contractors submit their bids, they're calculating the least amount of money needed to pay staff. That's why I was concerned about having a COLA. Maybe my concern is misplaced. When they submit a budget the fee for service is calculated. I still think the COLA will help retain well trained staff to provide services to those with serious mental illness.
  - Response: California Advancing and Innovating Medi-Cal (CalAIM) will change the whole landscape because we will no longer be cost based. Everything providers do will be based on the service actually provided. It will change our way of doing business and increase quality and outcome measures.
- Comment: MHSA is for SMI people only. A Housing that Heals Plan of Action for Contra Costa County should be included in the Plan.
- Question: How does the Plan address housing?
  - Response: There is a section in the Plan under Community Services & Supports (CSS) that addresses how MHSA is currently being used for housing related services. This includes a description of the various types of housing (from board & care, scattered site and permanent supportive housing). In addition there's the Housing Coordination Team, under leadership of the new Supportive Housing Services Chief. Housing previously operated by H3 is now consolidated under this team. The FSPs and Assisted Outpatient Treatment (AOT) also have housing flex funds, which are described.
- Question: What has happened to the Recovery Innovations (RI) contract?
  - Response: This change occurred after the Plan was drafted, so thank you for asking. We received 30 day notice that RI would not be renewing their contract to operate the three Wellness Centers across the County. Fortunately, Putnam Clubhouse has stepped in and will take over this contract. They're holding townhall meetings with the community to address any concerns is the changes in leadership. The plan is that they will maintain the three existing sites, all clients will be carried over and the staff will be retained.
  - Response: RI was a great partner and they did not leave on bad terms. They simply decided not to offer this level of service in the Bay Area any longer and have consolidated programming in Southern California and other regions.
  - Response: Putnam is very excited about the opportunity. We're working with consumers to address concerns during the transition. Avoiding language like "taking over." The program will not be run like the Clubhouse and will be more in line with the wellness centers. The curriculum was proprietary so working on this. We're working with the community. We know there's a need for housing, but there are so many other things on the table right now.
- Question: Will Putnam receive housing flex funds?
  - That would be a long term goal, but no immediate plan. Regarding NPLH, there has to be a developer on board.

#### **IV. Mental Health Commission Recommendations**

The Mental Health Commission thanked all those present today for their participation in the Public Hearing of the MHSA Three Year Program and Expenditure Plan Annual Update for 2021-22. This hearing fulfills the Commission's duties under the MHSA requirements. The Commission had no recommendations for consideration.

TO: BOARD OF SUPERVISORS

FROM: Anna Roth, M.P.H.  
Health Services Director

DATE: August 3, 2021



# Contra Costa County

SUBJECT: Mental Health Services Act (Proposition 63): Three Year Program and Expenditure Plan Update for Fiscal Year 2021-2022

SPECIFIC REQUEST(S) OR RECOMMENDATION(S) & BACKGROUND AND JUSTIFICATION

**RECOMMENDATION:**

ACCEPT the recommendation of the Behavioral Health Services Director to adopt the Mental Health Services Act Three Year Program and Expenditure Plan Update for Fiscal Year 2021-2022.

AUTHORIZE and DIRECT the Chair of the Board of Supervisors to send a letter to that effect to the Department of Health Care Services (DHCS) and the Mental Health Services Oversight and Accountability Commission (MHSOAC) to inform DHCS and the MHSOAC of their approval of the adoption of this Plan.

**FISCAL IMPACT:**

Adoption of the Mental Health Services Act Three Year Program and Expenditure Plan Update Fiscal Year 2021-2022 assures continued MHSA funding for Fiscal Year 21-22 in the amount of \$54,428,310.

**BACKGROUND:**

Proposition 63 was passed by California voters in the November 2004 election. Now known as the Mental Health Services Act (MHSA), the legislation provides public mental health funding by imposing an additional one percent tax on individual taxable income in excess of one million dollars. There are a total of five MHSA components which have been enacted over time by the State with the goal of creating a better program of mental health services and supports in California's public mental health systems. The five components include: Community Services and Supports; Prevention and Early Intervention; Workforce Education and Training; Capital Facilities and Technology; and Innovation. There are multiple programs operated within each component. This is a State mandated program under California's Welfare & Institutions Code.

CONTINUED ON ATTACHMENT:  YES

SIGNATURE: \_\_\_\_\_

RECOMMENDATION OF COUNTY ADMINISTRATOR COMMITTEE

RECOMMENDATION OF BOARD

APPROVE

\_\_\_\_ OTHER

SIGNATURE(S): \_\_\_\_\_

ACTION OF BOARD ON: JULY 7, 2021 APPROVE AS RECOMMENDED

OTHER \_\_\_\_\_

VOTE OF SUPERVISORS:

UNANIMOUS (ABSENT \_\_\_\_\_)

AYES: \_\_\_\_\_ NOES: \_\_\_\_\_

ABSENT: \_\_\_\_\_ ABSTAIN: \_\_\_\_\_

I HEREBY CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF AN ACTION TAKEN AND ENTERED ON THE MINUTES OF THE BOARD OF SUPERVISORS ON THE DATE SHOWN.

ATTESTED: AUGUST 3, 2021

CONTACT: SUSAN K. TAVANO, PHN, Ph.D,  
925-957-5150

DAVID TWA, CLERK OF THE  
BOARD OF SUPERVISORS AND  
COUNTY ADMINISTRATOR

CC: JENNIFER BRUGGEMAN

BY: STEPHANIE MELLO, DEPUTY

**ATTACHMENTS:**

- Executive Summary
- Cover Letter
- Final Plan

## Executive Summary

We are pleased to present Contra Costa Behavioral Health Services (CCBHS) Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan Update (Plan Update) for fiscal years 2021-22. This Plan Update starts July 1, 2021 and updates the MHSA Three Year Program and Expenditure Plan (Three Year Plan) that was initiated in July of 2020. The past year has been unprecedented in many ways. We look forward to continued community partnerships that have emerged in 2020 to address the pandemic, health inequities and community crisis response services. These on-going efforts will continue to provide learning opportunities that guide our work moving forward.

The Three-Year Plan describes programs that are funded by the MHSA, what they will do, and how much money will be set aside to fund these programs. The Three-Year Plan includes the components of Community Services and Supports (CSS), Prevention and Early Intervention (PEI), Innovation (INN), Workforce Education and Training (WET), and Capital Facilities/ Information Technology (CF/TN). Also, the Three-Year Plan describes what will be done to evaluate plan effectiveness and ensure that all MHSA funded programs meet the intent and requirements of the Mental Health Services Act.

California approved Proposition 63 in November 2004, and the Mental Health Services Act became law. The Act provides significant additional funding to the existing public mental health system and combines prevention services with a full range of integrated services to treat the whole person. With the goal of wellness, recovery and self-sufficiency, the intent of the law is to reach out and include those most in need and those who have been traditionally underserved. Services are to be consumer driven, family focused, based in the community, culturally and linguistically responsive, and integrated with other appropriate health and social services. Funding is to be provided at sufficient levels to ensure that counties can provide each child, transition age youth, adult and senior with the necessary mental health services and supports set forth in their treatment plan. Finally, the Act requires the Three-Year Plan be developed with the active participation of local stakeholders in a Community Program Planning Process (CPPP).

### **Highlights of changes and updates to the Plan Update for 2021-22 include the following:**

- Budget updated to reflect estimated available funding for FY 21-22 (Pg. 61)
- Full Service Partnership performance indicators for FY 19-20 (Pg. 23)
- Prevention and Early Intervention Data & Performance Indicators (Pg. 39)
- No Place Like Home (NPLH) and housing updates (Pg. 30)
- New PEI Programs currently in the Request for Proposal (RFP) process:
  - Early Childhood Mental Health Outreach & Education (Pg. 42)
  - Suicide Prevention Training & Education (Pg. 48)
- Information on Suicide Prevention Coalition and new Youth Subcommittee (Pg. 49)
- Expansion of Loan Repayment Program to address mental health career pathways and cultural responsiveness (Pg. 56)



August 3, 2021

Mental Health Services Oversight and Accountability Commission  
1300 17th St., Suite 1000  
Sacramento, CA 95811  
E-mail: mhsoac@mhsoac.ca.gov

Dear Mental Health Services Oversight and Accountability Commission:  
Enclosed you will find the Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan Update for Fiscal Year 2021-22. Included in Appendix G is the signed Prudent Reserve Assessment form per Welfare and Institutions Code (WIC) section 5892(b) (2) and Department of Health Care Services (DHCS) Mental Health Substance Use Disorder Services (MHSUDS) Information Notice 1819.

Attached as the separate documents are:

- The Innovation Annual Report for FY 2019-2020.
- The Prevention and Early Intervention (PEI) Evaluation Report for FY 2019-2020

The Draft MHSA Three Year Program and Expenditure Plan Update for FY 2021-22 (MHSA Three Year Plan Update) was posted for the required 30 day public review and comment initially from the period from May 4, 2021 through June 3, 2021. The public hearing was conducted on July 7, 2021. The MHSA Three Year Program and Expenditure Plan Update for FY 2021-22 was adopted by the Contra Costa Board of Supervisors on August 3, 2021. Should you have any questions please contact Suzanne K. Tavano, PHN, PhD, Behavioral Health Services Director, 925-957-5150, or Suzanne.Tavano@cchealth.org.

Sincerely,

Diane Burgis, District 3  
Chair of the Contra Costa County Board of Supervisors

Enclosures:

- Contra Costa County Adopted MHSA Three Year Program and Expenditure Plan Update for FY 2021-22
- Innovation Annual Report for FY 2019-20
- Prevention and Early Intervention Annual Report for 2019-20



**MENTAL HEALTH SERVICES ACT  
PRUDENT RESERVE ASSESSMENT/REASSESSMENT**

County/City: \_\_\_\_\_

Fiscal Year: \_\_\_\_\_

**Local Mental Health Director**

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

I hereby certify<sup>1</sup> under penalty of perjury, under the laws of the State of California, that the Prudent Reserve assessment/reassessment is accurate to the best of my knowledge and was completed in accordance with California Code of Regulations, Title 9, section 3420.20 (b).

\_\_\_\_\_  
Local Mental Health Director (PRINT NAME)      Signature      Date

<sup>1</sup> Welfare and Institutions Code section 5892 (b)(2)

**Contra Costa County  
Mental Health Services Act  
Maximum Prudent Reserve Level Calculation**

	Overall MHS A			CSS Component Allocation 76% of Overall MHS A		
	Appointionment Received	Interest Earned	Total	Appointionment Received	Interest Earned	Total
<b>FY13/14</b>	28,085,078.51		28,085,078.51	21,344,659.67	-	21,344,659.67
<b>FY14/15</b>	39,312,663.70		39,312,663.70	29,877,624.41	-	29,877,624.41
<b>FY15/16</b>	32,115,245.21		32,115,245.21	24,407,586.36	-	24,407,586.36
<b>FY16/17</b>	41,775,216.85		41,775,216.85	31,749,164.81	-	31,749,164.81
<b>FY17/18</b>	46,070,781.70		46,070,781.70	35,013,794.09	-	35,013,794.09
	<b>187,358,985.97</b>	-	<b>187,358,985.97</b>	<b>142,392,829.34</b>	-	<b>142,392,829.34</b>

**Maximum  
Percentage  
Allowed**

Maximum MHS A Prudent Reserve Level	9,492,855.29	33%
Contra Costa County FY17/18 Prudent Reserve	7,579,248.17	
Under the Maxium Level?	YES	



FY 19-20 MHSA  
Prevention & Early Intervention (PEI)  
Annual Report

and

FY 19-20 MHSA  
Innovation  
Annual Report

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# **Annual PEI Evaluation Report**

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Contra Costa  
Behavioral Health  
Services

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Mental Health Services Act

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As submitted for MHOAC  
FY 2019-2020

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## EXECUTIVE SUMMARY

Prevention and Early Intervention (PEI) is the component of the Three-Year Plan that refers to services designed to prevent mental illnesses from becoming severe and disabling. This means providing outreach and engagement to increase recognition of early signs of mental illness and intervening early in the onset of a mental illness.

First approved in 2009, with an initial State appropriation of \$5.5 million, Contra Costa's Prevention and Early Intervention budget has grown incrementally to \$9.1 million for FY 2019-20 in commitments to programs and services. The construction and direction of how and where to provide funding for this component began with an extensive and comprehensive community program planning process that was like that conducted in 2005-06 for the Community Services and Support component. Underserved and at-risk populations were researched, stakeholders actively participated in identifying and prioritizing mental health needs, and strategies were developed to meet these needs.

The programs and services described below are directly derived from this initial planning process, and expanded by subsequent yearly community program planning processes, to include current year. New regulations and demographic reporting requirements for the PEI component went into effect on October 6, 2015. Programs in this component now focus their programming on one of the following seven PEI categories:

- 1) Outreach for increasing recognition of early signs of mental illness
- 2) Prevention
- 3) Early intervention
- 4) Access and linkage to treatment
- 5) Improving timely access to mental health services for underserved populations
- 6) Stigma and discrimination reduction
- 7) Suicide prevention

All programs contained in the PEI component help create access and linkage to mental health treatment, with an emphasis on utilizing non-stigmatizing and non-discriminatory strategies, as well as outreach and engagement to those populations who have been identified as traditionally underserved.

### Outcome Indicators.

PEI regulations (established October 2015) have data reporting requirements that programs started tracking in FY 2016-2017. In FY 19-20, over 32,000 consumers of all ages were served by PEI programs in Contra Costa County. This report includes updates from each program and is organized by PEI program category.

The information gathered enables CCBHS to report on the following outcome indicators:

- Outreach to Underserved Populations. Demographic data, such as age group, race/ethnicity, primary language, and sexual orientation, enable an assessment of the impact of outreach and engagement efforts overtime.
- Linkage to Mental Health Care. Number of people connected to care, and average duration of reported untreated mental illness enable an assessment over time of impact of programs on connecting people to mental healthcare.

### Evaluation Component

Contra Costa Behavioral Health Services is committed to evaluating the effective use of funds provided by the Mental Health Services Act. Toward this end, a comprehensive program and fiscal review process has been implemented to: a) improve the services and supports provided; b) more efficiently support the County's MHSa Three Year Program and Expenditure Plan; c) ensure compliance with stature, regulations, and policies. Each of the MHSa funded contract and county operated programs undergoes a triennial program and fiscal review. This entails interviews and surveys of individuals both delivering and receiving the services, review of data, case files, program and financial records, and performance history. Key areas of inquiry include:

- Delivering services according to the values of MHSa
- Serving those who need the service
- Providing services for which funding was allocated
- Meeting the needs of the community and/or population
- Serving the number of individuals that have been agreed upon
- Achieving outcomes that have been agreed upon
- Assuring quality of care
- Protecting confidential information
- Providing sufficient and appropriate staff for the program
- Having sufficient resources to deliver the services
- Following generally accepted accounting principles
- Maintaining documentation that supports agreed upon expenditures
- Charging reasonable administrative costs
- Maintaining required insurance policies
- Communicating effectively with community partners

Each program receives a written report that addresses the above areas. Promising practices, opportunities for improvement, and/or areas of concern are noted for sharing or follow-up activity, as appropriate. The emphasis is to establish a culture of continuous improvement of service delivery, and quality feedback for future planning efforts. Completed reports are made available to members of the Consolidated Planning Advisory Workgroup (CPAW) and

distributed at the monthly stakeholder meeting, or to the public upon request. Links to PEI program and fiscal reviews can be found here:

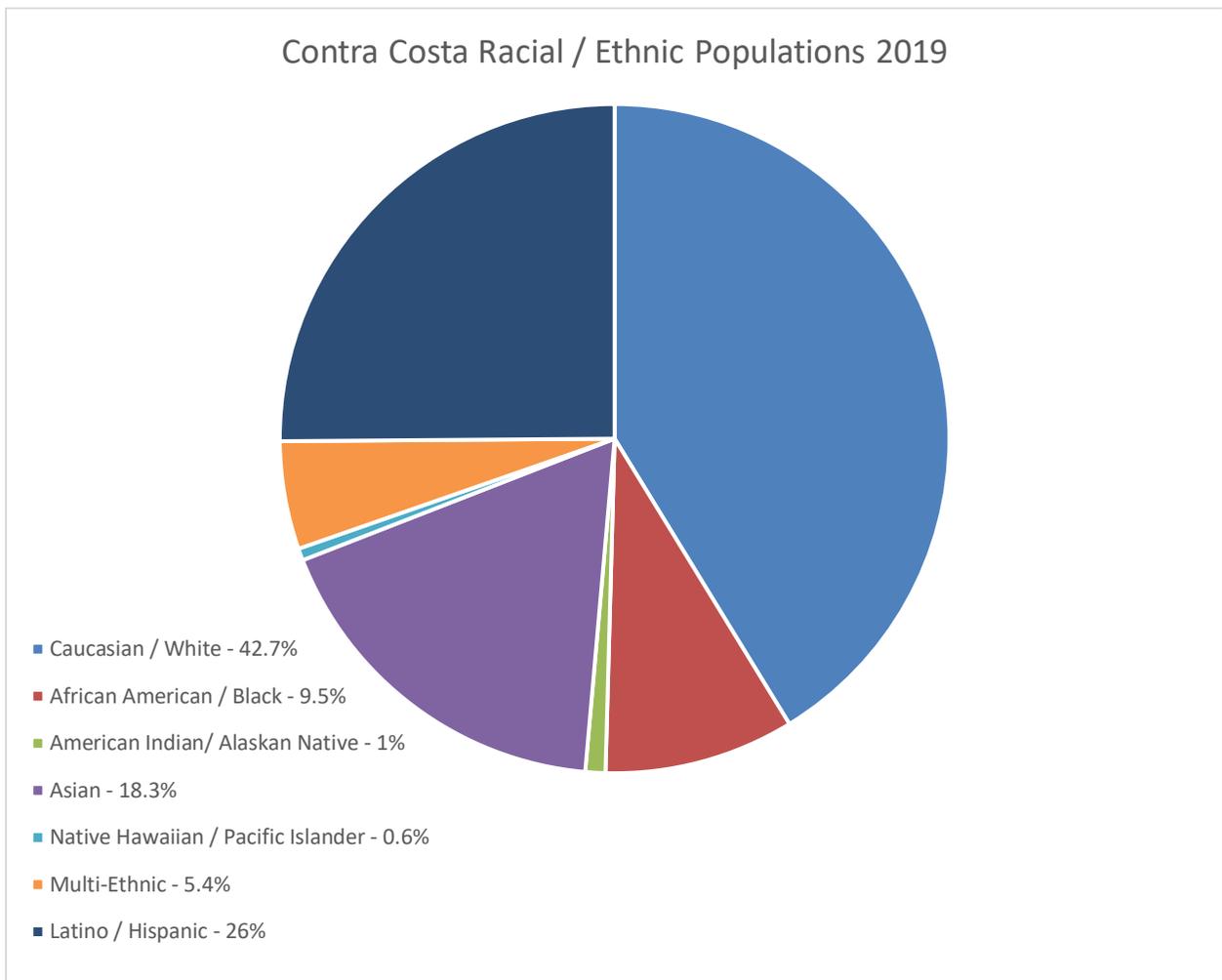
<https://cchealth.org/mentalhealth/mhsa/cpaw/agendas-minutes.php>.

During FY 2019-20, completed PEI Program and Fiscal Review reports were distributed at the following monthly CPAW meetings: August 1, 2019, January 9, 2020, and February 6, 2020.

## PEI AGGREGATE DATA FY 19-20

Contra Costa is a geographically and culturally diverse county with approximately 1.1 million residents. One of nine counties in the Greater San Francisco Bay Area, we are located in the East Bay region.

According to the [United States Census Bureau](#), it's estimated that 7.9% of people in Contra Costa County are living in poverty and that children, adolescents & young adults (ages 0-25) make up approximately 30% of the population. Roughly 25% of residents are foreign born. The most common languages spoken after English include: Spanish, Chinese languages, and Tagalog.



MHSA funded Prevention and Early Intervention (PEI) programs in Contra Costa County served over 32,000 individuals during FY 19-20. For a complete listing of PEI programs, please see Appendix A. PEI Providers gather quarterly for a Roundtable Meeting facilitated by MHSA staff, and are actively involved in MHSA stakeholder groups including Consolidated Planning and Advisory Workgroup (CPAW) and various sub-committees. In addition, PEI programs engage in the Community Program Planning Process (CPPP) by participating in three annual community forums located in various regions of the county.

The below tables outline PEI Aggregate Data collected for FY 19-20.

Total Served: 32,442

**Table 1. Age Group**

	<b># Served</b>
Child (0-15)	1,395
Transition Age Youth (16-25)	4,514
Adult (26-59)	9,096
Older Adult (60+)	2,623
Decline to State	14,814

**Table 2. Primary Language**

	<b># Served</b>
English	24,071
Spanish	1,959
Other	1,033
Decline to State	5,393

**Table 3. Race**

	<b># Served</b>
More than one Race	646
American Indian/Alaska Native	348
Asian	1,932
Black or African American	3,262
White or Caucasian	7,537
Hispanic or Latino/a	3,849
Native Hawaiian or Other Pacific Islander	618
Other	248
Decline to State	14,104

**Table 4. Ethnicity (If Non- Hispanic or Latino/a)**

	<b># Served</b>
African	443
Asian Indian/South Asian	1,036
Cambodian	3
Chinese	195
Eastern European	135
European	304
Filipino	33
Japanese	3
Korean	2
Middle Eastern	12
Vietnamese	152
More than one Ethnicity	463
Decline to State	28,453
Other	153

**Table 5. Ethnicity (If Hispanic or Latino/a)**

	<b># Served</b>
Caribbean	4
Central American	101
Mexican/Mexican American /Chicano	1,251
Puerto Rican	9
South American	8
Other	23

**Table 6. Sexual Orientation**

	<b># Served</b>
Heterosexual or Straight	11,553
Gay or Lesbian	99
Bisexual	156
Queer	18
Questioning or Unsure of Sexual Orientation	25
Another Sexual Orientation	82
Decline to State	20,509

**Table 7. Gender Assigned at Birth**

	<b># Served</b>
Male	10,113
Female	11,311
Decline to State	9,495

**Table 8. Current Gender Identity**

	<b># Served</b>
Man	10,263
Woman	11,281
Transgender	146
Genderqueer	11
Questioning or Unsure of Gender Identity	8
Another Gender Identity	15
Decline to State	10,718

**Table 9. Active Military Status**

	<b># Served</b>
Yes	31
No	2,873
Decline to State	29,073

**Table 10. Veteran Status**

	<b># Served</b>
Yes	103
No	3,427
Decline to State	28,912

**Table 11. Disability Status**

	<b># Served</b>
Yes	558
No	1,768
Decline to State	30,094

**Table 12. Description of Disability Status**

	<b># Served</b>
Difficulty Seeing	88
Difficulty Hearing or Have Speech Understood	77
Physical/Mobility	219
Chronic Health Condition	163
Other	36
Decline to State	25,320

**Table 13. Cognitive Disability**

	<b># Served</b>
Yes	144
No	1,327
Decline to State	25,387

**Table 14. Referrals to Services**

	<b># Served</b>
Clients Referred to Mental Health Services	1,120
Clients who Participated/ Engaged at Least Once in Referred Service	883

**Table 15. External Mental Health Referral**

	<b># Served</b>
Clients Referred to Mental Health Services	22,025
Clients who participated/ engaged at least once in referred service	21,849

**Table 16. Average Duration Without Mental Health Services**

	<b># Served</b>
Average Duration for all Clients of Untreated Mental Health Issues (In weeks)	55.9

**Table 17. Average Length of Time Until Mental Health Services**

	<b># Served</b>
Average Length for all Clients between Mental Health Referral and Services (In weeks)	4.5

## PEI PROGRAMS BY COMPONENT

PEI programs are listed within the seven categories delineated in the PEI regulations.

### **OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS**

Programs in this category provide outreach to individuals with signs and symptoms of mental illness so they can recognize and respond to their own symptoms. Outreach is engaging, educating, and learning from potential primary responders. Primary responders include, but are not limited to, families, employers, law enforcement, school, community service providers, primary health care, social services, and faith-based organizations.

Seven programs are included in this category:

- 1) Asian Family Resource Center (Fiscal sponsor Contra Costa ARC) provides culturally sensitive education and access to mental health services for immigrant Asian communities, especially the Southeast Asian and Chinese population of Contra Costa County. Staff provide outreach, medication compliance education, community integration skills, and mental health system navigation. Early intervention services are provided to those exhibiting symptoms of mental illness, and participants are assisted in actively managing their own recovery process.
- 2) The Counseling Options Parenting Education (COPE) Family Support Center utilizes the evidence-based practices of the Positive Parenting Program (Triple P) to help parents develop effective skills to address common child and youth behavioral issues that can lead to serious emotional disturbances. Targeting families residing in underserved communities this program delivers in English and Spanish several seminars, training classes and groups throughout the year.
- 3) First Five of Contra Costa, in partnership with the COPE Family Support Center, takes the lead in training families who have children up to the age of five. First Five also partners with the COPE Family Support Center to provide training in the Positive Parenting Program method to mental health practitioners who serve this at-risk population.
- 4) Hope Solutions (formerly Contra Costa Interfaith Housing) provides on-site services to formerly homeless families, all with special needs, at the Garden Park Apartments in Pleasant Hill, the Bella Monte Apartments in Bay Point, Los Medanos Village in Pittsburg, and supportive housing sites throughout the County. Services include coordination and assistance with accessing needed community resources, pre-school, and afterschool programs, such as teen and family support groups, assistance with school preparation, and homework clubs. These services are designed to prevent serious mental illness by addressing domestic violence, substance addiction and inadequate life and parenting skills.
- 5) Jewish Family Community Services of the East Bay (JFCS) provides culturally grounded, community-directed mental health education and navigation services to refugees and

immigrants of all ages in the Latino, Afghan, Bosnian, Iranian and Russian communities of Central and East County. Outreach and engagement services are provided in the context of group settings and community cultural events that utilize a variety of non-office settings convenient to individuals and families.

- 6) The Native American Health Center (NAHC) provides a variety of culturally specific methods of outreach and engagement to educate Native Americans throughout the County regarding mental illness, identify those at risk for developing a serious mental illness, and help them access and navigate the human service systems in the County. Methods include an elder support group, a youth wellness group, a traditional arts group, talking circles, Positive Indian Parenting sessions, and Gatherings of Native Americans.
- 7) The Latina Center serves Latino parents and caregivers in West Contra Costa County by providing culturally and linguistically specific twelve-week parent education classes to high-risk families utilizing the evidence-based curriculum of Systematic Training for Effective Parenting (STEP). In addition, the Latina Center trains parents with lived experience to both conduct parenting education classes and to become Parent Partners who can offer mentoring, emotional support, and assistance in navigating social service and mental health systems.

In addition, additional funding will be added for this Three-Year Plan to provide prevention and early intervention services to families with young children who are experiencing serious emotional disturbances. The Needs Assessment and Community Program Planning Process has identified 0-5 age children with serious emotional disturbances as underserved. The FY 2017-20 MHSAs Three Year Plan substantially increased funding for increasing treatment capacity in the Children’s System of Care. The FY 2021-22 MHSAs Three Year Plan Update dedicates funding to provide outreach, engagement, training, education, and linkage to mental health care for families with young children who are exposed to violence, physical and emotional abuse, parental loss, homelessness, the effects of substance abuse, and other forms of trauma.

The allocation for the Outreach for Increasing Recognition of Early Signs of Mental Illness category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Asian Family Resource Center	Countywide	50	\$150,408
COPE	Countywide	210	\$253,238
First Five	Countywide	(numbers included in COPE)	\$84,214
Hope Solutions	Central and East County	200	\$385,477
Jewish Family Community Services	Central and East County	350	\$179,720

Native America Health Center	Countywide	150	\$250,257
The Latina Center	West County	300	\$125,538
0-5 Children Outreach RFP TBD	Countywide	TBD	\$125,000
<b>Total</b>		<b>1,260</b>	<b>\$1,553,852</b>

## PREVENTION

Programs in this category provide activities intended to reduce risk factors for developing a potentially serious mental illness, and to increase protective factors. Risk factors may include, but are not limited to, poverty, ongoing stress, trauma, racism, social inequality, substance abuse, domestic violence, previous mental illness, prolonged isolation, and may include relapse prevention for those in recovery from a serious mental illness.

Five programs are included in this category:

- 1) The Building Blocks for Kids Collaborative (fiscal sponsor Tides) located in the Iron Triangle of Richmond, train family partners from the community with lived mental health experience to reach out and engage at-risk families in activities that address family mental health challenges. Individual and group wellness activities assist participants make and implement plans of action, access community services, and integrate them into higher levels of mental health treatment as needed.
- 2) Vicente Alternative High School in the Martinez Unified School District provides career academies for at-risk youth that include individualized learning plans, learning projects, internships, and mental health education and counseling support. Students, school staff, parents and community partners work together on projects designed to develop leadership skills, a healthy lifestyle and pursuit of career goals.
- 3) People Who Care is an afterschool program serving the communities of Pittsburg and Bay Point that is designed to accept referrals of at-risk youth from schools, juvenile justice systems and behavioral health treatment programs. Various vocational projects are conducted both on and off the program's premises, with selected participants receiving stipends to encourage leadership development. A clinical specialist provides emotional, social, and behavioral treatment through individual and group therapy.
- 4) Putnam Clubhouse provides peer-based programming for adults throughout Contra Costa County who are in recovery from a serious mental illness. Following the internationally recognized clubhouse model this structured, work focused programming helps individuals develop support networks, career development skills, and the self-confidence needed to sustain stable, productive, and more independent lives. Features of the program provide respite support to family members, peer-to-peer outreach, and special programming for transition age youth and young adults.
- 5) The RYSE Center provides a constellation of age-appropriate activities that enable at-risk youth in Richmond to effectively cope with the continuous presence of violence and

trauma in the community and at home. These trauma informed programs and services include drop-in, recreational and structured activities across areas of health and wellness, media, arts and culture, education and career, technology, and developing youth leadership and organizing capacity. The RYSE Center facilitates several city and system-wide training and technical assistance events to educate the community on mental health interventions that can prevent serious mental illness as a result of trauma and violence.

The allocation for the Prevention category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Building Blocks for Kids	West County	400	\$224,602
Vicente	Central County	80	\$191,336
People Who Care	East County	200	\$229,795
Putnam Clubhouse	Countywide	300	\$631,672
RYSE	West County	2,000	\$503,019
<b>Total</b>		<b>2,980</b>	<b>\$1,780,424</b>

**EARLY INTERVENTION**

Early intervention provides mental health treatment for persons with a serious emotional disturbance or mental illness early in its emergence.

One program is included in this category:

- 1) The County operated First Hope Program serves youth who show early signs of psychosis or have recently experienced a first psychotic episode. Referrals are accepted from all parts of the County, and through a comprehensive assessment process young people, ages 12-25, and their families are helped to determine whether First Hope is the best treatment to address the psychotic illness and associated disability. A multi-disciplinary team provides intensive care to the individual and their family, and consists of psychiatrists, mental health clinicians, occupational therapists, and employment/education specialists. These services are based on the Portland Identification and Early Referral (PIER) Model, and consists of multi-family group therapy, psychiatric care, family psychoeducation, education and employment support, and occupational therapy.

The allocation for the Early Intervention category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
First Hope	Countywide	200	\$2,587,108
<b>Total</b>		<b>200</b>	<b>\$2,587,108</b>

**ACCESS AND LINKAGE TO TREATMENT**

Programs in this category have a primary focus on screening, assessment, and connecting children and adults as early as practicable to necessary mental health care and treatment.

Three programs are included in this category:

- 2) The James Morehouse Project (fiscal sponsor Bay Area Community Resources -BACR) at El Cerrito High School, a student health center that partners with community-based organizations, government agencies and local universities, provides a range of youth development groups designed to increase access to mental health services for at-risk high school students. These on-campus groups address mindfulness (anger/stress management), violence and bereavement, environmental and societal factors leading to substance abuse, peer conflict mediation and immigration/accluturation.
- 3) STAND! Against Domestic Violence utilizes established curricula to assist youth successfully address the debilitating effects of violence occurring both at home and in teen relationships. Fifteen-week support groups are held for teens throughout the County, and teachers and other school personnel are assisted with education and awareness with which to identify and address unhealthy relationships amongst teens that lead to serious mental health issues.
- 4) Experiencing the Juvenile Justice System. Within the County operated Children’s Services five mental health clinicians support families who are experiencing the juvenile justice system due to their adolescent children’s involvement with the law. Three clinicians are out stationed at juvenile probation offices. The clinicians provide direct short-term therapy and coordinate appropriate linkages to services and supports as youth transition back into their communities.

The allocation for the Access and Linkage to Treatment category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
James Morehouse Project	West County	300	\$105,987
STAND! Against Domestic Violence	Countywide	750	\$138,136
Experiencing Juvenile Justice	Countywide	300	\$381,744
<b>Total</b>		<b>1,350</b>	<b>\$625,867</b>

## **IMPROVING TIMELY ACCESS TO MENTAL HEALTH SERVICES FOR UNDERSERVED POPULATIONS**

Programs in this category provide mental health services as early as possible for individuals and their families from an underserved population. Underserved means not having access due to challenges in the identification of mental health needs, limited language access, or lack of culturally appropriate mental health services. Programs in this category feature cultural and language appropriate services in convenient, accessible settings.

Six programs are included in this category:

- 1) The Center for Human Development fields two programs under this category. The first is an African American wellness group that serves the Bay Point community in East Contra Costa County. Services consist of culturally appropriate education on mental health issues through support groups and workshops. Participants at risk for developing a serious mental illness receive assistance with referral and access to County mental health services. The second program provides mental health education and supports for LGBTQ youth and their supports in East County to work toward more inclusion and acceptance within schools and in the community.
- 2) The Child Abuse Prevention Council of Contra Costa provides a 23-week curriculum designed to build new parenting skills and alter old behavioral patterns and is intended to strengthen families and support the healthy development of their children. The program is designed to meet the needs of Spanish speaking families in East and Central Counties.
- 3) La Clínica de la Raza reaches out to at-risk LatinX in Central and East County to provide behavioral health assessments and culturally appropriate early intervention services to address symptoms of mental illness brought about by trauma, domestic violence, and substance abuse. Clinical staff also provide psycho-educational groups that address the stress factors that lead to serious mental illness.
- 4) Lao Family Community Development provides a comprehensive and culturally sensitive integrated system of care for Asian and Southeast Asian adults and families in West Contra Costa County. Staff provide comprehensive case management services, to include home visits, counseling, parenting classes, and assistance accessing employment, financial management, housing, and other service both within and outside the agency.
- 5) Lifelong Medical Care provides isolated older adults in West County opportunities for social engagement and access to mental health and social services. A variety of group and one-on-one approaches are employed in three housing developments to engage frail, older adults in social activities, provide screening for depression and other mental and medical health issues, and linking them to appropriate services.
- 6) Rainbow Community Center provides a community based social support program designed to decrease isolation, depression and suicidal ideation among members who identify as lesbian, gay, bisexual, transgender, or who question their sexual identity. Key activities include reaching out to the community to engage those individuals who are at

risk, providing mental health support groups that address isolation and stigma and promote wellness and resiliency, and providing clinical mental health treatment and intervention for those individuals who are identified as seriously mentally ill.

The allocation for the Improving Timely Access to Mental Health Services for Underserved Populations category is summarized below:

<b>Program</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHSA Funds Allocated for FY 21-22</b>
Child Abuse Prevention Council	Central and East County	120	\$128,862
Center for Human Development	East County	230	\$161,644
La Clínica de la Raza	Central and East County	3,750	\$288,975
Lao Family Community Development	West County	120	\$196,128
Lifelong Medical Care	West County	115	\$134,710
Rainbow Community Center	Countywide	1,125	\$782,141
<b>Total</b>		<b>5,460</b>	<b>\$1,692,460</b>

**STIGMA AND DISCRIMINATION REDUCTION**

Activities in this category are designed to 1) reduce negative feelings, attitudes, beliefs, perceptions, stereotypes and/or discrimination related to having a mental illness, 2) increase acceptance, dignity, inclusion, and equity for individuals with mental illness and their families, and 3) advocate for services that are culturally congruent with the values of the population for whom changes, attitudes, knowledge and behavior are intended.

The County operated Office for Consumer Empowerment (OCE) provides leadership and staff support to several initiatives designed to reduce stigma and discrimination, develop leadership and advocacy skills among consumers of behavioral health services, support the role of peers as providers, and encourage consumers to actively participate in the planning and evaluation of MHSA funded services. Staff from the OCE support the following activities designed to educate the community to raise awareness of the stigma that can accompany mental illness.

- 1) The PhotoVoice Empowerment Project enables consumers to produce artwork that speaks to the prejudice and discrimination that people with behavioral health challenges face. PhotoVoice’s vision is to enable people to record and reflect their community’s strengths and concerns, promote critical dialogue about personal and community issues, and to reach policymakers to effect change.

- 2) The Wellness Recovery Education for Acceptance, Choice and Hope (WREACH) Speakers' Bureau forms connections between people in the community and people with lived mental health and co-occurring experiences, using face to face contact by providing stories of recovery and resiliency and current information on health treatment and supports. Other related activities include producing videos, public service announcements and educational materials.
- 3) The OCE facilitates Wellness Recovery Action Plan (WRAP) groups by providing certified leaders and conducting classes throughout the County. Staff employ the evidence-based WRAP system in enhancing the efforts of consumers to promote and advocate for their own wellness.
- 4) The Committee for Social Inclusion is an ongoing alliance of committee members that work together to promote social inclusion of persons who receive behavioral health services. The Committee is project based, and projects are designed to increase participation of consumers and family members in the planning, implementation, and delivery of services. Current efforts are supporting the integration of mental health and alcohol and other er drug services within the Behavioral Health Services Division. In addition, OCE staff assist and support consumers and family members in participating in the various planning committees and sub-committees, Mental Health Commission meetings, community forums, and other opportunities to participate in planning processes.
- 5) Through the Each Mind Matters initiative California Mental Health Services Authority (CalMHSA) provides technical assistance to encourage the County's integration of available statewide resources on stigma and discrimination reduction and suicide prevention. CCBHS partners via Memorandum of Understanding (MOU) with CalMHSA to link county level stigma and discrimination reduction efforts with statewide social marketing programs. This linkage will expand the County's capacity via language specific materials, social media, and subject matter consultation with regional and state experts to reach diverse underserved communities, such as Hispanic, African American, Asian Pacific Islander, LGBTQ, Native American and immigrant communities. Primary focus will be to reach Spanish speaking Latina/o communities via social media and materials adapted specifically for this population.

The allocation for the Stigma and Discrimination Reduction category is below:

<b>Program</b>	<b>County/Contract</b>	<b>Region Served</b>	<b>MHSA Funds Allocated for FY 21-22</b>
OCE	County Operated	Countywide	\$218,861
CalMHSA	MOU	Countywide	\$78,000
<b>Total</b>			<b>\$296,861</b>

## SUICIDE PREVENTION

There are three plan elements that support the County’s efforts to reduce the number of suicides in Contra Costa County: 1) augmenting the Contra Costa Crisis Center, and 2) supporting a suicide prevention committee. Additional funds are allocated to dedicate staff trained in suicide prevention to provide countywide trainings, education, and consultation for a host of entities such as schools, social service providers, criminal justice and first responder community-based organizations to know the signs of persons at risk of suicide, assess lethality and respond appropriately.

- 1) The Contra Costa Crisis Center provides services to prevent suicides by operating a certified 24-hour suicide prevention hotline. The hotline connects with people when they are most vulnerable and at risk for suicide, enhances safety, and builds a bridge to community resources. Staff conduct a lethality assessment on each call, provide support and intervention for the person in crisis, and make follow-up calls (with the caller’s consent) to persons who are at medium to high risk of suicide. MHPSA funds enable additional paid and volunteer staff capacity, most particularly in the hotline’s trained multi-lingual, multi-cultural response.
- 2) A multi-disciplinary, multi-agency Suicide Prevention Committee has been established, and has published a countywide Suicide Prevention Strategic Plan. This ongoing committee oversees the implementation of the Plan by addressing the strategies outlined in the Plan. These strategies include i) creating a countywide system of suicide prevention, ii) increasing interagency coordination and collaboration, iii) implementing education and training opportunities to prevent suicide, iv) implementing evidence-based practices to prevent suicide, and v) evaluating the effectiveness of the County’s suicide prevention efforts. In 2021, a subcommittee was convened to address Youth Suicide Prevention. In the light of the pandemic, school-based providers and people living and working with youth have expressed great concern about their mental health during these challenging times. The group meets in the late afternoon to encourage participation of students and young people.

The allocation for the Suicide Prevention category is summarized below:

<b>Plan Element</b>	<b>Region Served</b>	<b>Number to be Served Yearly</b>	<b>MHPSA Funds Allocated for FY 21-22</b>
Contra Costa Crisis Center	Countywide	25,000	\$320,006
Suicide Prevention RFP TBD	Countywide	TBD	\$50,000
County Supported	Countywide	N/A	Included in PEI administrative cost
<b>Total</b>		<b>25,050</b>	<b>\$370,006</b>

**PEI ADMINISTRATIVE SUPPORT**

Staff time has been allocated by the County to provide administrative support and evaluation of programs and plan elements that are funded by MHSA.

The allocation for PEI Administration is summarized below:

<b>Plan Element</b>	<b>Region Served</b>	<b>Yearly Funds Allocated</b>
Administrative and Evaluation Support	Countywide	\$158,090
<b>Total</b>		<b>\$158,090</b>

**PREVENTION AND EARLY INTERVENTION (PEI) SUMMARY FOR FY 2021-22**

Outreach for Increasing Recognition of Early Signs of Mental Illness	1,553,852
Prevention	1,780,424
Early Intervention	2,587,108
Access and Linkage to Treatment	625,867
Improving Timely Access to Mental Health Services for Underserved Populations	1,692,460
Stigma and Discrimination Reduction	296,861
Suicide Prevention	370,006
Administrative, Evaluation Support	158,090
<b>Total</b>	<b>\$9,064,668</b>

**APPENDIX A - PROGRAM PROFILES**

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## Asian Family Resource Center (AFRC)

Point of Contact: Sun Karnsouvong

Contact Information: Asian Family Resource Center (AFRC), 12240 San Pablo Ave, Richmond, CA  
[Skarnsouvong@arcofcc.org](mailto:Skarnsouvong@arcofcc.org)

### 1. General Description of the Organization

AFRC provides multicultural and multilingual services, empowering the most vulnerable members of our community to lead healthy, productive, and contributing lives.

### 2. Program: Building Connections (Asian Family Resource Center) - PEI

- a. Scope of Services: Asian Family Resource Center (AFRC), under the fiscal sponsorship of Contra Costa ARC, will provide comprehensive and culturally sensitive education and access to mental health services for Asian and Asian Pacific Islander (API) immigrant and refugee communities, especially the Southeast Asian and Chinese population of Contra Costa County. AFRC will employ multilingual and multidisciplinary staff from the communities which they serve. Staff will provide the following scope of services:
  - i. Outreach and Engagement Services: Individual and/or community outreach and engagement to promote mental health awareness, educate community members on signs and symptoms of mental illness, provide mental health workshops, and promote mental health wellness through community events. Engage community members in various activities to screen and assess for mental illness and/or assist in navigating them into the service systems for appropriate interventions: community integration skills to reduce MH stressors, older adult care giving skills, basic financial management, survival English communication skills, basic life skills, health and safety education and computer education, structured group activities (on topics such as, coping with adolescents, housing issues, aid cut-off, domestic violence, criminal justice issues, health care and disability services), mental health education and awareness, and health/mental health system navigation. AFRC, in collaboration with community-based organizations, will participate in 3-5 mental health and wellness events to provide wellness and mental health outreach, engagement, and education to immigrants and refugees in the Contra Costa County.
  - ii. Individual Mental Health Consultation: This service will also be provided to those who are exhibiting early signs of mental illness, to assess needs, identify signs/symptoms of mental health crisis/trauma, provide linkages/referrals, or assist in navigation into the mental health system, provide wellness support groups, access essential community resources, and linkage/referral to mental health services. Peer Navigators will be utilized to support participants in accessing services in a culturally sensitive manner. These services will generally be provided for a period of less than one year. AFRC will serve a minimum of 50 high risk and underserved Southeast

Asian community members within a 12-month period, 25 of which will reside in East County with the balance in West and Central County.

- iii. Translation and Case Management: AFRC staff will provide translation and case management services to identified mono-lingual consumers in the West County Adult Behavioral Health Clinic in San Pablo, CA. Services will include attending medical appointments, assisting with applications and forms, advocacy, and system navigation.
- b. Target Population: Asian and Pacific Islander immigrant and refugee communities (especially Chinese and Southeast Asian population) in Contra Costa County
- c. Payment Limit: FY 21-22: \$150,408
- d. Number served: FY 19-20: 583 high risk and underserved community members
- e. Outcomes:
  - Successful adaptation of services due to COVID-19 including telehealth, social distancing, mask wearing, and connecting participants to resources that were more difficult to access due to the pandemic.
  - All program participants received system navigation support for mental health treatment, Medi-Cal benefits, and other essential benefits.
  - Services are offered in the language of the consumer and outreach is conducted in areas frequented by those they are trying to engage.
  - Program collaborated with other service providers via zoom during the pandemic to share resources, information, and support.

## Building Blocks for Kids (BBK)

[www.bbk-richmond.org](http://www.bbk-richmond.org)

Point of Contact: Sheryl Lane

Contact Information: 310 9<sup>th</sup> Street, Richmond, CA 94804, (510) 232-5812

[slane@bbk-richmond.org](mailto:slane@bbk-richmond.org)

### 1. **General Description of the Organization**

Building Blocks for Kids (BBK) amplifies the voices of parents/caregivers of color and partners with them to advance equitable access and opportunities for all youth to have a quality education and all families to achieve emotional and physical well-being. We realize our goals through healing centered care, leadership development, and parent-led advocacy. BBK serves parents and primary caregivers living in West Contra Costa County that primarily represent low-income African-American, Latinx and immigrant populations.

### 2. **Program: Not Me Without Me - PEI**

#### a. Scope of Services:

Building Blocks for Kids Collaborative, a project of Tides Center, will provide diverse West County households with improved access to mental health education, and mental health support. The *Not About Me Without Me* prevention and early intervention work addresses MHSA's PEI goal of providing Prevention services to increase recognition of early signs of mental illness and intervening early in the onset of a mental illness.

Accordingly, the goals are three-fold: (1) working with families to ensure that they are knowledgeable about and have access to a network of supportive and effective mental health information and services; (2) reduce risk for negative outcomes related to untreated mental illness for parents/primary caregivers and children whose risk of developing a serious mental illness is significantly higher than average including cumulative skills-based training opportunities on effective parenting approaches; and, (3) train and support families to self-advocate and directly engage the services they need.

This work represents an evolution in our *Not About Me Without Me* approach to service provision by working toward a coordinated, comprehensive system that will support families in not just addressing mental illness and recovering from traumatic experiences but will fortify them to create community change. This system will continue to put resident interests and concerns at the fore and additionally be characterized by a model that enables organizations to: work more effectively and responsively with underserved residents in the Richmond and West Contra Costa community; improve outcomes; reduce barriers to success; increase provider accountability and create a truly collaborative and healing environment using strategies that are non-stigmatizing and non-discriminatory.

- b. Target Population: Parents and caregivers and their families living in West Contra Costa County
- c. Payment Limit: FY 21-22: \$224,602
- d. Number served: In FY 19-20: 336 Individuals (includes outreach and education events).
- e. Outcomes

- During the COVID-19 pandemic, BBK pivoted to continue to engage the community. Staff transitioned into a virtual model. Programs was offered through Zoom meetings, phone calls, and videos on their Facebook page.
- 195 women participated in a total of 28 Black and LatinX Women’s Peer Sanctuary groups where they received facilitated support for self-care, advocacy, personal goal setting and reclaiming positive cultural practices.
- Family Engagement activities events, during which families are invited to spend an enjoyable and safe time with their families, were held at Monterey Pines Apartments. 87 people participated in Family Engagement activities, including: an informational session about the Welcome Home Baby Program, Mindfulness practices, Youth Service Bureau, Effective Ways of Communication through Community Circles, Census Information as well family bonding arts & crafts and games.
- At the Health and Wellness free summer program, children under the age of 18 had access to free lunch Monday through Friday, Zumba classes and enrichment activities. BBK staff served an average of 90 children daily and altered their offerings to accommodate virtual programming to follow safety guidelines during the pandemic.
- BBK partnered with Child Abuse Prevention Council to offer weekly evidence-based parenting classes (Nurturing Parenting) in Spanish and English. A total of 26 parents/caregivers graduated from the 22-week program and 146 adults participated in a parent-child skills development playgroup.

## Center for Human Development (CHD)

<http://chd-prevention.org/>

Point of Contact: David Carrillo

Contact Information: 901 Sun Valley Blvd., Suite 220, Concord, CA 94520

(925) 349-7333, [david@chd-prevention.org](mailto:david@chd-prevention.org)

### 1. **General Description of the Organization**

Center for Human Development (CHD) is a community-based organization that offers a spectrum of Prevention and Wellness services for at-risk youth, individuals, families, and communities in the Bay Area. Since 1972 CHD has provided wellness programs and support aimed at empowering people and promoting growth. Volunteers work side-by-side with staff to deliver quality programs in schools, clinics, and community sites throughout Contra Costa as well as nearby counties. CHD is known for innovative programs and is committed to improving the quality of life in the communities it serves.

### 2. **Program: African American Wellness Program & Youth Empowerment Program - PEI**

- a. Scope of Services: The African American Wellness Program (formerly African American Health Conductor Program) serves Bay Point, Pittsburg, and surrounding communities. The purpose is to increase emotional wellness; reduce stress and isolation; and link African American participants, who are underserved due to poor identification of needs and lack of outreach and engagement, to appropriate mental health services. Key activities include: outreach through community events; culturally appropriate education on mental health topics through Mind, Body, and Soul support groups; conduct community health education workshops in accessible and non-stigmatizing settings; and navigation assistance for culturally appropriate mental health referrals.

The Youth Empowerment Program provides LGBTQ youth and their allies in Antioch, Pittsburg, and surrounding East County communities with strength-based educational support services that build on youths' assets, raise awareness of mental health needs identification, and foster resiliency. Key activities include: a) Three weekly educational support groups that promote emotional health and well-being, increase positive identity and self-esteem, and reduce isolation through development of concrete life skills; b) one leadership group that meets a minimum of twice a month to foster community involvement; and c) linkage and referral to culturally appropriate mental health service providers in East County.

- b. Target Population: Wellness Program: African American residents in East County at risk of developing serious mental illness. Youth Empowerment Program: LGBTQ youth in East County
- c. Payment Limit: FY 21-22: \$161,644
- d. Number served: FY 19-20: 733 individuals were served in both programs combined
- e. Outcomes:
  - African American Wellness Program
    - Served 623 participants during FY 2019-20.
    - Moved to telehealth due to COVID-19.
    - Provided 9 clients with mental health referrals.

- Participants were provided individualized services to help them to address the current issues they are facing
- Youth Empowerment Program
  - 110 individuals were served.
  - Staff facilitated 134 educational group sessions, trainings, and Leadership sessions and staff had 412 individual one-on-one meetings with youth. This is nearly double the number of individual check-ins and one-on-one meetings from the previous year.
  - Successfully Moved to telehealth due to COVID-19
  - Provided 6 clients with mental health referrals.
  - All Empowerment participants receive an emergency services “Safety Phone List”, including contact information for CHD’s Empowerment Program, Contra Costa Crisis Center, The Trevor Project, Planned Parenthood, Community Violence Solutions, STAND Against Violence, Runaway Hotline, Homeless Hotline, as well as having space to add information for trusted adults and friends. Additional referrals and linkages are provided as needed, and upon participant assent.

## Child Abuse Prevention Council (CAPC)

[www.capc-coco.org](http://www.capc-coco.org)

Point of Contact: Carol Carrillo

Contact Information: 2120 Diamond Blvd #120, Concord, CA 94520

[ccarrillo@capc-coco.org](mailto:ccarrillo@capc-coco.org)

### 1. **General Description of the Organization**

The Child Abuse Prevention Council has worked for many years to prevent the maltreatment of children. Through providing education programs and support services, linking families to community resources, mentoring, and steering county-wide collaborative initiatives, CAPC has led Contra Costa County's efforts to protect children. It continually evaluates its programs to provide the best possible support to the families of Contra Costa County.

### 2. **Program: The Nurturing Parenting Program - PEI**

- a. **Scope of Services:** The Child Abuse Prevention Council of Contra Costa provides an evidence-based curriculum of culturally, linguistically, and developmentally appropriate, Spanish speaking families in East County, and Central County's Monument Corridor. The 20-week curriculum immerses parents in ongoing training, free of charge, designed to build new skills and alter old behavioral patterns intended to strengthen families and support the healthy development of their children in their own neighborhoods. Developmental assessments and referral services are provided to each family served in the program using strategies that are non-stigmatizing and non-discriminatory. Families are provided with linkages to mental health and other services as appropriate. Providing the Nurturing Parenting Program (NPP) in the Monument Corridor of Concord and East County allows underserved parents and children access to mental health support in their own communities and in their primary language.
- b. **Target Population:** Latino children and their families in Central and East County.
- c. **Payment Limit:** FY 21-22: \$128,862
- d. **Number served:** In FY 19-20: 169 parents and children
- e. **Outcomes:**
  - Two 20-week classes in Central and East County serving parents and their children.
  - During the first semester of The Nurturing Parenting Program a total of 44 parents and 45 children enrolled in the program. A total of 29 parent and 36 children completed and graduated from the NPP successfully.
  - During the second semester of The Nurturing Parenting Program a total of 41 parents and 39 children enrolled in both regions. A total of 31 parents completed and graduated from the program despite the many challenges faced during the COVID-19 Shelter-in-Place.

- Staff modified sessions to meet parents needs during the pandemic and offered resources to families who lost their jobs, linked parents to internet access, and guided them on how to start using zoom to stay connected.
- All parent participants completed pre- and post-tests. All parents improved their scores on at least four out of five 'parenting constructs' (appropriate expectations, empathy, discipline, self-awareness, and empowerment).

## Contra Costa Crisis Center

[www.crisis-center.org](http://www.crisis-center.org)

Point of Contact: Tom Tamura

Contact Information: P.O. Box 3364 Walnut Creek, CA 94598

925 939-1916, x107, [TomT@crisis-center.org](mailto:TomT@crisis-center.org)

### 1. **General Description of the Organization**

The mission of the Contra Costa Crisis Center is to keep people alive and safe, help them through crises, and connect them with culturally relevant resources in the community.

### 2. **Program: Suicide Prevention Crisis Line**

#### a. Scope of Services:

- Contra Costa Crisis Center will provide services to prevent suicides throughout Contra Costa County by operating a nationally certified 24-hour suicide prevention hotline. The hotline lowers the risk of suicide by assuring 24-hour access to real time services rendered by a trained crisis counselor who not only assesses suicide and self-harm lethality and provides intervention, but links callers to numerous mental health treatment options. This linkage occurs via referral to culturally relevant mental health services as well as provides REAL TIME warm transfer to those services when appropriate. Because the hotline operates continuously regardless of time or day, all callers receive timely intervention and access to service WHEN THEY NEED IT and immediately upon their request. The Crisis Center's programs are implemented (including agency program and hiring policies, bylaws, etc.) in a welcoming and intentionally non-discriminatory manner. Much of our outreach activities and staff/volunteer training activities center around increased awareness of myriad mental health issues, as well as mental health services, consumer stigma reduction to increase community comfort at accessing services and in referring those in need.
- Key activities include: answering local calls to toll-free suicide hotlines, including a Spanish-language hotline; the Crisis Center will maintain an abandonment rate at or below national standard; assisting callers whose primary language other than English or Spanish through use of a tele-interpreter service; conducting a lethality assessment on each crisis call consistent with national standards; making follow-up calls to persons (with their consent) who are at medium to high risk of suicide with the goal of 99% one-month follow up survival rate; and training all crisis line staff and volunteers in a consistent and appropriate model consistent with AAS (American Association of Suicidology) certification. As a result of these service activities, >99% of people who call the crisis line and are assessed to be at medium to high risk of suicide will be survivors one month later; the Crisis Center will continuously recruit and train crisis line volunteers to a minimum pool of 25 multi-lingual/culturally competent individuals

within the contract year, Spanish-speaking counselors will be provided 80 hours per week.

- The Crisis Center will provide community outreach and education about how to access crisis services. Priority and vigorous outreach efforts are directed to underserved and hard to reach populations such as youth, elderly, isolated, persons with limited English, LGBTQ, etc. and focus changes as community needs emerge and are identified.
  - The Crisis Center will offer grief support groups and postvention services to the community
  - The Crisis Center will liaison with the County Coroner to provide referrals for grieving survivors (and mitigating contagion).
  - In Partnership with County Behavioral Health, the Contra Costa Crisis Center will co-chair the Countywide Suicide Prevention Committee.
- b. Target Population: Contra Costa County residents in crisis.
- c. Payment Limit: FY 21-22: \$320,006
- d. Number served: In FY19-20: 21,577 total calls were fielded.
- e. Outcomes:
- Services provided in English and Spanish, and callers have access to the Language Line interpreter services in 240 languages.
  - Upgraded to an advanced web-based phone system software in July 2019, allowing for remote work in case of a disaster, and increased the accuracy of calls answered, average speed to answer (in seconds), and abandonment rate measurements. This allowed calls to the 24-hour crisis lines to continue without interruption with staff and volunteers working either in the office or remotely due to COVID-19.
  - 21,577 referrals were made to mental health services
  - Managed an unprecedented increase in total call volume starting in March 2020 with callers needing referrals for health, food, housing, and financial assistance as well as experiencing feelings of high anxiety and stress.
  - Provided a 54+ hour call center training for new call center staff and volunteers several times throughout the year

## Counseling Options Parent Education (C.O.P.E.) Family Support Center

<http://copefamilysupport.org/>

Point of Contact: Cathy Botello, Executive Director

Contact Information: 3000 Citrus Circle, Ste. 220, Walnut Creek, CA 94598

(925) 689-5811, [cathy.botello@copefamilysupport.org](mailto:cathy.botello@copefamilysupport.org)

### 1. **General Description of the Organization**

C.O.P.E.'s mission is to prevent child abuse by providing comprehensive support services to strengthen family relationships and bonds, empower parents, encourage healthy relationships, and cultivate nurturing family units to encourage an optimal environment for the healthy growth and development of parents and children through parent education.

### 2. **Program: Positive Parenting Program (Triple P) Education and Support – PEI**

- a. **Scope of Services:** In partnership with First 5 Contra Costa Children and Families Commission and Contra Costa County Behavioral Health Services, C.O.P.E. is funded to deliver Positive Parenting Program classes to parents of children ages 0–17. The C.O.P.E. Family Support Center will provide approximately 21 services using the evidence-based Triple P — Positive Parenting Program Level 2 Seminar, Level 3 Primary Care, Level 4 Group, Level 5 Pathways, Level 5 Enhanced, Level 5 Transitions, Level 5 Lifestyle multi-family support groups, at low or no cost to parents of children two to seventeen years of age.

The program utilizes an evidence based self-regulatory model that focuses on strengthening the positive attachment between parents and children by building a parent's capacity for the following five aspects:

- i. **Self-sufficiency** - having the ability to use one's own resources to independently solve problems and decrease reliance on others.
- ii. **Self-efficacy** - having the confidence in performing daily parenting tasks.
- iii. **Self-management** - having the tools and skills needed to enable change.
- iv. **Personal agency** - attributing the changes made in the family to own effort or the effort of one's child.
- v. **Problem-solving** - having the ability to apply principles and strategies, including creating parenting plans to manage current or future problems.

All classes are available in Spanish, Arabic, Farsi and/or English. To outreach to the community about the curriculum and benefits of Triple P Parenting, C.O.P.E. provides management briefings, orientation, and community awareness meetings to partner agencies. C.O.P.E. supports and organizes annual trainings for other partnering agencies, including pre-accreditation trainings, fidelity oversight and clinical and peer support to build and maintain a pool of Triple P practitioners.

- b. **Target Population:** Contra Costa County parents of children and youth with identified special needs. Our targeted population includes caregivers residing in underserved communities throughout Contra Costa County.

c. Payment Limit: FY 21-22: \$253,238

d. Number served: In FY 19-20: 235

e. Outcomes:

- Provided 21 Triple P Positive Parenting Group classes and seminars to groups in West, Central and East Contra Costa County.
- Enrolled 235 client family members in Triple P Parenting classes.
- Provided a Family Transitions Triple P training program and accredited 18 practitioners.
- Beginning in Mid-March 2020, COPE moved all Triple P classes to online using the Zoom video conferencing platform.
- Pre and Post Test Survey results indicate program participants showed a 37% decrease in depression, 41% decrease in anxiety, and 24% decrease in overall stress.
- Access and linkage to on-going treatment supported through warm hand off referrals for housing, vocational, legal, and mental health services.

## First Five Contra Costa

<http://www.first5coco.org/>

Point of Contact: Wanda Davis

Contact Information: 1486 Civic Ct, Concord CA 94520.

(925) 771-7328, [wdavis@firstfivecc.org](mailto:wdavis@firstfivecc.org)

### 1. **General Description of the Organization**

The mission of First 5 Contra Costa is to foster the optimal development of children, prenatal to five years of age. In partnership with parents, caregivers, communities, public and private organizations, advocates, and county government, First Five supports a comprehensive, integrated set of sustainable programs, services, and activities designed to improve the health and well-being of young children, advance their potential to succeed in school, and strengthen the ability of their families and caregivers to provide for their physical, mental, and emotional growth.

### 2. **Programs: Triple P Positive Parenting Program - (PEI)**

- a. **Scope of Services:** First Five Contra Costa and Contra Costa Behavioral Health jointly fund the Triple P Positive Parenting Program that is provided to parents of age 0 - 5 children. The intent is to reduce the maltreatment of children by increasing a family's ability to manage their children's behavior and to normalize the need for support to develop positive parenting skills. The Triple P program provides timely access to service by placing the classes throughout county and offering classes year-round. The Program has been proven effective across various cultures, and ethnic groups. Triple P is an evidence-based practice that provides preventive and intervention support. First 5 Contra Costa provides over-site of the subcontractor, works closely with the subcontractor on program implementation, identifying, recruiting, and on-boarding new Triple P Practitioners, management of the database, review of outcome measurements, and quality improvement efforts. The partnership is intended to provide *outreach for increasing recognition of early signs of mental illness*.
- b. **Target Population:** Contra Costa County parents of at risk 0–5 children.
- c. **Payment Limit:** FY 21-22: \$84,214
- d. **Number Served:** In FY 19-20: 189 client family members enrolled in C.O.P.E. Triple P Parenting classes
- e. **Outcomes:**
  - Delivered 15 classes and 2 seminar series throughout the county at various times and convenient locations to accommodate transportation barriers. (through partnership with C.O.P.E.)
  - Held 12 presentations and briefings to early childhood organizations as an engagement and recruitment tool
  - Offered case management support to parents as appropriate

**First Hope  
(Contra Costa Behavioral Health Services)**

<http://www.firsthopeccc.org/>

Point of Contact: Jude Leung, Mental Health Program Manager

Contact Information: 391 Taylor Boulevard, Suite 100, Pleasant Hill, CA94523

925-608-6550, [yatmingjude.leung@cchealth.org](mailto:yatmingjude.leung@cchealth.org)

**1. General Description of the Organization**

Contra Costa Behavioral Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The First Hope program operates within Contra Costa Behavioral Health's Children's System of Care but is a hybrid program serving both children and young adults.

**2. Program: First Hope: Early Identification and Intervention in Psychosis - PEI**

- a. Scope of Service: The mission of the First Hope program is to reduce the incidence of psychosis and the secondary disability of those developing a psychotic disorder in Contra Costa County through:
- Early Identification of young people between ages 12 and 30 who are showing very early signs of psychosis and are determined to be at risk for developing a serious mental illness.
  - Engaging and providing immediate treatment to those identified as "at risk", while maintaining progress in school, work, and social relationships.
  - Providing an integrated, multidisciplinary team approach including psychoeducation, multi-family groups, individual and family therapy, case management, occupational therapy, supported education and vocation, family partnering, and psychiatric services within a single service model.
  - Outreach and community education with the following goals: 1) identifying all young people in Contra Costa County who are at risk for developing a psychotic disorder and would benefit from early intervention services; and 2) reducing stigma and barriers that prevent or delay seeking treatment through educational presentations.
  - In FY 18-19, the program expanded to offer Coordinated Specialty Care (CSC) services to First Episode Psychosis (FEP) young people ages 16-30, and their families, who are within 18 months of their first episode
- b. Target Population: 12–30-year-old young people and their families
- c. Total Budget: FY 21-22: \$2,587,099
- d. Staff: 27 FTE full time equivalent multi-disciplinary staff
- e. Number served: FY 19-20: 960
- f. Outcomes:
- Helped clients manage Clinical High-Risk symptoms and maintain progress in school, work, and relationships.
  - One conversion out of 78 from clinical high risk to psychosis.
  - 104 First Hope clients had zero PES visits or hospitalizations.
  - Zero completed suicides in FY 19-20.

- Trained 13 new staff in the Coordinated Specialty Care (CSC) model and trained and certified all staff in MultiFamily Group Treatment (MFGT) and Cognitive Behavioral Therapy for Psychosis (CBTp).
- Reduced the stigma associated with symptoms.
- Long Term Public Health Outcomes:
  - Reduce conversion rate from Clinical High-Risk symptoms to schizophrenia.
  - Reduce incidence of psychotic illnesses in Contra Costa County.
  - Increase community awareness and acceptance of the value and advantages of seeking mental health care early.

## Hope Solutions (formerly Contra Costa Interfaith Housing)

<https://www.hopesolutions.org/>

Point of Contact: Sara Marsh

Contact Information: 399 Taylor Blvd. Ste. 115, Pleasant Hill, CA 94530

(925) 944-2244, [smarsh@hopesolutions.org](mailto:smarsh@hopesolutions.org)

### 1. **General Description of the Organization**

Hope Solutions provides permanent, affordable housing and vital, on-site support services to homeless and at-risk families and individuals in Contra Costa County. By providing services on-site at the housing programs where individuals and families live, we maximize timeliness and access to services. This model also minimizes the discriminatory barriers to support, due to lack of transportation or other resources.

### 2. **Program: Strengthening Vulnerable Families**

#### a. Scope of Services:

- The Strengthening Vulnerable Families program provides support services at 5 locations. All these locations house vulnerable adults and/or families with histories of homelessness, mental health challenges and/or substance abuse problems. Case management was provided on-site and in-home for all residents requesting this support. Youth enrichment/afterschool programming was provided at all family housing sites. The total number of households offered services under this contract was 286, including the following sites:
  - Garden Park Apartments (Pleasant Hill) – 27 units permanent supportive housing for formerly homeless families with disabilities
  - Lakeside Apartments (Concord) – 124 units of affordable housing for low-income families and individuals (including 12 units of permanent supportive housing for formerly homeless residents with disabilities).
  - Bella Monte Apartments (Bay Point) – 52 units of affordable housing for low-income families and individuals
  - Los Medanos Village (Pittsburg) – 71 units of affordable housing for low-income families and individuals
  - MHSA funded housing (Concord, Pittsburg) - 12 residents in 3 houses.
- In addition to case management, Hope Solutions also provides property management and maintenance for the 12 units of MHSA housing.
- Hope Solutions also agreed to participate with helping to host a community forum on permanent supportive housing during the year.

b. Target Population: Formerly homeless/at-risk families and youth.

c. Payment Limit: FY 21-22: \$385,477

d. Number served: In FY 19-20: 433 clients

e. Outcomes:

- Provided 8 parenting support groups, 8 sessions/group at the 4 housing sites for a total of 67 group sessions and least 83 participants.
- Provided 4350 hours of support services with on-site case management to 275 families/433 individuals.
- After the Shelter-in-Place order many residents lost their jobs. Working remotely, case managers assisted 23 residents to access unemployment resources, and 33 residents to access COVID funds to subsidize rents. At Lakeside 12 undocumented families were also assisted to receive the COVID California state funds designated for immigrants.
- Staff also organized food resources for families with limited funds and delivered food to over 100 households to help keep residents safe. Case managers also distributed activity bags to youth including crayons, activity booklets, and hand sanitizer/PPE. Masks were distributed to over 100 families as needed, and education and support was offered regarding the stay-at-home order and the COVID19 virus.
- Provided 2914 hours of service to 181 youth at youth enrichment centers in the four housing sites. Activities included afterschool programming, summer programming, educational advocacy, and a teen support group.
- 99% (277/281) of families maintained their housing. 96% (104/108) of families at risk for eviction remained housed. 98% (243/248) of families requesting assistance with concrete resources had their request fulfilled (e.g., access to food, employment, transportation, healthcare, and mental health resources).
- 100% (8/8) of the residents who attended the wellness/harm-reduction group sessions reported using the coping strategies they learned in the groups.
- 77% (33/43) of youth who were assessed with the Social Skills Index Survey (SSIS) improved their skill score over the year.
- 87% (71/82) of youth that participate in the afterschool academic and tutoring program achieved at least four new CA Academic benchmarks.
- 86% (62/72) of grades K through 5 children achieved progress with their reading skills
- 100% (4/4) of Teen Club youth participants completed end of year surveys and showed improved self-concept/self-esteem.
- 88% (75/85) of parents who received educational advocacy/coaching reported having an improved/positive experience working with school personnel.

## **James Morehouse Project (JMP) at El Cerrito High (fiscal sponsor of Bay Area Community Resources)**

<http://www.jamesmorehouseproject.org/>

Point of Contact: Jenn Rader

Contact Information: 540 Ashbury Ave, El Cerrito, CA 94530

(510) 231-1437, [jenn@jmhops.org](mailto:jenn@jmhops.org)

### **1. General Description of the Organization**

The James Morehouse Project (JMP) works to create positive change within El Cerrito High School through health services, counseling, youth leadership projects and campus-wide school climate initiatives. Founded in 1999, the JMP assumes youth have the skills, values, and commitments to create change in their own lives and the life of the school community. The JMP partners with community and government agencies, local providers, and universities.

### **2. Program: James Morehouse Project (JMP) - PEI**

- a. Scope of Services: The James Morehouse Project (JMP), a school health center at El Cerrito High School (fiscal sponsor: BACR), offers access to care and wellness through a wide range of innovative youth development programs for 300 multicultural youth in West Contra Costa County. Through strategic partnerships with community-based agencies, local universities, and county programs, JMP offers three main program areas that include: Counseling & Youth Development, Restorative School-Wide Activities, and Medical & Dental Services. Key activities designed to improve students' well-being and success in school include: AOD Prevention; Migrations/Journeys (immigration/acclimation); Bereavement Groups (loss of a loved one); Culture Keepers (youth of color leadership); Discovering the Realities of Our Communities (DROC – environmental and societal factors that contribute to substance abuse); Peer Conflict Mediation; and Dynamic Mindfulness.

As an on-campus student health center, the JMP is uniquely situated to maximize access and linkage to mental health services for young people from underserved communities. The JMP connects directly with young people at school and provides timely, ongoing, and consistent services to youth on-site. Because the JMP also offers a wide range of youth development programs and activities, JMP space has the energy and safety of a youth center. For that reason, students do not experience stigma around coming into the health center or accessing services.

- b. Target Population: At-risk students at El Cerrito High School
- c. Payment Limit: FY 21-22: \$105,987
- d. Numbers Served: FY 19-20: 405 young people
- e. Outcomes:
- With the help of a team that included 8 clinical interns, JMP served 405 young people participated in 23 different groups and/or individual counseling.
  - Referred 17 young people to mental health services.

- Altered services to accommodate remote support with COVID-19 including partnering with community-based partners like the Seneca MRT in crisis situations.
- COVID-19 related needs were addressed through case management, including working with young people and families around challenges with distance learning (e.g., accessing Wi-Fi, troubleshooting tech challenges), and securing cash assistance and accessing other resources (e.g., food, legal assistance).
- Stronger connection to caring adults/peers (build relationships with caring adult(s), peers) for participating youth.
- Increased well-being (diminished perceptions of stress/anxiety, improvement in family/loved-one relationships, increased self-confidence, etc.) for participating youth.
- Strengthened connection to school (more positive assessment of teacher/staff relationships, positive peer connections, ties with caring adults) for participating youth.

## **Jewish Family & Community Services East Bay (JFCS East Bay)**

<https://jfcs-eastbay.org/>

Point of Contact: Lisa Mulligan

Contact Information: 1855 Olympic Blvd. #200, Walnut Creek, CA 94596

(925) 927-2000, [lmulligan@jfcs-eastbay.org](mailto:lmulligan@jfcs-eastbay.org)

### **1. General Description of the Organization**

Rooted in Jewish values and historical experiences, and inspired by the diverse communities the agency serves, JFCS East Bay promotes the well-being of individuals and families by providing essential mental health and social services to people of all ages, races, and religions. Established in 1877, JFCS East Bay's long tradition of caring directly impacts the lives of approximately 6,000 Alameda and Contra Costa residents each year. The agency provides services in three main program areas: Refugees & Immigrants, Children & Parents, and Adults & Seniors. Woven throughout these services is a comprehensive volunteer program.

### **2. Program: Community Bridges - PEI**

- a. Scope of Services: During the term of this contract, Jewish Family & Community Services East Bay will assist Contra Costa Behavioral Health to implement the Mental Health Services Act (MHSA), Prevention and Early Intervention Program "Reducing Risk of Developing Mental Illness" by providing Outreach and Engagement to Underserved Communities with the Community Bridges Program, providing culturally grounded, community-directed mental health education and navigation services to 200 to 300 refugees and immigrants of all ages and sexual orientations in the Afghan, Syrian, Iranian, Iraqi, African, and Russian communities of central Contra Costa County. Prevention and early intervention-oriented program components include culturally and linguistically accessible mental health education; early assessment and intervention for individuals and families; and health and mental health system navigation assistance. Services will be provided in the context of group settings and community cultural events, as well as with individuals and families, using a variety of convenient non-office settings such as schools, senior centers, and client homes. In addition, the program will include mental health training for frontline staff from JFCS East Bay and other community agencies working with diverse cultural populations, especially those who are refugees and immigrants.
- b. Target Population: Immigrant and refugee families of Contra Costa County at risk for developing a serious mental illness.
- c. Payment Limit: FY 21-22: \$179,720
- d. Number served: FY 19-20: 311
- e. Outcomes:
  - Provided culturally and linguistically appropriate care to all consumers served
  - Served 311 people, including 135 frontline staff and 176 clients.

- Completed three out of four planned trainings for the year. The fourth training was cancelled due to COVID-19. All three trainings were held via Zoom and had high attendance. In total, 135 service providers from the community were trained, exceeding the target of training 75 frontline staff. 96% of respondents reported a better understanding of recognizing stress and risk factors after the training and 91% of respondents reported a better understanding of when to refer clients to specialized services.
- Provided mental health education classes to 16 Russian-speaking seniors, parenting workshops to 16 Afghan parents, bilingual/bicultural case management to 160 clients (including 85 children ages 18 and under and 75 adults ages 18 and older and provided bicultural individual therapy services to 25 Dari-speaking clients.
- 100% of the 75 adult case management clients reported upon exit they were able to independently seek help for mental health services, knew how to link to the appropriate persons within the county health care system or other community resources for resolution of health or mental health issues, and had an increased understanding of health and mental health care systems in Contra Costa County.
- 81% of participants in the Russian Mental Health classes reported a better understanding of when and how to seek help, 93% reported an increased ability to recognize stress and risk factors in themselves and/or family members, and 93% reported feeling more supported after coming to the group.
- 100% of participants in the Afghan Parenting Workshops reported they learned useful skills to become a more effective parent, had a better understanding of when and how to seek help, and felt more supported after coming to the group. 87.5% reported having an increased ability to recognize stress and risk factors in themselves and/or family members.

## Juvenile Justice System – Supporting Youth (Contra Costa Behavioral Health Services)

Point of Contact: Steve Blum

Contact Information: 202 Glacier Drive, Martinez, CA 94553

(925) 957-2739, [steven.blum@cchealth.org](mailto:steven.blum@cchealth.org)

### 1. **General Description of the Organization**

The Behavioral Health Services Division of Contra Costa Health Services combines Mental Health, Alcohol & Other Drugs and Homeless Program into a single system of care. The staff working to support youth in the juvenile justice system operate within Contra Costa Behavioral Health's Children's System of Care.

### 2. **Program: Mental Health Probation Liaisons and Orin Allen Youth Ranch Clinicians - PEI**

County behavioral health clinicians strive to help youth experiencing the juvenile justice system become emotionally mature and law-abiding members of their communities.

Services include: screening and assessment, consultation, therapy, and casemanagement for inmates of the Juvenile Detention Facility and juveniles on probation, who are at risk of developing or struggle with mental illness or severe emotional disturbance.

- a. Scope of Services: *Orin Allen Youth Rehabilitation Facility (OAYRF)* provides 100 beds for seriously delinquent boys ages 13-21, who have been committed by the Juvenile Court. OAYRF provides year-round schooling, drug education and treatment, Aggression Replacement Training, and extracurricular activities (gardening, softball). Additionally, the following mental health services are provided at OAYRF: psychological screening and assessment, crisis assessment and intervention, risk assessment, individual therapy and consultation, family therapy, psychiatric, case management and transition planning.
- b. *Mental Health Probation Liaison Services (MHPLS)* has a team of three mental health probation liaisons stationed at each of the three field probation offices (in East, Central, and West Contra Costa County). The mental health probation liaisons are responsible for assisting youth and families as they transition out of detention settings and return to their communities. Services include: providing mental health and social service referrals, short term case management, short term individual therapy, short term family therapy. Additionally, the mental health probation liaisons are responsible for conducting court-ordered mental health assessments for youth within the county detention system.
- c. Target Population: Youth in the juvenile justice system in need of mental health support
- d. Payment Limit: FY 21-22: \$381,744
- e. Staff: 5 Mental Health Clinical Specialists: 3 probation liaisons, 2 clinicians at the Ranch
- f. Number Served: FY 19-20: 300+
- g. Outcomes:
  - Help youth address mental health and substance abuse issues that may underlie problems with delinquency.

- Increased access to mental health services and other community resources for at risk youth.
- Provide referrals, short-term therapy, and short-term case management to help decrease symptoms of mental health disturbance.
- Increase family and youth help-seeking behavior; decrease stigma associated with mental illness.
- Work with Probation, families, and youth to decrease out-of-home placements and rates of recidivism.
- Help youth and families increase problem-solving skills

## La Clínica de la Raza

<https://www.laclinica.org/>

Point of Contact: Laura Zepeda Torres

Contact Information: PO Box 22210, Oakland, CA, 94623

(510) 535 2911, [lztorres@laclinica.org](mailto:lztorres@laclinica.org)

### 1. **General Description of the Organization**

With 35 sites spread across Alameda, Contra Costa, and Solano Counties, La Clínica delivers culturally and linguistically appropriate health care services to address the needs of the diverse populations it serves. La Clínica is one of the largest community health centers in California.

### 2. **Program: Vías de Salud and Familias Fuertes - PEI**

- a. **Scope of Services:** La Clínica de La Raza, Inc. (La Clínica) will implement Vías de Salud (Pathways to Health) to target Latinos residing in Central and East Contra Costa County with a goal of: a) 3,000 depression screenings; b) 250 assessment and early intervention services provided by a Behavioral Health Specialist to identify risk of mental illness or emotional distress, or other risk factors such as social isolation; and c) 1,250 follow-up support/brief treatment services to adults covering a variety of topics such as depression, anxiety, isolation, stress, communication and cultural adjustment. La Clínica's PEI program category is Improving Timely Access to Services for Underserved Populations.

Contractor will also implement Familias Fuertes (Strong Families), to educate and support Latino parents and caregivers living in Central and East Contra Costa County so that they can support the strong development of their children and youth. The project activities will include: 1) Screening for risk factors in youth ages 0-18 (750 screenings); 2) 75 Assessments (includes child functioning and parent education/support) with the Behavioral Health Specialist will be provided to parents/caretakers of children ages 0-18; 3) Three hundred (300) follow up visits with children/families to provide psychoeducation/brief treatment regarding behavioral health issues including parent education, psycho-social stressors/risk factors and behavioral health issues. The goal is to be designed and implemented to help create access and linkage to mental health treatment, be designed, implemented, and promoted in ways that improve timely access to mental health treatment services for persons and/or families from underserved populations, and be designed, implemented, and promoted using strategies that are non-stigmatizing and non-discriminatory.

- b. **Target Population:** Contra Costa County Latino residents at risk for developing a serious mental illness.
- c. **Payment Limit:** FY 21-22: \$288,975
- d. **Number served:** FY 19-20: 922
- e. **Outcomes:**
- Vías de Salud:
    - Offered 3623 depression screenings (120% of yearly target), 296 assessments and early intervention services (118% of yearly target), and 1238 follow-up support/brief treatment services (99% of yearly target).

- Programming pivoted to telehealth as needed during COVID-19
- Familias Fuertes:
  - Offered 661 screenings for youth (88% of yearly target), 113 assessments for youth (105% of yearly target), and 333 follow-up visits with families (111% of yearly target).
  - Programming pivoted to telehealth as needed during COVID-19

## Lao Family Community Development

<https://lfcd.org/>

Point of Contact: Kathy Chao Rothberg, Brad Meyer

Contact Information: 1865 Rumrill Blvd. Suite #B, San Pablo, Ca 94806

(510) 215-1220 [krothberg@lfcd.org](mailto:krothberg@lfcd.org) ; [bmeyer@lfcd.org](mailto:bmeyer@lfcd.org)

### 1. **General Description of the Organization**

Founded in 1980, Lao Family Community Development, Inc. (LFCD) annually assists more than 15,000 diverse refugee, immigrant, limited English, and low-income U.S. born community members in achieving long-term financial and social self-sufficiency. LFCD operates in 3 Northern California counties delivering timely, linguistically, and culturally appropriate services using an integrated service model that addresses the needs of the entire family unit, with the goal of achieving self-sufficiency in one generation.

### 2. **Program: Health and Well-Being for Asian Families - PEI**

- a. **Scope of Services:** Lao Family Community Development, Inc. provides a comprehensive and culturally sensitive Prevention and Early Intervention Program that combines an integrated service system approach for serving underserved Asian and South East Asian adults throughout Contra Costa County. The program activities designed and implemented include: comprehensive case management; evidence based educational workshops using the Strengthening Families Curriculum; and peer support groups. Strategies used reflect non-discriminatory and non-stigmatizing values. We will provide outreach, education, and support to a diverse underserved population to facilitate increased development of problem-solving skills, increase protective factors to ensure families emotional well-being, stability, and resilience. We will provide timely access, referral, and linkage to increase client's access to mental health treatment and health care providers in the community based, public, and private system. LFCD provides in language outreach, education, and support to develop problem solving skills, and increase families' emotional well-being and stability, and help reduce the stigmas and discriminations associated with experiencing mental health. The staff provides a client centered, family focused, strength-based case management and planning process, to include home visits, brief counseling, parenting classes, advocacy, and referral to other in-house services such as employment services, financial education, and housing services. These services are provided in clients' homes, other community-based settings, and the offices of LFCD in San Pablo.
- b. **Target Population:** South Asian and South East Asian Families at risk for developing serious mental illness.
- c. **Payment Limit:** FY 21-22: \$196,128
- d. **Number served:** In FY 19-20: 128
- e. **Outcomes:**
  - A total of 125 clients completed the Pre LSNS assessment and 125 clients completed the Post LSNS assessments. The average progression was 8 with a high correlation between

the participant's progression and level of participation in monthly social peer support groups activities and workshops.

- 98% (125 of 128 respondents) of the participants were satisfied with the program services, and 2% (3 of 128 respondents) were somewhat satisfied with the program services.
- 101 clients were referred to mental health services.
- Held 16 Strengthening Families Program (SFP) workshops (2 workshops per month from August 2019 to March 2020). Due to COVID-19 there were no SFP event from April to May 2020.
- Facilitated 6 different thematic peer support groups/events during the FY
- Provided case management and system navigation for 128 community members

## The Latina Center

<https://thelatinacenter.org/>

Point of Contact: Miriam Wong, 3701 Barrett Ave #12, Richmond, CA 94805

(510) 233-8595, [mwong@thelatinacenter.org](mailto:mwong@thelatinacenter.org)

### **1. General Description of the Organization**

The Latina Center is an organization of and for Latinas that strive to develop emerging leaders in the San Francisco Bay Area through innovative training, support groups and leadership programs. The mission of The Latina Center is to improve the quality of life and health of the Latino Community by providing leadership and personal development opportunities for Latina women.

### **2. Program: Our Children First/Primero Nuestros Niños - PEI**

- a. Scope of Services: The Latina Center (TLC) provides culturally and linguistically specific parenting education and support to at least 300 Latino parents and caregivers in West Contra Costa County that 1) supports healthy emotional, social, and educational development of children and youth ages 0-15, and 2) reduces verbal, physical and emotional abuse. The Latina Center enrolls primarily low- income, immigrant, monolingual/bilingual Latino parents and grandparent caregivers of high-risk families in a 12-week parenting class using the Systematic Training for Effective Parenting (STEP) curriculum or PECES in Spanish (Padres Eficaces con Entrenamiento Eficaz). Parent Advocates are trained to conduct parenting education classes, and Parent Partners are trained to offer mentoring, support, and systems navigation. TLC provides family activity nights, creative learning circles, cultural celebrations, and community forums on parenting topics.
- b. Target Population: Latino Families and their children in West County at risk for developing serious mental illness.
- c. Payment Limit: FY 21-22 \$125,538
- d. Number served: For FY 19-20: 314
- e. Outcomes:
  - Served a total of 314 parents (parenting sessions, mental health workshops, psycho-educational therapy, support groups).
  - Additionally, provided 30 learning circles with activities reaching 424 children.
  - Outreach efforts reached 1,031 individuals and enrolled 42 people into their programs.
  - Parenting classes were held in 4 community-based locations: Cesar Chavez Elementary School, Mira Vista Elementary, Richmond Charter Academy, and The Latina Center. All classes completed the 10-week sessions, 6 sessions online.
  - 286 parents (244 women and 42 men) registered for the parenting class and completed a pre-survey in Spanish.
  - Based on the responses to the pre-survey, The Latina Center made at least 28 referrals.

- Held 6 Mental Health Workshops in 3 locations (The Latina Center, St Cornelius Catholic Church and Montalvin Elementary School) for 130 participants; 94 participants completed pre- and post-surveys.
- Before the workshop, 65% of parents said they did know what mental illnesses are; 35% did not know. After the workshop, 96.9% understood what mental illnesses are; 3.1% did not understand. Before the workshop, 57.5% knew any symptoms of mental illness and 42.5% did not. After the workshop, 81.3% stated they knew signs and symptoms and 18.8% did not.

## Lifelong Medical Care

<https://www.lifelongmedical.org/>

Point of Contact: Kathryn Stambaugh

2344 6<sup>th</sup> Street, Berkeley, CA 94710 (510) 981-4156

[kstambaugh@lifelongmedical.org](mailto:kstambaugh@lifelongmedical.org)

### 1. **General Description of the Organization**

Founded in 1976, LifeLong Medical Care (LifeLong) is a multi-site safety-net provider of comprehensive medical, dental, behavioral health and social services to low-income individuals and families in West Contra Costa and Northern Alameda counties. In 2017, LifeLong provided approximately 300,000 health care visits to 61,000 people of all ages and cultural backgrounds.

### 2. **Program: Senior Network and Activity Program (SNAP) - PEI**

- a. Scope of Services: LifeLong's PEI program, SNAP, brings therapeutic drama, art, music, and wellness programs to isolated and underserved primarily African American older adults living in Richmond. SNAP encourages lifelong learning and creativity, reduces feelings of depression and social isolation, and connects consumers with mental health and social services as needed. All services are designed with consumer input to promote feelings of wellness and self-efficacy, reduce the effects of stigma and discrimination, build community connections, and provide timely access to underserved populations who are reluctant or unable to access other mental health and social services.

SNAP provides services on-site at three low-income housing locations in West County, including weekly group activities, one-on-one check-ins, and case management. Activities vary based on consumer interests, but may include choir, theater, art, board games, word games, special events, and holiday celebrations. Services also include quarterly outings, screening for depression and isolation, information and referral services, and outreach to invite participation in group activities and develop a rapport with residents.

Services are designed to improve timely access to mental health treatment services for persons and/or families from underserved populations, utilizing strategies that are non-stigmatizing and non-discriminatory. The expected impact of these services includes: reducing isolation and promoting feelings of wellness and self-efficacy; increasing trust and reducing reluctance to revealing unmet needs or accepting support services; decreasing stigma and discrimination among underserved populations; and improving quality of life by reducing loneliness and promoting friendships and connections with others.

- b. Target Population: Seniors in low-income housing projects at risk for developing serious mental illness.
- c. Payment Limit: FY 21-22: \$134,710
- d. Number served: FY 19-20: 150

e. Outcomes:

- Prior to Shelter-in-Place, an average of 10 onsite events were held per month (including, creative movement, exercise, bilingual songs, discussion groups, tai chi, walking groups, Spanish classes, and arts & crafts, as well as memorial events for residents who passed away and an outing to visit a participant in the hospital). There was also a health fair held in the fall of 2019. The second planned health fair was cancelled due to COVID-19.
- With COVID-19 services shifted to mainly virtual (telephone and Zoom) interactions and there was an increased emphasis on food distribution. Distribution of masks and PPE, as well as outreach to at-risk older-adult consumers was prioritized.
- Registered 24 people for Meals on Wheels and made 289 deliveries of meals and/or groceries during April-June.
- The Annual survey was adapted to a shorter telephone survey due to COVID-19 and they documented 41 responses. Results were very positive, with all respondents reporting that they were very (79%) or somewhat (21%) satisfied with SNAP overall. 100% were satisfied with the food distribution portion of SNAP during Shelter-in-Place.

## Native American Health Center (NAHC)

<http://www.nativehealth.org/>

Point of Contact: Anthony Guzman, Catherine Nieva-Duran

Contact Information: 2566 MacDonald Ave, Richmond, CA 94804

(510) 434-5483, [anthonyg@nativehealth.org](mailto:anthonyg@nativehealth.org) or [catherinen@nativehealth.org](mailto:catherinen@nativehealth.org)

### 1. **General Description of the Organization**

The Native American Health Center serves the California Bay Area Native Population and other under-served populations. NAHC has worked at local, state, and federal levels to deliver resources and services for the urban Native American community and other underserved populations, to offer medical, dental, behavioral health, nutrition, perinatal, substance abuse prevention, HIV/HCV care coordination and prevention services.

### 2. **Program: Native American Wellness Center – PEI**

- a. **Scope of Services:** Native American Health Center provides outreach for the increasing recognition of early signs of mental illness. To this end, they provide mental health prevention groups and quarterly events for Contra Costa County Community Members. These activities help develop partnerships that bring consumers and mental health professionals together to build a community that reflects the history and values of Native American people in Contra Costa County. Community-building activities done by NAHC staff, community members, and consultants, include: an elder's support group, youth wellness group (including suicide prevention and violence prevention activities). Quarterly cultural events and traditional arts groups including: basket weaving, beading, quilting, health and fitness coaching and drumming. Other activities include: Positive Indian Parenting to teach life and parenting skills, Talking Circles that improve communication skills and address issues related to mental health, including domestic violence, individual and historical trauma, and Gathering of Native Americans (GONA) to build a sense of belonging and cohesive community. Expected outcomes include increases in social connectedness, communication skills, parenting skills, and knowledge of the human service system in the county.

Program Staff conduct cultural competency trainings for public officials and other agency personnel. Staff assist with System Navigation including individual peer meetings, referrals to appropriate services (with follow-up), and educational sessions about Contra Costa County's service system.

- b. **Target Population:** Native American residents of Contra Costa County (mainly west region), who are at risk for developing a serious mental illness.
- c. **Payment Limit:** FY 21-22: \$250,257
- d. **Number served:** FY 19-20: 68
- e. **Outcomes:**

- Hosted weekly prevention groups to serve the needs, empower, uplift, motivate, and connect with potential first responders.
- Made 16 behavioral health related referrals during this contract year.
- Held a total of 11 community-based events and trainings in FY 19-20, including Mental Health First Aid

**Office for Consumer Empowerment (OCE)  
(Contra Costa Behavioral Health Services)**

Point of Contact: Jennifer Tuipulotu

Contact Information: 1330 Arnold Drive #140, Martinez, CA 94553

(925) 957-5206, [Jennifer.Tuipulotu@cchealth.org](mailto:Jennifer.Tuipulotu@cchealth.org)

**1. General Description of the Organization**

The Office for Consumer Empowerment is a County operated program that supports the entire Behavioral Health System and offers a range of trainings and supports by and for individuals who have experience receiving behavioral health services. The goals are to increase access to wellness and empowerment knowledge for participants of the Behavioral Health System.

**2. Program: Reducing Stigma and Discrimination – PEI**

**a. Scope of Services**

- The PhotoVoice Empowerment Project enables consumers to produce artwork that speaks to the prejudice and discrimination that people with behavioral health challenges face. PhotoVoice’s vision is to enable people to record and reflect their community’s strengths and concerns, promote critical dialogue about personal and community issues, and to reach policymakers to effect change.
- The Wellness and Recovery Education for Acceptance, Choice and Hope (WREACH) Speakers’ Bureau forms connections between people in the community and people with lived mental health and co-occurring experiences, using face to face contact by providing stories of recovery and resiliency and current information on health treatment and supports. Other related activities include producing videos, public service announcements and educational materials.
- The OCE facilitates Wellness Recovery Action Plan (WRAP) groups by providing certified leaders and conducting classes throughout the County. Staff employ the evidence-based WRAP system in enhancing the efforts of consumers to promote and advocate for their own wellness
- The Committee for Social Inclusion is an ongoing alliance of committee members that work together to promote social inclusion of persons who receive behavioral health services. The Committee is project based, and projects are designed to increase participation of consumers and family members in the planning, implementation, and delivery of services. Current efforts are supporting the integration of mental health and alcohol and other drug services within the Behavioral Health Services Division. In addition, OCE staff assist and support consumers and family members in participating in the various planning committees and sub-committees, Mental Health Commission meetings, community forums, and other opportunities to participate in planning processes.

- Staff provides outreach and support to peers and family members to enable them to actively participate in various committees and sub-committees throughout the system. These include the Mental Health Commission, the Consolidated Planning and Advisory Workgroup and sub-committees, and Behavioral Health Integration planning efforts. Staff provides mentoring and instruction to consumers who wish to learn how to participate in community planning processes or to give public comments to advisory bodies.
- b. Target Population: Participants of public mental health services, their families, and the public.
  - c. Total MHSA Funding for FY 21-22: \$218,861
  - d. Staff: Three
  - e. Number Served: FY 19-20: 400+
  - f. Outcomes:
    - Committee for Social Inclusion convened 11 in-person and virtual meetings open to the community
    - PhotoVoice convened 6 subcommittee meetings open to the community, held Recovery Month exhibition, and trained Health, Housing and Homeless Services (H3) staff to facilitate classes for Homelessness Awareness Month exhibition
    - WRAP coordinated recertification of 17 Community Support Workers as facilitators and certification of an additional 11 CSWs as first-time facilitators.
    - WREACH convened 6 subcommittee meetings open to the community

## People Who Care (PWC) Children Association

<http://www.peoplewhocarechildrenassociation.org/>

Point of Contact: Constance Russell

Contact Information: 2231 Railroad Ave, Pittsburg, 94565

(925) 427-5037, [pwc.cares@comcast.net](mailto:pwc.cares@comcast.net)

### 1. General Description of the Organization

People Who Care Children Association has provided educational, vocational and employment training programs to young people ages 12 through 21 years old, since 2001. Many are at risk of dropping out of school and involved with, or highly at risk of entering, the criminal juvenile justice system. The mission of the organization is to empower youth to become productive citizens by promoting educational and vocational opportunities, and by providing training, support and other tools needed to overcome challenging circumstances.

### 2. Program: PWC Afterschool Program - PEI

- a. Scope of Services: Through its After School Program, People Who Care (PWC) will provide Prevention services through providing work experience for 200+ multicultural at-risk youth residing in the Pittsburg/Bay Point and surrounding East Contra Costa County communities, as well as programs aimed at increasing educational success among those who are either at-risk of dropping out of school or committing a repeat offense. Key activities include job training and job readiness training, mental health support and linkage to mental health counseling, as well as civic and community service activities.
- b. Target Population: At risk youth with special needs in East Contra Costa County.
- c. Payment Limit: FY 21-22: \$229,795
- d. Number served: FY 19-20: 207
- e. Outcomes:
  - After Shelter-in-Place started, organized online tournaments to keep students engaged and connected. 40 students participated in each week-long and 2 week-long competition.
  - During the Green Jobs Bridge program (virtual adaptation of existing/pre-covid program) a total of 12 unduplicated, and 78 duplicated students participated in the program. More than 50% of participants did not re-offend during the participation in the program
  - Students participated in a weeklong simulation in which they had to utilize skills and learning from personal finance lesson taught to make financial and life decisions in an open simulation combining all finance-oriented modules (Budgeting and Saving, finding an apartment, choosing and balancing a bank account, getting a credit card, fixing your credit, online banking, time management and health, paying and filing taxes, intro to investing for retirement, risk vs. return, and diversification). The goal was to have the highest net worth by the end of a week's time. The winner went from \$0 and homeless to home-owning, college-educated with 250k in the bank. Majority of participants showed an increase in school day attendance and decrease in school tardiness.

## Putnam Clubhouse

<https://www.putnamclubhouse.org/>

Point of Contact: Tamara Hunter

Contact Information: 3024 Willow Pass Rd #230, Concord CA 94519

(925) 691-4276, (510) 926-0474, [tamara@putnamclubhouse.org](mailto:tamara@putnamclubhouse.org)

### **1. General Description of the Organization**

Putnam Clubhouse provides a safe, welcoming place, where participants (called members), recovering from mental illness, build on personal strengths instead of focusing on illness. Members work as colleagues with peers and a small staff to maintain recovery and prevent relapse through work and work-mediated relationships. Members learn vocational and social skills while doing everything involved in running The Clubhouse.

### **2. Program: Preventing Relapse of Individuals in Recovery - PEI**

#### **a. Scope of Services:**

- i. Project Area A: Putnam Clubhouse's peer-based programming helps adults recovering from psychiatric disorders access support networks, social opportunities, wellness tools, employment, housing, and health services. The work-ordered day program helps members gain prevocational, social, and healthy living skills as well as access vocational options within Contra Costa. The Clubhouse teaches skills needed for navigating/accessing the system of care, helps members set goals (including educational, vocational, and wellness), provides opportunities to become involved in stigma reduction and advocacy. Ongoing community outreach is provided throughout the County via presentations and by distributing materials, including a brochure in both English and Spanish. The Young Adult Initiative provides weekly activities and programming planned by younger adult members to attract and retain younger adult members in the under-30 age group. Putnam Clubhouse helps increase family wellness and reduces stress related to caregiving by providing respite through Clubhouse programming and by helping Clubhouse members improve their independence.
- ii. Project Area B: Putnam Clubhouse assists the Office for Consumer Empowerment (OCE) by providing career support through hosting Career Corner, an online career resource for mental health consumers in Contra Costa County and holding countywide career workshops.
- iii. Project Area C: Putnam Clubhouses assists Contra Costa County Behavioral Health in several other projects, including organizing community events and by assisting with administering consumer perception surveys.
- iv. Project Area D: Putnam Clubhouse assists Contra Costa County Behavioral Health in implementing the Portland Identification and Early Referral (PIER) program for individuals at risk of psychosis, First Hope, by providing logistical and operational support.

- b. Target Population: Contra Costa County residents with identified mental illness and their families.
- c. Payment Limit: FY 21-22: \$631,672
- d. Number served: In FY 19-20: 456
- e. Outcomes:
  - 456 unduplicated members (target: 300) spent 57,290 hours engaged in Clubhouse programming activities (target: 40,000 hours). 55 newly enrolled Clubhouse members (target: 70) participated in at least one Clubhouse activity
  - Members helped prepare and eat 30,938 meals at the Clubhouse (target: 9,000). This is significantly higher than in past years due in large part to the implementation of a food pantry in response to COVID-19.
  - 1,543 rides were provided to members to and from Clubhouse activities, job interviews, medical appointments, and more.
  - 1,403 in-home outreach visits were provided.
  - 131 postings (target 124) were made on the Career Corner Blog and 4 career workshops were held (target 4).
  - Three community events were held with 378, 389, and 397 people in attendance respectively. The latter was held virtually due to COVID-19.
  - Assisted the implementation of the Portland Identification and Early Referral (PIER) program for individuals at risk of psychosis, First Hope, by providing logistical and operational support.
  - Survey data demonstrated positive outcomes in terms of consumer and caregiver satisfaction, respite, well-being, decreased hospitalizations, increased referrals, etc.

## Rainbow Community Center

<https://www.rainbowcc.org/>

Point of Contact: Kiku Johnson

Contact Information: 2118 Willow Pass Rd, Concord, CA 94520.

(925) 692-0090, [kikujohnson@rainbowcc.org](mailto:kikujohnson@rainbowcc.org)

### 1. **General Description of the Organization**

The Rainbow Community Center of Contra Costa County builds community and promotes well-being among Lesbian, Gay, Bisexual, Transgender, Queer, and Questioning (LGBTQ) people and our allies. Services are provided in our main office in Concord, our satellite location in West County, and in East County by arrangements with partner organizations.

### 2. **Programs: Outpatient Behavioral Health and Training, and Community-Based Prevention and Early Intervention - PEI**

#### a. Scope of Services:

i. Outpatient Services: Rainbow works with LGBTQ mental health consumers to develop a healthy and un-conflicted self-concept by providing individual, group, couples, and family counseling, as well as case management and linkage/brokerage services. Services are available in English, Spanish, and Portuguese.

ii. Pride and Joy: Three-tiered prevention and early intervention model. Tier One: outreach to hidden groups, isolation reduction and awareness building. Tier Two: Support groups and services for clients with identified mild to moderate mental health needs. Tier Three: Identification and linkage of clients with high levels of need and who require system navigation support. Services are aimed at underserved segments of the LGBTQ community (seniors, people living with HIV, and community members with unrecognized health and mental health disorders).

iii. Youth Development: Three tiered services (see above) aimed at LGBTQ youth as a particularly vulnerable population. Programming focuses on building resiliency against rejection and bullying, promoting healthy LGBTQ identity, and identifying and referring youth in need of higher levels of care. Services are provided on-site and at local schools.

iv. Inclusive Schools: Community outreach and training involving school leaders, staff, parents, CBO partners, faith leaders and students to build acceptance of LGBTQ youth in Contra Costa County schools, families, and faith communities.

b. Target Population: LGBTQ community of Contra Costa County who are at risk of developing serious mental illness.

c. Payment Limit: FY 21-22: \$782,141

d. Number served: FY 19-20: 941

e. Outcomes:

- Implemented a Training and Curriculum Manager position with a seasoned SOGIE (Sexual Orientation, Gender Identity and Expression) national trainer and published educational curriculum writer that joined the staff in March 2020. This enabled Rainbow to launch within the two months of the state's Shelter-in-Place orders, a meaningful update to culturally informed work through virtual SOGIE workshops and trainings.
- Rainbow's Inclusive School Coalition served the following four districts: Mt. Diablo, Pittsburg, Acalanes, West Contra Costa Unified.
- Offered services to LGBTQ seniors, adults, and youth through their various tiered services

## **RYSE Center**

<https://rysecenter.org/>

Point of Contact: Kanwarpal Dhaliwal

Contact Information: 205 41<sup>st</sup> Street, Richmond. CA 94805

(925) 374-3401, [Kanwarpal@rysecenter.org](mailto:Kanwarpal@rysecenter.org)

### **1. General Description of the Organization**

RYSE is a youth center in Richmond that offers a wide range of activities, programs, and classes for young people including media arts, health education, career and educational support, and youth leadership and advocacy. RYSE operates within a community behavioral health model and employs trauma informed and healing centered approaches in all areas of engagement, including one-on-one, group and larger community efforts. In these areas, RYSE focuses on the conditions, impact, and strategies to name and address community distress, stigma, and mental health inequities linked to historical trauma and racism, as well as complex, chronic trauma. This focus enables RYSE to provide culturally relevant, empathetic, and timely community mental health and wellness services, resources, and supports across all our program areas and levels of engagement.

### **2. Program: Supporting Youth – PEI**

#### **a. Scope of Services:**

- i. Trauma Response and Resilience System (TRRS): Develop and implement Trauma and Healing Learning Series for key system partners, facilitate development of a coordinated community response to violence and trauma, evaluate impact of trauma informed practice, provide critical response and crisis relief for young people experiencing acute incidents of violence (individual, group, and community-wide).
  - ii. Health and Wellness: Support young people (ages 13 to 21) from the diverse communities of West County to become better informed (health services) consumers and active agents of their own health and wellness, support young people in expressing and addressing the impact of stigma, discrimination, and community distress; and foster healthy peer and youth-adult relationships. Activities include mental health counseling and referrals, outreach to schools, workshops and ‘edutainment’ activities that promote inclusion, healing, and justice, youth assessment and implementation of partnership plans (Chat it Up Plans).
  - iii. Inclusive Schools: Facilitate collaborative work with West Contra Costa schools and organizations working with and in schools aimed at making WCCUSD an environment free of stigma, discrimination, and isolation for LGBTQ students. Activities include assistance in provision of LGBT specific services, conducting organizational assessments, training for adults and students, engaging students in leadership activities, and providing support groups at target schools, etc.
- b. Target Population: West County Youth at risk for developing serious mental illness.
  - c. Payment Limit: FY 21-22: \$503,019

d. Number served: FY 19-20: 865 young people

e. Outcomes:

- 283 new members enrolled, for a total of 613 unduplicated members attending. Since March 2020. An additional 322 youth participants (not unduplicated) who are not formally enrolled as members took part via virtual program offerings.
- Health and wellness content promoted via social media (Instagram Live videos and TikTok) also engaged youth in the community, with over 2,000 views.
- Supported students across WCCUSD to respond to distance learning policies, surveyed over 282 youth about distance learning needs and ideas, organized a Youth Town Hall for over 100 participants on distance learning, and participated in local, statewide, and national forums to share youth experiences.
- Created a Youth COVID-19 Care Fund, providing direct cash disbursements to nearly 200 youth and their families, as well as assisted the City of Richmond with establishing a community-guided Richmond Rapid Response Fund
- 107 young people completed Education, Career, Let's Get Free or Case Management Plans
- 22 young people completed Community Service requirements with support from RYSE.
- Engaged at least 33 young people who came to RYSE through reentry/transition from juvenile confinement in the Hire Up, Rysing Professionals, and Side Hustle programming
- 23 young men, ages 15-18, completed the Hidden Genius Project (HGP), a 15-month intensive Tech Literacy and Skill-Building program for Black-identified males in the areas of computer science and entrepreneurship.
- Engaged over 326 young people through an arts-based healing program.

## **STAND! For Families Free of Violence**

<http://www.standffov.org/>

Point of Contact: Reina Sandoval Beverly

Contact Information: 1410 Danzig Plaza #220, Concord, CA 94520

(925) 676-2845, [reinasb@standffov.org](mailto:reinasb@standffov.org)

### **1. General Description of the Organization**

STAND! For Families Free of Violence is a provider of comprehensive domestic violence and child abuse services in Contra Costa County, offering prevention, intervention, and treatment programs. STAND! builds safe and strong families through early detection, enhanced support services, community prevention and education, and empowerment to help individuals rebuild their lives. STAND! enlists the efforts of residents, organizations, and institutions, all of whom are partners in ending family violence. STAND! is a founding member of the "Zero Tolerance for Domestic Violence Initiative", a cross-sector organization working for fifteen years to help end domestic violence, sexual assault, and childhood exposure to violence.

### **2. Program: "Expect Respect" and "You Never Win with Violence" - PEI.**

- a. Scope of Services: STAND! provides services to address the effects of teen dating violence/domestic violence and helps maintain healthy relationships for at-risk youth throughout Contra Costa County. STAND! uses two evidence-based, best-practice programs: "Expect Respect" and "You Never Win with Violence" to directly impact youth behavior by preventing future violence and enhancing positive mental health outcomes for students already experiencing teen dating violence. Primary prevention activities include educating middle and high school youth about teen dating through the 'You Never Win with Violence' curriculum, and providing school personnel, service providers and parents with knowledge and awareness of the scope and causes of dating violence. The program strives to increase knowledge and awareness around the tenets of a healthy adolescent dating relationship. Secondary prevention activities include supporting youth experiencing, or at-risk for teen dating violence by conducting 20 gender-based, 15-week support groups. Each school site has a system for referring youth to the support groups. As a result of these service activities, youth experiencing or at-risk for teen dating violence will demonstrate an increased knowledge of: 1) the difference between healthy and unhealthy teen dating relationships, 2) an increased sense of belonging to positive peer groups, 3) an enhanced understanding that violence does not have to be "normal", and 4) an increased knowledge of their rights and responsibilities in a dating relationship.
- b. Target Population: Middle and high school students at risk of dating violence.
- c. Payment Limit: FY 21-22: \$138,136
- d. Number served: FY 19-20: 1778
- e. Outcomes:
  - *You Never Win with Violence* presentations to 1445 middle and high school youth (during 55 presentations) in Contra Costa County
  - 17 *Expect Respect* groups reached 146 participants
  - Offered 17 10-week long gender-based support groups

- Trained adult allies (teachers and other school personnel)

## Vicente Martinez High School - Martinez Unified School District

<http://vmhs-martinez-ca.schoolloop.com/>

Point of Contact: Lori O'Connor

Contact Information: 925 Susana Street, Martinez, CA 94553

(925) 335-5880, [loconnor@martinez.k12.ca.us](mailto:loconnor@martinez.k12.ca.us)

### 1. **General Description of the Organization**

The PEI program at Vicente Martinez High School and Briones School (co-located on the same campus) offers an integrated mental health focused experience for 10th-12<sup>th</sup> grade at-risk students of all cultural backgrounds. Students are provided a variety of experiential and leadership opportunities that support social, emotional, and behavioral health, career exposure and academic growth while also encouraging, linking, and increasing student access to direct mental health services.

### 2. **Program: Vicente Martinez High School & Briones School - PEI**

a. Scope of Services: Vicente Martinez High School and Briones School provide students of all cultural backgrounds an integrated, mental health focused, learning experience. Key services include student activities that support:

- individualized learning plans
- mindfulness and stress management interventions
- team and community building
- character, leadership, and asset development
- place-based learning, service projects that promote hands-on learning and intergenerational relationships
- career-focused exploration, preparation, and internships
- direct mental health counseling
- timely access and linkage to direct mental health counseling

Services support achievement of a high school diploma, transferable career skills, college readiness, post-secondary training and enrollment, democratic participation, social and emotional literacy, and mental/behavioral health. All students also have access to a licensed Mental Health Counselor for individual and group counseling.

Students enrolled in Vicente and Briones have access to the variety of programs/services that meet their individual learning goals. Classes have a maximum of 23 students and are led by teachers and staff who have training in working with at-risk students and using restorative justice techniques. Students regularly monitor their own progress through a comprehensive advisory program designed to assist them in becoming more self-confident through various academic, leadership, communication, career, and holistic health activities.

b. Target Population: At-risk high school students in Central County

c. Payment Limit: FY 21-22: \$191,336

d. Number served: FY 19-20: 245

e. Outcomes:

- 97% of the Vicente student body and 54% of Briones students participated in PEI

activities.

- All seniors participated in service-learning hours. A minimum of 15 hours is usually required. Due to the school closure because of COVID-19 some students didn't complete all hours but were given a waiver for these hours.
- All students were offered mental health counseling and there was one full time mental health counselor on campus daily.
- Staff organized and hosted 70 different types of activities and events to enrich the curricula.
- Vicente was again a recipient of the Model Continuation High School Recognition through the California Department of Education
- and the California Continuation Education Association.
- All students were given the opportunity to apply, interview and participate in career-focused internships.
- At least 70% of students who participated in four or more services and who had had chronic absenteeism increase their attendance rate by 5%.

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## PEI ANNUAL REPORTING FORM

### OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: VistAbility/Asian Family Resource Center

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

Our primary method of outreach and engagement with potential responders were program brochures. The potential responders we have reached primarily consist of multilingual and multicultural individuals and families (specifically of Chinese, Vietnamese, Laos, Khmu, and Mien backgrounds) currently living in Contra Costa County (with the majority residing in the western region of the county). These groups and individuals are frequently underserved as a result of language barriers and cultural differences. These brochures were printed in several languages, such as Chinese, Vietnamese, Lao, and Mien to reach a wider range of potential responders. These brochures consisted of our mission, the types of services we offer under this program, the language we speak, and our contact information. These brochures are placed in areas that attract high concentrations of the APIC population such as public libraries, supermarkets, restaurants, adult schools, housing complexes, the faith community, and community events on the weekend and are also distributed to the participants at diverse community activities. In addition to having attended our outreach events in previous years.

We also hold collaborative efforts with other community agencies such as the Family Justice Center Richmond and Concord, Regional Center of East Bay, Senior Peer Counseling, Bay Area Legal Aid, local school districts, SSA, and housing corporations for service resources and case referrals to further engage with our community.

Furthermore, we hold psychoeducation workshops for community members regarding the importance of prevention and early intervention relative to mental health, as well as self-care and human wellness. These workshops also touch on cultural/historical issues and family/parenting issues. These workshops raise the attendees' awareness and understanding of the early signs of mental health issues, increase their knowledge about mental health, and reduce the stigma that surrounds the topic of mental health. Additionally, we provide information about where and how to get help if needed, particularly for those who may feel limited due to language barriers.

Several strategies are utilized to provide access and linkage to treatment. For instance, if there is a potential case that needs mental health assessment and treatment, the case would be transferred to another program we offer, Medi-Cal recipients. For individuals who are not qualified for this treatment program or are having difficulties accessing or receiving services in English because of language and cultural barriers. They would be encouraged to receive individual/family consultation for up to one year under the PEI program or participate in wellness support groups in a variety of Asian languages (this program is also under the PEI program.)

To improve timely access to services for underserved populations, we regularly attend community meetings and workshops. We receive training for new and updated information about laws, public benefits, social services, etc. that may have an impact on the people we serve. This way we, as providers, can develop a better understanding of the needs of services for underserved populations and provide more catered and supportive services.

On September 26, 2019, our agency hosted an outdoor event for the community at Alvarado Park in Richmond, CA. People from all backgrounds, young and old, joined us at the picnic. 68 people attended the event, including those from Chinese, Vietnamese, Lao, Khmu, and Mien communities. Our agency gave out 55 bags of produce and food to the consumers. It was a fun day for all, filled with an abundance of food and activities. Our attendees enjoyed spending quality time talking and eating with good friends and good food. The picnic was a success, bringing many different people together for a day of fun. It was our pleasure to share resources with all.

Asian Family Resource Center (AFRC), a satellite site of VistAbility/CCARC will provide comprehensive and culturally sensitive, appropriate education and access to Mental Health Services for Asian and Pacific Islander (API) immigrant and refugee communities, especially the Southeast Asians and Chinese population of Contra Costa County. VistAbility/CCARC will employ multilingual and multidisciplinary staff from the communities which they serve. Staff will provide the following scope of service.

Outreach and Engagement Services: individual and/or community outreach and engagement to promote mental health awareness, educate community member on signs and symptoms of

mental illness, provide mental health workshops, and promote mental health wellness through community events. Engage community member in various activities to screen and assess for mental illness and/or assist in navigating them into the service systems for appropriate intervention: community integration skills to reduce MH stressors, senior adult care giving skills, basic financial management, survival English communication skills, basic life skills, health and safety education and computer education, structured group activities (on topics such as, coping with adolescents, housing issues ,laid off, domestic violence, criminal justice issues, health care and disability services), mental health education and awareness, and health/mental health system navigation. VistAbility/CCARC, in collaboration with community-based organizations, will participate in 3-5 mental health and wellness events to provide wellness and mental health outreach, engagement, and education to API immigrants and refugees in the Contra Costa County.

Individual Mental Health Consultation: will also be provided to those who are exhibiting signs of mental illness early in its manifestation, to assess needs, identify signs/symptoms of mental health crisis/trauma, provide linkages/referrals or assist in navigating them into the mental health system in culturally responsive manner without stigma, and provide wellness support groups to prevent escalations in mental health symptoms or stressors, accessing essential community resources, and linkages/referral to mental health services. Peer navigators will be utilized to support participants to access services in a culturally sensitive manner. These services will be provided for a period of less than one year unless psychosis is present. VistAbility/CCARC will serve a minimum of 55 high risk and underserved Southeast Asian community members within a 12-month period 25 of which will reside in East County with the balance in West and Central County.

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, include a list of indicators measured, how often data was collected and analyzed.***

During this 2019-2020 fiscal year, Asian Family Resource Center served 583 individuals. Due to COVID-19, we regularly called and did home visits with our clients who could not come the office. We would speak to them from the car with our mask on. We bought groceries and necessities for vulnerable clients who could not go out. We communicated local resources such as rent assistance, meals on wheels, food bank, cleaning supplies, etc. We utilize the Demographics Form to conduct evaluation and measure outcomes. Some questions in the form have been modified to better reflect cultural competency. Some of the qualitative data we collect include primary language spoken, race, ethnicity, gender, sexual orientation. Our quantitative data includes the number of individuals that attend groups, their ages, and the

number of hours attended. The Demographics Form does not include the client's name so their information will always be confidential. We use 1 form per 1 individual per 1 contact. The data is compiled at end of the month and analyzed.

**DEMOGRAPHIC DATA:** *X Not Applicable (Using County form)*

Please refer to Aggregate Data Reporting Form Not Applicable

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Asian Family Resources Center has been able to meet the diverse cultural needs of our clients by providing services in multiple languages to meet the need of these groups. We would go to different areas to distribute brochures to where these groups are at. These areas include other agencies, housing complexes, farmer markets, Chinatown, Asian supermarkets, and community events. We also appeal these diverse groups by promoting and hosting events they are used to. A lot of the groups we work with come from cultures focused on community, so we often host events focused on communal support and community building. Many of these events were unfortunately canceled however due to COVID-19, such as our annual picnic. We focus on the community, which is how we support cultural responsiveness.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Asian Family Resources Center used to host the outdoor events, information fair, workshop, and joined other agencies for community events. During pandemic our agency staff joining other agencies in zoom meeting to get or share some information and support on how to help clients who are in need. When the pandemic is over, we will start to work with other agencies to have more events and workshop for the community.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Our program reflects the values of wellness, recovery, and resilience. We base our work on our agency's mission statement, which emphasize the need to provide and advocate for multilingual and multicultural family services that empower people in Contra Costa County to lead healthy, contributing, and self-sufficient lives. The services we provide always aim to assist, educate, and eliminate the stigmas of mental health-related issues. Our doors are always open to anyone that seeks assistance, regardless of race, color, ethnicity, religion, sexual orientation and with the assistance of our bilingual staff; we can provide language-based care and services. Being able to provide language-based care is something that we value deeply and believe that it truly provides a safe place for those who are ESL and need services.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

AFRC staff helped the head of a household, who lived with his wife and one of their children.

His elderly mother his mentally disabled sister, and his very sick niece lived with him as well. However, in 2018, he suffered from a massive stroke that paralyzed him. Due to his illness and the lack of speech, this family's need was brought to staff attention. The staff went to visit the family and started to engage in assisting the family with medical and physical therapy interpretation and served as a point of contact for his medical needs. AFRC staff had assisted him with his worker disability information and provided emotional support when he was depressed from his illness. Staff visited him and aided him on a weekly basis. AFRC staff was consistently in contact with his physical therapist to update them with his physical mobility progress. He is now much better physically and emotionally but still required physical assistance from his wife.

His wife doesn't drive. So, when he got sick, they had no transportation to and from Doctor appointments, etc. However, staff assisted his wife on studying the driving test and took her to the DMV multiple times to take the written exam. She finally passed her written exam, and hopefully she will pass her driving exam soon. Staff is planning to apply for Paratransit services.

The client's elderly mother has suffered from post-traumatic disorder for years. AFRC staff had the privilege to assist her with emotional support by encourage her to join our life skills group/therapy and church's small group. Her income was limited and due to the illness of her son, they struggled with bills and foods. AFRC staff was able to assist her in applying for food stamp which was a tremendous help to her and her family. In January 2019, his niece passed away and his mentally ill sister was traumatized by the passing of her daughter. Staff was able to be there for the family providing emotional and logistic support since neither one of them were able to communicate with the hospital, funeral home, etc. AFRC staff assisted the family

with funeral arrangements (asking for donations, choosing the casket, arranging for cremation, date, and time, aiding with price negotiation, etc.) and worked with the hospital to obtain the death certificate and assisted the family with locating the deceased bank account, and more.

AFRC staff continues to provide emotional support to this family as of this writing. Stories like the one described above are just one of many successful stories that staff had the privilege to assist in our community through the AFRC agency. The existence of AFRC to serve as a refuge to our Asian community in need and AFRC staff is grateful to represent the agency with pride and dedication.

Thank you to PEI program for your financial support. Without your support this agency would not be able to support our community like the way we are supporting this community now.

## PEI ANNUAL REPORTING FORM

### EARLY INTERVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Building Blocks for Kids

Project (if applicable): Not About Me Without Me

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations**

**X Use strategies that are non-stigmatizing and non-discriminatory**

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

The goals of the 2019-2020 scope of work are three-fold: (1) Community and Family Engagement: working with Richmond families to ensure that they are knowledgeable about and have access to a network of supportive and effective mental health information and community services; (2) Social Support and Referral: reduce risk factors for developing a potentially serious mental illness, and to increase protective factors; and, (3) Healthy Parenting Skills: train and support families to self-advocate and directly engage the services they need.

Community and Family Engagement: Ensure Richmond families are knowledgeable about and have access to a network of supportive and critical health and mental health information and services

Linkages with East Bay service providers: In 2019-2020, BBK focused on connecting families to existing mental health and support services that are available within the region. BBK staff connected families to accessible mental health professionals that provide no and low-cost individual, family and group mental health support and prevention services. During the last fiscal year, BBK connected six participants to support services. In 2020, as the COVID-19 pandemic unfolded our staff made check-in phone calls with our program participants and conducted a Needs Assessment. Based on the results, our staff successfully connected 42 families to food resources, financial assistance, and free/reduced internet service options. BBK along with other Richmond-based organizations, launched the Richmond Rapid Response (R3F)

– a wraparound initiative that will meet the immediate and ongoing needs of the community during the COVID-19 pandemic including direct monetary disbursements to residents.

Organizational Support: BBK staff continued to provide support to strengthen services made available by mental health and community wellness providers. In the 2019-2020 fiscal year, BBK continued to partner with the Child Abuse Prevention Council’s Nurturing Parenting program. BBK provided logistical support including convening and training space recruitment and evaluation; and offering developmental Child Watch and food for program participants. BBK provided this support to CAPC for two classes during the previous fiscal year.

Family Engagement: Family Engagement activities are events held at Monterey Pines Apartments a 324-unit housing community in South Richmond. At these events, Richmond families are invited to spend an enjoyable and safe time with their families. Each event is hosted by a different organization or multiple organizations intent on engaging families with children from birth to eighteen years of age. In the 2019-2020 fiscal year a total of 87 people participated in Family Engagement Events. Family Engagement activities included: an informational session about the Welcome Home Baby Program, Mindfulness practices, Youth Service Bureau, Effective Ways of Communication through Community Circles, Census Information as well family bonding arts & crafts and games.

Health & Wellness at the Park: In 2019-2020, BBK continued to offer Richmond families a free summer program. During the 2019 summer program, children under the age of 18 had access to free lunch Monday through Friday, Zumba classes and enrichment activities. BBK staff served an average of 90 children daily. As the 2020 summer began, BBK staff decided to continue to offer the summer program but changed our approach as we followed local government social distancing regulations. Our staff offered virtual programming for a total of four weeks in July 2020. Videos were posted daily on our Facebook page. Families had access to two Zumba videos a week, two playgroup videos a week, and once a week we posted a cooking video.

Social Support and Referral: Reduce risk for negative outcomes related to untreated mental illness for parents/primary caregivers whose risk of developing a serious mental illness is significantly higher than average including cumulative skills-based training opportunities on effective parenting approaches.

Sanctuary Peer Support Groups: Through our Sanctuary groups we educated, supported healing, offered mothers the opportunity to share information, build community and worked with moms to develop accessible approaches to maintaining their mental health and that of their families and community. BBK staff continued to host in-person Sanctuary Peer Support Groups at Chavez Elementary School, Monterey Pines housing development in South Richmond, and our office space in the Iron Triangle neighborhood. In April 2020, as we all went into Shelter in Place, our staff conducted check in phone calls with our program participants. Based on responses our staff decided to increase the meetings from once a month to twice a

month. Participants are now able to participate in two virtual meetings a month. In the last year participants were facilitated through different activities related to self-care, meditation, and stress relieving practices. During the 2019-2020 fiscal year, 195 women participated in 28 meetings.

In late 2019, BBK began an equity-centered design thinking approach and process to redesign our parental resilience and emotional wellbeing programs and activities. Our process has included the primary principles of human-centered design. These design principles provide us with the framework to design with the constituents we serve and with whom we are looking to serve. BBK staff has collected 106 e-surveys, spoke with 11 people in 1-1 interviews and another 23 people in focus groups. We are excited about the opportunity to utilize community input to create programs that resonate with community members and meet their needs. We are now beginning to develop program ideas and will work with our Advisory Committee to prioritize these ideas and share them with a smaller subset of community members for feedback.

Healthy Parenting Skills: Train and support families to self-advocate and directly engage the services they need.

Parent Education: In 2019-2020, BBK continued to partner with the Child Abuse Prevention Council to provide evidenced based and informed learning opportunities focused on parents/primary caregivers living within Central and South Richmond. These sessions incorporate curricula for child(ren)/youth that are aligned with learning objectives for parent participants, creating an ongoing mechanism for mutual learning and reinforcement at home. The classes were offered in English and Spanish at two different sites in Richmond. The sites included Highland Elementary, a WCCUSD school in Richmond's Hilltop neighborhood and our office in Central Richmond. During the fiscal year, a total of 26 parents successfully completed the 22-week program.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, For PEI - Early Intervention programs, please describe: Which mental illness(es) were potentially early onset, how participant's early onset of a potentially serious mental illness was determined, List of indicators and data that measured reduction of negative outcomes.***

#### Numbers Served:

During the 2019-2020 fiscal year, BBK served a total of 336 unduplicated program participants.

### COVID-19 Adaptations:

During the COVID-19 pandemic, BBK has pivoted to continue to engage the community. Our staff has transitioned into a virtual model. All our programs are now offered through Zoom meetings, phone calls, and videos on our Facebook page.

### Outcomes:

Care Providers develop strong knowledge base on child development and positive parenting skills

Since July 2019, 26 adults completed a 22-week positive skills parenting class. 146 adults participated in a parent-child, skills development playgroup during the summer months of 2019.

Service providers are responsive to mental health needs and requests of CentralRichmond families. BBK Zone families are increasingly accessing mental health services. In the last year, we have seen an increase in the confidence that Richmond families have in our partner mental health organizations' ability to respond to their needs. Many of our partners have improved their responsiveness by following up with us right away when asked for their assistance in guiding or referring a family who needs support. They have also been willing to come to planned activities that put them in front of families where they are able to make important connections and build rapport. We see this is as an important evolution; however, it has become apparent that responsiveness doesn't quite capture all that families are looking for in mental and emotional health support. It makes sense that Richmond families, especially those who are high need, have a minimum expectation that they're going to be able to connect to a provider who can help them when a need arises. Getting a friendly initial response might even be enough to solve some short-term problems, but many families are looking for more from providers. Responsiveness is what families expect, but resolution is what they really need.

### Measures of Success:

#### **Sanctuary**

Success Measure: 100% of the mothers participating in Sanctuary report a plan for supporting mental wellness for themselves

Result: 100% of the mothers participating in Sanctuary report a plan for supporting mental wellness for themselves

Success Measure: 80% of mothers will report progress on achieving at least one wellness goal.

Result: 80% reported progress on achieving at least one wellness goal. All mothers reported that there is at least one other person from the group that they feel comfortable checking in with about their mental and emotional state, which was a goal for all participants.

### **Parent Partner**

Success Measure: 75% of parents that work with a Parent Partner will report that they feel safe, confident, and more knowledgeable about how to advocate for mental health services for themselves, their child or other family members.

Result: Of the parents that responded to this question, 100% reported that they feel safe confident and more knowledgeable about how to advocate for mental health services for themselves, their child or other family members. However, many of the undocumented Latinx families reported that they still did not know where to go to get services.

### **Parenting Support Services**

Success Measure: 85% of all participants will report an increase in their use of positive parenting skills with their children

Result: At our midpoint check-in for our most recent parenting session, 100% of parents reported that there was an increase in their use of positive parenting skills with their children.

### **Linkages with Service Providers**

BBK will establish procedures for identifying those individuals/families that need more intensive mental health support and hence referrals to other service providers. Families and individuals were identified from Sanctuary and Parenting Classes and referred for services by members of the Health and Wellness team. It continues to be difficult to refer undocumented families for mental health services because of the dearth of services available to them.

Success Measure: 70% of families identified as needing mental health services will be successfully linked to providers.

Result: It continues to be difficult to refer undocumented families for mental health services because of the dearth of services available to them. During the last fiscal year, BBK connected six participants to support services. In 2020, as the COVID-19 pandemic unfolded our staff made check-in phone calls with our program participants and conducted a Needs Assessment. Along with the stress of the virus, families also shared that they were dealing with financial stress due to the loss of jobs. These financial pressures greatly impact the emotional and mental well-being of the families we serve. As a result, our staff successfully connected 42 families to food resources, financial assistance, and free/reduced internet service options.

**DEMOGRAPHIC DATA:** *X Not Applicable (Using County form)*

*Please refer to Aggregate Data Reporting Form*

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

We are a data-informed organization, and we utilize it to facilitate program development. We take our direction from program participants and residents of the community to then create opportunities for them that continue to inform our work and program implementation. To provide the best service to the community, all flyers and program materials are developed using culturally appropriate English and Spanish. We provide dual translation in Spanish, childcare, and meals for most of our programming, events, and activities. We are increasing our efforts to meet families in community spaces in their neighborhoods to continue to serve African American families, we have expanded our programming to south Richmond because of the density of African American families living in these neighborhoods. In addition, we also schedule our programming to meet the needs of the community. For example, our Latina Sanctuary group was held at Chavez Elementary School in the morning time so that mothers can drop off their children at school and attend the meeting. Our Family Engagement events are scheduled in the evening so that families can attend as kids are out of school and working parents are available.

As an organization rooted in the community, we believe in community representation on our staff and Advisory Board. Our staff is all women of color with deep roots in Richmond and West Contra Costa County through professional and/or personal histories including our executive director who has called Richmond home for most of her life. Similarly, most of our Advisory Board members are people of color, most are from and currently live in Richmond and our expert professional in their fields. BBK has a high standard for work, service, and commitment to the local community. We also have an equally high commitment to the well-being of our colleagues and their families. We believe that supporting the sound maintenance and development of the mind, body and soul of our colleagues is the only way we will effectively serve and support Richmond and West Contra Costa County communities.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Collaboration is a key component of our work. As an organization we understand that to be able to make a lasting impact on our community we must work with community partners to serve community members. One of the biggest collaborations have been with WCCUSD. Our

partnership with the school district has allowed us to serve families at two elementary school sites in Richmond. In addition, our partnership with the City of Richmond has allowed BBK to provide our free Health & Wellness Summer Program since 2014. Additionally, through our partnership with the Child Abuse Prevention Council, we were able to free parenting support to several families throughout Richmond.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non- stigmatizing and non-discriminatory?***

Since its founding in 2005, BBK has been a community of social innovators working to support Black and Latinx families in Central Richmond. We support families to use their voices and experiences to directly inform the systems they interact with and which impact them.

BBK envisions empowered communities that are wellness-centered and have equitable access to high- quality education, where healthy families blossom to realize their dreams and full potential.

Our three core strategies are parent-led advocacy, healing-centered care, and leadership development. These strategies drive our mission to amplify the voices of parents/caregivers of color and partner with them to advance equitable access and opportunities for all youth to have a quality education and all families to achieve emotional and physical well-being. Our staff will continue to keep families' health & wellbeing at the forefront of our work in all our programming. Our approach continues to align with and bolster MHSA's PEI goal of providing activities intended to reduce risk factors for developing a potentially serious mental illness, and to increase protective factors.

BBK's theory of change is simple and enduring: by providing healing centered care, leadership development, and activating inclusive parent-led advocacy, we support the personal and collective transformation of parents and caregivers as they reclaim their power. Furthermore, we seek the transformation of education and health systems, so that all youth achieve success

and all families experience positive emotional and mental well-being. We collaborate with families to overcome trauma and barriers so that they may strengthen their ability to support their children, family, and community toward healthy, successful development. Efforts focus specifically on ensuring the well-being of parents and supporting parents to determine long term success for their children. We do this by offering nurturing and culturally responsive environments where parents can heal and identify practices that promote well-being. We also help parents make direct linkages to mental health tools and resources that may not otherwise be accessed. Furthermore, we provide skills-based training that develop the leadership capacity

of parents/primary caregivers. Our aim is that Richmond and West County parents/primary caregivers' effect positive changes in home, schools, and neighborhoods to ensure that they are responsive to the needs of families and children.

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

About two years ago Shawn joined our Nurturing Parenting class. At the time, Shawn was going through hard times. He found himself struggling with parenting and grieving his mother's recent death. Participating in the classes gave him an outlet. He built relationships with other parents and was able to learn from them, share his experiences, and vent. Through the classes, Shawn learned about other BBK programs and began regularly attending Family Engagement Nights. Shawn shares that these events helped him build a stronger relationship with his son and meet other families. Shawn continues to look for different growth opportunities through BBK and other community organizations. He was recently a part of our equity-centered design thinking approach and process to redesign our parental resilience and emotional wellbeing programs and activities. He has provided great feedback and ideas about what our work can look like in the future. BBK is very happy to see how much Shawn has grown over the last two years and is excited to see him continue to develop.

We met Lauren a few years ago when she began participating in our Black Women's Peer Support group. Through the Sanctuary, Lauren was able to build relationships with other participants and BBK staff. As we launched our Community Educational Leadership Institute, Lauren showed interest and applied to the program. Through the four-month program, Lauren learned how to contribute to systems change by serving on a board or commission. As a result, Lauren applied for and is currently on the Rodeo Municipal Advisory Council. She has also decided to run for a board seat on the John Swett Unified School District School Board.

**PEI ANNUAL REPORTING FORM**

**IMPROVING TIMELY ACCESS TO SERVICES FOR UNDERSERVED POPULATIONS REPORTING FORM**

**FISCAL YEAR: 19-20**

**Agency/Program Name: THE CENTER FOR HUMAN DEVELOPMENT**

**Project (if applicable): THE AFRICAN AMERICAN WELLNESS PROGRAM**

**PEI STRATEGIES:**

***Please check all strategies that your program employs:***

- Provide access and linkage to mental health care
- Improve timely access to mental health services for underserved populations
- Use strategies that are non-stigmatizing and non-discriminatory

**SERVICES PROVIDED / ACTIVITIES:**

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

The African American Wellness Program provides prevention and early intervention services that empowers participants to: Increase emotional well-being, decrease personal stress and isolation, increase their ability to access culturally appropriate mental health services.

Key Activities included culturally appropriate education on mental health topics through Four Mind, Body and Soul support groups: community health education workshops, outreach at health-orientated community events. Also, assistance and navigation for appropriate mental health referrals.

**OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, how are participants identified as needing mental health assessment or treatment?***

The African American Wellness Program served 623 participants during 2019-2020 fiscal year. Due to Covid 19 our program was unable to provide in-person support group meetings.

Community Health Advocates Michelle Moorhead and Risha La Grande provided services to participants via telephone. Providing One on One check ins to participant, referrals, and resources according to individual needs. Shelter-In-Place order was placed in effect on March 13, 2020. The Ambrose Community Center was shut down due to the Covid 19 orders. Community Health Advocates Michelle Moorehead and Risha La Grande began to work from home to stay connected to the participants in the program. Risha La Grande resigned on March 31, 2020 to care for her mother full time. At this time, Michelle Moorehead resumed full responsibility of all services for the African American Wellness Program.

**LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including how the PEI program: 1) provides encouragement for individuals to access services; and 2) follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

Participants, who attend the Mind, Body, and Soul support groups receive an assessment tool to identify barriers. Participants are individually provided services to help them to address the current issues they are facing. Participants are referred to Contra Costa Crisis 211, Mental Health Line, and community resources. Community Health Advocates assist participant by helping them to navigate through the systems, so they can receive care and learn to advocate for themselves in the future. The Community Health Advocate will call the Mental Health Access Line with participant, insuring participant to get an appointment. Community Health Advocate also supports participant by attending their Doctor's appointments to help in supporting and advocating for the participants care, and to help create effective communication and mutual understanding between the participant and provider. The appointment is scheduled from the initial phone call. The time for scheduling an appointment and seeing a Therapist or other provider time frame is up to 3-4 weeks. The Community Health Advocate will follow up with participants within a week to check on progress.

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

Please refer to Aggregate Data Reporting Form

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization***

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

The African American Wellness Program collaborates with other agencies to provide more resources and referrals for our participants. Such as St. Vincent De Paul and their Loaves and Fishes program. Participants were provided with a hot meal and bag of groceries from referral. Pittsburg Senior Center provides our program with referrals for participants that would like to attend the African American Wellness Program.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

The African American Wellness Program serves adults 18 years and older, living in East Contra Costa County. African American Wellness Program supports their participants by empowering them to recognize and achieve inner strengths, use coping strategies to maintain emotional wellness, and providing tools, resources, and referrals, to reduce stress, anxiety and isolation. The program provides a welcoming, safe, and confidential environment for their participants. The Mind, Body, and Soul support group helps give the participant hope, while facing life challenges. African American Wellness Program helps participants address and overcome barriers such as homelessness, unemployment no medical coverage, lack of food and transportation. African American Wellness Program supports their participants needs by linking participants, who are low income and disadvantaged due to lack of resources, and referrals to mental health services. Participants enter the program through word of mouth, referrals, community outreach and mental health services at Pittsburg Health Center.

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Story #9

E.B. is one of our male participants; age range is 60+ years old. He has attended the Mind, Body, and Soul (M.B.S.) support group for 6 yrs. now. E.B. attended activities at the Pittsburg Senior Center, he saw the flyer on the announcement board regarding the Mind, Body, and Soul support group and decided to attend. E.B. is a U.S. Marine Veteran he suffered from P.T.S.D.,

diabetes, and high blood pressure. Since attending our support group E.B. has developed new friendships, is eating healthier to regulate his diabetes, and high blood pressure. He attends therapy for his P.T.S.D. and is taking his medication regularly now. E.B. has a positive attitude due to practicing self-care tips and techniques provided in Mind, Body, and Soul support groups. E.B. continues the tools he learned and is progressing well. We are proud of his success and with continue to encourage him in the future.

## **PEI ANNUAL REPORTING FORM**

### **IMPROVING TIMELY ACCESS TO SERVICES FOR UNDERSERVED POPULATIONS REPORTING FORM**

**FISCAL YEAR: 19-20**

**Agency/Program Name: Center for Human Development – Empowerment Program**

#### **PEI STRATEGIES:**

***Please check all strategies that your program employs:***

- Provide access and linkage to mental health care**
- Improve timely access to mental health services for underserved populations**
- Use strategies that are non-stigmatizing and non-discriminatory**

#### **SERVICES PROVIDED / ACTIVITIES:**

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

Center for Human Development’s Empowerment Program provides weekly support groups, youth leadership groups, and mental health resources for lesbian, gay, bisexual, transgender, queer, questioning (LGBTQ+) youth and their heterosexual allies, ages 13 – 20, in East Contra Costa.

The annual goal is to reach 80 unduplicated youth from July 1, 2019 through June 30, 2020. During the contract, staff will provide the following services:

Component 1: Facilitate educational support group sessions at Pittsburg High School in Pittsburg, twice per week during the academic school year, totaling at least forty (40) but not more than fifty (50) open-ended group sessions.

Component 2: Facilitate one (1) weekly educational support group sessions at Deer Valley High School, Antioch during the school year; totaling at least twenty (20) but not more than twenty-five (25) sessions.

Component 3: Facilitate one (1) weekly educational support group at Rivertown Resource Center (or satellite office) in Antioch, Wednesday afternoons totaling at least thirty (30) but not more than thirty-six (36) open-ended ongoing sessions; this group meets year-round; educational support groups contain a social-emotional support component along with educational discussions, workshops, activities related to LGBTQ identity, culture, relationships, mental health, and wellness.

Component 4: Facilitate one (1) weekly educational support group sessions at Hillview Junior High School, Pittsburg during the school year; totaling at least twenty (20) but not more than twenty-five (25) sessions.

Component 5: Facilitate twice-monthly youth leadership groups totaling at least sixteen (16) but not more than twenty (20) ongoing sessions at Rivertown Resource Center, Antioch.

Component 6: Facilitate two (2) per year youth-led community service projects and skill-building field trips.

Component 7: Refer youth to culturally appropriate mental health services on an as needed basis including referral support to a minimum of 15 youth.

Component 8: Facilitate community educational outreach/psycho-educational workshops including two (2) per year.

Kevin Martin, Empowerment Program Coordinator, facilitated the following services from July 1, 2019 through June 30, 2020. Mr. Martin is a full-time employee, working 40 hours per week on the project. During this reporting period, Empowerment has worked with 110 unduplicated youth, which far exceeds our annual goal of 80 unduplicated youth.

Component 1: Facilitate 40 to 50 weekly meetings at Pittsburg High School, Pittsburg for LGBTQ+ youth and their allies to promote emotional health, positive identity, and reduce isolation through life skill development. Providing services at this location helps to increase access in several ways: it eliminates the need for additional transportation, as students are already at school; there is a network of supportive school staff and service providers working at Pittsburg High School, allowing for expedient linkage to additional support services as needed; and youth are more inclined to engage in support services, including Empowerment, when they can do so with, or supported by their peers and with reduced anxiety of being “outed” to their parents, or guardians.

From July 1 through June 30, 2020, Kevin Martin facilitated 46 sessions of youth support groups on the campus of Pittsburg High School. The number of meetings meets goal of 40 to 50

sessions for the year. This was the first year that PHS set a designated room for support groups to meet confidentially. CHD staff continued to receive new referrals from school staff, students, and service providers on campus, and as previously noted, has establish a regular time to meet two groups at Pittsburg High School, to meet this need. The average group attendance for this period was 5. Low attendance was 1 (in April) and high attendance was 10 (in February). These groups did not meet during “dead week” (final exam prep), during finals week, or while the school was closed for recess in December, February, April, and June. Staff continued to work closely with school staff and other service providers on campus to secure space for groups, as providing services at Pittsburg High School fills a need for youth who have difficulty with transportation to Antioch, and/or are not “out” in some aspect of their life (i.e., peers, family, or community). CHD also staff conducted more than 125 individual check-ins and one-on-one assessments with students during this year. More than twice that of previous years.

Topics for the Pittsburg group included: group development, establishing group norms, surviving trauma at home, LGBT terminology, healthy boundaries, jealousy, discrimination by authority figures, coping with stress, writing as a coping method, conflict with friends, Trans awareness, mourning the passing of a teacher, challenges of split family dynamics, symptoms of depression, self-image, affirmations, assumptions, identifying emotions, holiday & family stresses, concerns for Winter break, intentions for 2020, experiences over Winter break, upholding personal boundaries, “4 Pillars of Healthy Relationships”, speaking authentically about emotions, questioning gender identity, the process of coming out, managing boundaries and expectations in multilayered relationships, LGBTQ+ Black History Icons, personal stories of identity realization, confronting friends (difficult conversations), initial response to announcement of two week COVID-19 school closure, check-ins, establish telehealth group norms, realities of COVID- 19 Shelter-In-Place order (missed opportunities, stress and mental health), self-care, time management, ending romantic relationships (difficult conversations), tools for changing perspectives (opportunity from victimization), stresses of COVID-19 Shelter-In-Place order, end of school year stresses and excitement, holding grudges, challenges of online learning, openly LGBTQ+ celebrity representation and activism, irrational fear, senior appreciations and advice for underclassmen, anticipating summer during COVID-19.

Component 2: Facilitate 20 to 25 weekly meetings at Deer Valley High School, Antioch for LGBTQ youth and their allies to promote emotional health, positive identity, and reduce isolation through life skill development. Providing services at this location helps to increase access in a few ways: it eliminates the need for additional transportation, as students are already at school; youth are more inclined to engage in support services, including Empowerment, when they can do so with, or supported by their peers and with reduced anxiety of being “outed” to their parents, or guardians; and until very recently, CHD’s Empowerment Program has been the only external mental health service providers working with LGBTQ+

youth at Deer Valley High School, allowing LGBTQ+ students access where otherwise there would not be any.

From July 1 through June 30, 2020, Kevin Martin facilitated 19 sessions of youth support groups on the campus of Deer Valley High School. The number of meetings is just short of our goal of 20 to 25 sessions for the year. This group saw exponential growth during this year, largely due to word of mouth by participants and referrals from school counselors.

This school runs on a block schedule, group is held during the final hour of the school day. Staff continued to receive referrals from school staff and students right up to the end of the in-person school year, in March, indicating the high level of need for this population in this area. Staff is weighing the capacity of the program to support a second group at this site, or if capping the number of participants in group sessions is necessary. Average group attendance for this period was 14. Low attendance was 11 and high attendance was 19.

This group did not meet during “dead week”, during finals week, or while the school was closed for recess in December, March, May, and June. CHD also staff conducted more than 70 one-on-one meetings with students during this year. This is almost three times the number of previous years.

Topics for the Deer Valley group included: group development, bisexual awareness and myths, LGBTQ+ terminology, National Coming Out Day and the process of coming out, Trans awareness, gender terminology, “safe spaces” to be LGBTQ+, emotion identification, assumptions, intentions for 2020, coming out support, “4 Pillars of Healthy Relationships”, grief and shock of student shooting, LGBTQ+ Black History Icons, “friends” speaking negatively about you to others, social and performance anxiety, “Can you remain friends after romantic breakup?”, domestic violence, divorce.

Component 3: Facilitate 30 to 36 weekly meetings at Rivertown Resource Center, Antioch for LGBTQ+ youth and their allies to promote emotional health, positive identity, and reduce isolation through life skill development. Providing services at this location has challenges, but is the only year-round, drop-in support program for LGBTQ+ youth in East Contra Costa County, providing access to youth from Bay Point, Pittsburg, Antioch, Oakley, and Brentwood.

From July 1 through June 30, 2020, Kevin Martin facilitated 40 sessions of youth support group in Antioch. The group met at Rivertown Resource Center at 10th and D Streets. The number of meetings exceeds the goal of 30 to 36 sessions for the year. There was a shift in attendance during this period, with a significant decrease after the Shelter-In-Place order began, with a slight increase in June, when staff focused on integrating all participants into one group, in effort to maintain participant enthusiasm. The decrease in attendance was due to several factors, increased family obligations, the inability to meet in person, issues with access to technology, a lack of desire to participants’ home environments to be seen and possibly judged

by others, and lack of parental or guardian support. This group had an average attendance of 6 youth per session for this reporting period. Low attendance was 2 (in early May) and high attendance was 9 (in July, January, February, and June). Staff noted that attendance spiked when schools were not in session and when special social events were scheduled. Staff addressed the challenge of transportation by utilizing CHD's agency van to pick up and drop off youth for this group. CHD staff also conducted more than 120 one-on-one meetings with youth during this year. This is nearly double that of previous years.

Topics for the Rivertown group included: group development, Pride & Castro field trip, screening of history of LGBTQ+ Pride films, coping with stress, LGBTQ+ representation in media, "Family Dynamics & Personal Boundaries: Choosing to end codependent relationships", positive affirmations, family obligations, suicide awareness "Know the Signs", sadness & mourning, bisexuality awareness & myths, the process of coming out, symptoms of depression, dysphoria, self-care, asking for help, LGBT History Month, peer support, Transgender Day of Remembrance Vigil, gratitude and Thanksgiving, emotional support identification, concerns/stresses relation to holidays, concerns about pharmacological treatments for depression, intentions for 2020, "4 Pillars of Healthy Relationships", LGBTQ+ Black History Icons, trauma, establish telehealth group norms, wellness tips for COVID-19 Shelter-In-Place order, heightened dysphoria during COVID-19, opportunities for changing perspective (opportunity from victimization), confronting friend/re-establishing boundaries (difficult conversations), poetry as creative outlet for emotional expression, queer celebrities and representation in media, LGBTQ+ Pride history and relations to current civil rights protests, Queer Tech Professionals guest speakers.

Component 4: Facilitate one (1) weekly educational support group sessions at Hillview Junior High School, Pittsburg during the school year; totaling at least twenty (20) but not more than twenty-five (25) sessions.

From July 1 through June 30, 2020, Kevin Martin facilitated 19 sessions of youth support groups on the campus of Hillview Junior High School. The number of meetings is just short of our goal of 20 to 25 sessions for the year. This group saw exponential growth during this year, largely due to word of mouth by participants and referrals from school counselors. Staff decided in January to break the group into two separate groups, one with older students that participated last Spring, and one for younger participants, just beginning participation this year. These smaller groups proved to be more effective for staff working with this age group. Average group attendance for this period was 5. Low attendance was 2 (in February) and the high attendance was 9 (in December). This group did not meet during testing weeks, or while the school was closed for recess in October, November, December, May, and June. Staff also conducted more than 61 one-on-one meetings with students during this year.

Participants came to this group primarily through referrals from the school's counseling staff, administrators and teachers, as well as from other service providers working with students at

the school, including: CHD's Project Success program, CHD's Four Corners program, Contra Costa Health Services Mobile Clinic staff, Lincoln Children's Services clinicians, and JFK University clinicians. Staff continued to receive referrals from school staff and students right up to the end of the in-person school year, in March, indicating the high level of need for this population in this area.

Topics covered in this group include: group development, establishing group agreements, identity development, gender versus sexual orientation, bisexuality awareness, supportive tools for coming out, LGBTQ+ terminology, check-ins, instruction manual for parents, LGBTQ+ Black History Icons, Valentines to yourself, LGBTQ+ Women's History Icons, personal stories of coming out.

Research is increasingly showing that junior high is a significant period of heightened bullying, stress and trauma related to gender identity/expression and sexual orientation. Staff believes this is an ideal point to introduce Empowerment's prevention and early intervention supports to help manage stress, mitigate trauma, increase social-emotional supports, connectedness, and life skills, reducing the potential development of serious mental health disorders.

Component 5: Facilitate 16 to 20 twice-monthly youth leadership groups to foster community involvement. These groups meet at Rivertown Resource Center and are held in conjunction with support group meetings discussed in Component 3.

From July 1 through June 30, 2020, the youth leadership group met 9 times, which is below our goal of 16 to 20 sessions for the year. The group met at Rivertown Resource Center at 10th and D Streets and stopped being able to meet after the Shelter-In-Place order was implemented. The average attendance was 5, with 2 being a low (in October) and 7 being a high (in January and February). Consistent attendance to Leadership sessions has been a challenge, so staff is meeting with Leadership around regular Empowerment group meetings at Rivertown Resource Center. This is also exposing more members to Leadership and helping to address challenges associated with jobs, after school schedule conflicts and transportation hurdles, which are also noted challenges for Component 3.

At the time the Shelter-In-Place order was announced, March, staff was preparing to engage two Leadership participants as dedicated Youth Leaders, as was done last year, leading to this not happening this year. Youth Leaders were to be tasked with leading the planning and coordination of our annual LGBTQ+ Youth Pride Prom, throughout April, May, and June, with the support of staff and in collaboration with Rainbow Community Center staff. These Youth Leader were to be given stipends for their work and leadership on this project.

During meetings, Leadership focused on activities to understand principals of leadership, inclusion, and group collaboration. Prior to COVID-19, Leadership began discussing ideas to support and promote our annual LGBTQ+ Youth Pride Prom and our fieldtrip to the Castro

District and GLBT History Museum. CHD staff also conducted 6 individual one-on-one meetings with youth during this period.

Component 6: Facilitate 2 youth-led community service events or fieldtrips to foster community involvement. These events occur in various locations, increasing East Contra Costa County LGBTQ+ youth's knowledge, experience of, and access to a range of surrounding communities, programs, and support services.

This component was planned to be fulfilled in the month of June. However, the COVID-19 Shelter-In-Place order and health guidelines for the county did not allow for this component to be completed. Planned projects and field trips included our annual Youth Pride Prom and annual field trip to the GLBT History Museum and Historical Castro District, in San Francisco. Staff is exploring alternate opportunities for youth led community service events for the upcoming year, such as voter registration efforts, possible campaigns to educate new voters on impacts of political actions on the LGBTQ+ community or exploring the history of civil disobedience protesting.

Component 7: Refer youth to culturally appropriate mental health services on an as needed basis, referral support to a minimum of 15 youth.

Specific referrals for new mental health support were made for 6 youth throughout the year. This number is short of our target of 15 annual referrals, however, all participants were given Safety Phone Lists and repeatedly encourage to reach out to the Contra Costa County Crisis Center, Trevor Project, as well as any current clinical support during times of stress, anxiety and crisis. Direct mental health referrals were made to Lincoln Child Center, John F. Kennedy University, Contra Costa County Mental Health Access Line, Community Violence Solutions, and SEEDS Community Resolution Center. As noted earlier, all Empowerment participants also receive a Safety Phone List with listings for the Contra Costa Crisis Center, Trevor Project, GLBT Youth Talk-line, Rainbow Community Center, Planned Parenthood, Homeless Hotline, Run Away Hotline, Community Violence Solutions, and STAND Against Violence.

It is important to acknowledge that many of Empowerment's participants, as in previous years, were referred to CHD's Empowerment program for additional social-emotional support from other mental health providers. Thus, these participants were already connected and engaged in culturally appropriate mental health services, rendering additional referrals unnecessary.

Component 8: Facilitate community educational outreach/psycho-educational workshops including two (2) per year.

From July 1 through June 30, 2020, Kevin Martin facilitated 1 educational outreach/psycho-educational workshops. This is just short our goal of 2 workshops for the year. Prior to the Shelter-In-Place order, Empowerment staff, in collaboration with RCC's training team had been

in conversations with Pittsburg Unified School District for ongoing trainings for all levels of district staff.

October 14: Kevin co-facilitated an all-day Inclusive Classrooms training for the academic counseling staff of Pittsburg Unified School District (PUSD), at the Pittsburg High School, in collaboration with Rainbow Community Center training staff. Approximately 20 academic and clinical counselors representing all schools in the district, elementary through high school, attended.

**OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, how are participants identified as needing mental health assessment or treatment? List of indicators measured, including how often data was collected and analyzed***

From July 1 through June 30, 2020, staff facilitated 134 educational group sessions, trainings, and Leadership sessions. Information on mental health topics and services comes up “naturally” during the weekly support groups so this is not seen as a “stand alone” component by staff. However, regular, periodic check-ins and occasional one-on-one meetings and assessments are provided when staff identifies possible “red flags”, such as symptoms of anxiety, depression, and suicidal ideation, or youth are distressed. Check-ins and one-on-one meetings are held regularly, since COVID-19. During check-ins and one-on-one meetings, staff always inquires as to youth’s experiences, interest, and willingness to participate in mental health services, outside and in addition to Empowerment’s programming. Staff also periodically administers the Adolescent Mental Health Continuum Short Form (MHC-SF) during one-on-one meetings to help assess need for referral to mental health services. Staff has had 412 individual one-on-one meetings with youth during this year. This is nearly double the number of individual check-ins and one-on-one meetings from last year. The sharp increase in this number is primarily to the Shelter-In-Place order, which, as noted in earlier components, have led to many participants being willing to only engage in one-on-one, non- video, communication with staff, and not wanting to participate in groups via telehealth platforms. Telephone communications and secure video conferencing, via Zoom, are the main forms of delivering telehealth support to participant, since COVID-19.

It is important to note that staff also noticed a sharp decline in participant’s willingness to engage with CHD staff or the Empowerment Program, in any form once the Shelter-In-Place order was implemented. Staff has continued to attempt to make contact and receive updates on disconnected participants through school staff, counselors, family, and friends, to ensure they are aware that Empowerment is still available to them. Some feedback staff has received is that many do not feel safe to engage with Empowerment while at home, due to lack of privacy

and lack of support or acceptance from family. Many of Empowerment’s participants have not shared their identity, or questioning, with their family members.

**LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including how the PEI program: 1) provides encouragement for individuals to access services; and 2) follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

As noted in the previous section, specific referrals for new mental health support were made for six (6) youth during the year. The average length of time between report of symptoms onset and referral for treatment is 5 weeks; 2 entered treatment within 1 week, 1 entered treatment after 4 weeks, due to school closure for Winter recess, 2 unknowns as staff was not able to follow up with them and one did not enter treatment after referral. The methodologies used during treatment are generally unknown to Empowerment staff, as Empowerment staff does not provide therapy, and all mental health referrals are made to external providers.

Also noted previously, all Empowerment participants receive an emergency services “Safety Phone List”, including contact information for CHD’s Empowerment Program, Contra Costa Crisis Center, The Trevor Project, Planned Parenthood, Community Violence Solutions, STAND Against Violence, Runaway Hotline, Homeless Hotline, as well as having space to add information for trusted adults and friends. Additional referrals and linkages are provided as needed, and upon participant assent. Direct linkages are made via phone, fax or in person, such as during Care Team, or COST meetings at school sites.

General encouragement of all participants to seek services that could be of support to them is continual during all group sessions. Specific and direct encouragement and referrals are offered to participants during one-on-one check-ins and assessments by Empowerment staff. Staff administers the Adolescent Mental Health Continuum Short Form (MHC-SF) periodically during one-on-one meetings to help assess need for referral to mental health services.

Empowerment staff follows up, verbally, with participants regarding referrals to external services on a weekly basis until participant successfully engages in services, or no longer wishes to engage services. The current average length of time between referral and entry into treatment is 2 weeks.

**DEMOGRAPHIC DATA:**  *Not Applicable (Using County form)*

Please refer to Aggregate Data Reporting Form

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Empowerment, like CHD, has a history of employing staff and volunteers that represent, and frequently are a member the communities they are employed to represent, embracing diversity in the greatest sense of the word as a fundamental principal of all our agency's work. Desiring to unleash human potential CHD and Empowerment foster an environment of inclusion by encouraging diversity of perspective and opinion, valuing the importance of lived experience as highly as formal education and professional training. CHD staff frequently support other staff, by sharing their unique perspectives and professional expertise. Empowerment staff has often acknowledged its participants educate the staff as much as staff educate participants. Staff also take part in multiple trainings, workshops, coalitions, and other forums throughout the year to stay up to date on issues, research, terminology, laws, diverse perspectives, etc. relevant to the highly diverse LGBTQ+ youth community in East Contra Costa County, incorporating what they learn into the support and education provided to throughout the Empowerment Program.

Empowerment also endeavors to make its support services as accessible as possible to our target population in multiple ways. Number one, Empowerment is free of charge to all its participants, to eliminate financial barriers. Number two, Empowerment recognizes that transportation, in general, for youth, and especially in the East part of Contra Costa County is a significant barrier. Due to this, Empowerment has sought to provide support groups in various locations, that will still provide safe and confidential meeting spaces, to permit access to as many LGBTQ+ youth as possible. We currently have offer support groups at one Junior High School, two High Schools, and a centrally located "drop-in" location throughout Pittsburg and Antioch. We currently support youth residing in Pittsburg, Antioch, Oakley, Brentwood, and Discovery Bay. And, number three, fostering an environment and feeling of welcoming inclusion, non-judgement, empathy, honesty, and confidentiality.

Our staff understands and openly acknowledges that the Empowerment Program does not have the capacity to meet all the needs of every person who enters our program, but we always strive to actively listen and empathize with the needs and experiences of all who come our way, so that we can support linkage to other culturally appropriate services, when their needs fall outside our scope of work and capacity. We believe, we do not need to have all the solutions to be able to support someone on their path to finding what they need.

## **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Empowerment staff maintains many long-standing collaborative relationships, as references in all earlier components. Our relationships with Pittsburg Unified School District, specifically Pittsburg High School, Hillview Junior High School, as well as Deer Valley High School and Rivertown Resource Center, in Antioch allow us to provide training, education, confidential support, direct referrals and wrap around support to participants and those connected to them in safe, welcoming, and confidential environments.

Staff also maintains collaborative relationships with a variety of mental health and other support service providers for direct referral and wrap around support, such as: Contra Costa Behavioral Health Service, Lincoln Child Center, SEEDS Community Resolution Services, John F. Kennedy University Counseling Services, STAND for Families Against Violence, Community Violence Solutions, Family Purpose, Contra Costa Health Services (mobile clinics), as well as several individual licensed clinicians.

Empowerment staff also continues to foster a multifaceted collaborative relationship with Rainbow Community Center (RCC). Empowerment often collaborate with RCC's youth program to organize a variety of educational and social events for LGBTQ+ youth in Central and East Contra Costa County. Our staff also collaborate to provide training opportunities to other organizations, such as Pittsburg Unified School District. Our staff is active with the Inclusive Coalition, headed by RCC staff. RCC has historically been a culturally appropriate provider of clinical services, including individual and family therapy, case management and wrap around support for Empowerment participants. Our staff are also, currently, facilitating combined youth support groups (one time per month, since May 2020) to support linkage to both agency's support services and expand peer support for participants.

## **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non- stigmatizing and non-discriminatory?***

Empowerment is a social-emotional and educational support program for LGBTQ+ youth, ages 13 to 20, in East Contra Costa County, which is a highly diverse community regarding ethnic makeup and socio-economic status, with large percentages of LatinX, black, and low- income families. Youth enter the program through referrals from self, peers, family, school staff, and other service providers. Staff works diligently to create safe, welcoming, empathetic,

confidential spaces for all who attend Empowerment. This is facilitated by the development of group norms, which all attendees agree to adhere to. During groups and during one-on-one sessions youth work to identify and process challenges and struggles they face, then identify and develop internal strengths, coping mechanisms and tools for building resiliency to work through challenges, with the support and encouragement of Empowerment staff and peers. Through this process, when youth are identified to need or would benefit from support services outside the capacities of Empowerment Program, referrals and linkages are made to other culturally appropriate service providers.

All youth in Empowerment are treated with respect as individuals, and staff makes a concerted effort to do so without bias or judgment. As noted earlier, staff also take part in multiple trainings, workshops, coalitions, and other forums, including clinical supervision, throughout the year to stay up to date on issues, research, terminology, laws, possible bias, diverse perspectives, etc. relevant to the highly diverse LGBTQ+ youth community in East Contra Costa County, incorporating what they learn into the support and education provided to throughout the Empowerment Program. All LGBTQ+ youth, ages 13-20, and their heterosexual friends are welcome to join Empowerment's groups and their level of participation is completely voluntary. We believe that the diversity of our participants is an indication of our success in this endeavor, however, we are always striving to do better.

In Empowerment, LGBTQ+ youth are engaged in discussions of topics, workshops and activities that are common to the broader LGBTQ+ community, such as: identity development, the process of coming out, rejection and fear of rejection, isolation, harassment, bullying, discrimination, anxiety, depression, suicidality, healthy relationships, relationship violence, community development and engagement, leadership and activism, physical, mental, and sexual health, and safety.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

It is not an uncommon experience for staff to hear participants and parents/guardians indicated that Empowerment Program is the only source of positive support participants are able to identify, from time to time; especially during times of mental, or emotional struggle related to their identity. This year, staff asked participants to share their personal experiences with Empowerment Program. Here are a couple of their responses:

“Empowerment is a confidential group that is there to help those who don't have emotional support. A couple years ago I was going through a lot and I didn't have anyone to talk to, it felt as if the doors were closed, but once I came to high school and found out about Empowerment

everything changed. During this time, I had come out to my family as bisexual, and everything was bad. As soon as I began to be part of Empowerment everything changed. I began to have the help I needed and the support. During group meetings I felt welcomed and able to be and express my true self without judgement. Empowerment helped me become a stronger version of me. I learned how to cope with emotions a lot better and if it wasn't for Empowerment, I honestly don't know where I would be right now." VCG (17)

"My experience with Empowerment has been one of the greatest so far. This program has helped me in so many ways that most people haven't been able to. Before this program I was insecure about who I was and I was scared to be who I truly am around others, but thanks to my advisor and the help of my peers I was able to overcome my obstacles and I am now free to express myself and be the person I always wanted to be. When life presents a new problem, I know I can always count on my advisor and group because we all strive to help each other, be positive and find solutions to difficult problems. Also, when someone new joins this program, in my experience, everyone was welcoming, and the members were some of the most positive and fun people to be around and they never put anyone down. I highly encourage those who are thinking about joining the group to take advantage of this amazing opportunity." RHV (17)

It is notable that both VCG and RHV are long-term (more than one year) school-based participants of Empowerment Program. They were referred to Empowerment by school staff, each received referrals linking them to additional support services (both school and community based) in conjunction with Empowerment support groups, and this year successfully graduated from high school with healthy goals for their futures. Historically, this has been a common trajectory for most Empowerment Program participants who have not changed schools or relocated making accessing Empowerment support groups impossible.

PEI ANNUAL REPORTING FORM

**OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS REPORTING FORM FISCAL YEAR: 2019 - 2020**

**Agency/Program Name: Child Abuse Prevention Council/Nurturing Parenting Program Reporting**

**PEI STRATEGIES:**

***Please check all strategies that your program employs:***

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations X Use strategies that are non-stigmatizing and non-discriminatory**

**SERVICES PROVIDED / STRATEGIES:**

***Please describe the services you provided in the past reporting period. Please include qualitative and quantitative data depicting: 1) the types and settings of potential responders you reached during the past reporting period; 2) methods used to reach out and engage potential responders; 3) any strategies utilized to provide access and linkage to treatment, and 4) strategies utilized to improve timely access to services for underserved populations.***

During the first semester of The Nurturing Parenting Program a total of 44 parents and 45 children enrolled in the program. A total of 29 parent and 36 children completed and graduated from the NPP successfully. Fifteen parents attended a couple of sessions and dropped out due to scheduling challenges, parents were invited to return when time allows. The first session of the Nurturing Parenting Program, operated as planned and parents expressed gratitude for this type of program, which offered 20 in person sessions and followed curriculum as projected at the beginning of the Fiscal Year. During the second semester of The Nurturing Parenting Program (NPP) a total of 41 parents and 39 children enrolled in both regions (Central and East County). A total of 31 parents completed and graduated from the program despite the many challenges faced during the COVID-19 Shelter in Place, the remaining shared they were experiencing other challenges and dropped out prior to Pandemic The Child Abuse Prevention Council (CAPC) reached out to the Latino community in Central and East County offering The Nurturing Parenting Program (NPP) starting in January, ending June 2020. Parents and their children enrolled to participate in the 20-week parenting education program offered in the evening at Vintage Parkway Elementary School in East County and at the Concord First 5 Center in Central County. NPP collaborated with community-based agencies and school districts such as First 5 Center, Head Start, WIC, Antioch Unified and Oakley Elementary School District to

promote this program. Parents enrolled in the NPP reported that hearing other parents' opinion and comments about this program motivated them to enroll. CAPC staff \*planned for 20 consecutive weeks following the fidelity of the NPP evidence-based curriculum to increase parenting skills, decrease isolation within this population, decrease stigma related to accessing mental health services for self and/or child.

*\*Sessions were interrupted March 16<sup>th</sup> and resumed via zoom/phone April 16<sup>th</sup> following County Health Department orders.*

The Nurturing Parenting Program has faced and overcome many challenges in the past 12 years of serving our communities, and this year has by far being the most challenges. As Shelter-In-Place orders were given our NPP team started working remotely and following direction from our Executive Director, the team was able to adjust our services to continue implementing the program. The NPP staff modified sessions to meet parents needs as the pandemic continue to bring many other challenges for our nation. Staff offered resources to families who lost their jobs, linked parents to internet access and guided them on how to start using zoom to stay connected. During the first two weeks of shelter in place, staff reached parents by phone (more than once a week) to check in and keep them informed. As our communities experienced changes rapidly CAPC offered staff two-week sick leave to emotionally and logistically adjust to the changes we were facing. CAPC provided staff with support and guidance to ensure providers were ready to continue supporting our program participants and linked them to the resources families needed. CAPC resumed sessions via zoom; parents reported feelings "emotionally connected" to the group and appreciated CAPC for "not abandoning them" (as reported by parents).

The Nurturing Parenting Program not only tailored the curriculum to meet parents' needs during the shelter in place, but it also allowed a safe space for parents to express their emotions as their "normal" lifestyle changed and families were spending every day, every hour of the day together (some in very closed quarters and some sharing housing with other family members or friends).

The NPP team was able to continue lessons and utilizing program materials as suggested by curriculum and encouraged parents to use time to implement with their children creating an opportunity to bond and build a stronger relationship with their children whenever possible. CAPC utilized funding to provide meal baskets to families enrolled in the program, providing ingredients and instructions for families to prepare one meal per week as a family and eat together as a family (as suggested by the curriculum).

CAPC offered a safe space for parents to share areas of concerns as they parent their children in very unusual times, parents shared their fears and frustrations of losing patience. Staff discussed creative ways to support parents and monitor any signs of possible abuse or neglect

happening in the home without pushing parents away. The NPP team implemented a “drive by” date to deliver meal baskets and materials with information on accessing community resources to decrease uncertainty and find support in many different areas of needs as discussed during zoom sessions.

Parents received the Surviving Parenthood Resource Guide to facilitate access to community based

organizations providing a wide variety of services at no cost or sliding scale as an effort to encourage parents to connect and explore preventive/intervention programs, in addition NPP offered flyers and other contact information to facilitate families access to services. NPP staff offered guidance on how to access Mental Health support, crisis intervention, EDD services, food banks, low cost, housing, internee support and many others.

To keep a sense of “normalcy” NPP staff continue our program as planned by sharing information and psychoeducation to help identify mental health/behavioral challenges that may need professional support. NPP kept one of the three session with the collaboration of Dr. Hector Rivera-Lopez. Dr. Rivera who has experience working with the Latino community in Contra Costa County offers participants an opportunity to identify possible behavioral/mental health needs that in the past were perceived as just “part of their cultural beliefs” and enhances “how to care for the caregiver” promoting self-care to increase emotional availability for parents caring for their children and decrease the risk of child abuse.

The NPP supervisor not only oversees sessions, but she also offers direct services to help parents feel more comfortable and confident when accessing resources. NPP evaluates each family to offer linkages to the appropriate resources. At the end of the program the NPP staff meets to discuss observations and brainstorm ideas to continue serving our community.

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services. Include a list of indicators measured, how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served.***

The Nurturing Parenting Program offered two 20-week sessions starting in July 2019, ending in June 2020. Parents were administered the evaluation tool AAPI “A” at the beginning of the program and AAPI “B” at completion of each program. Results of the AAPI forms are entered in a password protected data base (Assessing Parenting) which analyzes the results and provides a chart reflecting variation of participants starting and ending the program. Upon completion of the program, staff reviews the results which reflect areas of improvement and measures the “risk” of child abuse and neglect in the home. In the event parents score as “high risk”, an invitation is offered to the family to participate in the program one more time as well as offer

additional resources to address their needs. All data entered in the Assessing Parenting site is password protected and only authorized personnel has access to these records.

The Nurturing Parenting Program focuses and encourages participants in developing skills along five domains of parenting: age-appropriate expectations; empathy, bonding/attachment; non-violent discipline; self-awareness and self-worth and empowerment, autonomy, and independence.

Responses to the AAPI provide an index of risk in five parenting constructs:

A - Appropriate Expectations of Children. Understands growth and development. Children can exhibit normal developmental behaviors. Self-concept as a caregiver and provider is positive. Tends to be supportive of children.

B – High Level of Empathy. Understands and values children’s needs. Children can display normal developmental behaviors. Nurture children and encourage growth. Communicates with children. Recognizes feelings of children.

C – Discipline/ VALUES ALTERNATIVES TO CORPORAL PUNISHMENT Understands alternatives to physical force. Utilizes alternatives to corporal punishment. Tends to be democratic in rule making. Rules for family, not just for children. Tends to have respect for children and their needs. Values mutual parent-child relationship.

D - APPROPRIATE FAMILY ROLES tends to have needs met appropriately. Finds comfort, support, companionship from peers. Children can express developmental needs. Takes ownership of behavior. Tends to feel worthwhile as a person, good awareness of self.

E - VALUES POWER-INDEPENDENCE Places high-value on children’s ability to problem solve. Encourages children to express views but expects cooperation. Empowers children to make good choices.

These five parenting constructs enhance **the Five Protective Factors** that replace risk of abusive behavior with positive parenting skills.

The Five Protective Factors are the foundation of the Strengthen Families Approach: Parental resilience, social connections, concrete support in times of need, knowledge of parenting and child development, and social and emotional competence of children.

Inventory A and B are given to parents at the beginning of the session and at the end. Result per group. Central & East County

**AAPI Results Session 1& 2 East County**

<i>Construct</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>Form A</i>	6.19	6.06	5.75	8.00	6.25
<i>Form B</i>	7.20	8.00	8.20	7.30	6.90
<i>Construct</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>Form A</i>	6.57	6.43	7.00	7.71	6.86
<i>Form B</i>	6.67	8.67	9.50	8.67	7.67

**AAPI Results Session 1 & 2 Central County**

<i>Construct</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>Form A</i>	6.89	6.44	5.22	8.11	5.78
<i>Form B</i>	7.40	8.40	8.00	8.80	6.00
<i>Construct</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>Form A</i>	7.09	6.91	6.00	8.09	5.91
<i>Form B</i>	7.33	8.67	9.00	9.67	8.00

Scale 1 – 10 (Higher the score, lower the risk).

**DEMOGRAPHIC DATA:**  Not Applicable (*Using County form*)

***If your agency has elected to not utilize the County Demographics Form AND have chosen to not collect specific demographic domains (i.e., Veteran Status, Disability, etc.), please provide justification.***

Form attached

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

As the world faces the Pandemic, CAPC learned not only the importance of helping others but also the importance of supporting our staff. The population which we served is the most vulnerable and its crucial for us at CAPC to be informed and keep ongoing collaboration with our County as we offer this important service to families who many times feel overwhelmed.

The Pandemic has presented many challenges for us as staff, and we have met regularly to modify our approach and ensure we are taking care of our own Mental Health as we support others. Families have reached out and have opened sharing their fears of COVID-19 and to the unknown of “what comes next”. In the mist of all the confusion and frustration our team has continued building bridges between families and community services. We have found the importance of offering psychoeducation to increase awareness and teach parents to monitor themselves as well as their children. Staff utilizes a cultural approach to help them feel comfortable discussing issues parents identify as “triggers” of stress in their daily life. This program offers a safe place for families. We also value importance of identifying our own challenges to support parents in a timely manner and help manage our mental health decreasing the risk of emotional fatigue which has been at a higher level since the Shelter-In-Place and as we go on dealing with the Pandemic. Staff has met several times to brainstorm ideas on how to manage emotional / zoom fatigue and to address the emotional needs parents are experiencing while maintaining the fidelity of the Nurturing Parenting curriculum.

The CAPC Director and The Nurturing Parenting Program Supervisor continue to meet regularly to discuss program outcomes, challenges and to ensure staff offering direct services receive support and guidance thought out the course of the session.

The Child Abuse Prevention Council staff agreed to continue being proactive in finding resources for the Latino community who has reported challenges accessing mental health services that are culturally appropriate. Staff has learned of challenges parents are facing in trying to connect adults to mental health resources. To support this need staff has worked with

parents by linking them to resources as they wait for clinicians to be open to new clients. CAPC links parents to support groups in their area creating opportunity for families to connect with families in their own neighborhood. CAPC strongly believes in building community connections to increase children's safety. Staff recognizes the areas in which they can help in building bridges to connect the underserved population to the services much needed.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

CAPC values parents' feedback to help us learn how to improve our program. During this Fiscal Year parents shared several points; please see below.

"When I received the meal basket with ingredients and instructions to cook, I felt someone cared for ME, and prepared this basket for me and my family, this made me feel happy and brought a smile to my day"

"Being able to continue the NPP gave me hope and helped me not feel alone"

"During this time of Shelter-In-Place my family and I have had many challenges, being able to continue participating in the NPP has helped me keep moving forward"

"The NPP team has given me resources to access support that our family much needed"

#### **A father's Story**

Growing up in a family where role models are present and absent at the same time. Father grew up in a family where children are told what to do and are not heard. Father shared he is a father of 5 children and that in his younger year he made many mistakes; mistakes which helped him realized he wasn't doing things the right way.... And what is the right way? Father asked himself many times. Father enrolled in the Nurturing Parenting Class January 2020. In his search for help to become a "better" father and be the father and role model he didn't have. Father shared having a difficult childhood, as his parents provided the essential to survive but he lacked the attention and guidance he much needed. During his adolescence he made poor choices which led him to lose control of his life, and the loss of loved ones including his children. After finding himself alone and without his children he started to make changes. Father shared he found a church which opened its doors and provided the emotional support he much needed at that time. Father then felt the need to do more for his children, especially for a 13-year-old boy with special needs who has been removed from the mother's home and is currently living in a group home. Father decided to try the Nurturing Parenting to explore his options.

Father enrolled in this program and didn't miss a session; many times, came straight from work. Often apologized for not coming to class "presentable" as he would be wearing work clothing after a long day of labor. We couldn't help but be amazed by his interest to learn and his questions and comments about what parenting is all about. He interacted with other parents and his curiosity helped him learn new ways and strategies to connect with his children. Father explained he never imagine how much he missed by not "being there" for his children and how now he is enjoying each minute of the time he gets with his kids. "It hasn't been easy", Father says. As we transition to the zoom meetings due to Shelter-In-Place orders, Father continued connecting despite the many challenges he had learning how to use technology. Father explained he has more skills and strategies to parent his children; Father now believes in his potential to be a father and is determined to continue growing as a father.

Father completed the program and has requested CAPC to allow him to continue attending the Nurturing Parenting Program. Father's scores are impressive, the AAPI pre and post inventories show his curiosity has paid off. CAPC will continue to offer support and guidance he requested to continue fighting to reunite with his 13-year-old son. Father shared his past has put him in this situation and he is not giving up, after learning the importance of being a father he is now ready to be the role model he did not have as a child. His 13-year-old might be soon be place up for adoption, and Father is asking for a second chance. CAPC linked Father to Nami, Access Line and other resources to help him continue learning about his child's disability and become familiar with the support needed it to care for him. Father's journey may not end where he would like, but he believes it's all worth it. This is a Father's journey, and we wish the best for him and his son.

## PEI ANNUAL REPORTING FORM

### SUICIDE PREVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Contra Costa Crisis Center

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

Provided active listening, emotional support, and referrals to resources on our 24-hour mental health crisis lines via phone for all local and toll-free hotlines. Crisis text services are also provided 24-hours a day. Lines are answered in English and Spanish, and we have access to the Language Line interpreter services in 240 languages.

Provided callers linkage to mental health services through referrals and warm transfers as appropriate for each call.

Provided supervision, silent monitoring, and consultation for all staff and volunteers in a manner that meets national industry standards and American Association of Suicidology accreditation.

Provided our 54+ hour call center training for new call center staff and volunteers several times throughout the year which included both a classroom education component and one-on-one mentorship with on-the-job skills training.

Provided professional development training and monthly in-services for staff and volunteers throughout the year regarding exploring unconscious bias, ACES trauma training, and increasing our cultural awareness, sensitivity and skills when working with families, youth, children with special needs, and veterans.

Provided trainings for service providers throughout Contra Costa County on the warning signs of suicide, suicide risk assessment, and cultural competency and awareness when assessing for

suicide risk. Trainings were also conducted for agency partners on our agency services, grief & loss, and utilizing our 211 Resource Database.

Liaised with the county coroner's office to provide referrals for grieving survivors as well as collected up to date data of county suicide statistics.

Continued co-chair responsibilities with MHPA for the monthly Suicide Prevention Committee.

Hosted an "International Survivor Day" with American Foundation for Suicide Prevention (AFSP) at John Muir Hospital to provide support to survivors of suicide loss and to promote suicide prevention awareness.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, please detail any methods used in evaluating change in attitudes, knowledge and/or behavior, and include frequency of measurement How have your selected methods proven successful? Please reference any evidence-based, promising practice or community practice standards used, as well as how fidelity to the practices have been ensured.***

We upgraded to an advanced web-based phone system software in July 2019, allowing for remote work in case of a disaster, and increased the accuracy of our calls answered, average speed to answer (in seconds), and abandonment rate measurements.

Due to the COVID-19 Shelter-In-Place county orders beginning March 2020, we conducted all meetings and trainings virtually via Zoom or Microsoft Teams. Calls to our 24-hour crisis lines continued without interruption with staff and volunteers working either in the office or remotely. We created Social Distancing Protocols and implemented Remote Work Policies. We experienced an unprecedented increase in total call volume starting in March 2020 with callers needing referrals for health, food, housing, and financial assistance as well as experiencing feelings of high anxiety and stress.

A suicide risk assessment continues to be conducted for every crisis and suicide call. Methods of intervention and lethality assessment are done in accordance with industry standards set by the American Association of Suicidology (AAS). Monitoring of the calls and call record data indicates that fidelity to the model is being well maintained.

Confidentiality - Our policies (HIPAA and clinical license standards informed) ensure confidentiality – including use of technology, storage of records, destruction of records, subpoena response, record keeping, report writing, and (non)use of identifying client information on server.

Competency – Our supervision is informed by ongoing in-service trainings and professional development opportunities regarding multiple populations and social issues. Our staff and volunteers are diverse regarding country of origin, languages spoken, culture, gender, religion, sexual orientation, and socio-economic class.

Core Values- Our core values of compassion, integrity, inclusion, accessibility, and collaboration along with continuous cultural competency development is written, spoken, and practiced. Our policies, protocols, and office environment support these values.

**DEMOGRAPHIC DATA: x Not Applicable (Using County form)**

*Please refer to Aggregate Data Reporting Form*

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

We provided professional development training and monthly in-services for staff and volunteers throughout the year regarding exploring unconscious bias, ACES trauma training, and increasing our cultural awareness, sensitivity and skills when working with families, youth, children with special needs, and veterans. We have planned and organized team bonding activities and events for staff and volunteers to help develop teamwork, cohesiveness, and a cultural of trust (agency luncheons, potlucks, baseball games, hikes, etc.).

We are active participants in meetings that strive to improve cultural sensitivity, awareness, and education to better serve our clients such as CPAW, Historically Marginalized Communities, Special Needs Committee, and the Reducing Health Disparities Meetings.

We maintain a feedback box in our front lobby for staff, volunteer, and clients, as well as gather feedback and evaluation surveys at the conclusion of every training and grief support group we provide.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

We provide professional trainings for the community and partner agencies on utilizing our 211 Resource Database, Suicide Prevention & Intervention, and Grief & Loss.

We attend collaborative meetings throughout the county to build our partner relationships and better serve the clients on the crisis lines, which include:

- BASCIA (Bay Area Suicide & Crisis Intervention Alliance)
- Child Death Review Team
- CPAW
- East Contra Costa Networking Meeting
- ECPIC (Early Childhood Prevention & Intervention)
- Fetal Infant Mortality Review Team
- Historically Marginalized Communities
- Human Services Alliance
- NSPL- Local Veteran Suicide Prevention Coordinator
- PEI (Prevention & Early Intervention)
- Reducing Health Disparities Meeting
- San Ramon Valley Mental Health Advisory Council Meeting
- Special Needs Committee Meeting
- Suicide Prevention Committee (Co-chair)
- System of Care Committee
- Volunteer Organizations Active in Disaster (Chair)
- West Contra Costa Networking Meeting

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Our services are designed based on the belief that emotional support can make huge difference in a caller's ability to self-manage and minimize psychiatric hospitalization (5150) visits when the support is available any time it is needed 24/7/365. We believe every person has a basic right to assistance in life-threatening or other crisis situations. Our mission is to keep people alive and safe, help them through crises, and provide or connect them with culturally relevant resources in the community. Our vision is that people of all cultures and ethnicities in Contra Costa County are in a safe place emotionally and physically. Every resource in our 211 Resource Database is vetted, maintained, and up-to-date and is accessible for agencies partners and members of the community to use throughout the county free of charge.

The Contra Costa Crisis Center holds the following core values:

- Compassion: We are driven by a desire to alleviate the emotional pain, distress, and needs of our clients.
- Integrity: We respect and honor our colleagues and clients through trustworthy actions.

- Inclusion: We affirm the value of differing perspectives and are committed to representation from, and service to, all members of our diverse community.
- Accessibility: We believe that people in need should be able to get help 24/7.
- Collaboration: We are committed to developing strong, lasting partnerships with community members to achieve common goals.

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Call Record #428117

The caller was a 28-year-old black male, in imminent risk at the beginning of the call. He immediately shared with the call specialist that he had a knife, has been trying to stab himself, and is bleeding. The call specialist quickly developed rapport with the caller and asked him to put the knife away out of reach while they were talking. He was agreeable and stated that he needed emergency services and needed to go to the hospital right away. Necessary information was collected for emergency services and a second call specialist contacted Pittsburg Police department.

While waiting for the police, the call specialist remained on the phone line to maintain the connection and keep the caller safe. The caller has had thoughts of suicide since he was a child, had two past attempts, and currently stabbing himself due to his suicidal ideation. His past two attempts have been to try to shoot himself and to overdose on Meth. He stated that he has not told his counselor about the past attempts, or the "voice in his head is always really loud," or that he gets headaches and cannot sleep. He has been homeless for 8 years. He comes from a family with five sisters and his father recently died.

The call specialist remained on the line until police arrived at his home providing active listening and emotional support. The caller consented to a follow-up call in four days when he hopes to return from the hospital. He was reminded that he can call or text the crisis lines 24/7 for emotional support.

Follow Up: Three separate attempts were made to follow up with the caller. Caller is doing well following his hospitalization and has been in contact with the Homeless Coordinated Outreach Referral & Engagement team (CORE) regarding a motel room through Project Roomkey during COVID-19.

## PEI ANNUAL REPORTING FORM

### OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS REPORTING FORM FISCAL YEAR: 19-20

Agency/Program Name: COPE

#### PEI STRATEGIES:

*Please check all strategies that your program employs:*

**XX** Provide access and linkage to mental health care

**XX** Improve timely access to mental health services for underserved populations

**XX** Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

##### Program Quality and Standards

COPE completed all provisions of this contract.

COPE ensured that program activities were provided by accredited Triple P qualified staff and focused on parents and/or guardians, expectant parents of children from birth through age 18, and/or early childhood educators of children from birth through age 5.

COPE provided twenty-one (21) Triple P Positive Parenting Group classes and seminars to groups in West, Central and East Contra Costa County. COPE enrolled 235 individuals in these classes and seminars.

##### Trainers

This year we provided a Family Transitions Triple P training program and accredited 18 practitioners. Clinical interns were provided pre-accreditation training through assisting accredited Triple P practitioners in their classes.

##### Enrollment

COPE enrolled 235 client family members in Triple P Parenting classes during the fiscal year.

COPE provided case management services for families who asked for additional resources. Additionally, if a parent's assessment indicated a concern, the participant was contacted to

determine if additional community support was needed. Where appropriate, referrals were made for additional mental health services.

Demographic information noted below.

Programs and Outreach

Parenting Classes: We delivered 20 classes and 1 seminar series throughout the county at various times and convenient locations to accommodate transportation barriers. C.O.P.E. provided classes in English and Spanish in East, West and Central County.

Settings of Potential Responders for the 2019-20 FY included elementary, junior, and high schools, early education centers, homeless shelters and community-based organizations.

Below is a list of class site locations for Triple P:

<b><u>MHSA Triple P Site Locations</u></b>
C.O.P.E. Family Support Center – Central County
Family Justice Center – Central County
Contra Costa County Juvenile Hall
Family Justice Center- East County
Concord Veterans Center
Black Diamond High School
Hillview Jr High
Martin Luther King Jr. High School
Murwood- Walnut Creek
Ranchos Medanos Jr. High School

We utilized the services of our Clinical interns to address the needs of parents and families with more intensive challenges. Clinical interns are invited to assist accredited Triple P practitioners in the Triple P classes, providing client support and administrative aid.

COPE recorded how parenting classes have supported parents in developing a more positive relationship with their child through vignettes and testimonies. See report below

## Outreach

COPE attended the following SARB meetings:

- County Office of Education, Antioch/Acalanes/Pittsburg/Martinez//Walnut Creek Unified School Districts.

COPE attended Parent Truancy Court bi-monthly to promote Triple P System to the courts and outreach to at risk parents with children in Contra Costa County.

COPE provided:

- Case management services for parents interested in or attending Triple P to provide additional supports and linkages.
- Warm-handoff referrals to community resources such as housing, job training and placement, food banks and family law centers, HMG-First 5 Centers.
- Collaboration between staff and a 'point person' at each agency to ensure timely access to resources.
- Evaluations and individual parent consultation for Triple P participants scoring above the clinical-cutoff range in any pre-assessment (DASS, Parenting Scale, ECBI, Conflict Behavior), providing resources as needed.

## Data Collection and Tracking

COPE collected data using pre and post assessments in all classes. Data was entered in the ETO system with individual and class results provided to facilitators and participants.

## Program Monitoring and Evaluation

COPE worked with Sarah Burke to maintain a secure database containing assessment data for all classes.

COPE maintained quality assessment through regular check-ins by the program manager with the practitioners, weekly review of class checklist and periodic auditing of classes.

Site visit has not been scheduled at this time.

## Reporting

C.O.P.E. submitted a report at the half year point on January 15, 2020 and will submit this report by September 15, 2020. Monthly reports are also submitted on Persimmony.

## **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services.***

***Numbers served during the fiscal year***

- 235 individuals enrolled in Triple P classes in MHSA funded programs in Contra Costa County for the 2019-2020 Fiscal Year.
- 46% of participants identified as Hispanic/Latino/a; 22% identified as Caucasian; 6% identified as More than One Race/Ethnicity; 15% identified as African American; 11% identified as Asian
- 43% of participants reported household income below the California state poverty level
- 12% of participants reported completing at least two years of college (or more)
- Additional Demographic information below depicts the types of potential responders and is organized by Ethnicity, Gender, Language, Age, Education, and Income.

***Describe any adaptation of services due to COVID-19 that may be relevant***

- Beginning in Mid-March 2020, COPE moved all Triple P classes to online using the Zoom video conferencing platform.
- All assessments were recreated on Google Forms to allow participants to complete the assessments on their personal devices (smart phone, tablet, or computer).
- Practitioners followed up with participants by phone to assist them with completing the forms and worked with participants in accessing classes through Zoom.
- Group session times, in some cases, were reduced to one hour and a half and practitioners made additional one-on-one phone calls to the participants.
- Practitioners had to spend additional time assisting participants in how to use the online meeting platform.

***For PEI - Early Intervention programs, please describe:***

*Triple P-* Positive Parenting Program *is a* multi-level system of family intervention for parents of children who have or are at risk of developing behavior problems. It is a preventively oriented program which aims to promote positive, caring relationships between parents and their children, and to help parents develop effective management strategies for dealing with a variety of childhood behavior problems and common developmental issues.

**PROGRAM OBJECTIVES:**

- Increase parents' competence in managing common behavior problems and developmental issues
- Reduce parents' use of coercive and punitive methods of discipline
- Improve parents' communication about parenting issues
- Reduce parenting stress associated with raising children

**PRINCIPLES OF TRIPLE P**

- Having a safe and interesting environment

- Having a positive learning environment
- Using assertive discipline
- Having realistic expectations
- Taking care of yourself

***Which mental illness(es) were potentially early onset?***

Our Triple P Practitioners are not clinicians qualified to diagnose mental illness. Every participant is administered the DASS assessment which measures for symptoms of depression, anxiety, and stress in adults.

***How participant’s early onset of a potentially serious mental illness was determined***

All participants were provided the Depression Anxiety Stress Scale as part of the pre and post assessments. Participants who scored above the clinic cutoff on the DASS pre or post assessment for depression, anxiety or stress were contacted individually and referred as necessary to community resources for additional support and services.

***List of indicators and data that measured reduction of negative outcomes.***

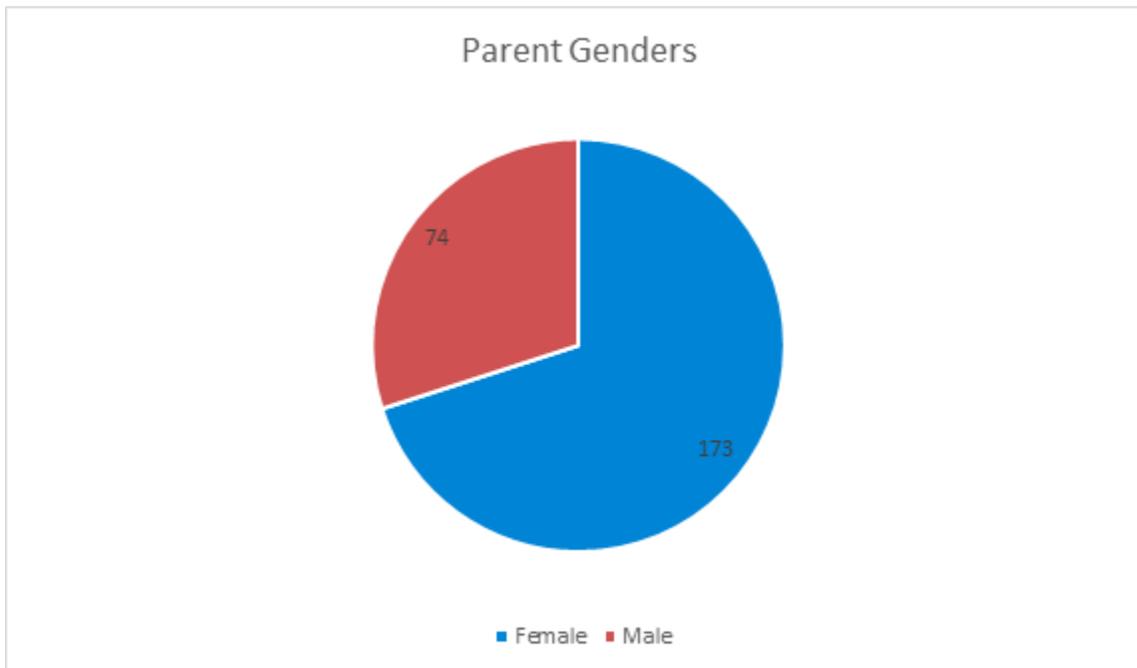
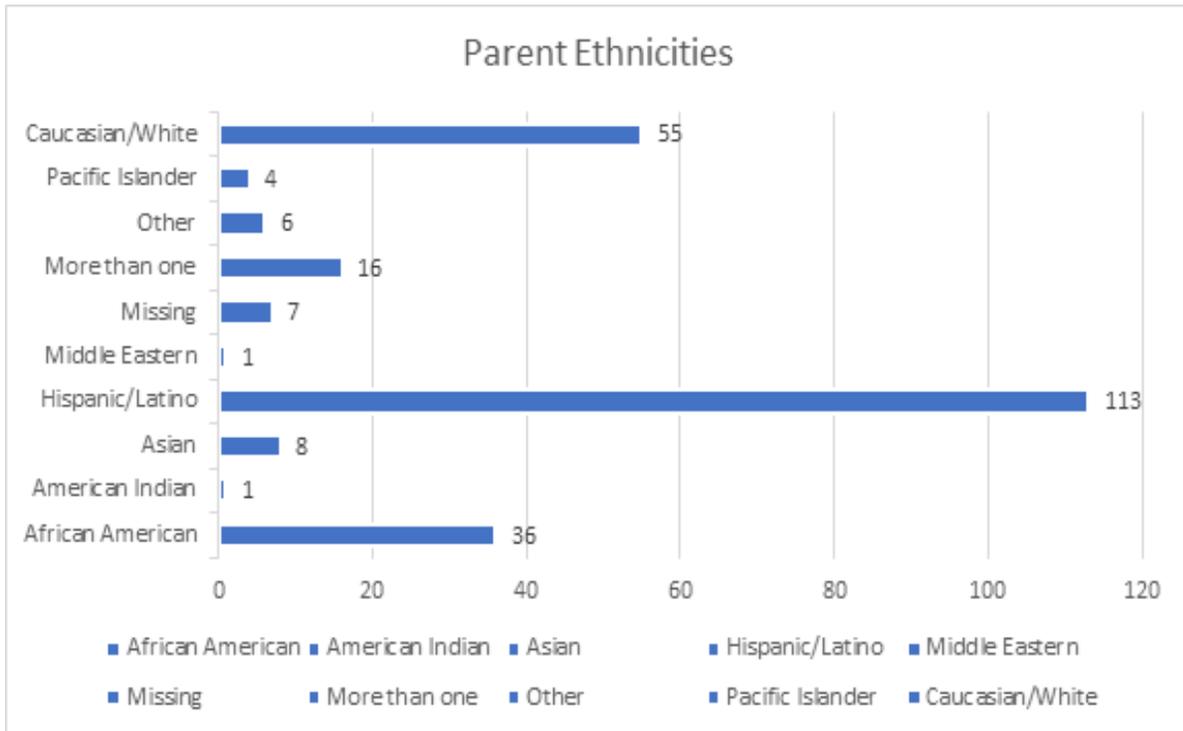
Pre and Post Assessments are completed by all Triple P participants. These assessments are the Parenting Scale, Eyberg Child Behavior Inventory and the DASS

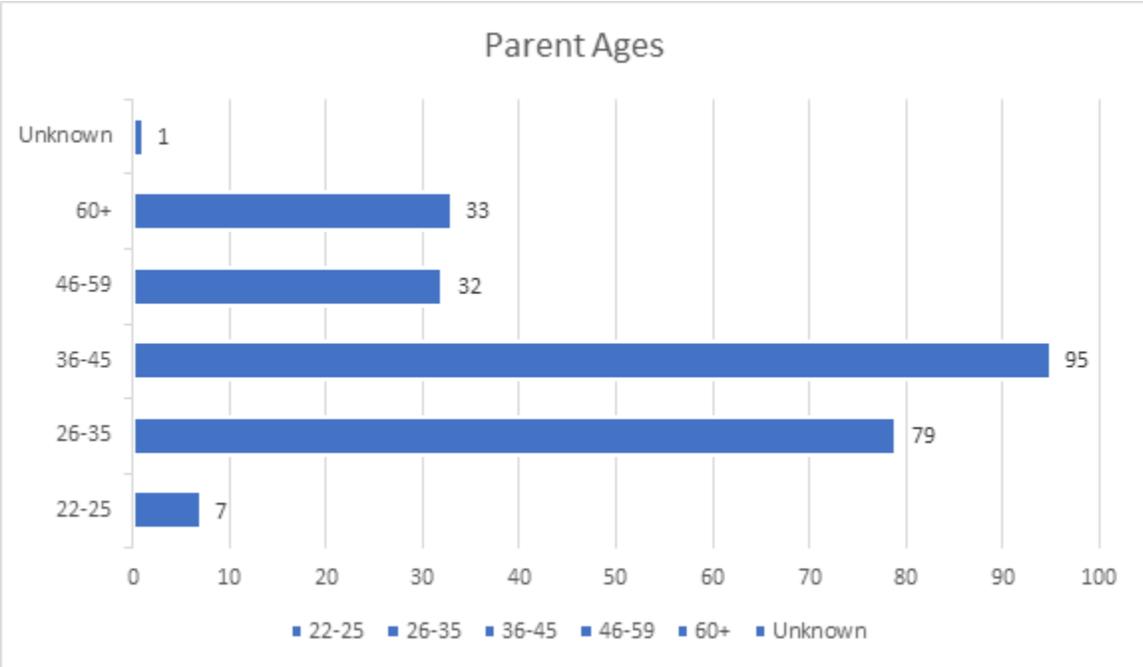
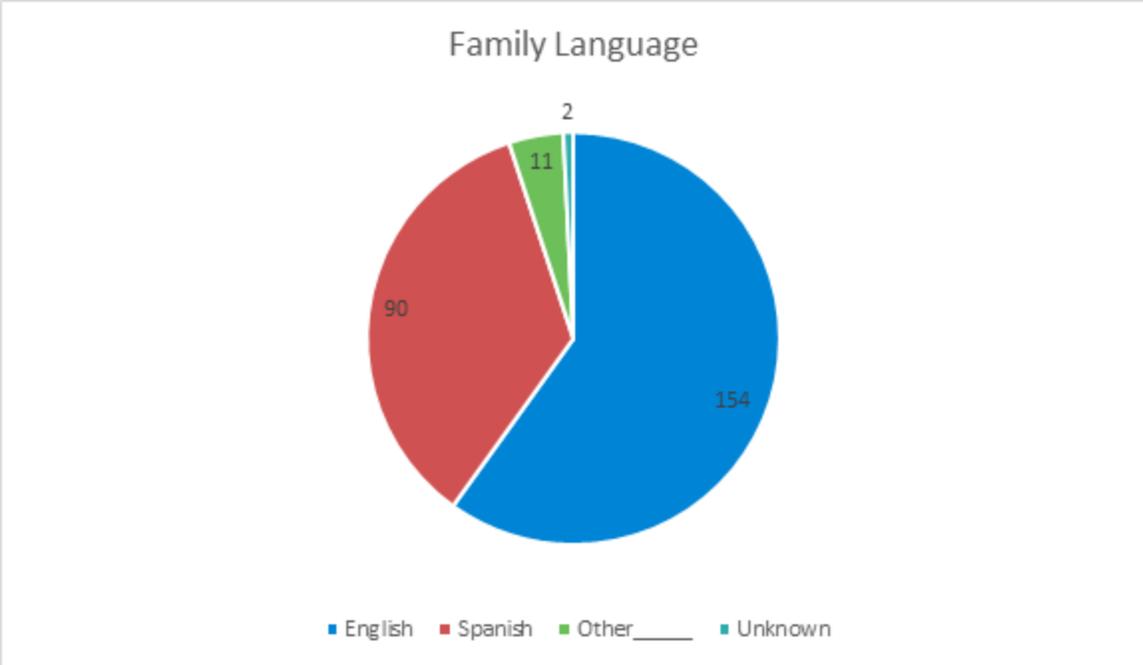
- The Parenting Scale measures dysfunctional discipline practices in parents.
- The Eyberg Child Behavior Inventory measures parental perceptions of disruptive child behavior using both an intensity scale and a problem scale.
  - The Intensity scale measures the frequency of each problem behavior.
  - The Problem scale reflects the parent’s tolerance of the behaviors and the distress caused.
- The Depression Anxiety Stress Scale measures symptoms of depression, anxiety, and stress in adults.

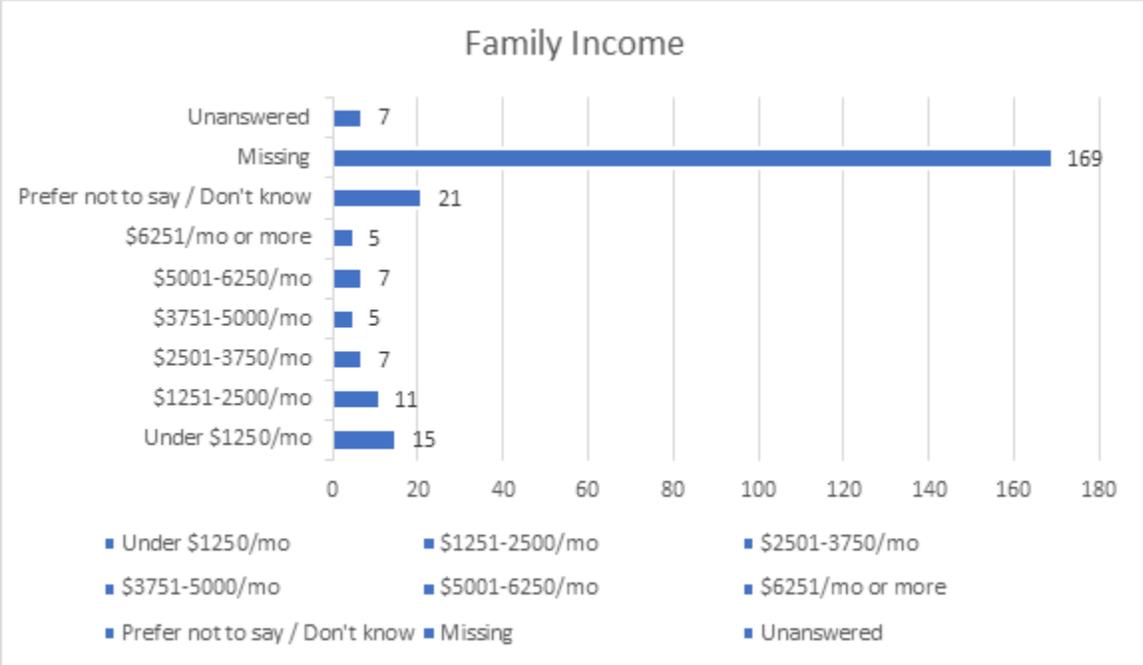
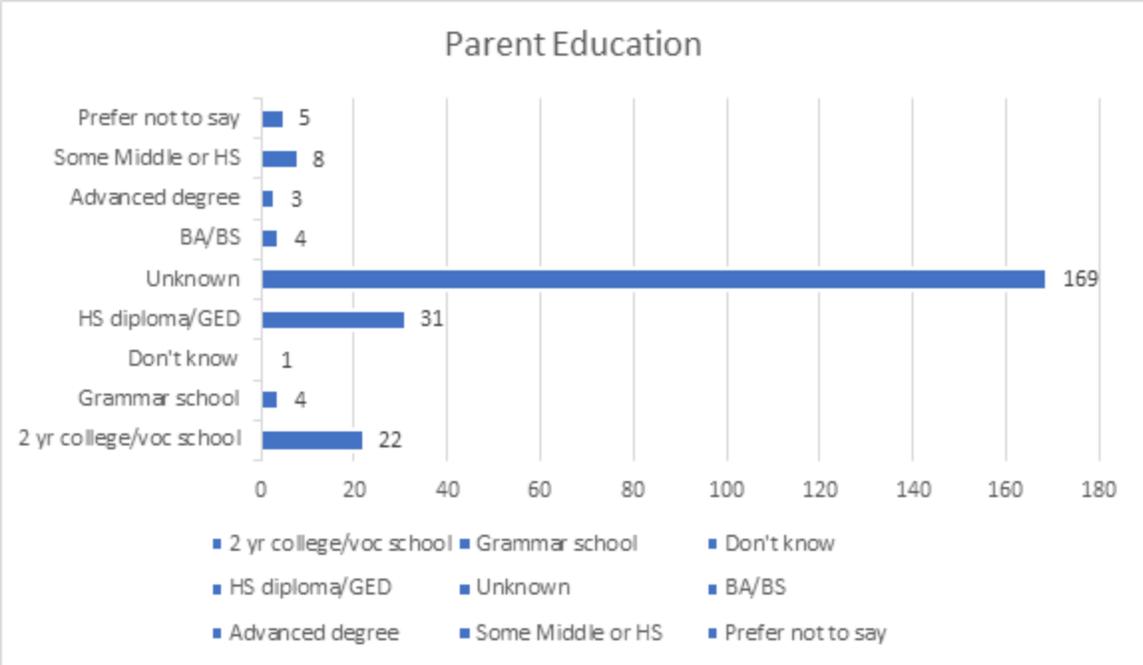
Assessments are administered at the beginning and end of the course. Reports are produced showing the change in results and these reports are reviewed by the practitioner and shared with the individual participants as part of the conclusion of the course. See overall results below.

Participants are invited to provide anecdotes of their own successes, both during regular check-ins at each class and at the end of the course.

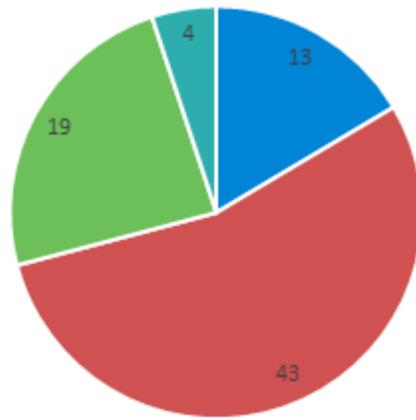
### MHSA Demographics for Parents of children 6-17 years of age





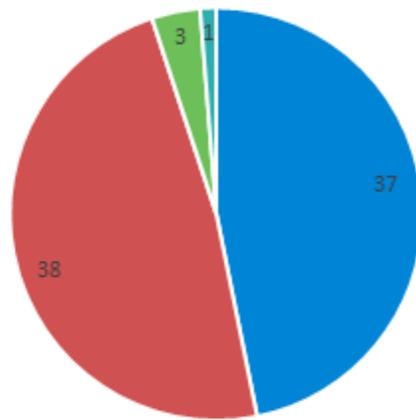


Focus Children Ages

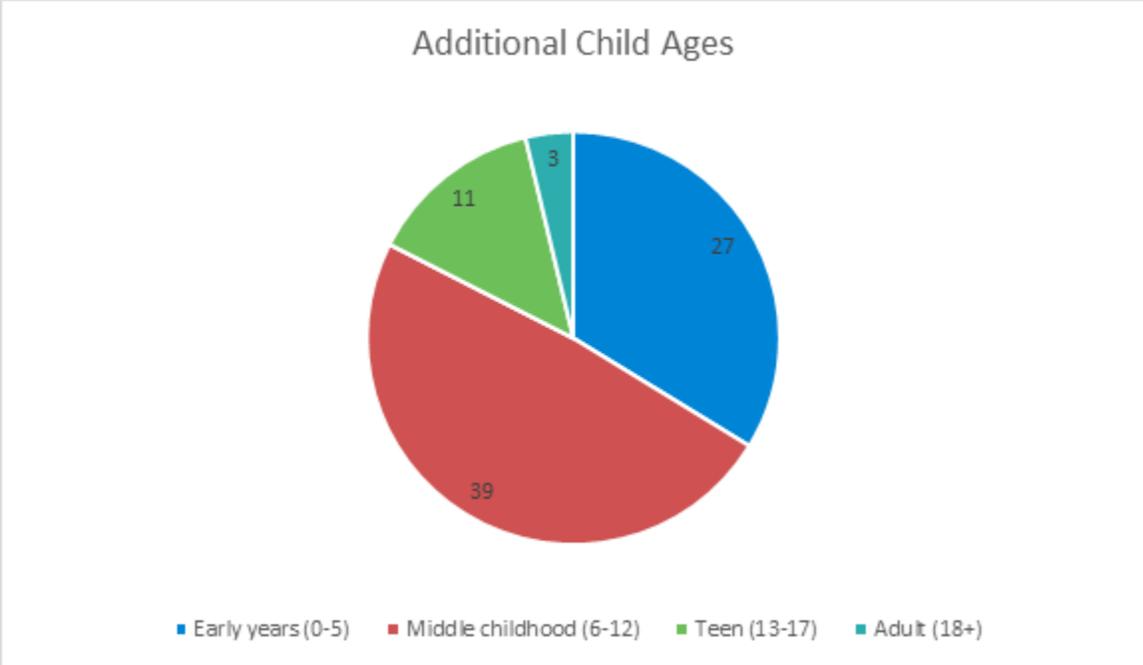
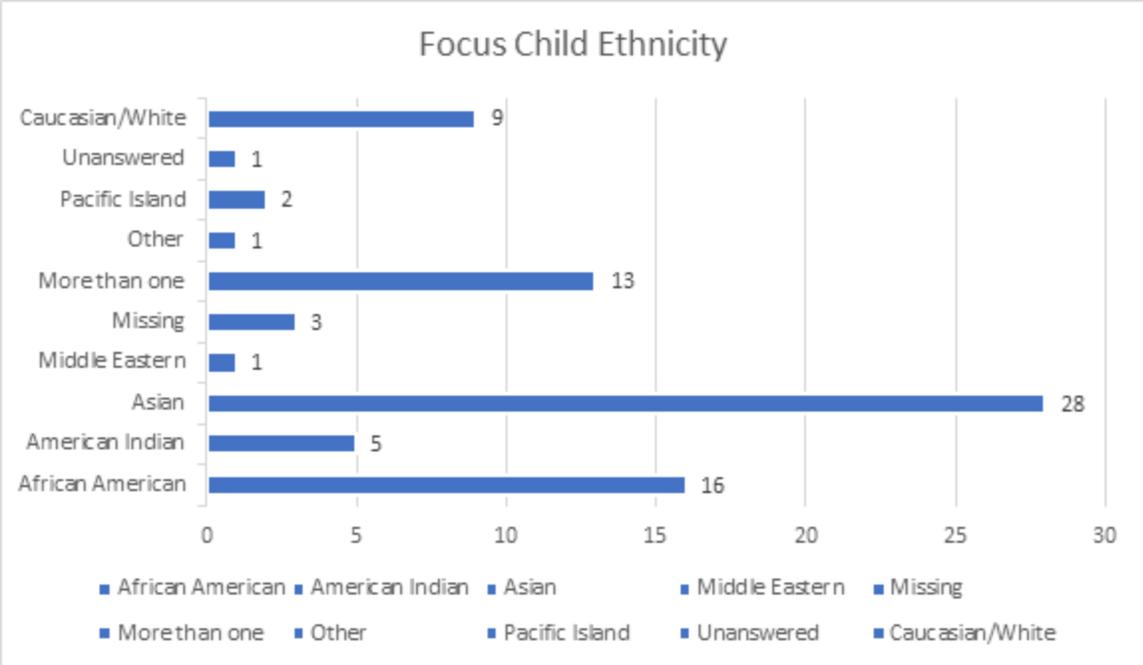


■ Early years (0-5) ■ Middle childhood (6-12) ■ Teen (13-17) ■ Unknown

Focus Child Genders



■ Female ■ Male ■ Missing ■ Unanswered



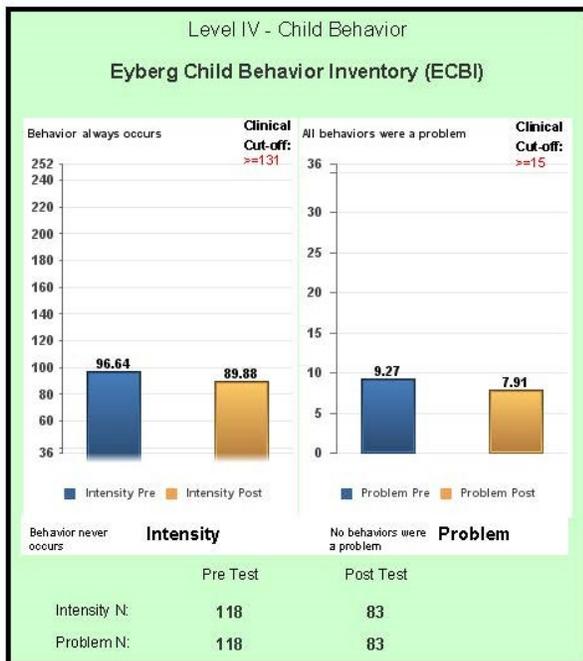
**OUTCOMES AND PROGRAM EVALUATION:**

*Please provide quantitative and qualitative data regarding your services. Include a list of indicators measured, how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served.*

**OVERALL RESULTS**

Positive Parenting Program  
©2010 Applied Survey Research

**Average of all Pre-Post Parent/Caregiver Scores**  
(Region - None) (Funder - Mental Health Services Act) (Collection - ALL)



The Eyberg Child Behavior Inventory measures parental perceptions of disruptive child behavior. The Intensity Scale measures the frequency of each problem behavior.

Intensity Scale – 7% reduction in Intensity

The Problem Scale reflects parent’s tolerance of the behaviors and the distress caused. Problem – 15% reduction in Problem

The Conflict Behavior Questionnaire is used to measure the level of conflict between a parent and their teenager.

Conflict Levels – 30% reduction in Conflict Levels

## OVERALL RESULTS

### Average of all Pre-Post Parent/Caregiver Scores

(Region - None) (Funder - Mental Health Services Act) (Collection - ALL)



The Parenting Scale measures dysfunctional discipline practices in parents. Laxness (Permissive Discipline) – 14% reduction in Laxness

Over-Reactivity (Displays of anger, meanness, and irritability) – 14% reduction in Over-Reactivity

Hostility (Use of verbal or physical force) – 5% reduction in Hostility

**OVERALL RESULTS**

**Average of all Pre-Post Parent/Caregiver Scores**

(Region - None) (Funder - Mental Health Services Act) (Collection - ALL)



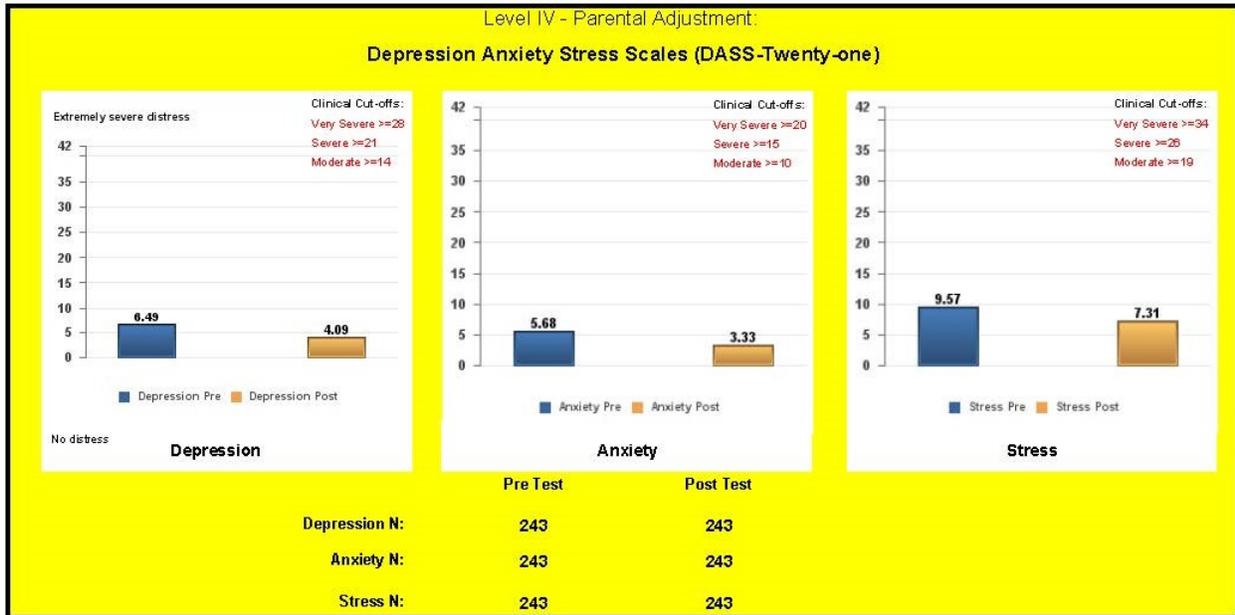
The Parenting Scale measures dysfunctional discipline practices in parents. Laxness (Permissive Discipline) – 16% reduction in Laxness

Over-Reactivity (Displays of anger, meanness, and irritability) –17% reduction in Over-Reactivity  
 Overall Score – 16% reduction

## OVERALL RESULTS

### Average of all Pre-Post Parent/Caregiver Scores

(Region - None) (Funder - Mental Health Services Act) (Collection - ALL)



The Depression Anxiety Stress Scale measures symptoms of depression, anxiety, and stress in adults.

Depression (Dysphoria, hopelessness, devaluation of life, self-depreciation, lack of interest/involvement, anhedonia, and inertia) – 37% reduction

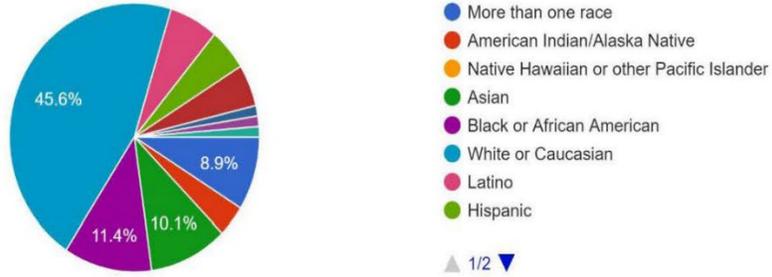
Anxiety (autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effect) – 41% reduction

Stress (difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive, and impatient) – 24% reduction

**MHSA DEMOGRAPHIC DATA: ☐ Not Applicable (Using County form)**

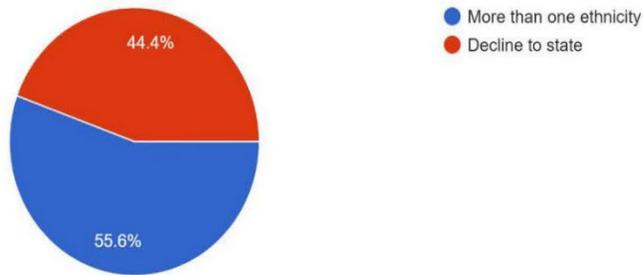
Race (please select one.)

79 responses



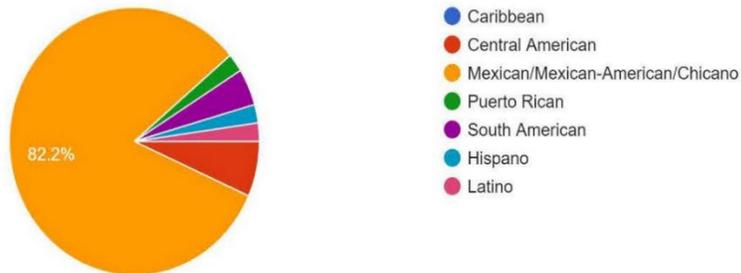
Ethnicity

18 responses



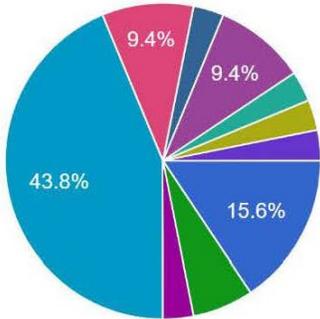
Ethnicity (If Hispanic or Latino/a)

45 responses



Ethnicity (If Non-Hispanic or Non-Latino/a)

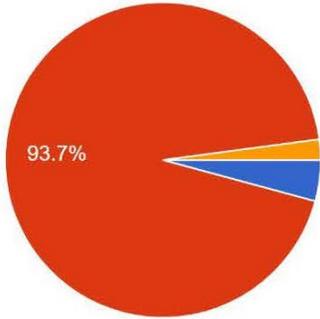
32 responses



- African
  - Asian Indian/South Asian
  - Cambodian
  - Chinese
  - Eastern European
  - European
  - Filipino
  - Japanese
- ▲ 1/2 ▼

Veteran Status

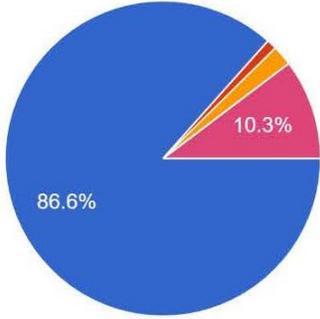
95 responses



- Yes
- No
- Decline to State

Sexual Orientation

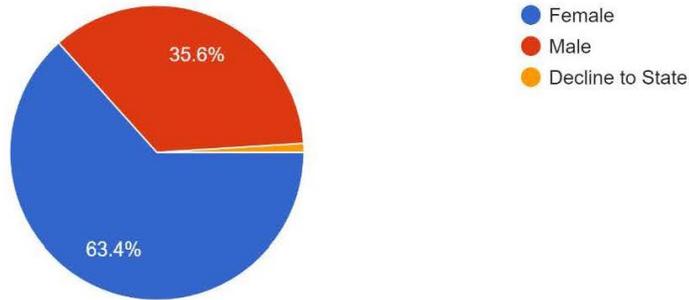
97 responses



- Heterosexual or Straight
- Gay or Lesbian
- Bisexual
- Queer
- Questioning or unsure of sexual orientation
- Another sexual orientation
- Decline to State

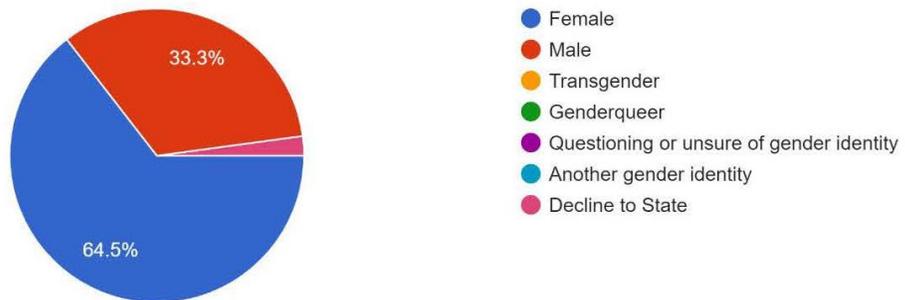
### Gender (Assigned Sex at Birth)

101 responses



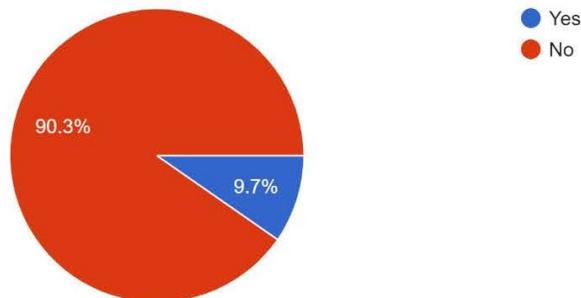
### Gender (Current Gender Identity)

93 responses



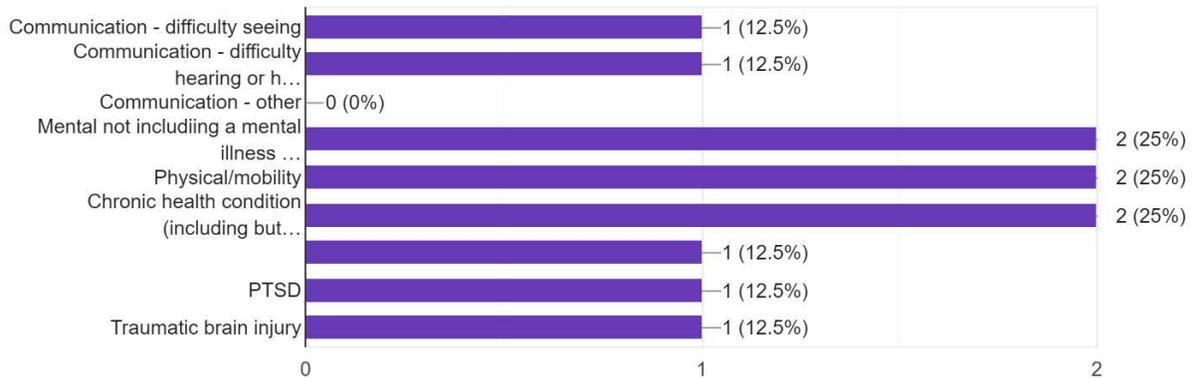
### Disability Status (a disability is a physical or mental impairment or medical condition lasting at least six months that substantially limits a major life activity, which is not the result of a severe mental illness)

93 responses



Disability - If yes, please describe the domain of your disability (check all that apply)

8 responses



Note: Age Group is not included in the above summary of responses as many respondents incorrectly entered the age group of their children rather than their own age. The questionnaire for 2020-2021 will be modified slightly to make it clear that the respondent's age is what is being asked.

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

C.O.P.E. has a culturally diverse staff, both personally and professionally with sensitivity and training in the needs and characteristics of diverse populations of participants. C.O.P.E. staff cultivate an inclusive, non-judgmental environment for participants seeking services and are trained in areas such as ACES, trauma-informed care, self-regulation techniques, conflict resolution and other methods for participant communication.

C.O.P.E. provides a culturally inclusive classroom where parents and staff recognize, appreciate, and capitalize on diversity to enrich the overall learning experience. Fostering a culturally inclusive learning environment that encourages all individuals – regardless of age, gender, ethnicity, religious affiliation, socioeconomic status, sexual orientation, or political beliefs – to develop effective and consistent parenting skills that nurture the uniqueness of each family.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

- Collaboration with the Contra Costa Truancy Court, Probation and CFS to refer families to parenting classes
- Collaboration with school districts and administrative staff to provide referrals to parents of students within each district
- Referrals from community partners such as Family Justice Center, Contra Costa County Juvenile Hall, and Concord Veterans Center.
- Provided briefing/orientation meetings to community agencies interested in referring members to the Triple P program
- Attended community events to provide resources
- Agreement with SPARK to use COPE facility to meet with clients for SIS-SUDS program (Seeking Information & Support – Substance Abuse Disorders)
- Provide classroom to Kinship services to provide classes to foster families

Methods Used to Reach Out and Engage Potential Responders include:

- Distribution of flyers for upcoming classes to community members and other CBOs in both electronic and hard copy
- Attended community events to provide resources
- Collaboration with the Contra Costa Truancy Court, Probation and CFS to refer families to parenting classes
- Collaboration with school districts and administrative staff to provide referrals to parents of students within each district
- Case Management referrals for parents working with C.O.P.E. case management staff
- Website advertising of class schedule
- Referrals from community partners such as Family Justice Center, Contra Costa County Juvenile Hall, and Concord Veterans Center.
- Provided briefing/orientation meetings to community agencies interested in referring members to the Triple P program

During the 2019-20 FY, the following community partners were provided with a briefing/orientation meeting:

- West County Children and Family Services
- Contra Costa Leadership Institute (CCLI)
- Scotts Valley TANF
- Acalanes Adult Education Center
- Pittsburg Unified School District
- Court Appointed Special Advocates (CASA)
- Cornerstone Fellowship
- Shelter Inc.

- Lincoln Family Services
- Community Violence Solutions
- Rainbow Community Center
- Center for Human Development

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non- stigmatizing and non-discriminatory?***

C.O.P.E. Family Support Center fosters a holistic approach to family wellness and recovery by providing evidence-based parenting classes along with other complementary services. Parents in need of further intervention are identified through their participation in Triple P parenting classes and are linked to supplementary services. Participants may express a need for more intensive support and utilize other programs offered such as individual and family counseling, Anger Management and Truancy Intervention. By offering a menu of services, C.O.P.E. can provide customized support to families in need as well as identify referrals to additional resources such as county mental health, housing, food banks and family law centers.

C.O.P.E. also provides a comfortable, family-oriented atmosphere for community members visiting the office for services. C.O.P.E. staff pride themselves in

Case management is provided to participating families which includes:

- Initial assessments of program needs
- Parent/Family coaching
- Resource referrals
- Enrollment into appropriate C.O.P.E. programs
- Weekly check-ins from C.O.P.E. staff
- Preparation of progress reports/attendance verification Strategies Utilized to Provide Access and Linkage to Treatment include:
  - Provide assessment and case management to community members in need of services
  - Warm-handoff referrals to community resources such as housing, job training and placement, food banks and family law centers
  - Collaboration between staff and a 'point person' at each agency to ensure timely access to resources
  - Evaluate and provide individual parent consultation for Triple P participants scoring above the clinical-cutoff range in any pre-assessment (DASS, Parenting Scale, ECBI, Conflict Behavior), providing resources as needed.

Strategies Utilized to Improve Timely Access to Services for Underserved Populations included:

- Free and sliding scale Triple P classes for low-income participants
- Delivery of classes throughout the county at various times and convenient locations to accommodate transportation barriers (accessible via public transportation)
- Increased capacity to offer case management services for parents and families with more intensive challenges
- Provided classes in English and Spanish and Arabic in each region of the county
- Individual assessment, consultations and referrals to county mental health as needed
- Collaboration with school districts, family workers, other service providers and families to create a service plan for individuals, to ensure timely access to support and resources.
- Tailored classes that include focus topics that directly address parenting needs (ex. Having a discussion around teen’s use of social media in a Group Teen Triple P parenting class where parent have expressed this as a challenge)
- After assessing family needs, we link to other community supports such as county mental health, housing, crisis centers and other resources

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Participants feel they are spending more quality time with their children and less conflict. “I spend time with my kids, and I am not yelling at them anymore.”

One parent stated she was spending more quality time with her teen which led to less aggression and more conversations between them. She reported her son was “attending school more regularly and not smoking inside the house.”

One parent stated, “the behavior charts are working so well that we want to expand them.” All parents stated how self-care is important and that they will start to make time for themselves.

“I didn’t realize how poorly I was taking care of myself and how that affected my relationship with my child.”

“I am working on progress with my mom...” The strategies the students liked were setting goals, stop vaping, and hugging their mom every day.

“I’m recognizing the importance of my time.”

One parent reported “learning the difference between underlying issues and expressed issues helped me to identify what I was arguing as opposed to what I should’ve been arguing.”

One parent stated, “spending small amounts of quality time really does make a big difference.” This class helped me to see that I was treating my kids differently.

“I wished I had taken a parent class when my children were young.”

One parent shared that “attending a class does not make you a bad parent. Parent classes should be required.”

“I didn’t realize how poorly I was taking care of myself and how that affected my relationship with my child.”

## PEI ANNUAL REPORTING FORM

### EARLY INTERVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: First 5 Contra Costa

Project (if applicable): Contra Costa Triple P

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

**XX Provide access and linkage to mental health care**

**XX Improve timely access to mental health services for underserved populations**

**XX Use strategies that are non-stigmatizing and non-discriminatory**

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

#### Program Quality and Standards

First 5 Contra Costa completed all provisions of this contract.

First 5 Contra Costa ensured our subcontractor, COPE, utilized accredited Triple P practitioners to implement Triple P services that focused on children from birth through age 5, and/or their parents/guardians, expectant parents, and/or early childhood educators of children from birth through age 5. A year-round “learning community” was provided to support practitioners and a yearly Triple P level training offered for workforce development resulting in eighteen individuals were accredited in the Family Transitions Triple P training.

- First 5 has a secure database containing assessment data for all classes.
- First 5 has an established quality improvement process where our subcontractor COPE maintains quality assessment through regular check-ins with the practitioners, weekly review of class checklist and periodic auditing of classes.
- Quarterly performance progress completed to ensure movement toward all objectives.

#### Enrollment

189 client family members enrolled in Triple P Parenting classes during the fiscal year.

Enrollment of a subset of families in Case management services who could benefit from additional support in connecting to other community resources.

Demographic information noted below.

### Program, Trainers and Outreach

Parenting Classes: We delivered 15 classes and 2 seminar series throughout the county at various times and convenient locations to accommodate transportation barriers. Classes were available in English and Spanish in East, West and Central County. All classes were free to all participants.

The subcontractor used clinical interns to address the needs of parents and families with more intensive challenges.

Our evaluation process captured the effectiveness of the parenting classes including parents' experiences as reflected in vignettes and testimonies. See report below

Program attendance is track in the ETO database to ensure accuracy in reporting participants.

Presentations and briefings to early childhood organizations as an engagement and recruitment tool. This year 12 occurred.

Subcontractor targeted specific key meetings to attend to engage community partners in identifying potential program participants and to expand the reach diverse populations.

### Data Collection and Tracking

Collected data using pre and post assessments in all classes offered in First 5 Centers. Data was entered in the ETO system with individual and class results provided to facilitators and participants.

### Program Monitoring and Evaluation

The Triple P program is closely monitored. Pre and post evaluation entered on each class. The program data is track quarterly to allow for adjustment and continuous quality improvement. Practitioners received ongoing TA and professional development.

### Reporting

The internal database collects quarterly data in preparation for the MHSA annual report.

### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services.***

***Numbers served during the fiscal year***

- There were 189 individuals enrolled in Triple P classes in First 5 – provided programs in Contra Costa County for the 2019-2020 Fiscal Year.
- 72% of the participants were female.
- 56% of the participants were Latino/a.
- 10% of the participants identified as African American.
- 49% of the participants were either Spanish-speakers or bilingual Spanish/English

***Describe any adaptation of services due to COVID-19 that may be relevant***

- Beginning in Mid-March 2020, classes moved all Triple P classes to online using the Zoom video conferencing platform.
- All assessments recreated on Google Forms to allow participants to complete the assessments on their personal devices (smart phone, tablet, or computer).
- Practitioners followed up with participants by phone to assist them with completing the forms and worked with participants in accessing classes through Zoom.
- Group session times, in some cases, reduced to one hour and a half and practitioners made additional one-on-one phone calls to the participants.

***For PEI - Early Intervention programs, please describe:***

*Triple P- Positive Parenting Program is a multi-level system of family intervention for parents of children who have or are at risk of developing behavior problems. It is a preventively oriented program, which aims to promote positive, caring relationships between parents and their children, and to help parents develop effective management strategies for dealing with a variety of childhood behavior problems and common developmental issues.*

**PROGRAM OBJECTIVES:**

- Increase parents' competence in managing common behavior problems and developmental issues
- Reduce parents' use of coercive and punitive methods of discipline
- Improve parents' communication about parenting issues
- Reduce parenting stress associated with raising children

**PRINCIPLES OF TRIPLE P**

- Having a safe and interesting environment
- Having a positive learning environment
- Using assertive discipline
- Having realistic expectations
- Taking care of yourself

***Which mental illness(es) were potentially early onset?***

Our Triple P Practitioners are not clinicians qualified to diagnose mental illness. Every participant is administered the DASS assessment which measures for symptoms of depression, anxiety, and stress in adults.

***How participant's early onset of a potentially serious mental illness was determined***

All participants are provided the Depression Anxiety Stress Scale as part of the pre and post assessments. Participants who scored above the clinic cutoff on the DASS pre or post assessment for depression, anxiety or stress were contacted individually and referred as necessary to community resources for additional support and services.

***List of indicators and data that measured reduction of negative outcomes.***

All Triple P participants complete Pre and Post Assessments. These assessments are the Parenting Scale, Eyberg Child Behavior Inventory and the DASS

- The Parenting Scale measures dysfunctional discipline practices in parents.
- The Eyberg Child Behavior Inventory measures parental perceptions of disruptive child behavior using both an intensity scale and a problem scale.
- The Intensity scale measures the frequency of each problem behavior.
- The Problem scale reflects the parent's tolerance of the behaviors and the distress caused.
- The Depression Anxiety Stress Scale measures symptoms of depression, anxiety, and stress in adults.

Assessments are administered at the beginning and end of the course. Reports are produced showing the change in results and these reports are reviewed by the practitioner and shared with the individual participants as part of the conclusion of the course. See overall results below.

Participants are invited to provide anecdotes of their own successes, both during regular check-ins at each class and at the end of the course.

## OVERALL RESULTS

### Average of all Pre-Post Parent/Caregiver Scores

(Region - None) (Funder - First 5 Contra Costa) (Collection - ALL)



The Parenting Scale measures dysfunctional discipline practices in parents. Laxness (Permissive Discipline) – 16% reduction in Laxness

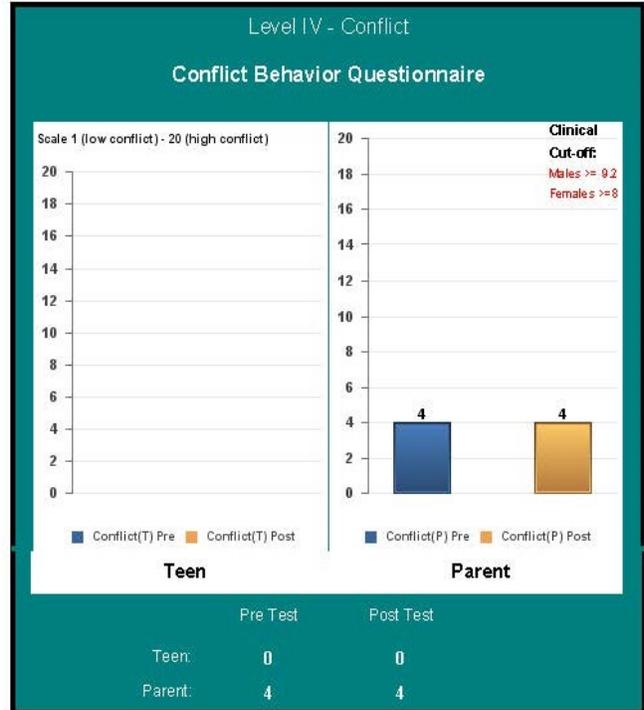
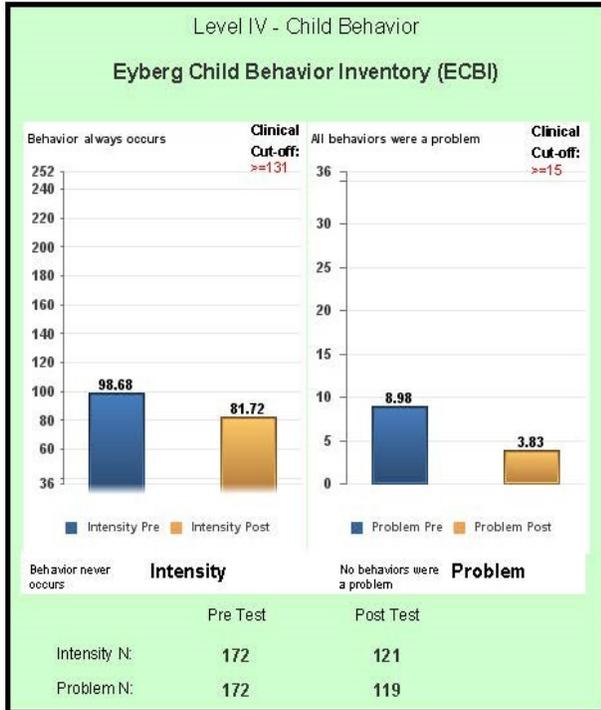
Over-Reactivity (Displays of anger, meanness, and irritability) – 24% reduction in Over-Reactivity

Hostility (Use of verbal or physical force) – 23% reduction in Hostility

**OVERALL RESULTS**

**Average of all Pre-Post Parent/Caregiver Scores**

(Region - None) (Funder - First 5 Contra Costa) (Collection - ALL)



The Eyberg Child Behavior Inventory measures parental perceptions of disruptive child behavior. The Intensity Scale measures the frequency of each problem behavior.

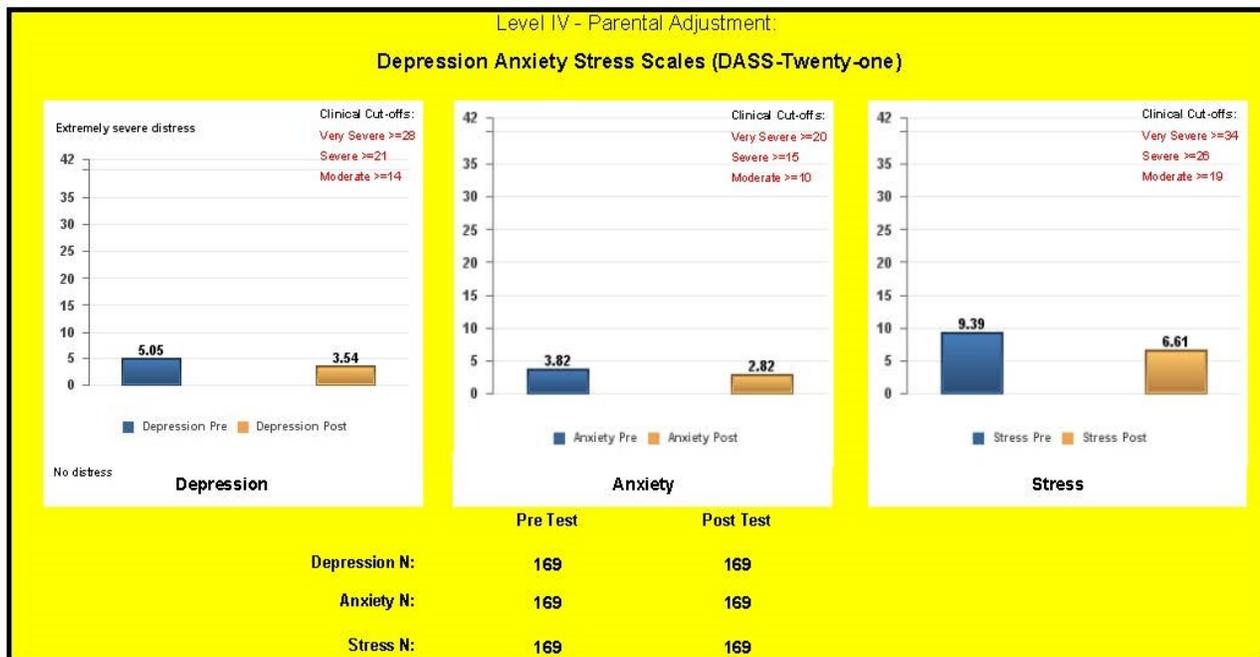
Intensity Scale – 17% reduction in Intensity

The Problem Scale reflects parent’s tolerance of the behaviors and the distress caused. Problem – 57% reduction in Problem

## OVERALL RESULTS

### Average of all Pre-Post Parent/Caregiver Scores

(Region - None) (Funder - First 5 Contra Costa) (Collection - ALL)



The Depression Anxiety Stress Scale measures symptoms of depression, anxiety, and stress in adults.

Depression (Dysphoria, hopelessness, devaluation of life, self-depreciation, lack of interest/involvement, anhedonia, and inertia) – 41% reduction

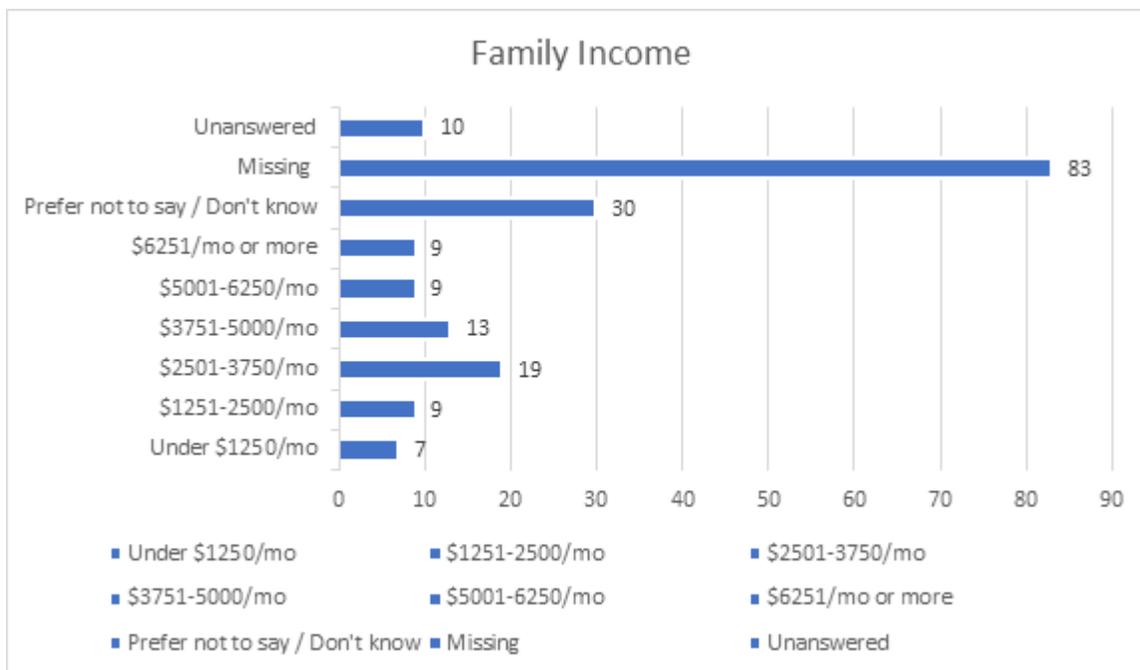
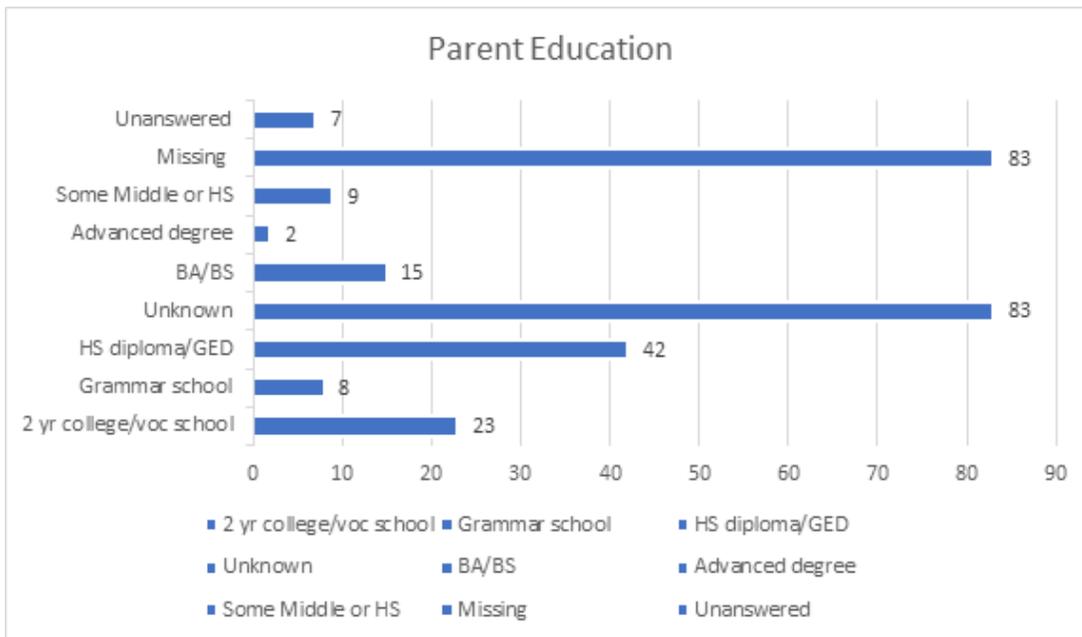
Anxiety (autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effect) – 26% reduction

Stress (difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive, and impatient) – 31% reduction

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

Please refer to Aggregate Data Reporting

<b>F5 AGGREGATE REPORTING FORM</b>								
<b>Date:</b> <u>FY 19-20</u>								
<b>Program Name :</b> <u>COPE FAMILY SUPPORT CENTER - TRIPLE P CC COUNTY</u>								
<b>REPORTING PERIOD:</b> <u>FY 19-20</u>			<b>YTD TOTAL NUMBER SERVED:</b> <u>189</u>		<b>TOTAL NUMBER OF INDIVIDUAL FAMILY MEMBERS SERVED:</b> <u>189</u>			
<i>(Example: 06/2016-12/2016)</i>			<i>(If applicable)</i>					
<b>PART 1 – FOR ITEMS 1-3, PLEASE RECORD THE TOTAL NUMBER OF CLIENTS IN YOUR PROGRAM FOR THE CURRENT REPORTING PERIOD THAT FIT INTO THE CATEGORIES BELOW.</b>								
1. AGE GROUP	#SERVED DURING REPORTING PERIOD	# SERVED DURING FY	2. PRIMARY LANGUAGE	#SERVED DURING REPORTING PERIOD	#SERVED DURING FY	3. RACE	#SERVED DURING REPORTING PERIOD	#SERVED DURING FY
CHILD (0-15)		1	ENGLISH		84	MORE THAN ONE RACE		8
TRANSITION AGE YOUTH (16-25)		22	SPANISH		93	AMERICAN INDIAN/ALASKA NATIVE		3
ADULT (26-59)		147	OTHER		13	ASIAN		14
OLDER ADULT (60+)		19	DECLINE TO STATE		7	BLACK OR AFRICAN AMERICAN		19
DECLINE TO STATE			IF OTHER SPECIFY BELOW:  Arabic  _____			WHITE OR CAUCASIAN		28
						HISPANIC OR LATINO/A		106
						NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER		2
						OTHER		6
						DECLINE TO STATE		3



## CULTURAL RESPONSIVENESS:

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

A Culturally diverse staff is trained to respond with cultural humility and compassion to the needs and characteristics of diverse populations of participants. Triple P practitioners cultivate, inclusive, and non-judgmental environment for participants seeking services. Practitioners receive training and skill development in a variety of areas (ACES, trauma-informed care, self-regulation techniques, conflict resolution and other methods for participant communication)

Triple P classes provides a culturally inclusive setting where parents and staff recognize, appreciate, and capitalize on diversity to enrich the overall learning experience. Fostering a positive learning environment that encourages all individuals – regardless of age, gender, ethnicity, religious affiliation, socioeconomic status, sexual orientation, or political beliefs – to develop effective and consistent parenting skills that nurture the uniqueness of each family.

## COLLABORATIVE PRACTICES:

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

- Collaboration with the Contra Costa Truancy Court, Probation and CFS to refer families to parenting classes
- Collaboration with school districts and administrative staff to provide referrals to parents of students within each district
- Referrals from community partners such as Family Justice Center, Contra Costa County Juvenile Hall, and Concord Veterans Center.
- Provided briefing/orientation meetings to community agencies interested in referring members to the Triple P program
- Attended community events to provide resources
- Agreement with SPARK to use COPE facility to meet with clients for SIS-SUDS program (Seeking Information & Support – Substance Abuse Disorders)
- Provide classroom to Kinship services to provide classes to foster families

## VALUES:

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

First 5 Contra Costa fosters a holistic approach to family wellness and recovery by providing evidence-based parenting classes. Parents in need of further intervention are identified early during assessment and through their participation in Triple P parenting classes. Parents are linked efficiently to additional mental health supports such as individual and family counseling, Anger Management and Truancy Intervention. Practitioners can access case management or use the HMG/211 phone line to obtain referrals to additional resources such as county mental health, housing, food banks and family law centers

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Participants feel they are spending more quality time with their children and less conflict. “I spend time with my kids, and I am not yelling at them anymore.”

One parent stated, “The behavior charts are working so well that we want to expand them.” All parents stated how self-care is important and that they will start to make time for themselves.

“I didn’t realize how poorly I was taking care of myself and how that affected my relationship with my child.”

“I’m recognizing the importance of my time.”

One parent reported “learning the difference between underlying issues and expressed issues helped me to identify what I was arguing as opposed to what I should’ve been arguing.”

One parent stated, “Spending small amounts of quality time really does make a big difference.” This class helped me to see that I was treating my kids differently.

One parent shared that “attending a class does not make you a bad parent. Parent classes should be required.”

“I didn’t realize how poorly I was taking care of myself and how that affected my relationship with my child.”

## PEI ANNUAL REPORTING FORM

### EARLY INTERVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: CCCBH/First Hope

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations**

**X Use strategies that are non-stigmatizing and non-discriminatory**

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

First Hope provides early identification, assessment, and intensive treatment services to youth ages 12-25, and their families, who show signs and symptoms indicating they are at Clinical High Risk (CHR) for psychosis. Just over a year ago (June 10, 2019), we also significantly expanded our First Episode Psychosis (FEP) program. We trained our 13 new staff in the Coordinated Specialty Care (CSC) model to treat FEP clients between 16-30 years old and within 18 months of their first episode. In addition, our staff were trained and certified in MultiFamily Group Treatment (MFGT) and Cognitive Behavioral Therapy for Psychosis (CBTp).

Key components of our program include 1) community outreach and education, 2) rapid and easy access to screening and assessment, and 3) intensive treatment services.

Community outreach and psychoeducation – The expansion of our First Hope services has provided an opportunity to re-engage with our various community partners and to build relationships with new collaborators. Our outreach presentations focus on the importance of early intervention, how to recognize the early warning signs of psychosis, and how to make a referral to the First Hope program. This past fiscal year 2019/2020 we provided 21 outreach presentations/trainings in early intervention in psychosis. We reached 518 attendees that included staff from schools, community-based mental health agencies such as Familias Unidas, other community organizations such as Rainbow Center, and hospitals, as well as community members at NAMI meetings and at Putnam Clubhouse. On 9/17/19, we also held an Open House at First Hope where 14 of our community partners attended.

Screening and assessment – In order to provide a high level of responsiveness and access to immediate help, First Hope has a Clinician of the Day (COD) who takes screening calls as well as any urgent calls when the primary clinician is not available. The telephone screen helps to determine whether a more extensive SIPS assessment is indicated whether an individual is eligible for our new FEP services (based on a combination of the potential client’s self-report, a medical records review, and collateral information), or whether the caller is referred to more appropriate services. Our Urgent Response Team (URT) that has some capacity to provide an urgent response to those in crisis in inpatient psychiatry or crisis residential treatment. Services are offered in any language using the language line. Services in Spanish are provided by our Spanish-speaking clinicians.

Intensive treatment services – First Hope uses the evidence-based Portland Identification and Early Referral (PIER) and Coordinated Specialty Care (CSC) models, which have been shown to be effective in preventing conversion to psychosis and the subsequent disability associated with psychotic disorders, and in ameliorating psychotic symptoms and promoting functional recovery. Both models provide comprehensive and needs-driven services utilizing the combined skills of a multidisciplinary team. Our First Hope treatment team includes a clinician, occupational therapist, educational and/or employment specialist, community support worker family partner, community support worker peer specialist, rehab counselor with a specialization in substance use disorders, RN, and psychiatrist. Our clinicians are trained and certified to provide Structured Interview for Psychosis risk Syndrome (SIPS) assessments, Cognitive-Behavioral Therapy for psychosis (CBTp), and MFGT, evidence-based practices for assessing and treating CHR and FEP. In addition to individual therapy, peer groups, case management, educational/employment support, psychosocial rehabilitation, and psychiatric services, clients also benefit from a heavy emphasis on family psychoeducation and engagement in MultiFamily Group Treatment (MFGT). Treatment services are offered in any language using the language line. Treatment services in Spanish are provided by our Spanish-speaking clinicians.

Functional outcomes targeted are improved functioning at school and work, improved relationships with family members, decreased need for hospitalization and PES visits, and most importantly preventing conversion to psychosis or a reoccurrence of a psychotic episode.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant For PEI - Early Intervention programs, please describe: Which mental illness(es) were potentially early onset, how participant’s early onset of a potentially serious mental illness was determined. List of indicators and data that measured reduction of negative outcomes.***

Please refer to Aggregate Data Reporting Form for Numbers served during the fiscal year.

Due to COVID-19, most of our services, including group therapy, have moved to telehealth. Throughout the pandemic, we have continued to offer a limited number of in-person appointments to clients when clinically indicated – on average we see about 5 clients in person each week. Our in-person clinic hours are reduced to 11am-4pm Mon-Fri.

We work with youth ages 12-30 who are either at Clinical High Risk (CHR) for developing psychosis, or within 18 months of their first episode of psychosis (FEP), as established by the Structured Interview for Psychosis-risk Syndromes (SIPS) assessment, the potential client's self-report, a medical records review, and/or collateral information.

The primary desired outcome for our CHR clients is to prevent conversion to psychosis in a population estimated to carry a 33% chance of conversion within two years. We had 1 conversion from CHR to psychosis from July 2019 through June 2020, out of 78 CHR clients served.

Desired functional outcomes for both our CHR and FEP clients include reduction in crises, hospitalization, incarceration and suicide attempts or completions.

From July 2019 through June 2020, 104 First Hope clients had 0 PES visits or hospitalizations; 17 First Hope clients had a combined total of 46 visits to the psychiatric emergency room, 21 of which resulted in an inpatient hospital stay. Three First Hope clients represented 43% of the PES visits (20/46). We are still analyzing data to assess whether the rates of PES visits and hospitalization improve over baseline rates for our clients.

Three of our clients were arrested, one of whom was charged and served jail time, during the time period of July 2019 through June 2020. One additional client of ours was sadly killed during an attempted burglary.

We had 4 suicide attempts and 0 completed suicides from July 2019 through June 2020.

Improvement in age-appropriate functioning is also critical. Our data indicates that at the beginning of treatment most First Hope clients were failing in school, while at discharge they were stable in school. Many who were work-eligible were now working at least part-time. We also showed a 15-point average increase in GAF for all clients, including those who did not complete the program.

***DEMOGRAPHIC DATA: X Not Applicable (Using County form)***

Please refer to Aggregate Data Reporting Form

Also, Screen Calls: We do not use the county demographic form for our screening calls to avoid barriers that may be encountered due to stigma or lack of a release of information. Screen calls are designed for same day conversation with one of our clinicians and in a manner that allows the caller, whether it is the client, family member, or professional, to disclose concerns without

requiring background information, unless the caller can do so and is willing. Also, since the caller has not engaged in services and may be cautious about disclosure, we only asked pertinent questions about the client's symptoms, important history related to the symptoms, contact information, region of the county, and the referral source. The call allows the caller to inquire about First Hope services and discuss symptoms to determine if an assessment is recommended or if the client is eligible for our FEP services, and allows our clinician to offer an assessment, an intake, or a recommendation of another service. If needed, we also offer advice about how to talk to the client, son, daughter, or the family about the need for early intervention.

#### **CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

We have been highly successful in reaching the Hispanic/Latinx community who represent 25% of our county's population but are typically underrepresented within mental health services. One-third of our client population identify as Hispanic or Latinx. One-third of our clinical staff speak Spanish, making services especially inviting to families with monolingual members. All materials are available in Spanish and Psychoeducation Workshops are also conducted in Spanish. Our Multifamily groups have consistently included at least one (currently two) Spanish-language groups.

Contra Costa County Mental Health Division has a well-developed language line to address other language needs.

We have made significant strides over the past few years in engaging with African-American clients and families, and their enrollment rates into our services (13% of our client population) are now reflective of our county's demographics (9% of county's population). Some of the steps that we've implemented over the past few years were key in strengthening our engagement with this community. These steps included hiring additional staff who identify as African-American and conducting outreach to faith communities.

While we have served several Asian-American clients who have been very satisfied with services once engaged, we perceive a continued underutilization of services at the level of seeking services. Asian-Americans make up 8% of our client population, and 14% of our county's population. While we continue to see increases in the enrollment of Asian-American clients over the past year, we plan to continue to focus on ways to reach this community, including addressing stigma and providing culturally friendly services.

Currently two of our staff identify as Asian-American (psychiatrist and program manager).

In addition, about 20% of our client population identify as LGBTQ+. Currently one of our staff identifies as LGBTQ+ (psychiatrist). On 10/31/19, we hosted a Rainbow Center training for our entire First Hope team on Sexual Orientation, Gender Identity, and Expression to further our focus on fostering a welcoming environment for our LGBTQ+ youth and family members.

#### **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

As noted above, we regularly offer trainings on early intervention in psychosis to our community partners. Whenever possible, we engage in a mutual training exchange, where we provide training in early psychosis to their staff, while they provide training to our staff in their area of expertise. The two partners with which we participated in such an exchange during this past year are Familias Unidas and Rainbow Center.

In addition, the First Hope program manager attends a weekly meeting with staff from the inpatient unit at Contra Costa Regional Medical Center to better identify potential referrals and coordinate care. Staff from the John Muir Behavioral Health inpatient units also attends this meeting once a month.

Finally, First Hope frequently refers to, receives referrals from, and coordinates care with other community providers such as Seneca, COFY, Regional Center, RYSE, Fred Finch, Discovery House, Rainbow Center, La Clínica, CFS, Youth Homes, probation, school-based mental health, teaching, and administrative staff, primary care physicians, and private practice providers.

#### **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

First Hope practices a collaborative, strengths-based, and recovery-oriented approach that emphasizes shared decision-making as a means for addressing the unique needs, preferences, and goals of the individuals and families with whom we work. We define family broadly, that is, whoever forms the support team for the client, which may include friends, siblings, extended family, foster parents, significant others, and clergy. We also coordinate closely with other mental health and primary medical care service providers, to support our clients' overall mental and physical health.

Much care is taken to provide a welcoming and respectful stance and environment, from the very first contact by phone, to the individual and family's first visit to First Hope, to each

interaction thereafter. We work closely with our families to identify and problem-solve barriers to accessing care, including childcare, transportation difficulties, and challenges with accessing technology.

We over-screen so as not to miss any individual in need of service. Any individual who is determined not to be eligible for our program is provided with a referral to more appropriate services. For any individual/family who is found to be eligible for First Hope and accepts our services, treatment begins immediately with engagement (termed Engagement sessions) with their assigned clinician.

Services are offered in any language using the language line and in Spanish by our Spanish-speaking clinicians, including a Spanish-language MFG. Our program brochures and psychoeducational materials are available in English and in Spanish.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Many of the individuals and families who have graduated from First Hope keep in touch with us, and several have returned as volunteers to speak with new clients and families about their experiences with First Hope. other members of the family. Below is some feedback we have received from our clients and families:

“Staff is helpful and understanding.”

“I really appreciate this program and all of its services.”

“The new facility is more secure and connected to technology. I feel safer in the location.”

“The program has helped me get back up on my feet. Slowly I learned to open up to others and have confidence to speak up for myself. This program has made me clear my mind and understand what is reality and what’s not actually there. I’m thankful for being in this program because I got to learn about new things and knowing I wasn’t alone made me feel slightly better. I got to learn from so many people, it was sad listening from what everyone went through, but I’m glad I wasn’t alone. We can get through an obstacle but with help from this program.”

## PEI ANNUAL REPORTING FORM

### OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS REPORTING FORM FISCAL YEAR: 19-20

Agency/Program Name: Hope Solutions (formerly Contra Costa Interfaith Housing)

Project (if applicable): Strengthening Vulnerable Families

#### PEI STRATEGIES:

*Please check all strategies that your program employs:*

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations  Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

Hope Solutions Strengthening Vulnerable Families program provided the following services to assist the Behavioral Health Division of Contra Costa County to implement the Mental Health Services Act, Prevention and Early Intervention Program. The following is a summary of the services and activities delivered during the past fiscal year 2019-2020.

#### SCOPE OF WORK

The Strengthening Vulnerable Families program provides support services at 5 locations. All these locations house vulnerable adults and/or families with histories of homelessness, mental health challenges and/or substance abuse problems. Case management was provided on-site and in-home for all residents requesting this support. Youth enrichment/afterschool programming was provided at all family housing sites. The total number of households offered services under this contract was 286, including the following sites:

- Garden Park Apartments (Pleasant Hill) – 27 units permanent supportive housing for formerly homeless families with disabilities
- Lakeside Apartments (Concord) – 124 units of affordable housing for low-income families and individuals (including 12 units of permanent supportive housing for formerly homeless residents with disabilities).
- Bella Monte Apartments (Bay Point) – 52 units of affordable housing for low-income families and individuals

- Los Medanos Village (Pittsburg) – 71 units of affordable housing for low-income families and individuals
- MHSA funded housing (Concord, Pittsburg) - 12 residents in 3 houses.

In addition to case management, Hope Solutions also provides property management and maintenance for the 12 units of MHSA housing.

Hope Solutions also agreed to participate with helping to host a community forum on permanent supportive housing during the year.

#### ACTIVITIES AND OUTCOMES:

##### Parent and Life Skills Education and Support

Hope Solutions provided 8 parenting support groups, 8 sessions/group at the 4 housing sites for a total of 67 group sessions and least 83 participants.

Support groups included two community café groups at the two East County sites, two community café groups in Central County (one in Spanish), and a wellness support group, community café group, harm reduction group and parent-toddler group at Garden Park Apartments. These parent support groups were offered with food and childcare as needed. Some of the groups were interrupted by the stay-at-home order, but staff were able to re-organize and offer the continued groups remotely.

- Topics in parenting support included:
  - Setting Life goals
  - Creating Vision Boards
  - Maintaining good health
  - disaster readiness/awareness
  - Creating Emergency kits
  - Exercise and fitness Yoga
  - Computer skills
  - Mindful eating and nutrition
  - Budgeting and making wallets
  - Self-care and mindfulness
  - Positive discipline for children
  - Resilience in our lives
  - Adverse Childhood Experiences
  - Coping with news of police brutality – talking to children about racial justice
  - Coping with COVID
  - Managing children at home under stay-home order

## EARLY INTERVENTION, CASE MANAGEMENT AND MENTAL HEALTH SERVICES

Hope Solutions provided 4350 hours of support services with on-site case management to 275 families/433 individuals.

Licensed clinicians and mental health interns provided case management/mental health support at Garden Park Apartments where the population is 100% special needs (formerly homeless with most parents coping with mental health/substance abuse challenges). Lakeside Apartments and East County families have average incomes lower than 50% of the area median income and struggle with limited resources. Case managers at these sites are members of the communities they serve, providing on-site assessment, information and referral, and eviction prevention to the families of the East County housing programs (LMV, BMA) and to Lakeside Apartments. Staff at Lakeside are both bi-lingual/bi-cultural, serving this predominantly LatinX community.

Services provided include resource referrals to obtain concrete resources (food, clothing, furniture, financial support, health, and mental health care) as well as referrals and support for educational and employment needs. Case managers work closely with property management at the housing sites to prevent housing instability or eviction with financial and behavioral support. With on-site, fulltime availability, residents develop trusting relationships with staff and are comfortable seeking mental health resources when necessary. Staff are also able to reach out and educate and advocate for residents when mental health challenges arise.

On-site case management and property management were also provided for 12 residents in MHSA funded housing in Central and East County. Case managers supported residents coping with mental health challenges to maintain shared housing relations with housemates, remain engaged with mental health supports and access other critical resources during the stay-home orders. This support enabled residents to stay safe and maintain their housing.

After the Shelter-in-Place order many residents lost their jobs. Working remotely, case managers assisted 23 residents to access unemployment resources, and 33 residents to access COVID funds to subsidize rents. At Lakeside 12 undocumented families were also assisted to receive the COVID California state funds designated for immigrants.

Hope Solutions staff also organized food resources for families with limited funds and delivered food to over 100 households to help keep residents safe. Case managers also distributed activity bags to youth including crayons, activity booklets, and hand sanitizer/PPE. Masks were distributed to over 100 families as needed, and education and support was offered regarding the stay-at-home order and the COVID19 virus.

Hope Solutions also developed procedures to stay connected to residents with weekly outreach via phone, text, facetime and zoom. At first staff were concerned that residents would not want that much contact, but it turned out that the families actually appreciated the contact and said

it made them feel less isolated and that “someone cares”. Hope Solutions also received donations from the community to allow isolated residents to have the technological tools they needed to stay connected, including computers, phones, and internet access.

After the killing of George Floyd, Hope Solutions also provided support and education for staff to be able to manage their distress related to the fight for racial justice. The organization offers monthly town hall style meetings for all staff to come together to share support and learnings in this area. Study groups and action groups were formed to address racial justice efforts within the organization and within the homeless services/housing community. At parents’ requests, one of the resources put together is information about how to address the pandemic and the civil rights protests with children.

#### Academic Support and Youth Enrichment

Hope Solutions provided 2,914 hours of service to 181 youth at youth enrichment centers in the four housing sites. Activities included afterschool programming, summer programming, educational advocacy, and a teen support group.

During the Shelter-In-Place period academic and mental health supports were offered via zoom and with telehealth. Attached is a picture of one of our first zoom meetings at Lakeside Apartments. Youth Enrichment Coordinators and volunteers coordinated their efforts to help youth be able to finish their school year with support.

During the month of July Youth Enrichment Coordinators put a 4-week summer camp schedule together on zoom, collaborating across all 3 programs. This was a big success with many volunteers and youth participating. The Coordinators are now planning a similar effort for supporting remote learning in the fall. (Summer Schedule attached)

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year (see above), describe any adaptation of services due to COVID-19 that may be relevant (see above), include a list of indicators measured, how often data was collected and analyzed.***

Specific Goals and Outcomes for the 19.20 fiscal year:

Goal: 95% of families will retain safe, permanent housing.

Outcome: 99% (277/281) of families maintained their housing.

Goal: 95% of families referred for eviction prevention will retain housing.

Outcome: 96% (104/108) of families at risk for eviction remained housed.

The four families that left the program were offered support and referrals to alternate housing/treatment resources. Problems with violent behaviors caused them to be asked to leave the programs.

Goal: 95% of families accessing case management for assistance with concrete resources will have request fulfilled successfully.

Outcome: 98% (243/248) of families requesting assistance with concrete resources had their request fulfilled.

Examples of their requests included access to food, employment, transportation, healthcare, and mental health resources.

Goal: 75% of parents attending wellness support group will report using relapse prevention and/or harm reduction skills learned in group.

Outcome: 100% (8/8) of the residents who attended the wellness/harm-reduction group sessions reported using the coping strategies they learned in the groups.

A wellness group and a harm-reduction group were offered at GPA. The focus of these groups was to support parents with coping skills for managing depression and anxiety and cravings/relapse triggers related to substance use. Activities offered included mindfulness exercises, discussion of triggers and giving each other feedback about strengths in a circle.

Goal: 75% of children and youth that participate in the daily social skill group and afterschool programming will demonstrate an increased sense of competence and mastery in social skills. (SSIS)

Outcome: 77% (33/43) of youth who were assessed with the Social Skills Index Survey (SSIS) improved their skill score over the year. A social skills discussion is facilitated with the youth in the afterschool programs each day. Topics at these discussions include managing anger, addressing bullying, conflict resolution and other helpful topics for youth in their challenges at school and at home.

Goal: 75% of youth that participate in the afterschool academic and tutoring program will achieve at least four (4) new CA Academic benchmarks.

Outcome: 87% (71/82) youth achieved at least 4 benchmarks.

Due to the remote learning mandate at the end of the school year report cards did not include a final benchmark report. The numbers cited for this outcome are based on our internal assessments and observations by our Academic Supervisor, a credentialed, bi-lingual teacher.

Goal: 75% of grades K through 5 children will show progress on reading- level.

Outcome: 86% (62/72) achieved progress with their reading skills.

These results are based on our internal assessments at the start and end of the school year.

Goal: 75% of Teen Club participants will show improved self-esteem after attending regularly.

Outcome: 100% (4/4) youth completed end of year surveys and showed improved self-concept/self-esteem. Four more baselines were set for next year.

These results are based on the Piers-Harris self-esteem assessment tool. This is a statistically reliable and valid tool we have used for the past few years.

Goal: 80% of parents receiving educational advocacy coaching will report they had a positive experience with school personnel.

Outcome: 88% (75/85) of parents who received educational advocacy/coaching reported having an improved/positive experience working with school personnel.

Examples of educational advocacy include staff attendance and support at parent/teacher conferences, IEP meetings and meetings related to accessing educational supports. Twenty-eight of the families served were mono-lingual and worked with Hope Solutions staff who provided translation support. Families were given support for helping children with remote learning after the stay-at-home order.

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

Please refer to Aggregate Data Reporting Form Attached

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Hope Solutions offers support provided on-site in the housing sites where people live. In this way we seek to address barriers to access to services created by lack of transportation, education, and trust. Staff are hired for their awareness and interest in working with a diverse population of under-served citizens.

Materials are provided in Spanish and English as needed, and advocacy with a variety of resources is maintained to ease the access of residents to receive resources. Support groups are offered in the evenings for working residents and during the days for families who are available while children are in school.

Hope Solutions seeks the input and promotes the leadership of the residents in the many housing settings. We ask for feedback annually with satisfaction surveys. We hire residents in paid resident monitor positions and train residents in paid Resident Empowerment Program positions, supporting their voice in the community to address housing needs.

Ongoing staff training is offered monthly at Hope Solutions on topics that include trauma-informed case management, motivational interviewing and working with substance use/harm reduction. Cultural aspects of all educational trainings are addressed as a regular expectation of the organization. HR is also available to help whenever anyone feels that bias or prejudice is being exhibited in the workplace. Training on successful communication across levels of privilege is offered and supported.

Since the killing of George Floyd, staff have met to discuss the support needs of African American staff and residents during this challenging time. Hope Solutions has also instituted a monthly Town Hall Racial Justice Learning meeting, several study groups and several action groups addressing issues of racial injustice in history, in housing, and in the organization. We have also contracted with LeaderSpring to do a full year of training with all staff and the board on Racial Justice Training.

Hope Solutions has a policy of hiring people with lived experience and with racial/ethnic experience that benefits the populations we serve.

#### **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Hope Solutions is grateful to collaborate with many community partners. We couldn't support residents without an array of resources. We collaborate with the CC Food bank and many faith communities to access food, we collaborate with CC health and behavioral health services to access physical and mental health resources, we regularly work with the mobile crisis response teams that serve children and adults, we work with NAMI, Putnam Club House, Monument

Crisis Center, GRIP, H3, Family Justice Center, 211, and the Continuum of Care for housing. We also have ongoing collaborative relationships with property owners and landlords and property managers where we provide services and from whom we master- lease properties. We collaborate with the public-school systems where youth attend, and the community and 4-year colleges to access higher education and to share educational resources. We collaborate with multiple faith communities who provide donations and volunteer hours. When needed we collaborate with Child and Family Services and local police departments to ensure that residents receive the support and respect they deserve. We are active in the provider community with many coalitions of service providers including CPAW and the Human Services Alliance. We collaborated this past year with the PEI committee to help provided a community wide training on Permanent Supportive Housing. We continually work to improve the quality of services from the micro to the macro level to benefit the populations we serve.

#### **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

The Strengthening Vulnerable Families program reflects MHSA values of wellness, recovery, and resilience by providing on-site, on-demand support when and where residents need it. By being available immediately and in a timely manner when problems emerge, we can improve the trajectory of those problems with early interventions that are embedded in the housing community where residents live. When mental health care is needed support staff in this program are ready and available to assist residents with information about possible resources, with transportation, and with educational and emotional support that is culturally responsive and respectful of the concerns different populations have about accessing this type of resource. By providing an array of supports and services

(employment support, financial support, educational support, basic needs like food, healthcare, childcare access, and social/community activities) we lower stress and help people avoid the need for formal mental health supports. We host activities and events that build community, supporting resilience and community self-reliance. When the need for mental health support arises, an individual can make this request in the context of other resources and thus is not singled out or identified with this need. By having a trusted, long-term relationship with an on-site case manager, residents are be able to move past fears of stigma or discrimination as they seek mental health assistance.

MHSA values parallel well with Hope Solutions values:

#### **Values**

Hope Solutions is committed to excellence and we accomplish our work with integrity, respect, compassion, and humility.

### **Mission**

Hope Solutions heals the effects of poverty and homelessness by providing permanent housing solutions and vital support services to highly vulnerable families and individuals.

### **Vision**

Hope Solutions envisions a world in which everyone has a place to call home and the support of a strong community so that they can live with dignity and reach their full potential.

### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

#### Josephine Returns

Josephine lived in a shared housing setting for many years in permanent supportive housing. She is 80 years old and was not in touch with her doctors or her family for over a year. When Hope Solutions began to manage the house where she lives, she conflicted with her 3 housemates, and had several troubling behaviors. Josephine stayed up late at night, rhythmically pounding her cane on the floor, poured oil and ammonia on the furniture, and sprayed toxic bug spray in the refrigerator. Her housemates complained.

James, the new case manager, spoke with Josephine about these behaviors, asking her about her thoughts. Josephine agreed to stop doing these things but was not able to follow through with that agreement. She also thought James might be the devil or a doctor. James offered to take Josephine to see her doctor, and she declined the offer.

James reached out to collaborate with community behavioral health providers, and eventually was able to support Josephine to enter a brief residential program where she received a new medication and was able to stabilize. During her time in the program her grown daughter visited her from out of state and they were able to re-connect after a long period of no contact.

Josephine had a small refrigerator in her room, and when James cleaned it out to keep the food from spoiling, he found many sharp knives and garden shears propped on the windowsills in Josephine's room. James carefully placed them aside when Josephine re-entered the house. Josephine's housing was held for her while she received treatment.

After a few weeks Josephine returned to her home. At first her housemates were wary and fearful after the problems they had before. James worked with all the housemates and now

they are living together without conflict. Josephine's daughter is continuing to stay in touch with her mother, which they both enjoy.

### Claudia needs a break

Claudia lived on the streets for the first few years of her adult life. She became addicted to drugs, but when she learned she was pregnant at age 23, she went into a rehab program. Her daughter was born there and shortly after that Claudia and her baby moved to permanent supportive housing. Claudia maintained her sobriety and was diagnosed with a thought disorder and helped with medication. She lived a quiet life at her apartment with her daughter.

Claudia ran into an old friend from the streets, David. He had also gotten sober, and they soon decided to move in together. They planned to marry. Claudia applied to her housing manager and her fiancé was able to move in at the housing program. He had a job for a year but hurt his back and had to go on disability.

David and Claudia became community leaders, helping others and speaking in public about the importance of housing. They reported that having housing had made all the difference in their lives, and they worked with the support staff when they needed emotional or practical resources.

Claudia became pregnant with her second child and worked with her doctors to change her medications to protect the baby. The pregnancy and the medication were challenging for Claudia, but she gave birth to a healthy baby boy.

When COVID stay home orders were issued, Claudia was managing her new baby, her toddler daughter and transitioning with her medication again. It was too much. She began to hallucinate, and David called 911. Claudia voluntarily went into the hospital and is now having her medications adjusted. David is receiving support from the PSH staff as he cares for his two young children. Claudia and David report that they never worried about their housing, even though this has been a difficult time. Knowing that the housing and the support is there for them has again made a hard time better for this young family.

## PEI SEMI-ANNUAL REPORTING FORM

### ACCESS & LINKAGE TO TREATMENT REPORTING FORM

FISCAL YEAR: 2019-2020

Agency/Program Name: James Morehouse Project

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

- Provide access and linkage to mental health care
- Improve timely access to mental health services for underserved populations
- Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please describe the services you provided in the past reporting period. Please include types of problems/needs addressed, any activities that address these problems/needs, and any functional outcomes targeted by the services provided.***

In 2019-2020, the JMP had a team of eight clinical interns. Through March 2020, interns and staff worked at capacity across JMP mental/behavioral health programming—this included individual/group counseling, crisis intervention and support, youth leadership/advocacy and youth development. JMP groups engaged a wide range of young people facing mental health and equity challenges. In 2019-2020 405 young people participated in 23 different groups and/or individual counseling. Targeted outreach and services supported our English Language Learners (ELL) who participated in counseling, case management, in-class support, and youth development programming.

JMP's work changed dramatically with the school closure on March 13. We were able to ramp up our telehealth capacity and to continue individual, group and crisis intervention/support remotely. This included partnering with community-based partners like the Seneca MRT in crisis situations. Our case management work with young people and families around challenges with distance learning (e.g., accessing Wi-Fi, troubleshooting tech challenges), securing cash assistance and accessing other resources (e.g., food, legal assistance) in the community became the focus of quarter 4 activities. As the school community shifted from the school building to a virtual environment, the JMP scrambled to stay connected with school staff, young people, and families. Our crisis work continued in quarter 4 as families and school community members reached out to connect young people in crisis with JMP support. Students with sub-acute needs

were more difficult to identify and connect with in the absence of in-person contact with teachers, peers, and others likely to refer a struggling student for services.

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services. How are participants identified as needing mental health assessment or treatment? List of indicators measured, including how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served. Average length of time between report of symptom onset and entry into treatment and the methodology used.***

Young people are referred for services by parent/guardians, school staff, peers, and themselves. The JMP measures a range of indicators (see Work Plan for 2019-2020) including connection to caring adults/peers and school, and a sense of well-being (diminished perceptions of stress/anxiety, improvement in family/loved-one relationships, increased self-confidence). The JMP engages in ongoing formative assessments throughout the school year that include participation by JMP staff/interns, school staff and youth participants.

#### Outcome Statements

- Stronger connection to caring adults/peers (build relationships with caring adult(s), peers) for participating youth.
- Increase in well-being (diminished perceptions of stress/anxiety, improvement in family/loved-one relationships, increased self-confidence, etc.) for participating youth.
- Strengthened connection to school (more positive assessment of teacher/staff relationships, positive peer connections, ties with caring adults) for participating youth.
- Strengthened culture of safety, connectedness, and inclusion schoolwide.

In Quarter 4, the JMP focused on formative assessments to create capacity for connecting with young people in a remote environment. Given the sudden changes in service delivery, our evaluation partner (UCSF) was not able to pivot to an online evaluation tool. So, while we were effective in not having a break in services for young people and families, we were not successful in refashioning our evaluation tools, and thus have no summative data for 2019-2020.

#### **DEMOGRAPHIC DATA: Not Applicable (Using County form)**

If your agency has elected to not utilize the County Demographics Form AND have chosen to not collect specific demographic domains (i.e., Veteran Status, Disability, etc.), please provide justification.

We have completed the County Demographic Form except for the following:

Part 2: We import demographic data from PowerSchool (PS), the school district database; PS does not capture the ethnic categories listed in Part 2 of the County form.

Part 3: We capture only 6A, as reported by PS. It is not consonant with our respect for personal sovereignty to ask young people to identify their own sexual orientation, gender identity or disability status based on our need to know. Young people's identity language belongs to them; they can choose to disclose aspects of their identity in ways that feel useful and owned by them. We don't assume a right to that information.

Part 4: #8. We do not ask clients to disclose a "disability status." See Part 3 above. Part 5: See Part 3 above.

#### **LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including, how the PEI program follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

When we are in the school building, young people are referred to services through a "Resource Request (RR) Form" widely available on the school campus and online through the JMP website. In Quarter 4, this became more of an on-the-fly process with school staff, students, and families texting, emailing, and calling JMP staff to connect young people with services. Typically, as an on-site school-based program, we can easily follow up with students to ensure that they have successfully engaged with (or formally declined) services. If there is a crisis or urgent referral, students relate to services immediately. If there is a need to discern if the student needs to be hospitalized, the JMP partners with the Seneca MRT in that determination. During COVID, MRT staff are also virtual, and we have enlisted the participation of local police departments to solicit a wellness check in-person in students' homes if we are unsure of a student in crisis' status.

The length of time between referral and entry into services is 1 – 14 days depending on the urgency of the referral and staff/intern caseloads.

#### **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non- stigmatizing and non-discriminatory?***

The JMP integrates an activist youth centered program with more traditional mental health and health services; we prioritize community change along with positive health outcomes for individual youth participants. The JMP clinical program and youth centered initiatives challenge

the dominant narrative that sees youth as “at risk” or as problems to be fixed. JMP staff/interns partner with young people to build their capacity and connect them with opportunities for meaningful participation in the school community. Students in counseling or a therapeutic group have direct access to wider opportunities for participation in JMP programs. All these efforts foster resilience and wellness as they engage young people and caring adults in active and robust relationships.

The range of supports and opportunities at the JMP creates an energetic field that powerfully mitigates against stigma. Young people come to the JMP for a counseling appointment, to offer peer support through a youth leadership program, to participate in the ELD youth committee, Culture Keepers, Skittles (a group for queer identified youth of color) or a myriad of other possibilities. The JMP is a vibrant sanctuary on campus for youth of color and young people from low-income families in a school building where social identity threat is often pervasive in other spaces.

In a virtual environment, we are striving to sustain these values in our work with young people. We are in constant conversation among our JMP staff, with school administrators, teachers, and young people to explore new opportunities to partner and be in relationship over this time.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

The following quotes are from 2018-2019 JMP student voices. We were unable to complete our formal evaluation for 2019-2020.

I never imagined that I could say things that matter in front of other people. Now I talk in front of entire classes or give presentations to a room full of adults. I know my stories and opinions touch people.

An English Language Learner student who participated in a JMP field trip to the Monterey Bay Aquarium shared, when asked if he had ever visited the Aquarium, “Since I have been in this country, I have not been anywhere but my house.” His face was shining with joy and excitement. He explained that since his family arrived in the United States, they are all working and cannot afford to go anywhere. His story is not unique. Even for ELL students who have grown up here, going to places like the Monterey Bay Aquarium is expensive and out of reach for their families. A student shared that this experience meant so much because in his country, El Salvador, they do not have these types of places. For almost all the students, this was a unique opportunity to travel outside of the Bay Area and access an enrichment resource that, for many of their peers, is a normative part of their childhood and youth.

## PEI ANNUAL REPORTING FORM

### PREVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Jewish Family & Community Services East Bay

Project (if applicable): Community Bridges

#### PEI STRATEGIES:

Please check all strategies that your program employs:

- Provide access and linkage to mental health care
- Improve timely access to mental health services for underserved populations
- Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

- In total, we served 311 people. This number includes 135 frontline staff and 176 clients. Clients included 80 children (ages 0-15); 13 transition-aged youth (ages 16-25); 63 adults (ages 26-59); and 20 older adults (ages 60+).
- We completed 75 pre-post assessments with adult case management clients (ages 18+).
- We provided cross-cultural mental health trainings to 135 frontline staff.
- We provided 16 Russian-speaking seniors with mental health education classes.
- We provided 16 Afghan parents with parenting workshops.
- We provided 160 clients with bilingual/bicultural case management. Case management clients include 85 children (ages 18 and under) and 75 adults (ages 18 and older).
- We provided bicultural individual therapy services to 25 Dari-speaking clients.

Cross-Cultural Mental Health Training Series: We completed three of the planned trainings for the year. Our fourth trainer declined to hold a virtual training during the pandemic. All three of our trainings were held via Zoom and had high attendance. In total, we trained 135 service providers from the community, exceeding our target of training 75 frontline staff.

- April 24, 2020: Domestic Violence—Serving South Asian Survivors (Presenter: Bindu Fernandez, Executive Director of Narika). Participants learned about:

- The types of abuse faced by immigrants and survivors of South Asian communities.
- Trends in the South Asian landscape regarding domestic violence.
- Recommendations on how to support South Asian survivors and those with identities different from our own.
- May 14, 2020: Suicide Prevention with a Brief Overview of Risk Assessment (Presenter: Scott Chavez, Outreach and Training Lead at Contra Costa Crisis Center). Participants learned about:
  - Suicide-related statistics and myths.
  - Suicide risk factors and protective factors.
  - How to assess risk lethality.
  - How to identify an action plan to increase safety.
- June 17, 2020: Cultural Sensitivity and Clinical Practice - Working with Muslim Clients (Presenter: Dr. Rania Awaad, Director of the Muslim Mental Health Lab at Stanford University School of Medicine). Participants learned about:
  - Issues faced by Muslim clients, including discrimination based on ethnicity, cultural background, or faith, and the potential fear of deportation.
  - Assessment considerations for working with Muslim clients.
  - A brief overview of Muslim history.

Mental Health Education Groups: JFCS East Bay held groups throughout the year for Dari- and Russian-speaking communities of Contra Costa County.

Mental Health Classes for Russian-Speaking Seniors: Due to the pandemic, the decision was made to do individual (30-minute) mental health classes via phone with 16 Russian-speaking seniors. Zoom was not used because the Russian seniors engaged with our agency stated they were more comfortable using the phone. The topic was the same for all 16 individualized classes: “Anticipatory Grief and Other New Pandemic-related Emotions.” The one-on-one format also allowed each Russian senior to get more individualized attention and personalized support from our Russian Case Manager.

Afghan Parenting Workshops: The first parenting workshop for Afghan mothers was held in our office in February. Due to the pandemic, our parenting workshops were then moved onto Zoom. For these virtual offerings, we selected the same four families (husbands and wives) to participate in a series of three workshops. These new-arrival families were identified as being highly vulnerable by our Resettlement Program Coordinator. The small group size was advantageous because it gave these new-arrival families the chance to have more of their questions answered. In addition, it gave them the opportunity to connect with other new-arrival families and build a sense of community during shelter-in-place. A total of 16 unduplicated clients participated in Afghan Parenting Workshops.

- February 28, 2020, How to Discipline with Dignity & How to Promote Healthy Child Development (8 participants). The purpose of this workshop was to promote positive parenting techniques and to help parents understand how to promote healthy child brain development.
- April 29, 2020: How to Talk to Your Children about Covid-19 (6 participants). This workshop covered Covid-19 symptoms, steps to prevent Covid-19, and how to have a conversation about Covid-19 with your children.
- May 6, 2020: Building Children’s Socioemotional Skills through Play (7 participants). This workshop focused on teaching parents games that they can play with their children at home during shelter-in-place. All games that were taught are known to help build children’s vocabulary, math, and/or socioemotional skills.
- May 13, 2020: Parenting Relaxation Techniques (8 participants). This workshop focused on at-home relaxation techniques for parents, such as deep breathing. Parents were also introduced to other JFCS East Bay Afghan staff that they can reach out to with questions about resettlement and life in the U.S.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, For PEI – Prevention programs, please describe: List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning. Please include how often data was collected and analyzed.***

#### **CLIENTS SERVED DURING FISCAL YEAR**

- In total, we served 311 people. This number includes 135 frontline staff and 176 clients. Clients included 80 children (ages 0-15); 13 transition-aged youth (ages 16-25); 63 adults (ages 26-59); and 20 older adults (ages 60+).
- We completed 75 pre-post assessments with adult case management clients (ages 18+).
- We provided cross-cultural mental health trainings to 135 frontline staff.
- We provided 16 Russian-speaking seniors with mental health education classes.
- We provided 16 Afghan parents with parenting workshops.
- We provided 160 clients with bilingual/bicultural case management. Case management clients include 85 children (ages 18 and under) and 75 adults (ages 18 and older).
- We provided bicultural individual therapy services to 25 Dari-speaking clients.

#### **QUANTITATIVE DATA**

Please note that *qualitative* information regarding our services, along with how our services were adapted due to Covid, are addressed in the section “Services Provided/Activities.”

### Health and Mental Health System Navigation (Case Management)

- 100% of the 75 adult case management clients reported upon exit that they were able to independently seek help for mental health services. At entry, 90% of clients reported that they did not know how to do this.
- 100% of the 75 adult case management clients reported upon exit that they knew how to link to the appropriate persons within the county health care system or other community resources for resolution of health or mental health issues. At entry, 89% of clients reported that they did not know how to do this.
- 100% of the 75 adult case management clients reported upon exit that they had an increased understanding of health and mental health care systems in Contra Costa County. At entry, 78% of clients reported that they did not understand care systems.

*\*Data was collected by case managers at intake and exit of case management services.*

### Cross-Cultural Trainings

- 96% of respondents from our cross-cultural staff trainings reported that they had a better
- understanding of recognizing stress and risk factors after the training.
- 91% of respondents from our cross-cultural staff trainings reported that they had a better understanding of when to refer clients to specialized services.

*\*Data was collected using anonymous surveys via Zoom.*

### Russian Mental Health Classes

- 81% of participants reported that they had a better understanding of when and how to seek help.
- 93% of participants reported that they have an increased ability to recognize stress and risk factors in themselves and/or family members.
- 93% of participants reported that they felt more supported after coming to the group.

*\*Data was collected by instructor after each class.*

### Afghan Parenting Workshops

- 100% of participants reported that they learned useful skills to become a more effective parent.
- 100% of participants reported that they had a better understanding of when and how to seek help.
- 100% of participants reported that they felt more supported after coming to the group.

- 87.5% of participants reported that they have an increased ability to recognize stress and risk factors in themselves and/or family members.

*\*Data was collected by staff who did not lead workshops to prevent bias. Surveys were anonymous.*

#### HOW DATA WAS COLLECTED AND ANALYZED

The program used the following tools to evaluate the efficiency of the program:

- Participants/clients mental health evaluation forms for mental health education sessions.
  - Collected after each mental health education session.
- Staff and community members' anonymous evaluation forms for training sessions.
  - Collected after each training session.
- Pre- and post-assessments case management (health and mental health navigation assistance) progress.
  - Collected once at intake and once at exiting the program.

#### LIST OF INDICATORS

Case Management Services Indicators (Likert Scale: Not Applicable, Strongly Agree, Disagree, Strongly Disagree):

- Can independently seek help for mental health services.
- Can be linked to the appropriate person(s) within the county health care system or other community resources for resolution of health or mental health issue.
- Understands consumer rights in relation to medical care, including the right to seek a second opinion.
- Can apply for health benefits when eligible.
- Has the ability to communicate with doctors and providers about medical and mental health issues.
- Understands health and mental health care systems in Contra Costa County.
- Has a healthy/expanding support network; household is stable, and communication is open.
- Has adapted to American culture.
- For parents: has well-developed parenting skills.
- For parents: can name at least one parenting skill they can apply at home.

Mental Health Education Indicators (Yes/Neutral/No):

- I have an increased ability to recognize stress and risk factors in myself or my family.
- I have a better understanding of when and how to seek help if I need it.

- I feel more supported after attending the group.
- I have a better understanding of the concepts discussed today.
- For parents: I understand the parenting topics presented in the parenting class.
- For parents: I understand at least 75% of the parenting concepts presented in the parenting class.
- For parents: I have learned useful skills to be a more effective parent.
- For parents: I can name at least one parenting skill that I can apply at home.

Provider Trainings Indicators (Likert Scale: Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree):

- I will apply what I learned today with my work with clients.
- Training gave me a better understanding of when to refer clients for specialized services.
- Training will help me improve my professional effectiveness.
- The presenter and/or presentation was effective.
- The content of the training was relevant to my professional needs.
- Training increased my ability to recognize stress and risk factors.

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

**Please refer to Aggregate Data Reporting Form**

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

General Services and Case Management: The clients served by PEI are primarily survivors of state-sponsored persecution and/or war and experienced or witnessed numerous incidents of violence and trauma before arriving in the United States. For families exposed to such trauma, starting a new life in the U.S. can be an additional stressor. The unique type of trauma exposure experienced by some refugees is called the “Triple Trauma Paradigm,” coined for refugees who have been exposed to 1) trauma in their home country; 2) trauma during flight (i.e., while escaping their home country); and 3) trauma in resettlement (i.e., language barriers, cultural barriers, discrimination, and marginalization.) It is during resettlement, when stress is heightened, that a refugee client may be reminded of other traumatic events in their lives. Resettlement, therefore, is an opportunity for our staff to intervene and start to reverse the effects of compound trauma by providing clients with culturally sensitive care and support. This is done by providing clients wrap-around case management services and attending to their mental health needs.

JFCS East Bay's culturally attuned staff is anchored by our 7 Afghan case workers, representing four distinct regions and cultures of Afghanistan. All staff speak both Dari and Farsi, with some also speaking Pashtu, Urdu, and Punjabi. Most staff are former refugees who entered under the federal government refugee resettlement program. All are recent arrivals. This level of understanding of Afghan culture and the refugee experience allows staff to build a strong rapport with clients and to better understand and respond to client needs.

In addition to language and cultural competency, staff attend frequent trainings. This year, trainings included "Trauma-Informed Care within the Refugee Context" and "Preventing Crises Within Resettlement: De-escalation with a Trauma Awareness." Fidelity to Trauma-Informed Care (TIC) was ensured by taking a strengths-based approach to case management. In other words, staff ensured that clients were always the primary-decision makers when it came to making choices about their own lives. This proves especially important for those who may not have had the opportunity of self- agency in decision-making while fleeing persecution and awaiting resettlement. Fidelity to TIC was also ensured not only by upholding and honoring clients' autonomy over their own lives, but by regularly checking in on clients' emotional well-being to see if they need additional emotional support. Any client exhibiting signs of need for support receives immediate referral to internal or external trauma-informed mental health providers.

Psychotherapy: JFCS East Bay provides psychotherapy to refugees in-house as needed. Services are modified to make treatment culturally appropriate for clientele and are based on evidence-based modalities including Trauma Affect Regulation, Solution Focused Therapy, and Cognitive Behavioral Therapy. JFCS East Bay's therapist also has a background in Global Mental Health from Harvard's Program in Refugee Trauma and incorporates the program's H5 model into treatment. Co-created by Dr. Richard Mollica, a world-renowned refugee mental health expert, the H5 model explores five overlapping dimensions essential to trauma recovery by highlighting findings from studies of refugee populations. In-house therapy services are specifically geared for refugee clientele with an emphasis on client strengths, post-traumatic growth, and resiliency.

Parent Education Workshops: Given that stress during resettlement can potentially become overwhelming and create strain on family dynamics, our agency's Parenting Education Workshops for new-arrival families aim to mitigate the potential negative effects of such stress through the teaching of positive parenting skills. This is done through the adaptation of the International Rescue Committee/USAID's "[Parenting Skills Curriculum: Ages 6-11](#)" designed specifically for refugee parents. This parenting skills curriculum is based on "more than three decades of the effectiveness of parent training programs to improve child behavior, eliminate behavior problems and prevent and mediate child abuse and neglect." (IRC, Parenting Skills Curriculum, page 13.) Fidelity is ensured by sticking to the core elements of the Parenting Skills

Curriculum, such as the recommended workshop activities, and building on the strengths of individual families.

Advancing Racial Justice: Since the beginning of the summer, JFCS East Bay has had weekly all-staff meetings on advancing racial justice. These meetings allow staff to discuss racial inequities openly and to find ways to advocate for racial equity within and outside of JFCS East Bay. A Racial Justice Advisory Team has also been formed at our agency, made up of non-leadership and leadership staff. In addition, JFCS East Bay plans on hiring an anti-racism consultant to train all staff.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

This year, JFCS East Bay collaborated with the Contra Costa Crisis Center, Narika (a domestic violence services agency), and Dr. Rania Awaad, the Director of the Muslim Mental Health Lab at Stanford University School of Medicine, to provide three expert trainings to community-based providers. These three trainings allowed experts to share their knowledge with other providers to improve participants' ability to respond to client needs, especially those from minority backgrounds.

These trainings also created a space for community providers to connect and become familiar with each other's work in Contra Costa County. Following each training, various community providers reached out to JFCS East Bay's Refugee Mental Health Coordinator to discuss ways to improve client care/referrals/and cultural responsiveness. In total, 135 community providers participated in the trainings.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non- stigmatizing and non-discriminatory?***

JFCS East Bay's commitment and dedication to our clients greatly contributed to our success. The value of "Welcoming the Stranger" and serving vulnerable people are at the core of our mission. Clients receive wrap-around services including case management, health and mental health navigation, mental health services, and parent education classes. JFCS East Bay is also deeply committed to taking a strengths-based approach in everything we do. Given this, goals and services are regularly evaluated with the client/family to ensure that they have the primary decision-making role. Staff also expand upon clients' existing strengths and play to them when

creating personalized case management plans and throughout the entirety of service delivery. In this way, JFCS East Bay helps to empower clients on their paths to self-sufficiency.

As an agency, we also recognize that new arrivals come from countries in which there may not be programs in place for mental health and well-being or, if a program exists, it is only for those who are severely mentally ill. To combat any potential stigma, staff provide clients with education about programs that may not have been available abroad.

Because JFCS East Bay is in frequent contact with clients during the early, stressful resettlement period, we can provide timely linkages to other needed services. Universally, clients agree that getting settled and learning all new systems brings a level of hope, but also high anxiety. Link to care through our trusted case managers is offered as a bonus type of support, which many are eager to seize.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

#### Ahray\* Family (Wrap-Around Case Management and Parenting Workshops)

The Ahray family of four came to the United States in the early months of 2020 after fleeing persecution by the Taliban in Afghanistan. Before being granted Special Immigrant Visa (SIV) status, the parents had been waiting in Russia for seven years. During their time in Russia, the family had two children. The youngest, now age five, was born with a life-threatening medical condition that requires constant, lifelong treatment. The family came to the United States without an official resettlement agency. After being here for almost a month without support, they were referred to JFCS East Bay by a community member.

JFCS East Bay immediately took the Ahray family on as clients. At the time, both parents were unemployed, and the family didn't have housing. Our team quickly found them a two-bedroom apartment and covered their rent via our rent subsidy program. The agency also provided all the essentials, including furniture and household supplies.

After two months of building a trusting relationship, the family divulged that the youngest child had high medical needs and needed specialty care. They had kept their child's condition a secret for fear of being turned away if any special need became known. In addition, the family revealed that they are members of a religious minority group in Afghanistan and were fearful of judgment by the agency's Muslim staff. After working closely with staff, the family felt safe enough to reveal this new background information. Staff immediately responded by linking the child to care at the only facility prepared to serve pediatric patients with this condition: Lucille Packard Children's Hospital in Palo Alto. In subsequent months, the agency staff worked to

connect the family to California Children's Services (CCS), taught the family how to send in the home testing required to monitor the child's condition, and demonstrated how to connect to virtual medical appointments through an agency-donated Chromebook. Additionally, staff linked the family to a pharmacy that carries the specialized medicine covered through CCS, which was otherwise cost-prohibitive.

To prevent social isolation during the pandemic, staff also connected the family to a faith-based Zoom group (based on the family's minority faith). Staff also helped both parents enroll in online community college ESL classes, which they participate in regularly.

For parenting support, the family engaged in the agency's parenting workshops, where they learned about Covid-19 prevention and games that can use at home with their children to support healthy child development during shelter-in-place. The family was also introduced to the staff therapist and informed that they can always reach out if they want additional mental health support. Both parents are currently interviewing for jobs and are consistently receiving wrap-around support from our dedicated team as they work towards self-sufficiency. Mr. Ahray dreams of running his own business one day, and Ms. Ahray hopes to go to school to become a nurse.

#### Fatima\* (Therapy, and Parenting Workshops)

Fatima is a mother of four in her forties from Afghanistan. During childhood, she experienced child abuse and ever since has had trouble speaking up to anyone who violates her boundaries. When Fatima first came to therapy, she stated that she suffered from low self-confidence rating it a "10" (10 being the worst it's ever been) and that she had an inability to speak up and be assertive with others. Her male family members also made her feel unimportant as a young girl, and even told her once, "Don't bother coming home." Fatima said despite this, her aunt was the only consistent loving figure in her life and encouraged her to pursue her dreams and get an education, which she did.

In the initial phases of treatment, Fatima emphasized her strong desire to be assertive in situations. For example, she had the experience of being discriminated against by a store owner based on her race. Fatima's initial self-identified goals of improving her assertiveness skills and low-self-confidence were her first targets in therapy.

Early in treatment, Fatima shared how her maladaptive cognitions stemmed from her childhood trauma and worked with her therapist to come up with alternative, more positive cognitions. Fatima engaged in assertiveness training, which included role-play that required her to speak up for herself in a safe environment (in therapy). Approximately three months into treatment, the client self-reported that her confidence and assertiveness were both now a "0" (meaning the best it's ever been). She also then shared real-life examples of being able to be assertive in her new life in the United States with friends, family, and strangers. Fatima stated

in session, “I feel I have overcome that . . . I was lacking confidence, now I know I have confidence.”

Fatima’s secondary goal was to improve upon her parenting skills. Given this, Fatima was invited to a JFCS East Bay parenting workshop, where she said she learned about positive parenting techniques such as timeouts and positive reinforcement. Fatima stated she was grateful for learning these techniques especially since they did not use any form of physical discipline, which she stated she experienced in her own childhood. Fatima now regularly incorporates positive parenting techniques into her own child-rearing.

Part-way through treatment, Fatima also experienced a major car accident on the same day she found out she was pregnant with her fourth child. After this incident, Fatima expressed she was terrified of driving and asked her therapist to help her manage her anxiety so that she could make it to her pregnancy check-in appointments. Fatima was then taught mindfulness and grounding techniques and within four sessions exclaimed happily that her fear around driving had dissipated and she could now drive without fear and make it to her medical appointments.

Within weeks of her car accident, Fatima found out that her aunt, who is her role model and biggest cheerleader, had gone into a coma after being diagnosed with coronavirus in Afghanistan. During this time, a rumor also had spread in Afghanistan that the coronavirus was the sign of the apocalypse.

Fatima believed whole-heartedly that this was true. She was devastated by her aunt’s sickness and the belief the coronavirus was the apocalypse, but she knew she still needed to be present for her own young children. Fatima expressed in therapy that she had become too scared to bring her children outside to play—fearful that they may also catch Covid-19 and become fatally ill.

In treatment, Fatima then worked with her therapist on finding safe ways to get outside of the house to play with her kids. She was also taught to focus on what she can control rather than what she cannot regarding her aunt’s illness. For times of stress, she was also taught relaxation techniques such as progressive-muscle relaxation and deep-breathing. Drawing from CBT techniques, Fatima’s therapist helped her rationalize her way to believing coronavirus was not the apocalypse, but something she may be able to prevent by routine handwashing and mask-wearing. She was also comforted by the fact that she knew how and where to receive medical support if her or her children caught Covid-19. Following this, Fatima’s outlook started to become more positive, and she expressed feeling empowered to create a healthy environment for her children to grow in, despite the pandemic.

Both JFCS East Bay’s parenting workshops and intensive therapy have helped Fatima improve her confidence and ability to parent despite a history of childhood trauma and pandemic-

related grief. Fatima now looks toward creating a safe life full of opportunity and contentment for her and her children in the United States and has the confidence to achieve her goals.

*\* Names, ages, genders, and minor details have been changed to protect client confidentiality.*

## PEI ANNUAL REPORTING FORM

### ACCESS & LINKAGE TO TREATMENT REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: La Clínica de La Raza, Inc./ Vías de Salud and Familias Fuertes

#### PEI STRATEGIES:

**Please check all strategies that your program employs:**

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations**

**X Use strategies that are non-stigmatizing and non-discriminatory**

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

Vías de Salud (Pathways to Health) targets Latinos residing in Central and East Contra Costa County and has provided: a) 3623 depression screenings ( 120% of yearly target); b) 296 assessments and early intervention services provided by a Behavioral Health Specialists to identify risk of mental illness or emotional distress, or other risk factors such as social isolation (118% of yearly target); and c) 1238 follow up support/brief treatment services to adults covering a variety of topics such as depression, anxiety, isolation, stress, communication and cultural adjustment (99% of yearly target).

Familias Fuertes (Strong Families) educates and supports Latino parents and caregivers living in Central and East Contra Costa County so that they can support the strong development of their children and youth. This year, the program has provided: 1) 661 screens for risk factors in youth ages 0-17 (88% of yearly target) ; 2) 113 Assessments (includes child functioning and parent education/support) with the a Behavioral Health Specialist were provided to parents/caretakers of children ages 0-17 (150% of yearly target); 333 follow up visits occurred with children/families to provide psycho-education/brief treatment regarding behavioral health issues including parent education, psycho-social stressors/risk factors and behavioral health issues (111% of yearly target).

Services are provided at two primary care sites, La Clínica Monument and La Clínica Pittsburg. The service site enhances access to services because they are provided in a non-stigmatizing environment where many clients already come for medical services. As research shows that

Latinos are more likely to seek help through primary care (Escobar, et al, 2008), the provision of screening and services in the primary care setting may identify clients who would not otherwise access services. Furthermore, up to 70% of primary care visits involve a psychosocial component (Collins, et al; 2010). Having integrated behavioral health care allows for clients to receive a more comprehensive assessment and treatment, especially those that cannot attain specialty psychological or psychiatric care.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant***

Participants are referred to the Integrated Behavioral Health (IBH) team through either their primary medical provider or self-referral. Clients are given an annual behavioral health screen which includes screening for substance use and depression. If these screens yield a positive result, primary care providers discuss with the client and offer a referral to IBH. Additionally, primary care providers may identify behavioral health needs amongst their client population at any visit, discuss with the client and refer to IBH. Clients who self-refer to IBH contact the clinic themselves, or request referral during a primary care visit.

La Clínica provided the following services for Vias de Salud:

- 3623 out of 3,000 Depression Screenings at La Clínica's primary care sites.
- 296 out of 250 assessments and early intervention services were provided by a Behavioral Health Specialists within the FY 19-20
- 1,238 out of 1,250 support/brief treatment services were provided by a Behavioral Health Specialists within FY 19-20

La Clínica provided the following services for Familias Fuertes:

- 661 out of 750 Behavioral Screenings of clients aged 0 – 17 were completed during the 12-month period by parents (of children 0-12) and adolescents (age 12-17)
- A total of 113 out of 75 assessments or visits (including child functioning and parent education/support were provided for FY 19-20
- 333 out of 300 follow-up individual/family visits with Integrated Behavioral Health Clinicians were provided with children/caretakers. This includes psychoeducation/brief treatment regarding behavioral health issues including parent education, psycho-social stressors/risk factors and behavioral health issues.

La Clínica's services have been adapted to maintain the safety and well-being of both patients and staff, while ensuring the continued provision of essential care. To maintain social distancing during the Shelter-In-Place orders and to serve patients who may be quarantined, La Clínica's

behavioral health clinicians are primarily providing services via telehealth to continue offering essential services to clients. La Clínica is currently able to conduct telephone-based and video conference appointments via a secure platform. Given the remote work at the sites, La Clínica's medical assistants halted the provision of behavioral health screenings but are currently implementing new workflows to resume these services in a safe manner.

**DEMOGRAPHIC DATA:**  *Not Applicable (Using County form)*

Please refer to Aggregate Data Reporting Form

Data for gender identity, ethnicity and disability will only be collected by clients seen by a behavioral health provider. Other demographic data is already collected and a standard part of the data collection process for all clients during registration for medical care. It would be burdensome and could harm the client relationship to try to collect this data as part of the screening process during a medical appointment.

The Familias Fuertes program serves children and data on veteran status and military status will not be tracked.

For clients under the age of 18, La Clínica collects sexual orientation if it is directly connected to the reason for referral or treatment plan. Given that La Clínica is providing brief treatment, La Clínica wants assessments to be as targeted as possible. La Clínica also wants to be sensitive to the reality that our adolescent population is in the process of forming their identity and sexual preferences and do not think would be appropriate to ask sexual orientation in our entire adolescent client population.

For the Familias Fuertes program, data for gender identity, ethnicity and disability is only collected by clients seen by a behavioral health provider. Other demographic data is already collected and a standard part of the data collection process for all clients during registration for medical care. It would be burdensome and could harm the client relationship to try to collect this data as part of the screening process during a medical appointment.

**LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including, how the PEI program follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

Participants are referred to behavioral health services through their primary care provider or self-referral. Participants are scheduled into our Integrated Behavioral Health Clinicians' (IBHC) schedules directly from their medical appointment. For more urgent need, clients are scheduled for a same-day or 'warm hand-off' appointment with the IBHC. La Clínica encourages

all medical providers to discuss the behavioral health referral before it is scheduled to ensure that participant is both interested and motivated to attend the appointment. If the client does not show to the IBHC appointment, the IBHC will call the client to attempt to reschedule the appointment, which may include clarification of purpose of appointment. If the behavioral health clinician assesses participant to need a higher level of care than our program model, La Clínica will work to link the participant to the appropriate services. La Clínica continues to meet with and support the participant until they are linked and follow up with the recommended service.

For clients in the Vias de Salud and Familias Fuertes program, the average length of time between referral and treatment is 19.8 days. This is measured from date of referral from their primary care provider (or self-referral) to the date of the appointment. Please note the next available appointment may be sooner but may not fit in with the client's needs so the appointment is scheduled later.

#### **CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

La Clínica strives to reflect cultural competency in the assessment, treatment, and evaluation of the program. La Clínica utilizes screening and assessment tools that are evidenced-based and have been normed for and researched utilizing a similar client population. Linguistic competence, and cultural competence and humility, are central factors to the new staff hiring process and at the core of La Clínica's program design, the approaches used, and the values demonstrated by all the staff. An embedded value is to honor participants' traditions and culture and speak the language the participant is most comfortable in. Throughout the initial and continuing training for all IBH staff, cultural and linguistic accessibility and competence is a core element to all topics.

Culturally based methods including "dichos" (proverbs) and "Pláticas" or individual/family meetings are used to engage participants and employ culturally familiar stories and discussions with Latino clients. Furthermore, mental health terms are interchanged with language that is less stigmatizing and more comfortable. For example, with Latino clients, sadness (tristeza) is a topic used to engage community members, rather than approaching discussions with mental health language terms such as "depression". At the same time, La Clínica strives to understand our unique client population and evaluate data while taking into consideration our unique client population. All behavioral health providers are bilingual (English/Spanish), and most are bi-cultural. When appropriate, La Clínica utilizes translation services for all other languages.

#### **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

IBH Clinicians are currently building relationships with First 5 to collaborate on the ACES screenings and trauma informed care for patients and staff. Clinicians are also working to build relationships with Contra Costa Crisis Center to refer patients to the grief services program. Additionally, the clinicians currently have a trauma group and partner with Agency A Window between Worlds who provides trainings and curriculum for clinicians to use with patients individually and with the group. La Clínica's case Manager refers patients to a variety of community organizations i.e., first 5, shelter inc., senior centers, Putnam clubhouse, contra costa county access services, bay area legal aid, contra costa food bank, family justice center, rainbow community center, contra costa crisis center, STAND, Covia Home match, CORE homeless Outreach.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

La Clínica strives to offer quality, consistent behavioral health services to the client population. By locating behavioral health clinicians within primary care facilities, La Clínica provides direct, often same-day behavioral health care to those who need services. Often clients are identified as needing behavioral health support in an early stage before they have developed severe symptoms. In these cases, services promote client wellness and provide coping skills that prevent the need of a higher level of behavioral health care. For clients with more severe symptoms, La Clínica able to assess them in a timely manner and determine what course of treatment would be most appropriate. La Clínica clinicians work in a team-based approach along with our medical providers to offer holistic care that addresses the intersection between physical and mental health. This team approach is both effective and proves to have the best outcomes for La Clínica's client population. Many of the clients who access behavioral health care at La Clínica would not otherwise have access to behavioral health for a variety of reasons including: transportation difficulties, stigma associated with behavioral health access, and inability to navigate the larger behavioral health system due to language barriers and system complexity. La Clínica makes every effort to provide services equally to all clients who are open to receiving care. Staff use non-stigmatizing language by interchanging the terminology of mental health with emotional well-being, allowing for a more receptive message to be communicated. La Clínica emphasizes the improvement in well-being, recognizing disequilibrium, and providing tools and resources for establishing emotional well-being,

physical health, and supportive, healthy relationships in one's life. La Clínica also helps normalize mental health issues by pointing out the prevalence of mental health challenges, the availability of a range of treatment services, and the efficacy of support and treatment to help reduce stigma.

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

*An 81-year-old male patient was referred to Behavioral Health for moderate depression symptoms. Client had a poor relationship with his family, felt unsupported, unloved, and lonely. Despite being in the US for several years, client continued having difficulties with acculturation. Client was also going through a phase of life problem where his lack of self-sufficiency significantly affected him.*

*Client has been actively in treatment with behavioral health at La Clínica and has stated that this is his only emotional support system. In treatment, client has been learning about coping skills, has been processing the phase of life he currently is in, has been supported with linkage to community resources to improve self-sufficiency and is also provided with a space where he is supported emotionally. Client plans to continue treatment with brief treatment in behavioral health.*

## PEI ANNUAL REPORTING FORM

### IMPROVING TIMELY ACCESS TO SERVICES FOR UNDERSERVED POPULATIONS REPORTING FORM

FISCAL YEAR: 2019-2020

Agency/Program Name: Lao Family Community Development, Inc. (LFCD) Health and Well-Being for Asian Families

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

- Provide access and linkage to mental health care
- Improve timely access to mental health services for underserved populations
- Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

The Lao Family Community Development's (LFCD) Health and Well-Being Program for CCC Asian Families (HWB) continued to focus on delivering PEI services to 128 unique clients targeting South Asian and South East Asian immigrant/refugee/asylee residents living in Contra Costa County. This report covers services provided between July 2019 to June 2020. We served 128 participants from both communities representing a diverse group (Nepali, Tibetan, Bhutanese, Laotian, and Mien) Majority 66% of the clients were aged 26-59; seniors over 60+ years was approximately 31%; and young adults ages 16 to 25 were 2%. For FY 2019 – 2020, a total of 128 participants were enrolled 98% of enrollment goal for this fiscal year).

We provided navigation and timely access to internal and external services including linkages to mental health and other service providers such as: a) Partnerships for Trauma Recovery in Berkeley, a community-based organization offering linguistically accessible mental health care and clinical services; Contra Costa Regional Hospital in Martinez, West County Health Center in San Pablo, Contra Costa County Mental Health Services in San Pablo, California's Employment Development Department, Kaiser Permanente in Richmond, RotaCare Bay Area Richmond Clinic, and Highland Hospital in Oakland, all public health facilities for physical health services and severe mental health access; c) La Clínica Fruitvale Free Clinic in Oakland for free physical medical and mental health service, d) Bay Area Legal Aid in Oakland and Richmond, for related services in family violence, restraining orders, and other civil legal assistance, e) linkages to

access the American Bar Association for pro-bono and consultation in legal services (free or low cost consultation), and f) Jewish Family Services – East Bay for naturalization and citizenship services to address our clients’ issues affecting their mental health and recovery needs. For timely access, we escorted high barrier clients such as seniors with visual and physical disabilities; monolingual language barriers, and those with few other options for transportation to 1) mental/physical health evaluations and appointments at to Contra Costa Regional Hospital in Martinez, West County Health Center in San Pablo, Contra Costa County Mental Health Services in San Pablo, Partnerships for Trauma Recovery in Berkeley, Kaiser Permanente in Richmond, RotaCare Bay Area Richmond Clinic, Highland Hospital in Oakland, and La Clínica Fruitvale Free Clinic in Oakland; 2) the USCIS office in San Francisco for immigration assistance; 3) Jewish Family and Community Services – East Bay for onsite legal assistance with naturalization and immigration service 4) Federal SSA offices in Richmond or Oakland for SSI benefits or Temporary Protected Status. These access and linkage services were provided for clients by providers located in both inside and outside CCC county in line with participants’ individual service plans.

Enhanced services included: 1) assisting individuals with building connections and links in their cultural communities; 2) strengthening family relationships and communication within their families; 3) reducing stigmas associated with seeking mental health support through education and awareness; and 4) helping individuals learn how to navigate the public and community mental health and well-being systems and in some cases private providers.

THE FOLLOWING WERE ACTIVITIES DURING THE PROGRAM YEAR:

Strengthening Families Program (SFP) Educational Workshops:

LFCD held a total of 16 SFP workshops during the program year. (2 workshops per month from August 2019 to March 2020). Due to the COVID 19 pandemic we didn’t host SFP event from April to May 2020, being that those were the early stages of the pandemic and we wanted to wait until Contra Costa County suggested the number of attendees an event could hold. So, we focused on graduation and closing out of cases in June 2020. For the graduation again, due to the COVID 19 pandemic we had incentive of PPE supplies personally brought to participants who completed the program. We continued to conduct SFP workshops for the two population groups separately, to accommodate their specific needs. SFP workshops for SA and SEA populations varied from 4-5 hours per month. Weekly 1–2-hour SFP sessions were delivered on an as-need basis. SFP workshops and sessions were delivered in a variety of locations and timeframes. Locations included participants’ homes, community parks, community buildings and at LFCD’s community-based facilities during the weekday evenings, days and weekends as needed.

Our South Asian population, a 5-hour SFP workshop session was preferred due to personal, work, and school schedules. The top 5 most significant challenges identified by the South Asian

population were: 1) parent relationship conflicts 2) mental and health insurance access, 3) behavioral health in areas of alcohol and drug abuse and its relationship to well-being, 4) healthy communication conflict resolution skills within the family, 4) wellbeing and resilience in the areas of immigration status such as Temporary Protected Status (TPS), green cards and citizenship, 5) need for jobs-employment-financial stress. These topics were incorporated into the SFP workshops including having guest trainers and additional ones were provided as requested.

The Southeast Asian population preferred monthly 5-hour workshops in addition to weekly sessions as needed to allow clients to make up missed workshops. The top 5 most significant challenges identified by the SEA population were: 1) mental health/SSI related assistance, 2) affordable housing assistance, 3) health insurance/mental health access, 4) citizenship and employment, 5) parenting and reducing family conflicts.

Program format for both populations included integration of these identified challenges into each SFP workshop module using discussion and group peer counseling and individual case management and counseling. Linkages and connections to resources were provided to participants in line with their individual goals. Timely access and referral are part of the case management protocol and participants were provided services through internal programs and CBO providers in the community. This timely and relevant menu of linkages are critical in providing positive reputation for successful outreach, engagement, and retention of participants, and SFP workshop completion and individual service plan achievement. Program feedback from SFP workshops and/sessions indicated that program participants continue to prefer the following:

- Outdoor settings for peer/individual activities-physical health and mental health benefits including the use of the Health and Well-Being Community Garden at the San Pablo. NOTE: LFCD plans to complete the expansion of the Community Garden to the Community Building located across the street from our San Pablo office.
- Strong preference for community and spiritual related events for building social connections
- Preference for interactive socialization time with other participants and outside groups
- Live music/dancing as therapy to help reduce stress, reduce pain, depression, anxiety
- Interactive activities in workshops/social gatherings

#### Enrollment and Participants Individual and Family Goals

By June 30, 2020, a total of 128 program participants were enrolled for FY 2019/2020. Of the 128 participants, 16 participants 13% were from East/Central Contra Costa County. Each intake enrollments took 1.5 to 2 hours to complete. Participants developed individual and/or family written goals working closely with case managers. Exits and entrance are on a rolling basis.

Participant goals examples include:

- To access and obtain treatment for mental healthcare and evaluation for severe mental health issues, PTSD, etc.
- To access SSI benefits for elderly participants with visual impairment and other disabilities
- To access health and mental health services through Covered California exchanges or other low- cost health insurance options including County Basic Care, Medical, Medicare, CalFresh and other free services.
- To obtain/increase access to preventative health care including annual physical examinations
- To access permanent affordable housing (public housing, section 8, foreclosure assistance, etc.)
- To reduce anxiety and depression related to citizenship, naturalization, unemployment and under employment.
- To reduce stress related to financial hardships and lack of money for basic needs (mental health stress and well-being related illnesses)
- To develop and maintain healthier lifestyle behaviors
- To improve their relationships with immediate family members/children/grandchildren
- To be more engaged and civic oriented within their community
- To increase integration into US society through citizenship access

Outreaching strategies continue to include word-of-mouth referral from alums, current participants, and South Asian/Southeast Asian community members. LFCD has a strong and established reputation among the communities of the targeted population.

Alums are important for outreach, promotion, and referrals through their networks to build awareness of the services available and to reduce stigma around mental health. Case managers must continue to actively do direct outreach at local ethnic events such as community New Year celebrations (e.g., Mien, Khmu, and Nepalese) and social faith-based events. Case managers also conducted outreach at ethnic grocery stores, ethnic community leadership meetings, and other ethnic community gatherings. Outreaching at these events allowed case managers to continue to build awareness of the program services; personally, engage and build collaboration and rapport with ethnic group leaders; and to outreach to new community members. The HWB outreach strategy ensured that program staff continue to connect with hard-to-reach populations.

Case managers continued to leverage partner relationships with local service providers for needed service to address needs in the individual service plans. Community building with CBOs and stakeholders has allowed the HWB program to expand deliverable services. An example of this is an MOU signed with Jewish Family Services to provide on-site legal assistance with

immigration and citizenship issues at the LFCD San Pablo office once a month. Referral relationships have been valuable in recruiting and retaining program participants by allowing participants to become more aware of different community, public and private resources available to them within Contra Costa County.

### Thematic Peer Support Groups

The HWB program participated in 6 thematic peer support groups during this reporting period. These events allowed individuals to 1) make connections in the community, 2) become more aware of available public/private services including mental health assistance and how to navigate these systems, 3) communicate with family members across generations and 4) increase timely access to services by making a personal connection with HWB staff.

The following is a summary and highlights of each event.

- September 29, 2019 - A Meet and Greet Event was attended by 44 clients with food provided. A program introduction was provided by LFCD CEO Kathy Chao Rothberg that encouraged participants to take advantage and become engaged in the HWB program. Certified Zumba dance instructor Ms. Uma Maharjan led the group in Zumba activities and ethnic food was provided. Topics presented including Covered California, Census 2020, and community participation. Participants were encouraged to assist each other to reduce stress and isolation. Former clients Mrs. Sharada Parajuli who is disabled person shared her inspirational success story. She was graduated from the Lincoln University in Oakland California majoring in Human resource management. She got her driving license and job at the Peralta College district. She was continuing to her path to self-sufficiency. There were cultural dances from the community students. The participants were happily enjoying the activities.
- November 24, 2019 - A Thanksgiving Festival was held at Lao Family San Pablo office location with 60 people attending including 25 new clients. The participants celebrated with a traditional Thanksgiving meal plus a special cake for an established family from the program. Two presenters Mr. Surendra Prakash Malla and Mrs. Anupama Chapagai presented about the Cover California through power point. Similarly, Anupama Chapagai has presented about other social benefits such as how to receive services if you have no proper insurance. She also focused on women empowerment as well. Similarly, our former client Prem Pariyar has presented about ongoing mental health problem in the Asian community.
- December 22nd, 2019 - The HWB Christmas New year and Toys Giveaway event was held at the Community Building in San Pablo with 70 clients and family members attending in total with 25 of them regarded as new participants. The purpose of the event was to bring clients together to reduce isolation and meet new families. A Covered California representative Mr. Surendra Malla and Kileshor Malla provided a

power point presentation about the cover California benefit. Similarly, Lao Family CEO Kathy Chao Ruthberg highlighted various aspects of benefits and opportunity in Lao Family. She also congratulated to all participants for joining the HWB program to become self-sufficient. There was a cultural dances and songs by the local student artists. The City of San Pablo in partnership with LFCD provided some of the toys provided to the children in attendance. Many participants also received some gifts after being raffled by the HWB case managers.

- On March 8<sup>th</sup> and March 15<sup>th</sup>, 2020, there were a census related workshops and social gathering in San Pablo and Rodeo California with 50 participants due to COVID-19 pandemic. Case manager had enrolled more than 150 people to register census even during the pandemic time. Case manager had continued its efforts to call the clients over the phone and remind them to register in census to count themselves. Many community members and prospective clients were benefited by this effort.
- On April 9<sup>th</sup>, 2020, a Zoom meeting and presentation was initiated from 5PM-8 PM, by case manager by inviting health professional such as Dr. Pushkar Raj Pandey (General physician), Dr. Sharmila S. Bhatta (Mental health specialist), Mr. Yagya Prasad Nepal (Immigration attorney), Dr. Tika Lamsal (prof. University of San Francisco) , Mr. Tanka Rayachhetri (Tax expert), Mr.Tirtha Dong (Tax expert) and Mr. Suraj Pakhrin (Real Estate agent). They all had presented in their respective topics and extended their helping hands if anybody needs any kind of support at all times. In this way, case manager had connected many clients who were facing difficulties to apply EDD and pandemic EDD benefits. Similarly, health experts also promised to help the community members any COVID-19 related problems at any time and shared their contact information. Immigration attorney also promised help community members who need to extend their visas at no cost. Similarly, professor Tika Lamsal presented problem facing by the international students during the COVID-19 pandemic. He requested more help and support from the community. Finally, realtor Suraj Pakhrin who was our client during 2013-14 HWB program had presented about the current real estate market, gave some update how we can apply for loan forbiddance with the lenders, how we can write a letter to the apartment owners to request an extension. Many people watched this zoom video via Facebook. They highly appreciated our joint efforts for the community.
- Bay Area Nepali community had formed a new Group “COVID-19, Nepali Help Center” under my coordinator ship on April 16<sup>th</sup>, 2020. It was a coalition of 10 various CBOs and Ethnic organizations in Bay Area. We opened online and offline donation links for the support of victims of COVID-19. We have raised around 20,000 dollars and collected PPE from various sectors of society to help newly arrived immigrant’s family, international students, and senior citizen.
- On May 9<sup>th</sup>, 2020, case manager again participated in the ZOOM meeting with the various community leaders. The main goal of that meeting was how we were addressing

needs of community members, students, newly arrived immigrants, and elderly people who were stocked in USA due to COVID-19 pandemic. We have distributed cash donation of \$250.00 and PPE to each of 50 international students who did not qualify for the stimulus benefit. Similarly, we helped 15 new immigrant families \$350.00 each plus PPE, and we also provided financial support and PPE to 12 senior citizens \$250.00 each. Most of them were our clients. In this way, we were able to maintain very good relationship with the needy community members during the difficult time.

#### HWB Graduation Event:

Due to COVID-19 pandemic, HWB graduation event was completely different this year. We used to celebrate this event as a festival during our past 9 years in this program. We used to have big crowd of people (about 100-120). We used to have a cultural event, guest speakers and more informative presentation during the graduation event. However, due to CDC guidelines, our personal safety and client's safety our HWB team had decided drive throw incentive and certificates distribution event. On June 27th and 28th HWB graduation drive throw certificates and incentives distribution program were organized by both case managers individually. Case manager from South and South East Asian community distributed certificates and incentives to 101 clients from El Cerrito, San Pablo, Richmond, Rodeo, Martinez, Concord, Pittsburg, Bay Point, and Walnut Creek California who were still available in Bay area. The pocket of incentive consists of one hand sanitizer, 10, gloves, one KN95 mask, and dry food. For the clients who were not available by that time or had moved from the location on file. The Case manager sent their gifts and certificates via mail in their new addresses.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year, describe any adaptation of services due to COVID-19 that may be relevant, how are participants identified as needing mental health assessment or treatment? List of indicators measured, including how often data was collected and analyzed***

Participants were given a Pre and Post Lubben Social Networking Scale (LSNS-6) mental health assessment to help identify mental health needs. The LSNS-6 assessment was administered to each individual program participant at the beginning and end of their time in the program. According to program protocol, clients with initial or final scores that indicate a high level of social isolation and/or a lack of social connectivity are recommended and referred for mental health assistance.

The LSNS-6 assessment is a tool that measures social connectivity and gauges social isolation in adults by analyzing the perceived support that the participant receives from family, friends, and neighbors.

According to Boston College’s School of Social Work, the LSNS-6 “consists of an equally weighted sum of 10 items used to measure size, closeness and frequency of contacts of a respondent’s social network.” This provided quantitative data that measured the effectiveness of our HWB program within the framework of establishing mental health/well-being through social interaction/community building.

A total of 125 clients completed the Pre LSNS assessment and 125 clients completed the Post LSNS assessments. The average progression was 8 with a high correlation between the participant’s progression and level of participation in monthly social peer support groups activities and workshops.

Please refer to the table for LSNS results:

	Pre-LSNS	Post-LSNS	Progression
# of Completion:	125	125	
Average:	16	24	8
(Min) Range:	13	18	6
(Max) Range:	28	30	5

In addition, case management provides a continuous contact and monitoring of clients to determine if any trauma or event has affected their mental health status. Referrals to link participants to more rigorous mental health assessments and treatment were provided on an as-needed basis.

Internal evaluation of the program includes reviewing cases to ensure strategies for communication and considering the cultural competency of the counselors. Cases are reviewed to ensure participants in the program receive services that are linguistically and socially appropriate. Examples of these services include communicating in their native language (Mien, Lao, Thai, Nepalese, etc.) and understanding the cultural norms to address health and well-being issues in an appropriate and effective manner. A thorough review of cases every 6 months ensure that the confidentiality and integrity of the participants’ information is protected.

A program activity evaluation form was completed per each activity conducted (e.g., ethnic peer support gatherings and SFP workshops). In each program activity, 5 random participants were asked to complete the activity evaluation form. This process allowed a program staff or volunteer to work one-on-one with the non-English monolingual participant to complete the form. Each set of completed evaluation forms are attached to an activity reflection form for

documentation purposed. The evaluation forms are reviewed by the program staff and changes were implemented according to the participants' evaluations. Comments in the evaluations included recommendations for cultural activities, outdoor events including using the recently opened Community Garden at the San Pablo office.

The last evaluation tool used was a general program evaluation form that was created by the program staff to measure the participants' comfort level, participants' engagement, and the cultural competency of the program services. The tool was also used to measure the participants' knowledge of accessing services that were related to their mental health and wellbeing and the impact of stigma on their will to seek services after receive program services. The evaluation was completed via phone by non-program staff that spoke the same languages as the participants.

The results stated that the 98% (125 of 128 respondents) of the participants were satisfied with the program services, and 2% (3 of 128 respondents) were somewhat satisfied with the program services. Some of the resources the participants listed on the survey were West County Health Center in San Pablo, Contra Costa County Mental Health Services in San Pablo, Community Health for Asian Americans in Richmond, California EDD in Richmond, Department of Rehabilitation in Richmond, Contra Costa Regional Medical Center in Martinez, Highland Hospital in Oakland, La Clínica Fruitvale Free Clinic in Oakland, and East Bay Area Legal Aid in Oakland and Richmond, Law office of Laura A. Craig, Jewish Family Services – East Bay in Walnut Creek, etc.

From July 2019 to June 2020, there were 11 participants that were referred to mental health services because of monitoring clients' mental health status. The participants were referred to therapy related to PTSD and expressed symptoms of distress, anxiety, and depression. The average length of time between report of symptom onset and entry into treatment was from 2 to 6 weeks depending on availability of services with an average time of about 4 weeks.

One of our continuing challenges is utilizing the county mental health services as it can take up to 16 weeks to get an appointment. Specifically, through experience our case managers have found the Contra Costa Mental Health Access Line to be extremely difficult to navigate. Being that clients who are Medi-Cal recipients through the county, case managers have been directed to the access line to assist their clients. Unfortunately, the access line doesn't have a quick call back turnaround and often clients have been left without service. By comparison, access to private low-cost and CBO mental health services takes an average of 4 weeks. Which in many cases, clients have reported a more efficient way to access western mental health resources.

#### **LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including how the PEI program: 1) provides encouragement for individuals to access services; and 2) follows up with***

***the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

Participants have been linked to mental health services and other providers depending on their need and goals identified in the individual service plan. From July 2019 to June 2020, this PEI program referred participants to different agencies inside and outside Contra Costa County using the following step-by-step procedure:

- We carefully, patiently, and attentively listen to the participants in a safe confidential setting as they explained their needs. Through our culturally competent counselors, we begin to establish understanding and trust with the participants, prior to linking them with traditional western mental health resources. The LFCD office in San Pablo was able to add a new confidential private room that is used for intake, counseling, etc.
- We provided support to participants while helping them develop their individual service plan with step-by-step goals and tasks including identifying linkage providers.
- Then, we encouraged individual participants to access and seek service provided by others. This process can take from 4 to 8 weeks in duration.
- Once the participant feels confident in our relationship with their confidential information, then we escort them (most of the time) to the provider for the warm handoff.
- If we are not able to do this, we set up a phone conference call to provide an introduction and assure that there is a translator available when they go to their appointments. We also provide the participants with name and address to assist them. If the provider is not available, we send an email and call while the participant is there to witness this.
- Next, we followed up with the participant and referral partner within the week. Then we stay in contact either weekly, every two weeks, 3 weeks, or monthly depending on the length of time in their treatment and in the program with more attention upfront until the treatment is complete. Average time from the referral to consultation first appointment, evaluations and then entering the treatment at the referral partners' office is 1 to 8 weeks (depending on availability of interpreters and appointment slots at the outside partners; we have found public providers take longer than CBOs or private).

This is the list of the external services including linkages to mental health and other service providers such as:

- West County Health Center in San Pablo, Contra Costa County Mental Health Services in San Pablo, Community Health for Asian Americans in Richmond, California EDD in Richmond, Department of Rehabilitation in Richmond, Contra Costa Regional Medical Center in Martinez, Highland Hospital in Oakland, RotaCare Bay Area Richmond Clinic, Kaiser Permanente in Richmond, La Clínica Fruitvale Free Clinic in Oakland, Trauma

Recovery in Berkeley, and Regional Center of the East Bay in Concord for physical health services, severe mental health access and/or developmental disability services.

- Dr. Lee Hee, MD, a private practice medical doctor in Oakland for affordable medical care.
- Bay Area Legal Aid in Oakland and Richmond, East Bay Sanctuary Covenant in Berkeley, law office of Judith Lott in Oakland for related services in family violence, restraining orders, immigration assistance and other civil legal assistance and linkages to access the American Bar Association for pro- bono and consultation in legal services (free or low-cost consultation) for our participants' needs affecting their mental health and recovery needs.
- Jewish Family Services – East Bay, to assist with naturalization and immigration services on site at our San Pablo office at regularly scheduled intervals.

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

Please refer to Aggregate Data Reporting Form

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Services have been designed and structured to meet the diverse cultural needs of our clients and participants by developing a strong sense of cultural informed services. For example, during a SFP Social Gathering last year a Nepalese participant raised a valid concern about the food being served at the event. The client informed the case managers that they were unable to consume food during the event. Which was due to the participant undergoing a fasting period for a religious ceremony. Being that the event was going to be centered around the meal, the case managers were able to shift the focus of the event from the meal to the overall importance of the gathering. The organization has supported the cultural responsiveness and awareness in the agency by staffing individuals from backgrounds like those being served in the program. For example, both HWB case managers are from either South Asia or South East Asia. Therefore, these individuals meet the cultural perspective requirement necessary to serve participants in the program. Also, the organization has adopted the practice of cultural informed trainings throughout the organization. By doing so, our clients and participants can receive cultural aware services across our organization.

## **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Collaboration and referrals are a major aspect of the program through traditional and non-traditional channels. Currently, we leverage our partners and mental health providers in the community. For example, during this reporting period our program coordinator established a new partnership with the Contra Costa County Assisted Outpatient Treatment program. This program, like our HWB focuses on the importance of linking these underserved individuals to mental health treatment. Additional to leveraging outside partners and service providers, case managers refer clients within our organization for services such as employment, victim services, and immigration. With the collaboration within the organization, we have seen an increase in positive results and experiences from the clients. To build more relationships with partners and service providers, our coordinator has implemented the importance of outreaching for mental health service providers.

## **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

At the end of the 12-month period, we reflect on our work and partner linkages. Our evaluation is that our program values reflect MHSA values in these areas:

- Our written program policies and agency commitment and practice of providing a safe, trusting, and confidential setting at LFCD and elsewhere engenders feelings that there is no stigma. We patiently listen to understand. Knowing that anything shared is safe and that no one other than who they authorized will know.
- We have a zero-tolerance policy for discrimination or prejudice based on race, place of origin, gender, religion, disabilities, etc. and our practice gives participants confidence that they are not discriminated upon.
- Our practice and demonstration of our commitment to timely access for our clients. This results in the high level of satisfaction feedback we get from our clients with service provided in terms of case management, peer support, reduction of isolation, comfort in asking for helping and talking to others about mental health and increased knowledge of services in the community. Our services are provided daytime, nighttime, weekends, and escorted assistance.

- Our strategy to establish trust first through case management-leads to participants engaging at a higher level and higher graduation from the program and accomplishment of their goals. Our Case Managers are well-respected members of the communities that they serve which allows for an engaging relationship with participants.
- Providing participants with timely access and warm handoffs to linkages (specific person with the linguistic and cultural competency) to the mental health PEI services and providers helps participants to begin their recovery path sooner. Several mental health providers have provided reflections about the importance of participants trusting our Case Managers that results in a better handoff to services.

Our thematic peer group activities; individual connections to the counselors, linkage providers, and each other; cultural activities, food, music, and indoor/outdoor physical activities selected based on participants' wants and needs engenders resiliency and wellness. These activities help participants build their resiliency and their recovery from crisis.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

During this time, we have had several clients with mental health stress because of issues concerning immigration, housing, finances, physical health, and death in the family. Here are a few stories related to mental health stress:

Ms. A is a 38-year-old Nepali who was referred to us by Bay Area Legal Aid in July 2019. From monitoring her situation, it became evident she was experiencing a lot of stress and anxiety due to a situation in her home country. Due to her visa requirements, she was separated from her small children and her husband who are back in Nepal. In addition, her in-laws seized her and her husband's property in Nepal which ended up in a prolonged court case. She was also diagnosed with stomach cancer and suffered from extreme anxiety. The HWB Case Manager referred her to the East Bay Trauma Center to provide immediate access to mental and physical health professionals. She is currently in therapy and takes medication to reduce her anxiety, address her stress related conditions and treat her cancer. She has benefitted from participating in the LFCD PEI program activities which has provided more connections in her cultural community to provide her support and comfort while providing access to mental and specialized medical services.

Ms. A is a 58-year-old Laotian woman who came to the US in 2001 and was sponsored by her husband. In 2014, they divorced, and she has struggled to get access to housing, health benefits, etc. For example, she has struggled since 2015 to qualify for Medical because he continues to claim her under his health insurance without her having the ability to use it. The

HWB Counselor has helped her navigate the mental and physical health system to get the services she is entitled to receive. She currently receives Medical to address her high blood pressure and sleep amnesia which allows her to continue to work at her job in a local restaurant. She felt a lot of anxiety and stress about losing her job although her employer was flexible with her as she addressed her physical and mental health needs without any Medi-Cal support. Now that her health insurance situation has stabilized, she is working fulltime and receiving medication and health support through Medi-Cal. The HWB Case Manager helped her apply for the CCC Housing Authority Voucher as she is currently renting a room from a friend. The PEI program has provided ongoing support and engagement with other participants as she progresses towards economic and social stability.

## PEI ANNUAL REPORTING FORM

### Stigma and Discrimination Reduction Reporting Form

Fiscal Year: Jul 2019-August 2020

Agency/Program Name: The Latina Center/Our Children First (Primero Nuestros Niños)

#### PEI STRATEGIES:

***Please check all strategies that your program employs:***

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

The Latina Center offered culturally and linguistically relevant parenting classes and mental health workshops in community-based settings (schools, churches, The Latina Center's office) in West Contra Costa County and made referrals to mental health services, as well as providing educational and therapeutic services in house. During FY July 1, 2019 – June 30, 2020, we served a total of 314 parents (parenting sessions, mental health workshops, psycho-educational therapy, support groups) and provided 30 learning circles with activities reaching 424 children.

The Latina Center conducted outreach to recruit and engage parents to participate in our programs using flyers, phone calls, Facebook, referrals from intakes by The Latina Center staff, and referrals from West Contra Costa County schools, health clinics, Child Protective Services (CPS), churches, and courts.

During this annual reporting period, our outreach efforts reached 1,031 individuals, and enrolled 42 people into our programs.

To improve timely access to services, our staff provided one-on-one case management and follow-up to ensure that people were connected to the services they need. Staff also provided access to phone service and help clients develop a personalized action plan.

#### OUTCOMES AND MEASURES OF SUCCESS:

***Please provide quantitative and qualitative data regarding your services. Please include:***

***Numbers served during the fiscal year:***

During the fiscal year we served a total of 314 parents.

***Describe any adaptation of services due to COVID-19 that may be relevant***

In the second period of the year COVID-19 unexpectedly paralyzed our programs. First, we had to understand what was happening and how it affected not only our programs but the parents in our community. For most families, the pandemic has devastated their lives in many ways. In addition to the severe economic consequences, anxiety, depression, and fear are the primary mental health effects that we have seen in the last six months. After ensuring that all staff had the necessary skills and equipment (e.g., technology) they needed, we converted all our outreach and education programs to virtual platforms and provided families with supports as needed to access our new online programming. In addition, we received several grants that enabled us to distribute emergency relief funds and PPE to families in our community most in need. Eligibility criteria were identified, and systems were developed to track funds. \$189,000 was distributed.

***Please detail any methods used to change attitudes, knowledge and/or behavior, and include frequency of measurement.***

Our focus was on helping parents with their primary (basic/survival) needs while at the same time talking to them about the importance of learning to use technology that will allow them and us to share information and strategies about parenting that can help provide them with tools to manage their stress levels and avoid abuse and violence with their children, especially in this time of crisis. The methods we use include dynamic sessions that are culturally and linguistically relevant where parents can share their experiences and ask questions; homework that gives parents specific tools to practice parenting techniques; and feedback sessions where parents can support each other. We continued to administer surveys to measure changes in knowledge, attitudes and behavior and gather testimonies about their experiences.

***How have your selected methods proven successful? Please reference any evidence-based promising practice or community practice standards used, as well as how fidelity to the practices have been ensured.***

PARENTING CLASSES

Primero Nuestros Niños (Our Children First) is an evidence-based 10-week culturally appropriate and linguistically specific parenting education program. We converted our in-person classes to virtual classes due to the pandemic doing our best under the circumstances to maintain not just the course content (fidelity) but the in-person dialogue and support that parents receive. During the fiscal year, we successfully provided the following:

- 286 parents (244 women and 42 men) registered for the parenting class and completed a pre-survey in Spanish.
- Parenting classes were held in 4 community-based locations: Cesar Chavez Elementary School, Mira Vista Elementary, Richmond Charter Academy, and The Latina Center. All classes completed the 10-week sessions 6 sessions online.

#### Parenting Class Pre-Survey Results

- 100% of parents wanted to acquire new skills
- 61% of parents wanted to improve their communication with their children
- 54% of parents wanted to improve their relationship with their family
- 23% of parents wanted to learn more about child development
- 15% of parents wanted to learn more about mental health

At least 73% of participants identified as a survivor of some form of violence (physical, emotional, and verbal abuse) including current or experience with domestic violence (as teenagers or adults), child abuse. Many said their children have witnessed domestic violence in their own home.

Parents learned about our parenting program from other programs at The Latina Center, friends or other “word of mouth”, their children’s school, CPS, or the courts.

More than 1000 calls to reach parents that got help from the emergency fund COVID-19

#### Referrals for Services

Based on the responses to the pre-survey, The Latina Center made at least 28 referrals to:

- Ya Basta, a domestic violence support group at The Latina Center (5)
- Amor y Servicio !Liberate!, a support group for people with substance use or addiction problems (5)
- Family Justice Center (7)
- Familias Unidas (1)
- Caridades Catolicas (1)
- Life Long Medical Clinic (7)
- Early Childhood Mental Health Services (2)

#### Mental Health Workshop (in partnership with NAMI)

During July 1, 2019 - August 31, 2020, 324 individuals received educational and direct mental health services from the Our Children First Program. The Latina Center staff 6 Mental Health Workshops in 3 locations (The Latina Center, St Cornelius Catholic Church and Montalvin Elementary School) for 130 participants; 94 participants completed pre and post-surveys.

Before the workshop, 65% of parents said they did know what mental illnesses are; 35% did not know. After the workshop, 96.9% understood what mental illnesses are; 3.1% did not understand.

*Can you recognize any signs or symptoms of mental health?*

- Before: 57.5% know of any symptoms or mental illness and 42.5% do not. After: 81.3% know more of the signs and symptoms; 18.8% did not.

*Do you suffer from depression?*

- Before: 39.5% consider themselves to be depressed; 60.5% say they do not have depression. After: 40.6% recognized that they have depression, 50.4% say they do not.

*Do you suffer from anxiety?*

- Before: 51.2% admit they have anxiety, 48.8% say they do not. After: 50% acknowledged having anxiety; 50% say they do not.

*Do you suffer from stress?*

- Before: 76.2% say they have stress, and 23.8% say they do not have stress. After: 78.1% now admit to having stress, and 21.9% say they do not have stress.

*Does any member of your family have a cognitive disability?*

- Before: 20.9% say they have a family member with cognitive disabilities (i.e., dementia, learning disabilities); 29% say they did not.

*Does a family member need emotional support?*

- After: 71% acknowledged needing emotional support, and 29% say they do not need it.

*Are you going through a difficult emotional situation?*

- 39.5% answered yes and 60.5% answered no.

*Would you like to make an appointment with a counselor?*

- 47.6% answered yes and 52.4% answered no.

### Referrals to Mental Health Services

During the fiscal year, The Latina Center served 64 parents as follows:

- 20 parents received psycho-educational support/counseling from our onsite therapist Javier Nunton, MSW (see report)
- 8 parents were referred to therapy with Eleana Coll, MSW (see report)

- 36 mothers were referred to The Latina Center’s support group Celebrating Recovery (Facilitator, Beneranda Lara)

Activities for Children

Learning Circles: In addition to Our Children First parenting classes, The Latina Center provided 30 learning circles with activities reaching 424 children as follows:

- Ages 0-5        74 girls and 131 boys
- Ages 6-15      73 girls and 146 boys

**DEMOGRAPHIC DATA: *If your agency has elected to not utilize the County Demographics Form AND have chosen to not collect specific demographic domains (i.e., Veteran Status, Disability, etc.), please provide justification.***

Not Applicable

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your client, members, or participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

The Latina Center serves the Latino community with culturally and linguistically relevant parenting classes structured to support our clients by giving them the tools to thrive in their lives. The Latina Center also ensures that staff, Parent Educators, volunteers, and parents participate in training. During 2019-2020, we provided the following training opportunities:

- Vision y Compromiso’ 2-day conference in Los Angeles: training related to parenting and support
- NAMI: basic mental health first aid training for facilitators
- SISTAS/HIV education and awareness training informing teenagers

During COVID-19, our staff participated in many webinars and training online including:

- VISIÓN Y COMPROMISO: Answers from a community promoter to confront the pandemic, how to deal with stress and manage with kids at home
- California Work & Family: Understanding paid family leave during COVID-19
- Family Justice Center: Young children impacted by violence; Unlawful Detainers 101; Elder Abuse
- WCCUSD: Careers Training Fellowship
- Seminary from Lima, Peru: Physiotherapy training in mental health support techniques

### **COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients, members, or participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

The Latina Center works with organizations such as Familias Unidas, Early Childhood Mental Health, West Contra Costa County Children and Adolescent Mental Health Services, Family Justice Center, NAMI, Fred Finch Youth Center, among others.

### **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Through the Primero Nuestros Niños (Our Children First) parenting education and early intervention program, we identify community members with mental health issues and refer them to local mental health services and programs. Our culturally and linguistically relevant program reaches people where they are with strategies that are neither non-stigmatizing nor discriminatory including a warm hand off, one on one coaching, assistance with the process of contacting a crisis line or other program for assistance, case management, and ongoing follow up to ensure that people get connected and stay connected to the referrals we make.

The needs of immigrant families in our community are much greater than what we can provide and there remains much work to do to improve the emotional health and well-being in our community. Many Latino residents, especially those who are immigrants, are experiencing high levels of depression, anxiety, and stress, now more than ever due to the pandemic. Teenagers, children, and older adults all need resources including counseling and peer support groups but waiting lists are long and not everyone has access to the technology to make virtual programs work.

We refer people to our partners such as Familias Unidas, Early Childhood Mental Health, and West County Children and Adolescent Mental Health Services. Unfortunately, too many people tell us that they are not able to receive the help they need because they do not have medical insurance, the cost of mental health services is too high, the waiting list is long, and/or there is a shortage of bilingual providers. As a result, we have partnered with 2-3 bilingual therapists to refer monolingual Latina women with different mental health needs for appropriate levels of intervention. As a result, more Latina women in West County are being assisted via weekly, one on one sessions by phone based on pandemic protocols. They are receiving psychoeducation and case management for a limited period (12 weeks or 3 months). The array of conditions include:

- Individuals with traumatic experiences due to exposure to different levels of abuse.
- Mood disorders, self-esteem, and dependency issues.
- Parenting challenges; and grief.
- Assistance with the mental health effects of being diagnosed with COVID-19, the effects of the quarantine and/or other pandemic-related mental health issues.
- Clients are receiving case management to facilitate linkages to medical care and psychotherapy as well as immigration services, housing assistance, food banks, and crisis hotlines.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

A selection of testimonies from our participants are included below:

I learned to identify bad behavior in my daughters, and I have learned how to do it with love and patience and a lot of dedication. I give them precise instructions if they break them there will be consequences. Communication with my husband has increased in the agreements for them and neither of us disavowed each other. Sometimes he also applies ignoring, it is a good technique for them to find their own answers and make good decisions. We have a style of educating and disciplining, however, the tools of the classes (not punishing, encouraging, speaking with soft and firm words) have helped us a lot.

In my work I have applied I messages when there is a problem, and in my personal life it has helped me a lot in making internal changes and in my family. The dynamics of the heart helps me reflect on the damage that it caused to my loved ones and from now on I will use the tools from the classes to improve my relationship with my family.

I learned that using alternatives and consequences, and setting limits are better for disciplining my children. Before, I used methods by which I was educated (screaming, snapping fingers). But my beliefs have now changed with the STEP tools and thus my way of educating and understanding myself better with my family has improved.

There are many things that as a mother one sometimes does wrong, at least it has happened to me. With my children when they have bad behavior, I have spoken out loud to them or I do things for them without showing authority and that gives them power over me. So today I learned that it is better to go out for a moment and try to understand why they act that way and talk to them calmly.

My son suffered a lot from bullying at school. I noticed that he no longer wanted to go to school and showed an attitude of incompetence. I talked to him and applied what I learned in the

motivating classes to highlight the good things he is and that he can do. Little by little, he has been changing.

My children tend to throw tantrums every time we go out for something they want, and we don't give it to them. Now, I have set my limits and speak with them very firmly before leaving, explaining to them that we will go out and that they will not be given everything they ask for and that way they already know how they should behave.

I got desperate when a situation arose with my children and even yelled at them. Now with the tools of the parenting classes, I try to control my anger. I started treating them differently and not yelling at them.

After the class on the four objectives of bad behavior I have been able to identify what my son's objective is: attention and power. We have talked in my family about giving options and looking for alternatives.

And at the same time, we are improving communication.

In my work there are people who treat people very badly. After taking the Mental Health workshop, I understand that there are people who are not well and live with Mental Illnesses all their lives. Now I see them in a different way and with respect. The classes helped me reflect on my behavior and recognize that just as they hurt me, I also did a lot of damage. The tools from the classes I have begun to implement and I have seen that my environment is changing but because first I started to work on myself.

We had an exercise of the heart and I understood that I cannot harm someone because afterwards they are no longer the same, they have already hurt themselves and their heart will not be the same. I learned that reflective listening is a way to understand my family and understand their feelings, that they feel supported by me, and that they count on me.

I like parenting classes because they give me homework. My son is motivated to do it with me, and we bond more.

I've learned to identify my daughter's bad behavior. When I want her to cooperate and she misbehaves, I ignore her, and let her finish with the chores.

I have my daughter in sports, and I encourage her to continue because sometimes she doesn't want to attend, and I motivate her to get good grades so she will continue on the team. I also like to talk with my children, and I learned to listen to them reflectively.

I have learned to show respect for myself and to motivate my children to cooperate.

As a mother, I have learned to reflect and calm down in every situation so that I can think better and take things calmly to be able to solve them and not get out of control.

I really liked the idea of homework and family meetings because it helped me have more time with my children and give them the attention they need.

I learned that reflective listening to my children has helped me a lot in understanding them and improving communication. I also liked the I messages that helped me to listen to them and understand them more.

Reflective listening has helped me understand the needs of my children and my wife, I hope in the future that my wife will also take these classes so that we can agree on the education of our children.

### INDIVIDUAL THERAPY REPORTS

#### Eleana Coll LCSW 87111

During August 2019-August 2020, I have provided mental health services to 9 clients (12 individual sessions per client). This report presents information about their demographics, symptoms, pre and post test results, instruments used, interventions, and outcomes.

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Identifying Information: Client is a 49-year-old, female, Latina, married, with children.

Reason for referral: Symptoms of sadness, lack of sleep, and acute stress due to family changes and after being a victim of crime. Patient reported history of sexual abuse, emotional abandonment, and immigration issues.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 13 out of 27 on this measure, suggesting *moderate* depressive symptoms. To quantify her symptoms of anxiety, I administered the GAD-7. She scored 13 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: To quantify client's symptoms after 12 individual sessions, I re applied the PHQ-9 and GAD-7 screeners. Patient scored 9 in PHQ-9, suggesting *mild* depressive symptoms and 5 in GAD-7, suggesting mild anxiety symptoms.

Interventions: Gestalt therapy, Motivational interviewing, NLP (Neuro Linguistic Programming).

Outcome: Client attended her 12 individual sessions and actively engaged in each session. Client's current behavior and screeners scores suggest that her symptomatic behaviors have improved.

\*\*\*\*\*

Identifying Information: Client is a 38-year-old, female, Latina, married, with children.

Reason for referral: Symptoms of anxiety and depression due to history of trauma as a child and current issues with her partner in their relationship and conflicts in their parenting styles.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 21 out of 27 on this measure, suggesting *severe* depressive symptoms. To quantify her symptoms of anxiety, I administered the GAD-7. She scored 15 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: To quantify client's symptoms after 12 individual sessions, I re applied the PHQ-9 and GAD-7 screeners. Patient scored 14 in PHQ-9, suggesting *moderate* depressive symptoms and 7 in GAD-7, suggesting moderate anxiety symptoms.

Interventions: Gestalt therapy, Motivational interviewing, NLP (Neuro Linguistic Programming).

Outcome: Client attended her 12 individual sessions. She actively engaged in each session, and her anxiety and depression symptoms have decreased.

\*\*\*\*\*

Identifying Information: Client is a 32-year-old, female, married, with children.

Reason for referral: Symptoms of anxiety and depression due to history of domestic violence in her country of origin, and current issues with her children's father.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 19 out of 27 on this measure, suggesting *moderate severe* depressive symptoms. To quantify her

symptoms of anxiety, I administered the GAD-7. She scored 15 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: To quantify client's symptoms after 12 individual sessions, I re applied the PHQ-9 and GAD-7 screeners. Patient scored 9 in PHQ-9, suggesting *mild* depressive symptoms; and 7 in GAD-7, suggesting *moderate* anxiety symptoms.

Interventions: Gestalt therapy, Motivational interviewing, NLP (Neuro Linguistic Programming).

Outcome: Client attended her 12 individual sessions. She actively engaged in each session. Client's behavior and the screeners score suggest that her anxiety and depression symptoms have decreased.

\*\*\*\*\*

Identifying Information: Client is a 49-year-old, male, Latino, single, with children.

Reason for referral: Client reported lack of energy and concentration, constant worry about his children wellbeing. History of homelessness and substance abuse.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. He scored 14 out of 27 on this measure, suggesting *moderate* depressive symptoms. To quantify his symptoms of anxiety, I administered the GAD-7. He scored 13 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: Not able to do a post-test due to client participated only in his two first sessions.

Interventions: Initial assessment.

Outcome: Client stopped participating in the individual sessions due to conflict with his work schedule.

\*\*\*\*\*

Identifying Information: 60-year-old, male, Latino, married, with children.

Reason for referral: Due to symptoms of anxiety after a change in family situation.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread

use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. He scored 12 out of 27 on this measure, suggesting *moderate* depressive symptoms. To quantify his symptoms of anxiety, I administered the GAD-7. He scored 16 out of 21 on this measure, suggesting *severe* anxiety symptoms.

Post-test: To quantify client's symptoms after 12 individual sessions, I re applied the PHQ-9 and GAD-7 screeners. Patient scored 4 in PHQ-9, suggesting no depressive symptoms and 5 in GAD-7, suggesting *mild* anxiety symptoms.

Interventions: Gestalt therapy, Motivational interviewing, NLP (Neuro Linguistic Programming).

Outcome: Client attended his 12 individual sessions. He actively engaged in each session. Client's behavior and the screeners score suggest that his referral symptoms have decreased.

\*\*\*\*\*

Identifying Information: Client is a 43-year-old, female, Latina, single, with children.

Reason for referral: Symptoms of depression and anxiety that are impacting her self-esteem.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 14 out of 27 on this measure, suggesting *moderate* depressive symptoms. To quantify her symptoms of anxiety, I administered the GAD-7. She scored 8 out of 21 on this measure, suggesting *moderate* anxiety symptoms.

Post-test: In process

Interventions: Gestalt therapy, Motivational interviewing, NLP (Neuro Linguistic Programming).

Outcome: Client has only participated in 8 of her 12 sessions. Outcome is in process.

\*\*\*\*\*

Identifying Information: 33-year-old, female, Latina, single, with children.

Reason for referral: Client with symptoms of anxiety and depression due to family separation and immigration issues.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 16 out of 27 on this measure, suggesting *moderately severe* depressive symptoms. To quantify her symptoms of anxiety, I administered the GAD-7. She scored 15 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: In process

Intervention: Initial assessment

Outcome: Client has participated only in the assessment session. Outcome is in process.

\*\*\*\*\*

Identifying Information: 31-year-old, female, Latina, single, with children.

Reason for referral: Client with symptoms of anxiety and depression due to changes in her family situation.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: To quantify client's symptoms of depression, I administered the PHQ-9. She scored 17 out of 27 on this measure, suggesting *moderately severe* depressive symptoms. To quantify her symptoms of anxiety, I administered the GAD-7. She scored 11 out of 21 on this measure, suggesting *moderately severe* anxiety symptoms.

Post-test: In process

Intervention: Initial assessment.

Outcome: Client has participated only in the assessment sessions. Outcome is in process.

\*\*\*\*\*

Identifying Information: 17-year-old, female, Latina, single.

Reason for referral: Client complaints of symptoms of anxiety and depression.

Method of Assessment: Clinical Observations, Self-Report, and Mental health Screening Measures: Patient Health Questionnaire (PHQ-9), a depression screener that is in widespread

use in medical settings; and General Anxiety Disorder (GAD-7), an anxiety screener that is in widespread use in medical settings.

Pre-test: In process. Client has not completed the screeners

Post-test: In process.

Intervention: Initial assessment in process.

Outcome: Outcome is in process.

#### MENTAL HEALTH: PSYCHO EDUCATIONAL SERVICES

#### INDIVIDUAL SERVICES PROVIDED BY JAVIER NUNTON, MSW

August 2019 to August 2020

A total of 20 participants were assisted in the following manner:

MM: Starting Date: 8/1/2019

- Elderly woman from Mexico; Issues presented: Possible Post-Traumatic Stress Disorder due to witnessing her adult sons being murdered.
  - Intervention: Trauma Centered Approach
  - Outcome: Participant went to live with her son in another city and had to interrupt services.
  - Please note that same participant completed some of the Psycho-educational Groups provided as well.

DG: Starting Date: 9/28/2019

- Woman in her 50's from Mexico; Issues presented: Constantly worried about her daughter's best intervention for her disability and her future.
  - Intervention: Client was assisted to understand the main issues related to her daughter's diagnosis since her confusion worsened her apparent symptoms of anxiety. Client was also assisted to understand her role as a parent of a disabled girl and the importance to assume better care of her. Client was psycho-educated on relaxation strategies, other lifestyle changes and mindfulness. Client was also referred for possible medication management.
  - Outcome: Levels of anxiety decreased, and client made decisions on issues she felt she had gotten stuck related to her daughter's best type of intervention.

BP: Starting: 10/5/2019

- Woman in her 60's from Puerto Rico; Issues presented: Possible Trauma, Possible Major Depression Disorder; Possible Personality Disorder. Unable to forgive herself since she had to disconnect her son's life support machine.
  - Intervention: Identification of main symptoms by providing education on what Trauma and Depression represents; Identification of healthy alternatives; Psychoeducation on medication role and its importance toward her recovery. Referrals were also provided for possible medication management. Client was helped to find an ex-Psychiatrist provider from San Francisco as she said she had a good relationship with him.
  - Outcome: Client interrupted sessions. No respond to messages.
  - Please note that client refused other types of intervention as she indicated she did not trust the system and she believed that no one could help her.

LC: Starting Date: 10/5/2019

- Woman in her 50's from Mexico; Issues presented: Robbed at gun point at her workplace; possible Trauma.
  - Intervention: Trauma Centered Approach; Relaxation strategies; client learned how certain thoughts can also contribute to exacerbate trauma. Mindfulness approach to develop awareness of her immediate psychological and physical symptoms and act on prevention strategies. Exercises were recreated to help client switch focus of attention when becoming frustrated. She used recollection of daughter's plans in her career which made her feel immensely proud. Client got referrals to other mental health providers and medication management.
  - Outcome: Client responded very well to interventions and verbalized progress and changes of interpretation to what she had experienced.

RT: Starting Date: 9/16/2019

- Woman in her 40's from Belize' Issues presented: Sudden recollection of past traumatic event; possible anxiety and trauma.
  - Intervention: Psychoeducation of trauma; anxiety, main symptoms and effects on her mood and self-esteem. Psychoeducation on self-esteem issues was also provided as client requested to be the same as she was before.
  - Outcome: Levels of anxiety and trauma decreased per client's verbalization as she identified the types of thoughts, she realized only exacerbated her mood challenges. Client practiced suggested exercises via videos, music, and audio books to enhance her self-esteem and decrease symptoms of anxiety and fear.

ER: Staring Date: 1/6/2020

- Woman in her 30's from Mexico; Issues presented: Separation process and past Domestic Violence; Possible Bulimia.
  - Intervention: Individual onsite services were changed. Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client is being assisted with Psychoeducation on Separation and mood challenges, main symptoms; self-esteem and main definition of what Bulimia represents.
  - Client was provided with referrals to address specific issues such as Bulimia and medication management. Client has been provided with support by helping her to improve her self-care awareness; self-esteem re-definition by reading audio books of topics related: Do not be codependent by Melody Beatty; Change your life by healing your mind by Louise Hay; The power of the Word by Louise Hay; relaxation and guided meditation.
  - Outcome: In process. Client has been able to move on and her initial lack of confidence, anger and sadness have decreased considerably. Client made an important decision: quit her job and started working for a Community Agency to pursue her dreams to help people. Per client, she stating this process helped her to make decisive decisions about her life and to love herself. Client was also referred to programs where she could get further assistance if Bulimia symptoms would relapse.

LM: Staring Date: 1/28/2020

- Woman in her 30's from Mexico: Issues presented: Lack of assertive skills; past severe depressive episodes. Client wishes to be able to face her loneliness and become more independent.
  - Intervention: Individual onsite services were changed. Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client is being assisted to learn main types of communication and be more assertive; self-esteem enhancement strategies explained. Client was also assisted to identify main components of a relationship and what is healthy and what is not; assistance on how to set goals and organize herself to achieve them.
  - Possible referrals for therapeutic intervention and medication management will be provided. Explanation of importance of medication compliance.
  - Outcome: In process. Client's engagement into a new relationship triggers her emotions to relapse. Although she has developed more awareness about her immediate goals, she may need more emotional support and assistance as she identifies negative elements in her new relationship she feels "attracted" to but

hates it at the same time. Client was referred to Life Coaching services, continuation of Mental Health therapy and Support Groups such as CODA.

LC: Starting Date: 4/14/2020

- Woman in her 40's from Mexico; Issues presented: how to better manage her anxiety and anger that is causing conflict with her only 20-year-old daughter. Client wants to prevent escalation of arguments and bad relationship with her daughter.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Psychoeducation about emotions such as anxiety and anger; identification of her main characteristics that define her anxiety (type) and anger; assertive type of communication. Strategies to de-escalate her anger and develop new ways of communication; explanation of the types of communication to identify the one she uses more frequently (passive-assertive -aggressive).
  - Outcome: communication with daughter improved considerably to the point that client's daughter had a smooth housing transition back with client. Client reports she was able to control her anger and anxiety successfully.
  - According to client her daughter told her she had changed a lot and felt more at ease with her.

AM: Starting Date: 4/17/2020

- Woman in her 40's from Mexico; Issues presented: emotional decompensation, anxiety and fear reaction after witnessing murder of a man in the street.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Psychoeducation to differentiate Acute Stress Disorder and Post Traumatic Stress Disorder; symptom awareness; prevention of escalation of main symptoms associated with anxiety reaction. Coping skills, strategies to reduce stress, Conflict resolution at workplace.
  - Outcome: In progress: Symptoms decreased after 3<sup>rd</sup> session. Topic switched over conflict resolution to assist client reduce other parallel sources of stress that could exacerbate her condition. Client responded well to interventions as she put in practice ideas to reduce stress.

MS: Starting Date: 5/1/2020

- Woman in her 30's from Mexico, requested assistance due to strengthen her emotions and response to divorce process. Client presented symptoms of anxiety and depression. Difficulties with decision making process.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was assisted by providing

psychoeducation about Depression and Anxiety; identification of symptoms and development of strategies to cope with them effectively. Client was also supported in her decision-making process and develop a new sense of identity/concept about herself because of the divorce process.

- Outcome: Client's level of anxiety and depression decreased although it fluctuates due to length of divorce process. Client was assisted to identify specific strategies to use when dealing with perception of legal process and her response to it. Development of self-esteem and decrease symptoms of dependency may require further Mental Health assistance for which she was referred to these services.

AT: Starting Date: 5/1/2020

- Man, in his 30's from Guatemala. Client was referred due to grief issues related to the sudden death of one of his younger brothers. However, client did not follow through due to dealing with parallel challenges: brother arrested by ICE, injury at work.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was assisted to vent his problems and identify specific goals to work on. Client was initially motivated to pursue his own goals but then he changed and requested assistance for his brother because he was under house arrest and had a harder time accepting the death of their brother. Client was also provided with referrals to: Brookside Clinic, Immigration Emergency Benefit Services, Latina Center Food Bank.
  - Outcome: Client and brother did not complete services. They stopped returning phone calls.

KJ: Starting Date: 5/25/2020

- Woman in her late 20's from Mexico, was referred due to having Post-partum Depression symptoms. Client, in effect stated she wanted to overcome deeply sad symptoms and negative thoughts that were affecting her relationship with husband and older son.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Psychoeducation about Post-partum depression; identification of symptoms and pattern of distorted thoughts. Client was assisted to vent negative thoughts and learn how to challenge them. Client was also helped to understand the importance to identify gradual list of activities she could use to balance moments of sadness/anger with moments of relaxation, entertainment. Motivational approach was also used to help client develop positive self-affirmations. Parenting issues addressed.
  - Outcome: Services still in process.

HA: Starting Date: 6/6/2020

- Female in her 30's from El Salvador, looked for assistance to better cope with symptoms of anxiety and constant worry. During process client was also infected with COVID 19.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Supportive services to help client understand what anxiety is and identify immediate symptoms and coping strategies. Explanation on how thoughts influence on mood changes and behavior. Referral to medical assistance for medication management. Client was also assisted to deal with COVID 19 diagnosis; find coping strategies to mitigate anxiety symptoms.
  - Outcome: Client was able to follow recommendations to cope with anxiety and defeat distorted thoughts. She was also able to start medication treatment. Client was diagnosed with COVID 19 but was asymptomatic. Client was able to follow medical recommendations and avoided anxiety relapse. Client indicated that this process was very helpful as she felt supported to defeat her fears and especially better cope with the pandemic.

RT: Starting Date: 6/22/2020

- Female client from Belize. She was referred for the second time as she was having a hard time grieving the loss of her Mother.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Emotional support: psychoeducation of what grief represents and validation of array of emotions experienced during this process. Client was weekly assisted to avoid self-criticism and be aware of constant changes of mood and energy. Client was provided with suggestions to grief by practicing cultural/family rituals, vent about her loss and importance of her Mother in her life.
  - Outcome: Client has started to express she is becoming more adapted to the loss of her Mother by accepting the changes she is facing. Services still in process.

AR: Starting Date: 6/29/2020

- Female in her 50's from EL Salvador. Client requested assistance to overcome separation process and get back on her feet.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was helped to identify immediate goals and mood changes as well as patten of thoughts. Client was helped to identify possible pattern of dependency issues that sabotage her immediate goals.

- Outcome: client has started to respond effectively by focusing on her self-worth and on the goals, she deserves to achieve. Services still in process.

MM: Starting Date: 7/14/2020

- Female in her 40's from Mexico. Client was referred due to constant worries and possible anxiety symptoms.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was assisted to identify her symptoms to determine any mood challenges. Client was able to identify psychological as well as medical issues that needed clarification to provide better assistance. Client was referred with her doctor to rule out thyroid problems. Client can follow recommendations weekly.
  - Outcome: Service still in process.

PC: Starting date: 7/14/2020

- Female in her 30's from Mexico, was referred to services due to problems with her teenage daughter.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was assisted to identify immediate challenges with her daughter; psychoeducation on parenting issues: types of communication; how to talk to teenagers, determination of healthy time to interact with teenagers and issues to discuss.
  - Outcome: Client has started to share that her communication with her daughter has improved tremendously as her daughter thanks her for her change and dedication to her needs. Services still in process.

MA: Starting Date: 7/14/2020

- Female in her 50's. Client was referred due to possible depressive symptoms as client lives by herself.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client was assisted to identify symptoms, psychoeducation on depression and coping strategies. Client was offered emotional support and case management to identify medical assistance and importance to maintain a healthy diet, medication intake and housing /food bank alternatives.
  - Outcome: Client was able to follow recommendations and symptoms of depression started to decrease. Client was also able to follow a better diet pattern and medication intake.

- During the past 2 weeks client stopped answering phone calls. Possible home visit will take place.

RT: Starting Date: 7/29/2020

- Female in her 40's from Mexico. Client was referred for possible PTSD.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. During assessment it was determined that client may have Chronic PTSD and Major depression Disorder. She was assisted to find scale fee therapeutic services in the area; referral to medical evaluation in Richmond Clinic located in Macdonald Ave. Client was also referred to food bank assistance with Latina Center. While she waits for mental health services, client is being assisted to understand what PTSD and Depression mean; psychoeducational approach as well as motivational approach is being used to help client.
  - Outcome: Services still in progress.

GR: Starting Date: 7/31/2020

- Female in her 50's from El Salvador. Client requested assistance due to feelings of depression due to separation process. Client is an ex-participant in the circles of therapy provided at Latina Center.
  - Intervention: Due to COVID 19 state's Shelter-In-Place laws, client agreed to be assisted over weekly phone calls. Client is being assisted to identify main issues, symptoms, and goals. Psychoeducation on Depression and PTSD (client disclosed systems of multiple exposure of sexual abuse since teen years to adulthood).
  - Outcome: Services still in process.
- Woman in her 40's from Mexico; Issues presented: possible depression due to having parental issues with her daughter.
  - Intervention: Psychoeducation on what depression represents; self-esteem and what forgiveness means; parental tips.
  - Outcome: Case was transferred to therapist Eleana Coll due to conflict with schedule.
- Woman in her 30's from Venezuela; Issues presented: mood challenges (possible depression and anxiety due to changes in her environment); low self-esteem
  - Intervention: Definition of mood challenges because of important changes in life; alternative coping skills; Definition of what self-esteem is and its effect on her mood as well. Possible referral to the providers will be taken into consideration.
  - Outcome: Case was transferred to therapist Eleana Coll due to conflict with schedule.

## PEI ANNUAL REPORTING FORM

### IMPROVING TIMELY ACCESS TO SERVICES FOR UNDERSERVED POPULATIONS REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: LifeLong Medical Care

Project (if applicable): SNAP

PEI STRATEGIES:

*Please check all strategies that your program employs:*

- Provide access and linkage to mental health care
- Improve timely access to mental health services for underserved populations
- Use strategies that are non-stigmatizing and non-discriminatory

SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

LifeLong Medical Care's SNAP program provides seniors in Richmond with opportunities for social engagement, creative expression, lifelong learning, and case management support. Program goals include reducing isolation and promoting feelings of wellness and self-efficacy; increasing trust and reducing reluctance to revealing unmet needs or accepting support services; improving quality of life by reducing loneliness and promoting friendships and connections with others; and improving access to mental health and social services for underserved populations.

Prior to COVID, our service model created safe and accessible spaces for seniors to come together for group activities and to meet in-person with a case manager. From July 2019 to March 2020, we provided case management, congregate activities, and referrals to mental health and community resources on-site at three housing developments: Nevin Plaza, Friendship Manor, and Harbour View Senior Apartments, as well as at the Native American Health Center. We offered an average of 10 on-site events per month. When COVID hit in March, we shifted to mainly virtual (telephone and Zoom) interactions and increased our emphasis on food distribution (described below).

Throughout the year, seniors facing isolation, depression, and other stressors benefited from opportunities for creative activities and supportive interactions with staff, whether face-to-face or over the phone. Highlights of pre-COVID group activities included creative movement, exercise, bilingual songs, discussion groups, tai chi, walking groups, Spanish classes, and arts & crafts, as well as memorial events for residents who passed away and an outing to visit a participant in the hospital.

Participants in the craft class enjoyed a fancy tea party in September, as well as a trip to the African American Museum for a special dollmaking event. Other special events included holiday music and crafts in December and shopping outings in February to FoodsCo, the 99 Cents store, Goodwill and the food pantry. All activities were based on interests expressed by participants.

Seniors who worked with LifeLong's case manager received needed resources as well as emotional support around grief and loss, family stress, medical issues, and other challenges. Common resource requests included food, durable medical equipment, glasses, and Vial of Life kits (used for advance care planning). The case manager also organized health education events, including a health fair in October and presentations by Vital Link, ACE Home Health & Hospice and Contra Costa Crisis Center. A second health fair organized in collaboration with the Native American Health Center was cancelled at the last minute due to Shelter-In-Place orders in March.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include:***

***Numbers served during the fiscal year:***

SNAP served 150 people during FY 19-20.

***Describe any adaptation of services due to COVID-19 that may be relevant:***

Due to the Coronavirus pandemic, we made the following changes:

- Cancelled all in-person group activities and case management.
- Started weekly Zoom case management "office hours;"
- Distributed masks, gloves and toilet paper to those in need.
- Started weekly "check in" calls to SNAP consumers to assess physical, mental, and emotional well-being and offer companionship and supportive services.
- Partnered with the behavioral health team at the William Jenkins Health Center in Richmond (operated by SNAP's parent organization) to conduct outreach calls to high-risk older adult consumers, to assess well-being and offer support.
- Designed and delivered activity packets based on consumer interests (craft projects, books, Spanish language workbooks, etc.).

- Increased food distribution efforts - We have always provided groceries to consumers facing food insecurity, and when Shelter-In-Place started those numbers increased significantly. In March and early April, we helped consumers register for Senior Center meals, which we picked up and delivered weekly. We also purchased and delivered bags of groceries and registered 24 people for Meals on Wheels. Then, as more resources became available in April, we began offering meals weekly in partnership with Fare Community Kitchen and Bridge Kitchen, as well as groceries in partnership with Sojourner Church Presbyterian Church. In total, we made 289 deliveries of meals and/or groceries during April – June.
- Started “socially distanced” wellness checks during food and supply drop-offs; and
- Adapted our annual satisfaction survey from a confidential paper form to a telephone call (conducted by a colleague not associated with SNAP).

***How are participants identified as needing mental health assessment or treatment?***

The SNAP enrollment form includes questions about mental health symptoms and whether they would like support to access services. The enrollment form also screens for depression using the PHQ-2. If the resident is unable to complete a form, then staff asks these questions verbally. In addition to this formal process, we also check in with participants throughout the year to identify emerging issues.

***List of indicators measured, including how often data was collected and analyzed:***

SNAP measures mood, isolation, and program satisfaction using an annual survey that we developed with consumer input. Due to Shelter-In-Place orders, we adapted our paper form into a shorter telephone survey conducted by an independent colleague (unknown to consumers and not associated with SNAP).

We documented 41 responses to the telephone survey. Results were very positive, with all respondents reporting that they were very (79%) or somewhat (21%) satisfied with SNAP overall. 100% were satisfied with the food distribution portion of SNAP during Shelter-in- Place.

A summary of survey responses is provided below:

	Yes (Goal = 75%)	No	Maybe / Not Sure
Before COVID, would you say that SNAP helped improve your mood? (N=34 people who participated prior to S-I-P)	79%	12%	9%

Before COVID, do you think that SNAP helped you feel more connected to others (less isolated)? (N=32 people who participated prior to S-I-P)	88%	6%	13%
Now, during COVID, do you feel that SNAP helps with your mood and feeling connected to other people? (N=42)	74%	7%	19%

Consumer comments gathered during the survey are included below, under “Valuable Perspectives.”

**LINKAGE AND FOLLOW-UP:**

***Please explain how participants are linked to mental health services, including how the PEI program: 1) provides encouragement for individuals to access services; and 2) follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

Pre-COVID, SNAP staff outreached to all residents of Nevin Plaza, Friendship Manor and Harbour View each month with fliers posted in public areas and delivered door-to-door. Staff talked to residents about the program, and current participants encouraged others to attend or told staff when they thought someone might be interested or could benefit. It often took up to several months before a resident decided to attend, and during that time staff continued to reach out to build trust and offer support. These informal outreach strategies worked well given the contained nature of the community and the preferences of residents. Now, during Shelter-in-Place, this outreach happens through SNAP’s weekly food distribution, which draws SNAP members as well as residents who were not previously involved with SNAP.

Once a resident is willing, we ask them to fill out an enrollment form that includes questions about mental health symptoms and whether they would like support to access services. The enrollment form also screens for depression. If the resident is unable to complete a form, then staff asks these questions verbally.

For residents who are open to mental health or community support referrals, the SNAP case manager checks in regularly to determine if the referral was met. She also checks in with participants with established mental health services, to offer support should barriers to access arise.

The average length of time between referral and engagement with mental health resources was approximately eight weeks. This estimate is based on the date a referral was made and the date that a consumer reported to the SNAP Case Manager that they followed up with the referral (n=7).

Another eight consumers declined mental health referrals suggested by SNAP staff.

**DEMOGRAPHIC DATA:**  *Not Applicable (Using County form)*

Please refer to Aggregate Data Reporting Form

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

LifeLong is very intentional about hiring employees and contractors that reflect the racial identities, and to some extent lived experience, of the populations who utilize our programs. SNAP works with mainly African-American consumers, and our staff this year included an African-American Activity Coordinator, Case Manager (originally from Richmond), craft teacher and men’s group facilitator, as well as a Latina music and movement teacher. Staff develops the program based on consumer preferences, which we gather through informal focus groups (pre-COVID) and surveys.

SNAP’s manager, who is white, is participating in a program called “Whiteness at Work,” designed to identify and address personal and organizational bias including white-dominant workplace culture.

As an organization, LifeLong has launched a racial equity initiative to identify and eliminate polices, practices and cultural norms that reinforce differences in workplace opportunities and experiences based on race.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

SNAP collaborates with the following agencies and organizations:

- Native American Wellness Center: activity programs (monthly pre-COVID).
- Nevin Plaza Resident Council: to identify needs in the community and coordinate around programming.

- William Jenkins Health Center: outreach to isolated older adult behavioral health consumers in West County during the COVID-10 pandemic.
- Sojourner Truth Presbyterian Church: food resources for consumers.
- Fare Community Kitchen: food resources for consumers.
- Bridge Community Kitchen: food resources for consumers.
- Contra Costa Adult Protective Services Multidisciplinary Team: multidisciplinary support in high-risk cases.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

SNAP promotes MHSA values to the fullest, as described below:

Wellness, recovery, resilience: SNAP staff create inclusive, welcoming, and accepting environments where participants support and encourage each other. Art, music, and language classes encourage participants to expand their skills and experience success with others. These activities lead to resilience and feelings of self-efficacy, all while community presence improves mood and supports personal recovery. During COVID-19, in-person activities are limited but SNAP staff are still able to check in via telephone and during on-site food distribution.

Access and linkage: SNAP offers highly accessible services in the buildings where our target population lives, with extensive telephone contact added during Shelter in Place. Staff get to know and develop the trust of each resident, so that participants have a safe channel to disclose their needs. The SNAP case manager links participants to social services and facilitates referrals to mental health resources as needed. If the participant already sees a mental health provider, staff checks in regularly to encourage them to participate with external care providers.

Timely access for underserved populations: Services are provided directly in the building or local neighborhood (and now over the phone) to promote accessibility for elderly residents; culturally sensitive services are provided for this low-income and primarily African-American population.

Non-stigmatizing, non-discriminatory: Residents are accepted into SNAP as they are. When we operated in-person services, SNAP facilitators created group environments that supported diverse social thought processes, energy levels, and abilities, allowing each participant's strength to surface and shine. Participants could come and go from groups as they needed to, and it was perfectly acceptable to participate or not. Participants tended to talk

freely about their mental health issues because they were comfortable and knew they are not being judged. While we are mainly “remote” now, we continue to support consumers in a manner than is non-stigmatizing and non-discriminatory (and have normalized food distribution to reduce stigma around food insecurity).

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

We received the following comments from SNAP participants in this year’s annual satisfaction survey.

*Prompt: Is there anything else you’d like to say about benefits of SNAP (how SNAP has helped you)?*

I am very satisfied about SNAP services. It has been very helpful to me especially during this time when my daughter can't visit. Juana and Luz always check on me and help get food.
SNAP has been very helpful. I've received food from La Juana, and a pair of glasses from Rosilyne when I can't see. I participate in SNAP every week or every other week unless I have a doctor's appointment.
I really enjoy the social activities with La Juana and Luz, especially that one time when we took ferry to San Francisco. It was my first time getting on a ferry and it'd been a while since I went to San Francisco! I also enjoyed when we went to the buffet.
I love all the social activities with La Juana and Luz like arts, music, and outings to different places. Sometimes we would go to nursing homes and visit other disabled seniors, and they would ask us to go back! I did not work with Rosilyne a lot, but she always talked with us. I am very satisfied with SNAP.
SNAP has helped me so many ways. It helps me have good exercises and feel less lonely. I used to have anxiety and was taking medication for that. I miss the social activities so much like bingo and singing.
SNAP helps me get along with other people. Learn to do different activities. We went to movies and ferry to San Francisco etc. My caregiver and I miss everyone at SNAP.

<p>I like the team - they are sensitive and personable. SNAP helps me do more physical activities with La Juana, exercise my brain and learn Spanish with Luz, and do arts and craft - doll making is my favorite thing! We also went to movies and trips.</p>
<p>All of staff are very helpful.</p>
<p>I am not very involved with SNAP but have worked with Rosilyne to solve different problems. She is very nice and welcoming. I like her a lot.</p>
<p>I appreciate this program especially it is for us senior citizens. I moved here for 4 years and knew only a few people. Through SNAP I can meet other people in the same building.</p>
<p>SNAP helps me tremendously. The staff are amazing and always reaching out to us. Especially during this time with COVID-19, they still come and reach out, making sure everyone is taken care of.</p>
<p>I am very satisfied with the program. The staff are amazing, especially Rosilyne. She is very wonderful. She helped me so much. She helped me get into the hospital when I was sick and sign up with East Bay Paratransit. SNAP gives me something to do and socialize with other ladies in the building.</p>
<p>I joined SNAP during COVID and the Shelter-In-Place order and have been receiving food/groceries. I am very satisfied with the program. Would look forward to getting more involved.</p>
<p>I am pleased with the program. Joined SNAP about a year ago and am involved. I am active and doesn't need it, but it is very helpful to other folks who have history of stroke and can't get out of the house.</p>
<p>I'd like to see SNAP continue at Harbour View. I can't wait for our classes to resume after COVID. SNAP makes me and my neighbors a part of something. It changes my mood, makes me feel less isolated, and helps socialize with my neighbors. I am looking forward to the classes, outings, movies and dinner.</p>
<p>When COVID-19 is over, I would love to see the ladies again. They bring so much joy to me and other ladies in the building.</p>
<p>SNAP is a lifesaver for us. It keeps us going and gives us something to do like bingo, exercise, and Spanish classes. I love that they are a help to us especially at this time they still come out and distribute food and meals and update us with news. They are always so kind.</p>

I like that SNAP program has no requirements to join and is open to everyone. It is useful and free, and we can use it anytime and whenever we want to.
SNAP helps me a lot. I've been very involved since SNAP is here at Nevin Plaza, helping set up a brown bag program once a month. I was friend with the previous arts and craft teacher; I am not an art person, but she encouraged us to do what we can. Through SNAP, we went to different organizations, home care and senior centers.
It's a good program
I am very involved with SNAP. I tried to join every meeting they have. The staff there Rosilyne, La Juana and Luz are very nice.
SNAP is a good program. I like the ladies there.
The staff are doing a good job. SNAP is a program to keep especially for seniors who are isolated and lonely. I would go and sit in the meetings sometimes.
SNAP gives us something to do and something to occupy our mind. It is an outlet for us those who stay at home. I got to mingle with other residents. It helps me a lot. The staff are very nice!
Joined SNAP since shelter in place. Staff are very helpful and informative.
The food is a big help. Because I can't stand too long, the meals come in handy.
It helps me with a lot of things - we have games, exercise, and treat other people nicely. Communication is good between the staff and participants. I like SNAP.
I joined SNAP right around Shelter-In-Place started, and I got the food boxes. It's important for us especially when everyone is staying at home now, the food box helps us make a meal and stuff. I don't usually eat the meals because of my asthma but I give them out to other people.
I didn't join the meetings often and mainly have received food. But I think SNAP has helped other people in the building a lot. I wouldn't say it helps me connect with others, but it definitely improves my mood.
The staff are very understanding and thoughtful. They listen to you and understand your emotions; La Juana and Rosilyne especially are very kind to me.

**PEI ANNUAL REPORTING FORM**

**OUTREACH FOR INCREASING RECOGNITION OF EARLY SIGNS OF MENTAL ILLNESS REPORTING FORM**  
**FISCAL YEAR: 2019-2020**

**Agency/Program Name: Native American Health Center- Native Wellness Center Richmond**

**PEI STRATEGIES:**

***Please check all strategies that your program employs:***

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations X Use strategies that are non-stigmatizing and non-discriminatory**

**SERVICES PROVIDED / STRATEGIES:**

***Please describe the services you provided in the past reporting period. Please include qualitative and quantitative data depicting: 1) the types and settings of potential responders you reached during the past reporting period; 2) methods used to reach out and engage potential responders; 3) any strategies utilized to provide access and linkage to treatment, and 4) strategies utilized to improve timely access to services for underserved populations.***

Through the strategy of outreach the Native American Health Center provides prevention and early intervention services to increase the recognition of early signs of mental illness, assist community members to access culturally appropriate mental health services, and host Native American cultural groups, community events, mental health and wellness workshops, and classes that increase social connectedness, cultural connection, and general awareness of community and county resources to improve member's overall well-being. From July 2019 to June 2020, NAHC provided groups and events tailored to the Contra Costa County Native community and the remaining underserved and underrepresented populations. NAHC strongly believes that culture is prevention and integrates Native American cultural practices and traditions throughout our program. In addition to this, we continue to target outside events and activities sponsored by partnering agencies within our community that may serve the Native community. Our goal last year was to further establish our presence throughout Contra Costa County and continue to provide advocacy for the needs of the community that we serve, by doing this we were able to build a strong network of support with partnering organizations within our PEI network and throughout Contra Costa County. This led to partnerships and event collaborations that have allowed us to engage an increased number of potential responders. NAHC reached a total of 68 unduplicated members by the end of June 2020. In comparison to contract year 18- 19, we seen a significant decrease in services due to the start of the

pandemic. Many of the events we attend and programs we offer take place in the spring and summer months and due to the pandemic, we were unable to provide these services.

#### PEER SUPPORT FOR REFERRALS AND FOLLOW-UPS:

During intake interviews (either by phone or in person) staff assess members regularly for potential needs for resources or services. Referrals by appointment are encouraged so that staff can dedicate a significant amount of time to ensure the needs of members are fulfilled as well as allowing us the opportunity to conduct wellness surveying to address any other possible concerns they may have. Staff ensures that all referrals issued to members are followed up within a 48-hour window. Referrals are issued to both continuing and new members for services that are offered inter-agency and externally.

Inter-agency services include Medical, Dental, youth or transitional- age youth, and behavioral health services. In instances where we cannot provide the members with the resources they are looking for; our goal is to ensure their needs are met in other ways by providing them with information about the services we do provide and connecting them with other local organizations that may have the resources that they need. Prior to the pandemic, NAHC was in the process of converting our data from paper to electronic records via the Smartsheets application. This process was unable to be completed as we were unable to work on-site, and the focus had to be shifted to responding to the pandemic and other crisis that had developed. There was a total of 16 behavioral health related referrals processed during this contract year. At this time, we are unable to provide complete data on the quantity of non-behavioral health related referrals processed during this time.

#### ON-GOING PREVENTION GROUPS:

On-going prevention groups are a key component to reaching first responders. NAHC hosts weekly prevention groups to serve the needs, empower, uplift, motivate, and connect with potential first responders. Groups are facilitated by traditional consultants and trained NAHC staff members on site with a focus on traditional arts integrated with mental health and wellness messaging. These groups at the Native Wellness Center are a great resource and foundation for the services that take place here. They allow us to engage community members through culture and help translate mental health concepts in an informal and safe space. These different ways include:

- Exposure to and in-depth practice of Native Culture and Tradition
- Participating in and learning ceremony and etiquette
- Learning skills and various techniques associated with Native American focused crafts
- Community building and social connectedness
- Promotion of health and wellness
- Awareness and destigmatizing of mental health and behavioral health services

It is important to distinguish between the different ways people engage in our groups; our community is vastly diverse in cultural practice. This is why providing services based on the Holistic System of Care for Urban Natives is so important and useful. Being in the Bay Area, most of our clients are a long way from their homelands. Participation here in an Urban setting means that ceremonies and traditions are upheld despite our small numbers, and that makes the resiliency factor that much more important to positive mental health outcomes. Our groups are offered to all and serve a diverse group of individuals. This plays an important role in bridging the gap between people of different cultures and experiences. It allows for the opportunity for non-Natives to learn about the Native community first-hand, reduces misconceptions, corrects misrepresentations, and increases cultural humility. Our ongoing groups are Wisdom Holder's, Traditional Drum Circle and Pow Dance Practice, Beading Circle, Art for Therapy, Quarterly Basket Weaving, Quarterly Quilting, and Health and Fitness Workshop. All these groups share a common goal; to foster learning, connect members to cultural practices, provide a safe space, empower members, all while promoting healthy lifestyles, and both health and wellness education.

#### Wisdom Holder's Elder Support Group:

This group meets on a weekly basis to provide our elders a positive outlet to communicate any issues or concerns that they may be struggling with. There are also opportunities for them to gain knowledge on issues surrounding health and nutrition, Native culture, family support and prevention regarding depression and isolation. Monthly events are planned by the group to do outreach and interaction within the Native community. With the recent transition of facilitators, the elders support group has made positive strides toward improvement. We have recently implemented a formal curriculum of goals we hope to accomplish with the elders. The curriculum includes three important components: Formal health and Wellness education- which includes workshops ranging from healthy food demonstration to information on "how to fall" for example. The second component is cultural education- this focuses on teaching Native history, bringing awareness to issues surrounding the Native community, and providing positive entertainment that sparks awareness and constructive conversation within the group. The third component and most recent is the implementation of scheduled activities that focus on exercising the mind. Understanding that elders are commonly diagnosed with Alzheimer's and Dementia, we are more frequently scheduling activities that will help with combatting the diseases. For example, facilitating days dedicated to playing games that are proven to support brain function. In collaboration with Lifelong Medical, we partner once a month to provide our Elder's with additional support and activities they may need or want to have. Our groups combine in an effort for both programs to expand membership and build healthy relationships within the elder community. There is also a social worker with Lifelong who regular attends our elders group to provide additional support and access for wellness outside of our abilities. Throughout programming staff continually assesses attendees for way in which we may provide

support or resources and the goal is to support the members to achieve independence and empower them to take control of their own well-being.

Our elders continue to express their gratitude and appreciation for this group specifically. Many of the group members have expressed their dependence on these meetings for support because they either live alone or are facing challenges. They have expressed their need for social connection to combat depression and isolation. The group facilitator also ensures that their needs outside the group are addressed as well as doing regular wellness check-ups when members are not in attendance.

Elder's Fruit Day at NAHC Oakland: Combination of Elder's Support groups from Richmond and Oakland where they gather every second Wednesday of the month. This group uses a similar strategy as the Wisdom Holder's group on a larger scale, while also providing each participant with package of fresh fruit, vegetables, and other nutritious foods.

Traditional Beading Circle:

This group has become well established in our Center and in the community. As the group gathers more, the beading skills improve, and they are getting to do more advanced projects. It's been amazing to see members begin the group with no skills at all, and now they are making beautiful jewelry, medicine bags, and accessories with intricate designs that incorporate many traditional techniques. Also, to see people that started with no patience and get frustrated easily, be able to sit for 2 hours in a very calm environment and focus on their beading techniques. While in transition of instructors, this group had remained a drop-in group where members are able to work individually on their own projects in a safe and welcoming space until the new instructor had begun facilitation in February of 2018. Since then, she has established a specific curriculum focus on developing the coordination of members necessary to complete beadwork. She also focuses on the therapeutic aspects that beading provides to members and impact that on mental health this class promotes by providing a way in which the Native community can connect to cultural practices they're unable to learn at home. Beadwork is a common practice in the AI/AN community and the skill is typically passed down through familial interaction. For many urban Natives this tradition is not as common and by providing this class we can allow members to relearn lost traditions and promote cultural connectedness.

Traditional Drum Circle and Pow Wow Dance Practice:

This group is offered for Men of all ages, and often combines youth and adults. The facilitator teaches various types of songs like Honor Songs, Northern and Southern Drum styles with a focus on learning the words to the songs which are majority in the Sioux language. This group is important because it exposes members to cultural tradition and practices, promotes healing through traditions and spirituality, and provides a sense of identity and cultural connection to our Urban Native community. The facilitator has been successful in ensuring that the members

not only learn songs and drum techniques, but rather they understand the stories and reasons behind specific traditional practices. This speaks to the high importance of the Oral tradition within the Native community. Recently, we have added the Pow Wow dance practice aspect to the group to attract more women and families to the center because traditionally drumming is a men's practice, and the center does not want to encourage disconnection and separation. Through doing this both genders can learn about the culture and the reason why certain practices are gender exclusive. This is part of the cultural education component of our work.

In response to the pandemic, NAHC has moved our groups to a virtual platform. We now offer weekly classes and workshop through the Ringcentral platform. New members are required to pre-register and adhere to our virtual group guidelines. Our data has shown this transition has had both negative and positive impacts on our program. In terms of deliverables, the program has seen a significant decrease in numbers because we are unable to open our doors and provide our normal services. Many of our members lack access to electronic devices, cell phones, and even adequate housing. This has created a communication barrier and a huge challenge for the staff to address their needs and provide crucial services. We also serve a large elder population in Richmond and many of our members have since declined services until they can return in person. Some positive outcomes since the transition include reaching a larger target population, members who experience transportation barriers and/or have mobility issues do not find our program to be more accessible, and we are not able to record lessons and workshops to send out to those who have missed a class or are unable to attend due to scheduling conflicts.

Son Jarocho:

This was a workshop that focused on Son Jarocho folk music from Vera Cruz, Mexico. This class was added to our program to reflect the traditions and practice of indigenous communities in Mexico and allowed us the opportunity to show more inclusiveness for indigenous peoples from Latin American countries. Songs, dance, and the use of instruments were taught throughout the workshop and a community celebration was held at the end of the class.

Basket Weaving Workshop:

Basket Weaving has a similar goal and curriculum as our Beading Circle. Basket Weaving is also an important part of Native history and tradition and we offer a six week course each quarter with the goal that each participant complete one basket project. All the materials are "natural" and either gathered or purchased from specialized stores. Our first workshop of the year took place in April and had a total of 8 participants.

## EVENTS

Traditional Medicine Workshop:

This workshop was provided to youth and their families in collaboration with Building Blocks for Kids. It was offered at Garcia Belding Park for during their summer program. We had a total of 14 participants engage in a traditional medicine workshop and medicine bundling activity. The goal was to educate participants in traditional Native medicines and holistic approaches to wellness. Our workshop included Sage, Cedar, Sweet grass, and tobacco as well as information on the uses of lavender and other herbs. We also used this as an opportunity to recruit new members and assess for needs in the community.

#### Dream Catcher Making workshop:

This workshop was also a collaboration with BBK. The purpose was to teach the community how to make Dreamcatchers as well as educate them on their meaning and traditional use. We created a workshop curriculum and provided materials for each member to complete on dreamcatcher for them to take home. A total number of 16 people participated in the workshop.

#### Indigenous Walk for Sobriety:

Every year NAHC collaborates with California's chapter of the United Urban Warrior Movement to organize the Annual Indigenous Peoples Walk for Sobriety. This year was our 5<sup>th</sup> Annual. Participants walk to bring awareness to the impact of the use of alcohol and other drugs have on our community and the need for support. We walk from Grocery Outlet on Macdonald Ave. to our host location. This year we gathered at St. Luke's Methodist Church where City leaders, local politicians, community activists, and community members were honored and spoke on the impact alcohol and other drugs have on our communities and what we can do to support. Community members gave testimonials on their personal experiences and we held ceremony. During this event lunch and a health fair were also organized where local organizations met with and provided resources to the community. A total of 14 community members personal met with NAHC staff to discuss our programming and how we can support. Overall, there were over 50 people in attendance. Due to the inability to get information on every attendee we did not reflect the total number in our service summary for the event.

#### Indigenous Peoples day Pow Wow

#### Health and Wellness Fair- Lifelong Medical SNAP Program Collaboration:

Over 21 community members in attendance. This health and wellness fair was organized by both NAHC and Lifelong Medical in response to needs expressed by members for resources and necessities. We provided members the opportunity to receive basic needs items like canned foods, fruits, and vegetables, hygiene products, clothes, and household items. All the items distributed were either donations collected or purchased by both programs. Resource tables and information booths from various organization were present including Contra Costa Crisis

Center, Lifelong Medical, NAHC, Homehealth and Hospice, and Medical representatives. NAHC also provided a musical workshop by our Son Jarocho class instructor and Traditional Drum piece. One highlight from this event is that we were able to serve a large part of our homeless clients and provide them with clothing, hygiene products, and a free lunch.

Annual Halloween Celebration and Wellness fair:

The purpose of our Annual Halloween event is to engage with more youth and families and provide a safe place for youth to have fun as opposed to traditional “trick or treating”. We offer a range of activities like pumpkin carving, art workshops, distribute candy bags, provide a meal, and a traditional drum session. A total of 17 members were in attendance.

Richmond Powwow- Sponsorship and Outreach

Mental Health First-Aid Training:

A total of 19 participants attended this training. Jennifer Bruggeman from Contra Costa Behavioral Health Services facilitated this training in November of 2020. Direct service staff from NAHC, staff and interns from Lifelong Medical, and community members attended the training and received their certification.

NAHC’s Richmond site has had a vision in moving towards providing mental health specific trainings to the community. This was our first training that would pioneer this component of our programming.

QPR Training- Community

Talking Circle with Theda Newbreast:

Traditional Female Consultant, Theda Newbreast facilitated our quarterly talking circle in November. A total of 5 members attended this event. The topics of focus were substance use prevention, healing, resiliency, and use of traditional medicines.

Annual Harvest Celebration:

A total of 9 members attended our annual Harvest Dinner.

AICRC Pow wow:

A total of 42 contacts were made with potential responders. Staff met with members of the community over a duration of 14 hours. This event is part of our yearly outreach calendar and is used as an opportunity to recruit new members and assess and identify needs within our target population.

Richmond's Annual Pow wow:

This year NAHC had the honor of being a sponsor in our Annual Pow wow. Funds were used to sponsor the Drum competition and support with other associated costs. The Richmond Pow wow is an extremely valuable event to the Native American population in Contra Costa because they are very little programs and services in the area. It allows local Native a space to celebrate and embrace our culture and traditions as well as strengthen our community. Staff also conducted outreach at this event and had a total of 12 contacts with potential responders.

Indigenous Peoples Day Powwow:

This event was an outdoor Outreach opportunity to recruit new members and give information on the programming that NAHC offers. It was held in Berkeley at Peoples' Park and this is an Annual event that we attend. We connected with a total of 58 potential responders.

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services.***

***Include a list of indicators measured, how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served.***

Per our contract we had committed to the following measures of success:

- Engage 150 community members through prevention service programming.
- 65% of our members utilizing referral services will be successful in accessing (connecting with) services over a 12-month period.
- Program staff will participate in 20 outreach events or activities throughout the course of the year.
- 10 participants, including NAHC staff, community members, volunteers and interns, and partner agencies will be trained in Mental Health First Aid.
- With the intended outcomes that:
- Members will have increased access to prevention activities and mental health support.
- Members will increase their engagement in NAHC mental health prevention and treatment services.
- NAHC will engage a diverse population of first responders throughout Contra Costa County.
- Members, Peers, and Staff will be trained in behavioral health related topics including but not limited to Mental Health First Aid.

Due to the pandemic, we were not able to capture this data. Traditionally, we would administer surveys to our members at the beginning and near the end of our fiscal year but due to the

pandemic we were not able to develop workflows to accurately capture this information safely and regarding HIPAA compliance.

**DEMOGRAPHIC DATA:  Not Applicable (*Using County form*)**

If your agency has elected to not utilize the County Demographics Form AND have chosen to not collect specific demographic domains (i.e., Veteran Status, Disability, etc.), please provide justification.

Please see the MHSa Aggregate Reporting Form submitted in conjunction with this report.

**VALUES:**

***Reflections on your work: How does your program reflect MHSa values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

NAHC Richmond staff are specifically trained in Mental Health first aid, Trauma Informed care, Suicide prevention and intervention, and are well versed in identifying outside resources useful to members. A significant portion of our work is dedicated to bridging relationships with local agencies, and ensuring referrals are made to reliable providers. NAHC's programming continues to reflect the MHSa values by providing direct linkages through our Community Health Workers, addressing social determinants of health, and serving as system navigators for additional resources. Regarding behavioral health referrals specifically, NAHC Richmond partners with several local providers as well as NAHC's own Behavioral Health department which allows us to speak directly with staff regarding appointment scheduling and follow-ups. This reduces barriers and helps to speed up response times.

Embedded in our programming is the philosophy of culture is prevention. Providing services that reflect this philosophy is a key component in our overall mission and the driving force behind our service strategies and goals. Traditional cultural practices provide Native community members with a sense of belonging, identity, and restored pride. These elements are important because they have been historically lost throughout generations due to several causes. Exposing members to traditional practices has been proven to reduce stress by providing an outlet as well as played a key role in promoting healing from historical trauma (which we as a community understand causes those to suffer from mental illnesses). Participants report feeling a sense of belonging to community through our groups and events. The social connectedness and pride developed here directly supports wellness and recovery. It allows individual members to build relationships and prevent isolation. Our program builds upon the resiliency of our members to empower them toward the goal of self-sufficiency and self-efficacy.

NAHC also takes an intentional approach to integrating health messaging in our programming, health related topics such as understanding historical trauma, nutrition, diabetes prevention and management, self-care strategies, and insurance eligibility are all discussed in a group or event setting. Topics are covered sensitively and are mindful of language and presentation style. The Native Wellness Center also serves as a prevention center by providing information on preventing STD's, providing free condoms on-site and in collaboration with Contra Costa Health Services, we provide free HIV/HEP-C Testing twice a month to members.

The values of NAHC strongly enforce a drug and alcohol-free policy while also encouraging healthy lifestyle choices outside the center. We offer events focused celebrating sobriety and recovery as well as referrals to drug and alcohol counselors.

It is important to note that the community we serve suffers from historical trauma as well as continued poverty, substance abuse, mental illness, loss of identity, and distrust of our healthcare system. Therefore, the work that we do is so important and is specifically tailored the way in which it is. Wellness, recovery, and resilience not only reflect MHSA values but are also key values to keep in mind when serving the Native community.

Lastly, external outreach efforts are targeted toward visibility of our program and advocacy for the community. NAHC ensure our presence on various committees as well as our involvement in a number of city, county, and overall healthcare events, meetings, and groups. By doing this we provide an outlet for our staff to advocate and provide a voice for our member population. The Native community has a history of misrepresentation and under-representation. This community has its own unique identity and rich history to be proud of and it is our intention to represent so accurately and effectively.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Program participants often express their gratitude for the program and staff. The center plays a vital role in the community for support and a safe space. We created a drop-in space where members can come in and have a safe space to relax and remove themselves from environments that may cause stress or be triggering them. Many of our members are experiencing homelessness and/or in recovery and have expressed to staff their gratitude for creating a space that supports them. Our site provides light meals and coffee, clothing, hygiene products, blankets, and anything else they may need to get through the day. Unfortunately, we have not been able to figure out a safe way to continue to provide this service to those who are in need due to the pandemic.

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**Peer and Family  
Centered Programs**

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Contra Costa Behavioral  
Health Services

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Office for Consumer  
Empowerment

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As submitted for EQRO  
2020-21



## Peer and Family Centered Programs

The Office for Consumer Empowerment (OCE; see Appendix A for brochure and program overviews) holds several peer wellness and recovery skills trainings and social inclusion trainings focusing upon persons receiving services and family members, including peer provider monthly trainings. The Family Services Coordinators, in collaboration with OCE, also hold monthly and periodic trainings for Family Partners in the children's system of care and Family Support Workers in the adult system of care. The following describes OCE programs.

### Social Inclusion

Contra Costa Behavioral Health Services' Committee for Social Inclusion is a community alliance of peers with lived experience of behavioral health challenges, including co-occurring challenges such as substance use and homelessness. Family members of persons receiving behavioral health services and behavioral health providers are also part of this alliance. Committee members collaborate to educate the public on the facts about behavioral health and co-occurring challenges, emphasizing the ability of people to recover and achieve wellness. Social Inclusion promotes acceptance of persons with lived behavioral health experience within the community. In 2020, there were 11 Social Inclusion presentations. The April Social Inclusion meeting was cancelled due to COVID-19. All subsequent meetings through the end of the year were facilitated virtually via the online video conferencing platform Zoom. The Mental Health Services Act (MHSA) Virtual Community Forum on the Evolution of the Peer Movement took the place of the September Social Inclusion meeting. Please refer to the Social Inclusion committee flyers and meeting packets (Appendix B).

### PhotoVoice

PhotoVoice is a social advocacy tool that people overcoming discrimination and lack of opportunities can use to share their experiences through a combination of photography and narrative. It is a technique that enables community residents of all ages and languages to share information about their communities through pictures. PhotoVoice accomplishes the following objectives:

- Engages peers in documenting strengths and problems
- Promotes dialogue about important issues
- Educates the broader community about behavioral health challenges

PhotoVoice draws upon the principles of documentary photography as a means of using visual representation for advocacy and social change. Images serve as signifiers of culture, highlighting values and expectations of individuals, communities, and society. What participants choose to photograph, when and how, is shaped by community values as well as how participants would like to reflect their lives. Images prompt emotions, thoughts and experiences in ways that

narrative alone cannot. Narrative and image are united in PhotoVoice as the expression of artists as participants in ten-week classes using curriculum developed by Boston University Center for Psychiatric Rehabilitation.

In 2020, the following goals were achieved:

- Developing and leading a four-hour PhotoVoice facilitator training for staff from Contra Costa Health, Housing and Homeless Services division (H3). Five H3 staff members participated in the training.
- Successful PhotoVoice class and artwork from H3 facilitators
- Samples of H3 PhotoVoice exhibition pieces displayed in a PowerPoint presentation at the November Committee for Social Inclusion meeting in acknowledgement of Homelessness Awareness Month in Contra Costa County
- January and February PhotoVoice Subcommittee meetings facilitated to promote PhotoVoice classes, offering participation in activities taken from PhotoVoice curriculum and encouraging critical thinking around prejudice, discrimination and stigma. There were 8-10 participants per meeting.
- Planning for possible transition of PhotoVoice Subcommittee meetings from in-person to virtual format on Zoom in 2021.

(See Appendix C for PhotoVoice brochure, subcommittee agendas and sign-in sheets, facilitator training agenda, and H3 PhotoVoice PowerPoint.)

#### Wellness and Recovery Education for Acceptance, Choice, and Hope (WREACH)

WREACH, a subcommittee of the Committee for Social Inclusion, is a speakers' bureau dedicated to reducing stigma and encouraging awareness of lived behavioral health experience to transform how the community within Contra Costa County views behavioral health and recovery. It is made up of persons with lived behavioral health experience, including peers, family members, and providers, in Contra Costa County. What binds the members of this group together is that they share in their monthly meetings the common bond of experience living with mental health or substance use challenges and/or homelessness. Speakers utilize their wealth of knowledge, drawing from their personal experiences, to educate the community and promote wellness.

WREACH held 2 subcommittee meetings in 2020 with meetings thereafter suspended due to COVID-19. Resumption of subcommittee meetings via Zoom is currently under consideration. Shelter-in-place guidelines have necessitated the scaling back of WREACH presentations. Before COVID-19 restrictions took effect, there were 2 in-person WREACH presentations to local venues that included introduction to the speaker's bureau and/or presenters sharing their stories. There was also a virtual WREACH presentation facilitated over Zoom on November 3<sup>rd</sup>. Additionally, the WREACH Lead Facilitator created and facilitated 4 live presentations featuring

a rap song and PowerPoint that they developed incorporating their personal recovery story. This presentation was also recorded and disseminated to county employees and representatives from community-based organizations for the purposes of further exhibition to help reduce stigma, educate the public, or to foster hope in individuals who are living with behavioral health challenges. There was 1 Tell Your Story Workshop in 2020. Facilitation of the Tell Your Story Workshop over Zoom is also under consideration. (See Appendix D for WREACH brochure and subcommittee meeting agendas.)

#### Wellness Recovery Action Plan (WRAP) Program

The WRAP program involves groups once a week over the course of 8 to 10 weeks, 2 to 2 ½ hours per group. During the process of developing a WRAP Plan, group members create a wellness toolbox in which they place “tools” which help them stay well. WRAP includes a Daily Maintenance Plan. WRAP helps group participant to identify triggers and create a triggers action plan. Participants identify early warning signs and create an early warning signs action plan. The next part of WRAP involves making a list of what it is like when things are breaking down and creating an action plan. WRAP allows group participants to develop a crisis plan. The crisis plan in WRAP can sometimes be used as an alternative to an advanced directive. After that, they create a post- crisis plan which is used to begin the transition into wellness.

In 2020, the following goals were achieved:

- WRAP I certifications for personal WRAP for SPIRIT 2020 graduates
- Martinez Detention MH Services prior to COVID-19 restrictions: 2 eight-week groups with 3-4 participants and 7 one-on-one WRAP I certifications
- Behavioral Health Court prior to COVID-19 restrictions: 1 ten-week group with 3-4 participants
- Development of Work for WRAP Zoom groups to assist peer service providers
- OCE facilitation of 2 ten-week Work for WRAP Zoom groups with peer provider co-facilitator from Forensic MH Services: 6-8 participants per group
- OCE continues to maintain supply of WRAP materials to assist any certified WRAP facilitators working in County-operated programs for use in WRAP groups and/or one-on-one facilitation.

(See Appendix E for WRAP for Work flyer and attendance sheet.)

#### Service Provider Individualized Recovery Intensive Training (SPIRIT) Program

The Service Provider Individualized Recovery Intensive Training (SPIRIT) program is a series of three college courses totaling 9 credit units in a unique collaboration including Contra Costa Behavioral Health Services, Contra Costa College and over 30 county behavioral health provider and/or behavioral health peer and family-run organizations. The six-month class and internship

are instructed by OCE peer instructors and guest speakers to provide students with the skills they need to become peer providers. Due to the COVID-19 Shelter-in-Place order in Contra Costa County issued on March 16<sup>th</sup>, the SPIRIT 2020 class transitioned from an in-person program to virtual format using the Zoom online video conferencing and Canvas learning management system platforms. The SPIRIT staff provided technical support to the students when technical challenges arose. Fortunately, all the students were able to access the course online as some had personal devices that they were able to use, while others were loaned a Chromebook laptop for the semester issued by Contra Costa College. The second module of the program, SPIRIT II, commenced virtually on the Zoom and Canvas platforms from March 23<sup>rd</sup> through May 20<sup>th</sup> totaling 16 class sessions.

Under normal circumstances, the last module of SPIRIT (SPIRIT-III) is completed during the college's Summer Semester. However, under direction from Contra Costa College administration, a recess period took place in 2020 between the end of SPIRIT-II on May 20<sup>th</sup> and the beginning of SPIRIT-III on August 24<sup>th</sup> at the start of the Fall Semester. This extended transition allowed the program staff to tailor the SPIRIT III internship phase to an online/hybrid format.

When SPIRIT III began, the students attended their internships with various human services agencies using online platforms with supplemental activities. COVID-19 safety and health measures were observed during this period. SPIRIT III convened from August 24<sup>th</sup> through September 28<sup>th</sup> totaling 6 class sessions as well as a minimum of 60 hours of virtual work study/internship completion. Upon completion of all three modules, SPIRIT 2020 students attended a drive-thru graduation certificate ceremony on September 29<sup>th</sup> that fully complied with COVID-19 health and safety guidelines. A virtual graduation ceremony took place on October 5<sup>th</sup> using the Zoom platform. All SPIRIT graduates receive a Certificate of Achievement, which is a requirement to work for Contra Costa County as a peer provider. A total of 38 students graduated in 2020. (See Appendix F for SPIRIT syllabi and graduation flyer and program.)

#### SPIRIT Vocational Program

SPIRIT Peer Vocational Specialists coordinate and place SPIRIT students into internship positions in County-operated programs and Community-based Organizations (CBOs) by outreaching to and recruiting representatives to participate in the Virtual SPIRIT Work-Study Fair, providing ongoing support to the students before and during internships to ensure a positive outcome and experience, conducting site visits to support and meet the needs of both the students and the agency, and providing additional training on internship ethics and professionalism. During 2020, Peer Vocational Specialists managed to maintain partnership and support with collaborating agencies and transitioned what had historically been an in-person Work Study Fair

and it to the first ever “Virtual Work Study Fair.” This Virtual Work Study Fair required support and commitment to flexibility from partnering agencies.

Prior to conducting the Virtual Work Study Fair, Peer Vocational Specialists coordinated 32 meetings with representatives from collaborating CBOs and County-operated programs to obtain commitment to participate in this temporary transition to virtual/in-person/hybrid internship. To support this effort, the SPIRIT Peer Vocational Specialists identified virtual-internship and direct-internship tasks and duties, as well as local community advocacy and educational meetings pertaining to the behavioral health system of care to support agencies and students in utilizing their skills learned. This information was shared with the agencies. After commitment calls, Peer Vocational Specialists confirmed 25 collaborating agencies to participate in the Virtual Work Study Fair, leading to internships. This commitment allowed placement of all 39 interning students. Nine agencies engaged in virtual internships with the remaining 16 agencies engaging in remote-hybrid internships.

The COVID-19 pandemic affected some of the partnering agencies, as they had to temporarily forfeit the internship portion of the program due to agencies needing to reevaluate how the pandemic would affect their funding, staff tasks, and workload. Nonetheless, the graduating cohort was able to apply their learned skills amid a pandemic. During the 2020 class and after graduation, Peer Vocational Specialists continued to motivate and mentor students, provide job resources and monthly vocational trainings, and assist with resumes, cover letters, and mock interviews, while also working with hiring agencies to send the appropriate resumes that fit their job requirements.

Monthly vocational trainings are conducted and designed to provide ongoing educational support for current SPIRIT students and past graduates. Trainings include presenters covering various topics pertaining to the behavioral health system of care. Topics are intended to strengthen skills of individuals looking for work or currently working within County-operated programs and CBOs.

During 2020, 10 monthly trainings were convened to educate current SPIRIT students, past graduates and peer providers currently working in the behavioral health field. SPIRIT vocational training attendance totaled approximately 280 individuals (some of which were duplicated) that attended the trainings.

Monthly trainings held in 2020 facilitated by:

SPIRIT Vocational Program and collaborating Behavioral Health Partners

- January – Motivational Interviewing
- February – Cultural Sensitivity Workshop

- March – Motivational Interviewing II – Cancelled due to COVID-19 April – Ways to Cope with Feelings Related To COVID-19
- June – Weekly Summer Series, Peer Support Core Competencies from Senate Bill 803
  - Week One (June 22<sup>nd</sup>) and Week Two (June 29<sup>th</sup>)
- July – Weekly Summer Series, Peer Support Core Competencies from Senate Bill 803
  - Week Three (July 6<sup>th</sup>) and Week Four (July 13<sup>th</sup>) August – SPIRIT III Internship Prep & Forms
- September – No training held due to MHSA Community Forum on Evolution of the Peer Movement and due to SPIRIT Graduation
- October – Multicultural Layers of Identity
- November – Navigating COVID-19 & Holiday Community Resources

Employment Placements:

Peer Vocational Specialists serve as a liaison for SPIRIT graduates and employers, and track employment/volunteer status as it pertains to vocational placement into the behavioral health field. 19 placements were made in 2020, 18 graduates were placed into paid positions and 1 graduate into a volunteer position. 13 of the graduates placed were of the 2020 cohort.

Outreach and tabling in all regions of the county:

- Feb 18<sup>th</sup> – Putnam Clubhouse Birthday Celebration
- Sept 23<sup>rd</sup> – Evolution of the Peer Movement MHSA Forum

(See Appendix G for training flyers and attendance records.)

Overcoming Transportation Barriers

The Overcoming Transportation Barriers program is a systematic approach to develop an effective client/family/caregiver-driven transportation infrastructure that supports the entire mental health system of care. The goals of the Overcoming Transportation Barriers program are to:

- Improve access to mental health services.
- Improve transit system navigation.
- Improve independent living and self-management skills among clients.

The target population is clients of all ages, families, and caregivers served by the County-operated mental health clinics. Staff for the program consist of 2 Commute Navigation Specialists (CNSs), who are also Community Support Workers (i.e., peers).

This year's goals were to focus on three areas:

- Flex Fund
- One-on-One Peer Support
- Pilot a Ride Share Program

First, Phase One, known as Overcoming Transportations Barriers Flex Fund: This funding would cover a one-time cost specific to transportation needs and help provide support to clients who need to get to their appointments. Some examples of flex funding will be to cover the cost of a new tire or a loaded Clipper card to provide fare to and from appointments or groups.

The OTB Flex Fund piloted at the Central County Adult Mental Health Clinic started in January with a handful of flex fund requests and was halted in March due to the Shelter-in-Place restrictions.

However, in that short period of time each request submitted was completed at about an average of a week's time. The project started again once restrictions were eased, and presentations to clinics and programs are in progress.

Second, Phase Two will be for a CNS to provide one-on-one peer support travel training to clients by riding public transportation together. Referrals for this program will come from providers within the adult and children's system of care. Phase Two has been put on hold due to the shutdown and Shelter- in-Place.

Third, Phase Three will be to pilot a rideshare program with a small, targeted group. This is still in the conceptual and discussion phase. The OTB workgroup and the CCBHS Quality Improvement & Quality Assurance team will continue to research methods, costs and consult with the project administrator. The rideshare program is currently being piloted in Contra Costa Public Health for clients of the Whole Person Care initiative. Phase Three was put on hold due to the Shelter-in-Place.

Due to staffing changes where one of the two CNS's was promoted to work in the Children's Mental Health System of Care, and the pandemic which led to the Shelter-in-Place restrictions, the project suspended its 1:1 peer travel training program and the Flex Fund project that had just started in January. During the pandemic, the Commute Navigation Specialist acted as a liaison between county Behavioral Health staff and transit authorities to analyze existing County transportation and public transit resources by keeping participants up to date on the changes in transit systems during the pandemic via email to the distribution list for the Transportation Subcommittee, which OTB staff facilitates bi-monthly under the umbrella of the Committee for Social Inclusion. Staff also presents updates and announcements regularly at Social Inclusion meetings.

As a result of feedback by clients in the Transportation Subcommittee, physical wallet/pocket cards were created for clients who experience high stress situations or need a quick coping

strategy. Referenced coping strategies on the cards included: meditation, deep breathing, riding with friends, prayer, listening to music, journaling, reading, and practicing a hobby. Cards were distributed at all CCBHS outpatient clinics and included with bus vouchers upon request. The OTB workgroup revised the wallet cards with recommendations and input from the subcommittee into trifold wallet cards and are now provided in both English and Spanish. The OTB brochure that outlines the available services and resources continues to be distributed throughout the clinics and in the welcoming packets for new clients.

Additionally, a request was made to pilot Transportation Packets for new clients to be provided in the East County Adult Mental Health Clinic. The packets are prepared in English and Spanish contains a welcoming letter from the Commute Navigation Specialists and an ADA Paratransit application, introduction to BART, transit schedules, Regional Transit Connection (RTC) Discount ID Card application, OTB brochure and OTB trifold cards.

During Shelter-in-Place, OTB staff transitioned the Transportation Subcommittee meetings to virtual format via Zoom. The program continued bi-weekly planning meetings and planned and facilitated 4 of 6 community subcommittee meetings. At the community subcommittee meetings, it was noted that we gained new participants and lost our participants who live in congregate care that are required to stay in at home to minimize transmission risk. After asking the subcommittee their thoughts on keeping the meetings via Zoom after the Shelter-in-Place, participants agreed and requested to have an option to attend either physically or virtually. This way if a participant isn't feeling well, they can still receive the support from their peers and stay informed.

In the early summer, one of the two Commute Navigation Specialist's had been promoted to work in the Children's System of Care. Currently the program is operating with 1 FTE and has requested freeze approval to backfill the other position. The OTB workgroup will continue to monitor concerns shared by clients while accessing public transit and other transportation resources and staff a transportation hotline for clients and families/caregivers to seek out support.

(See Appendix H for subcommittee meeting agendas and flyers and resource brochures.)

In addition, OCE produces and disseminates the Peer Perspectives newsletter. (See Appendix I for the Winter and Summer 2020 editions.)

## PEI ANNUAL REPORTING FORM

### PREVENTION REPORTING FORM

FISCAL YEAR: 2019-2020

Agency/Program Name: People Who Care Children Association

Project: PWC Clinical Success After-School Program

#### PEI STRATEGIES:

Please check all strategies that your program employs:

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

For the first 3 quarters of the 2019-20 school year, our program flourished, building new momentum amongst the student population at Pittsburg's alternative high school site, Black Diamond. Having hired a new instructor and Black Diamond teacher, the word spread quickly about our program offerings and we welcomed many new faces. Our teacher, mental health specialist, and clinician worked in concert to provide a program that engaged clients intellectually, creatively, and most important to our work, emotionally. Each week, students engaged in learning experiences that built transferable, 21st century skills that will undoubtedly serve them in future professional contexts. They learned about entrepreneurship, collaborating effectively, professional communication, and assessing needs in a community. In racially and sexually heterogenous groups, they created original business ideas and learned how to write full-length professional business plans and pitch presentations. They practiced public speaking and ultimately presented their work for a panel of professionals from the business community. We offered trainings for our clients and community members to receive training and employment as census workers. We invited guest teachers from Wells Fargo who came and led weekly workshops for clients around financial literacy and planning. We are incredibly proud of the breadth and quality of our program offerings that all work to build key competencies and spark interests that are crucial for later success in life. However, the fundamental difference that sets PWC apart from any other after-school program in the area is our focus, commitment, and ability to provide mental and emotional health services to young people who need it. The

lack of sufficient counseling in schools and/or affordable options outside of school, is no secret. This is especially significant in our adolescent population who often do not and/or cannot receive services outside of school due to lack of familial or financial support. This is compounded by the negative associations many have with mental health care and therapy and associated stigma/shame. At PWC, we believe counseling and emotional health is the foundation upon which human beings build the infrastructure necessary to live healthy, fulfilling lives and the strength, resilience, and skills to handle the hardest parts of life. Therefore, at PWC, mental health support, access to counseling, and emotional skill-building is at the very center of the work we do: it is an essential piece of our program that to varying degrees is embedded into every decision, lesson, and process. We provide access and normalize receiving care because it is for everyone.

Due to the pandemic, school closures, and the consequent disconnection students are experiencing from school and communities of support, at-risk youth are in a vulnerable position. PWC provided necessary access to mental health support for students most at-risk in Pittsburg at the time. School failure, disengagement, and adverse childhood events (ACEs) are common in our community. Thus, school closure poses a very real threat to more than their physical health: it threatens their emotional well-being, their likelihood of graduation, and their futures. The likelihood of recidivism into or development of failure and disengagement due to separation from school/community becomes more and more likely the longer the closures persist. Our clients are predominantly seniors and juniors, in one of the most pivotal transitions of their lives so far: the months before adult life. Because of COVID19, it is more important to provide the support that we hope will assist in sustaining belief in themselves.

In the first half of the fiscal year, we provided on-site mental health counseling to 6-12th grade students in Pittsburg. Mental health practitioners have saturated caseloads in PUSD and have medical stipulations that disqualify many students and preclude school-site counselors from being able to see them more than for 1-time crisis-specific mental health check-ins. This positions us as a vital service for young people in Pittsburg. In our after-school program, we integrate social-emotional supports, trauma-informed curriculum and intervention, and exciting enrichment opportunities with free individual and group therapy.

After the shutdown, in addition to the wrap-around support and programming at PWC, an essential priority has been ensuring that our clients never experience an interruption in mental health services and that our clinicians remain in contact with students, delivering content that is useful and engaging.

As the shelter-in-place continues, a lot of what was planned for our Green Jobs Training Program needed to be delayed for safety reasons. We have found innovative ways to keep students on board and connected to services, for instance, offering remote courses in personal health and life skill-building, finance, and holding weekly zoom meetings for emotional health.

## **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year (See the attached). Describe any adaptation of services due to COVID-19 that may be relevant***

From April to mid-May we organized online tournaments to ensure that we were keeping the students supported and ensuring that they continued to feel a part of a community during this unprecedented time. Around 40 students participated in each week-long and 2 week-long competition. These involved countless challenges and games that accessed most learning styles and student interests. The challenges were organized as an online scavenger hunt and students competed to complete each step thoroughly and thoughtfully. For example, students had to write a poem, make a mask out of household items, cook a meal for 50 cents or less, download and score as many points as possible in a free game app etc. It was so much fun, and we ended up having around 10 winners!

Simultaneously, the Green Jobs Bridge program (virtual adaptation of our existing/pre-covid program) began on May 15th, ending June 19th. A total of 12 unduplicated, and 78 duplicated students participated in the program. From there, students had 3 weekly sessions via zoom. Mondays were reserved for community building and life skill-building. Our credentialed instructor, and mental health specialist, met with the kids and had restorative conversations around topics like change, self-love, managing stress and anxiety, trauma, police brutality, and institutional racism.

Wednesdays and Fridays were the days our instructor taught personal finance concepts to our students. The topics covered were organized in modules that corresponded with assigned industry level online virtual simulation for each concept. Modules involved Wednesday and Friday direct instruction and group activities. The instructional plan general included an assigned reading, a virtual zoom lesson and discussion, a quiz, and a simulation that put new understandings to the test in a real-life scenario.

The modules were: Budgeting and Saving, finding an apartment, choosing, and balancing a bank account, getting a credit card, fixing your credit, online banking, time management and health, paying and filing taxes, intro to investing for retirement, risk vs. return, and diversification.

Finally, students participated in a weeklong simulation from (6/22- 6/26) in which they had to put all the skills and learning to the test and make all the financial and life decisions in an open simulation that combined all the other modules. Their goal was to have the highest net worth by the end of a week's- time. Our winner went from 0 and homeless to home-owning, college-educated with 250k in the bank.

**For PEI – Prevention programs, please describe: *List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental,***

***emotional and relational functioning. Please include how often data was collected and analyzed.***

Our client's mental and emotional health is assessed weekly through a variety of measurements. The students engage in weekly self-report check-ins around their emotional state and perceived well-being. Additionally, they meet in group and individually for counseling. They are welcomed to myriad programs through-out the week to foster a sense of belonging, build resilience and emotional stability. Metrics such as improved school attendance and decreased incident of behavioral problems at school support the efficacy of our program and services as well. In addition, the clinician conducts on-going and frequent behavioral observations to assess all clients and provide services as needed. For example, the therapist may ask the client to rate their level of depression on a scale of 1-10. Clients are also asked by PWC staff about their school experience, attendance, participation, which is tracked and utilized to indicate outcomes.

As our current clinician, Betty Brown collects information from individual and group sessions on a weekly basis. In addition to utilizing rating scales with clients, other surveys are given which provide clients opportunities to answer questions and self-report experiences, personal growth, and challenges. Such information is summarized in progress notes which are secured in files off-site, in compliance with HIPPA standards.

PWC's triage and assessment approach ensures that client receive the most appropriate level of care: offering on-site preventative services, providing counseling in therapy groups/individual/family sessions, making referrals to outside mental health services as needed.

PWC's use of a triage model allows us to maintain clear pathways for client receipt of mental health services. As previously reported, participants first complete an intake packet, identifying their unique reasons for working with PWC. Our mental health resource specialist, Miss Pope, meets all clients and their families who sign up at PWC, sharing and discussing any possible community resources that may be available to the client and their family. This allows for her to build the necessary relationships needed to discover what each individual clients' needs are and what their family needs may be as well. As she discovers such needs, she provides resources and initial recommendations. This allows for initial assessment. Ms. Connie, PWC's executive director, greets new clients and builds rapport, making an introduction of the client to the on-site clinician. As Ms. Connie introduces the client to the mental health clinician, it is made clear that receiving counseling services is part of the program. This normalizes the practice and makes students feel comfortable receiving help. The clinician continues this warm welcome and explores the circumstances. Youth have become familiar with supportive staff, who are also looking out for additional support needed or signs of distress of the individual. This internal referral system, frequent open-communication, and clear protocols all play a vital part in

making our triage model work effectively to eliminate as many barriers as possible from mental health services.

This referral system recently successfully served a high school senior who had arrived to complete community service hours. On a registration page, she indicated a strong emotion tied to an interaction with a friend of the family. Recognizing a potential red flag, staff invited the participant to meet the clinician, in a supportive and friendly manner. The clinician was able to begin building rapport with the client, who disclosed feelings of depression and withdrawal from relationships after a traumatic experience with an older boy. With a safe environment, access to therapy, and a supportive network of adults, she was able to process her emotions and begin healing from this event. This resulted in her ability to re-build confidence, to engage more fully in activities, to strengthen relationships in her life, and end her patterns of disengagement and absenteeism from school.

On another occasion, another youth was participating in a green-jobs program offered at PWC. A staff member was getting to know her and recognized that she seemed to be working through some intense feelings and possible depression. This staff member referred her for 1-1 counseling that helped the student address feelings of severe depression and hopelessness in a safe space and to feel engaged and capable of taking steps to improve their emotional health. The clinician was able to work to mitigate self-harm ideation and to create a safety plan with the client throughout the year.

In addition to individual and group sessions, PWC conducts home visits as needed which aim to not only support the client, but also their families. Being mindful of cultural differences and perceived shame or stigma around mental health services, staff members offer support to families in an understanding, compassionate, and accepting way.

**DEMOGRAPHIC DATA:**  Not Applicable (Using County form)

Please refer to Aggregate Data Reporting Form

**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

At PWC, cultural responsiveness begins in our own awareness and understanding of the ways in which our own culture may affect clients' families from racial backgrounds different from our own. Our staff is a diverse group of professionals from African American, Latinx, and Caucasian backgrounds. PWC's staff receives weekly consultation from Porta Bella Hume Counseling Center in its work setting. Through this service we better understand the organization and the culture of the clients we serve. We anticipate how clients will interact in conflict situations and

how they may support one another in conflict prevention. Because PWC 's clients consist of a large population of the young people of color, understandings around race, implicit biases, privilege, and lived experience is essential to our efficacy. Additionally, in a more logistical sense, both our primary instructor and curriculum lead and our office assistant speak fluent Spanish so that we can communicate and support the large number of clients/families who come from Spanish speaking homes. Due to the demography in Pittsburg and in effort to further expand our ability to provide inclusive and culturally responsive programming to our clients, PWC is currently seeking a bilingual Spanish and English-speaking individual to join our staff as Site Coordinator. Latinx clients upon entering PWC's office/program site often seek Spanish speaking individuals. Our values around diversity, center on the core belief that mental and emotional health supports vital and that they are effective when cultural awareness is one of many large considerations involved in effective treatment.

Our mental health specialist along with countless other routines, behaviors, and interventions, educates the kids with loving sincerity and very real concern for their safety by requiring kids to break habits like wearing hoodies that might make them more likely to invite contact with law enforcement. She explains the hoodie rule as a vital protective measure for their safety. This is an example of risk reduction measures specifically related issues of race and bias in our society as they affect youth of color. One example of programmatic supports that promote cultural literacy in our clients is our emotional/life-skills groups; these offer a safe space to have the critical conversations necessary to build better understanding between students from different cultures. Clients explore their own lived experience and confront their own biases in a way that creates an environment of mutual respect and strengthens their ability to empathize with people different from themselves. All therapeutic groups on-site or on-line follow agreed upon norms around listening and speaking respectfully etc. PWC's emotional and life-skills groups, which are a vital component of every program we offer, help young people see that what appear to be characteristics in each other that they assume are irreconcilable or that clash with their own personalities are, in fact, better understood through a culturally responsive lens. This way students unpack biases and build relationships that change their perspectives. PWC continues to commit to the constant need for educating our clients on how to deal with challenges caused by racially conflict and misunderstanding of cultural differences. Thus, we create opportunities for clients to learn from and about one another and to engage in ways that honor who they are, while challenging clients to be mindful and respectful of others. PWC works to influence the culture of its organization so that its policies and practices are informed by utilizing guiding principles of cultural proficiency and its responsiveness.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Since 2016, People Who Care (PWC) Children Association has been in collaboration with several East Contra Costa County nonprofits, including Opportunity Junction, Loaves & Fishes, Brighter Beginnings, Monument Impact, Village Community Resource Center, Contra Costa County CASA, Winter Nights, Cope Family Support Center, Rainbow Community Center, and Dream Catchers Empowerment Networks. Through this partnership, in August 2019, the East Contra Costa Alliance (ECCCA) was established, with the long-term goal of strengthening the ecosystem of organizations addressing poverty in East Contra Costa through direct services, community organizing, and advocacy for systems change.

The purpose of the Alliance is to: 1) Address issues affecting East Contra Costa residents, particularly those impacted by racial inequities, poverty, social isolation, or other obstacles that greatly affect their communities, 2) Share and leverage resources among participating nonprofits and private funders, to create a more sustainable ecosystem to better support services to disadvantaged populations, and 3) Work towards building nonprofit capacity and sustainability understanding the important role nonprofits play in addressing the needs of the diverse members of the community.

One successful example of the results of the work of the Alliance happened in June of this year. PWC had a client family desperately in need of resources due to having lost their home in a fire. By reaching out to other service providers within the Alliance, PWC was able to offer immediate temporary solutions for this client family through their own access to vital information and resources for support. Today, this client family has relocated and is living safely with extended family members within East Contra Costa County.

#### **VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Our mental health program is continuing with the theme of self-discovery while beginning to intertwine concepts of teamwork and community building. This year we were fortunate to welcome Betty Brown, an associate Marriage and Family Therapist from the Hume Center.

By providing a safe space where clients can process their unique life situations and begin building healthier relationships, they build confidence, problem-solving skills and resilience that serves them in many contexts both at home, at school, and in life. The linkage to community is particularly important at PWC, as clients have ample time and space to practice serving others by participating and engaging in community events, such as crab feeds or setting up and supporting local parades. These opportunities not only provide practice in building social skills but generate positive feed-back for client who find themselves serving others, being

recognized, and thanked, and feeling an inner satisfaction of being part of something bigger than themselves.

Oftentimes, a client may begin participating in PWC programs and, with the support of friendly staff, reveal specific needs that could be addressed by being linked to other services in the community. Clients and families may experience lack of food, anxiety around housing stability, or health concerns. PWC staff can then provide referrals and linkage to resources that support these individuals and families. When basic needs of housing and food are met, individuals can then experience relief and begin to focus on inner growth.

Believing in a person's ability to learn, grow, overcome, and eventually thrive is a foundational belief of PWC's program. All staff engage with youth in an accepting, compassionate manner that meets them where they are at, yet also sees the potential for what they can become. At-risk youth need the support that PWC provides, in having and offering clinicians to support client with mental health needs and giving these individuals and their families linkage to resources in the community. By normalizing mental health services and restorative conversations, we de-stigmatize and dismantle preconceptions about therapy and mental health care; it is a vital part of our program that we believe is helpful and transformative to any human let alone the young people in our community who often have experienced adverse childhood events and painful disruptions in their lives without having had access or the ability to seek/receive therapy before our program. It is no secret that mental health disparities are rampant in underserved communities and our program provides a much-needed support to our youth and a vital service in Pittsburgh. More-over, an essential qualification of being a staff member at PWC is a commitment to racial/social justice. Additionally, staff must share the belief that mental and emotional health supports are a basic human right (not a privilege), while demonstrating awareness of the disparities that need to be addressed in terms of access in our community. PWC is also committed to on-going professional development to ensure we remain culturally responsive and non-discriminatory in every sense and situation.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Clinician Vignettes:

One afternoon a participant in PWC's Green Jobs program had been speaking with a staff member. She shared information that indicated a high level of distress and signs of depression. The staff member appropriately asked if she would be willing to meet and talk with the on-site clinician. That was the afternoon that I met a client I will call "Heather."

Heather was introduced to me and kept her eyes averted. I invited her into my office, and she came in and took a seat. We had a typical “first time meeting” exchange, where I asked some basic questions about family and where she lives and attends school. She was easy to engage with, yet her body language showed resistance to open up on deeper issues. She disclosed having a recent break-up with a boyfriend and spoke of having a best friend. She appeared uncomfortable, her knee bouncing up and down, and she was ready to go out of the room. After letting her know that she is welcome to come and talk with me anytime during my available hours, she went out to a main room, engaging with peers. Shortly later, she came in asking two things: could her best friend lay on the couch in my room, and could she write on my dry-erase board/easel. I warmly invited her and her friend in. Heather turned the writing board facing away from me and proceeded to fill it, top to bottom, with writing. Line after line she wrote how something had happened to her and she hadn’t been able to tell anyone and how nobody knew all of what she struggled with. She also wrote that life felt overwhelming and how there were times she did not want to live. After she completed writing, she left the room to hang out with others. Her friend also left. I read the message and observed her, knowing that it would be important to follow up before she departed that day. In less than twenty minutes she made her way back to my room, indicating that she had left her phone behind. I asked if we could talk privately for a few more minutes and she agreed. We used that time together to explore the message she left behind, in a supportive and non-intrusive way. She was able to speak about personal safety, the risk of self-harm, and suicidal ideation. She had a safety plan that was currently working. I shared with her that I looked forward to meeting with her again.

Shortly after that day, our county went into shelter-in-place restrictions. The PWC office was closed. We completed outreach to clients, leaving messages that we missed them, hoping they were well, and giving them a phone line to call and access support. While I cannot address this case in a manner of it unfolding over time, I offer it here to demonstrate how all of us work together to demonstrate care of the youth who come to participate in programs at PWC. The important part is that kids come and stay in the afternoons and have access to loving and supportive adults and therapeutic services that are delivered in ways that work for the kids, their reservations fall away and their ability to trust and thus heal, grows.

Another client, who I will call James, came in one day, early in 2020. He had been referred to PWC to complete community service hours due to school attendance truancy. He was friendly, smiling, and engaging, although he rarely gave direct eye contact. We did, however, build great rapport. He came to talk with me at least twice weekly. James presented as a transgender (girl to boy) youth. I heard from staff that his mom was not supportive of this change, while his dad was supportive. Because James presented as male in his appearance, I began using male pronouns from the beginning. A couple of months later, I did ask what his pronoun preference was, and he confirmed that he preferred male pronouns.

James was experiencing the ups and downs of self-identity. Staff observed him enacting gender roles with peers. James was inquisitive and seemed hungry for attention and approval. In sessions, he demonstrated artistic talent, and a keen interest in pets and music. Our exploration of family and relationships was cut short, due to COVID-19 and the shelter-in-place requirements. This case demonstrates how PWC is diverse, able to accept and support marginalized youth, and encourage their healthy development for the future.

People Who Care (PWC) Children Association PEI Annual Report

FY 2019-2020

Appendix



## Introduction

The purpose of the evaluation check/study is to help discern if program elements and activities are resulting in important and meaningful outcomes for targeted youth. The focus of this study is to track the progress of the objectives that were set for the program at the beginning of the year in accordance with funder expectations as aligned with actual program activities.

## Participant surveys

PWC Student Survey—A participant pre-/post-survey for this year was replicated as previously approved by Mental Health Administration staff from Contra Costa Health Services. This survey was designed to measure the following: resiliency; community support; recidivism; and program satisfaction.

As shown in Table 1, the participants were divided into cohorts based on when they started the PWC After-School Program.

Table 1. Participant Survey Administration (July 1<sup>st</sup>, 2019 – June 30<sup>th</sup>, 2020)

		PWC Survey			
	Participants N	Cohort	Period	Pre-	Post
Quarter 0	59	0	July - September	49	32
Quarter 1	57	1	October - December	45	26
Quarter 2	54	2	January - March	46	11
Quarter 3	0	3	April - June	0	0

## School Day Attendance Data from Pittsburg Unified School District (PUSD)

Through networking efforts with PWC, and the PUSD Director of Student Services, Pittsburg Unified School District (PUSD) staff did provide attendance records for most of the Cohort participants attending public schools. Some of the students served by the PWC program are high-risk youth who did not regularly attend school, transferred through multiple schools and districts, participated in alternative school/independent study programs, had issues related to truancy and/or are on record as having dropped out of school. Despite these challenges, school day attendance data was available for 35 participants of the 37 students referred to the program through the Student Attendance Review Board (SARB), due to attendance and behavior issues, and students that attended Black Diamond Continuation School.

## Probation Data from the Contra Costa County Juvenile Services Department

Data on recidivism is acquired from the Contra Costa County Juvenile Services Division’s Director

of Field Services. The Director was provided with a list of program participants, and asked to designate which students, if any, had re-offended during the time period for which they were in the PWC program. Due to the sensitive nature of the information, the Director provided aggregated information only; student names were not identified. The Probation Department provided PWC with reporting information for **15** students.

**EVALUATION FINDINGS:**

In this year of implementation, PWC continues to make notable progress in assisting at-risk youth to strive for a higher quality of life by providing them with a safe and supportive environment through which they can get vocational training, mentoring, counseling, and peer group support.

Through our dedicated staff, and technology-advances, our success is well documented. The following pages summarizes the progress of the program this year as related to its tangible goals and targets.

Outreach and Participation

The target number of unduplicated participants that PWC was prepared to serve in this reporting year was 200. The actual number of unduplicated participants was 207. (See Table 2.)

Table 2. Program Participation by Quarter (July 1<sup>st</sup>, 2019 – June 30<sup>th</sup>, 2020)

	July-Sept	Oct-Dec	Jan-March	Apr-June	Total Served
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	
# Students (Duplicated) Served Each Quarter	111	173	148	54	486
# New Students Served Each Quarter	123	43	32	9	207

As in past years, prior the start of the 2019-2020 school year, PWC recruitment plan involves the PUSD Director of Student Services, and Probation procedures for referrals to the PWC program during the upcoming school year. PWC also made site visits and presentations to the staff and administrators at Black Diamond and Golden Gate Community Day continuation schools.

The evaluation for our program consisted with the goal and objective identified are directly linked to the activities and proposed process and outcome measure. Overall, the purpose of

this evaluation is to examine specific program activities and service, identify what’s working well or not, and enhance our ability to better meet the identified needs and gaps. Working with program manager, the officemanager primarily manages the systematic data collection (e.g., pre-and-post clients’ surveys, program application, school attendance, and probation data), analyze information, and provide data for the biannual progress reports, ensuring that all the objectives are reached. Additionally, the office manager works closely with the program manager to provide up-to-date data requested by the PEI management team. Our evaluation assesses both clients and environmental level changes (e.g., school-level, systems).

Our data collecting methods help regarding maintaining clients’ confidentiality. Client’s confidential personal data are assured by following strict guidelines for collecting and managing client’s information. clinical data are being filed away at the Hume Center while clients’ program information is locked in the PWC office in double-locked file cabinets away from reach of our clients.

The types of schools that PWC participants attend, the majority (52%) of participants come from the alternative school system. (See Table 4.)

Table 4. Distribution of School Types Represented in the PWC Program Year: (July 1<sup>st</sup>, 2019 – June 30<sup>th</sup>, 2020)

School Type	Frequency	Percent
Alternative School placement (e.g., continuation, independent study)	107	52%
Traditional High School	73	35%
Traditional Middle School	12	6%
Adult School/Graduated	15	7%
Totals	207	100%

Goal 1: Enhance the Quality of and Access to Resources

*Objective 1.1:* 65% of the total number of green jobs program participants will increase their knowledge and skills related to entrepreneurship, alternative energy resources and technologies, and “green economy” according to program curricula for the duration of their program participation.

As indicated above, a lot of what was planned for our Green Jobs Training Program needed to be delayed due to COVID-19. Also, as indicated, we worked hard to make changes to ensure that the services we provide weren't delayed for our clients offering remote courses in personal finance and holding weekly zoom meetings for emotional health and life skills. Although, the objective that 65% of the green jobs participants will increase their knowledge and skills related to Entrepreneurship, and the "green economy" was not met in this instance; 100% of the participants enrolled in the remote courses did gain knowledge in aspects of business such as marketing/advertising, accounting and banking skills, which was very successful.

Goal 2: Develop a safer environment for at-risk youth who are chronically truant or on probation.

Objective 2.1: 65% of the 200 youth program participants will show improved youth resiliency factors (i.e., self-esteem, relationship, and engagement.)

Result: Of the 53 students enrolled in the after-school program who answered the resiliency questions on pre-and-post Student Surveys, 79% demonstrated improved resiliency. This exceeds the target objective that 65% of participants would demonstrate improved resiliency.

It is important to note of the 53 students that answered the resiliency questions, 32 participated in multiple Cohorts. The results of each unchanged answer analyzed utilizing the 1 to 6 point scale per item, positive and negative answers were combined in the categories of increased and decreased outcomes.

Responses of "Extremely and Moderately Satisfied" or "Very Little Stress and Some Stress" or "The future looks very bright, and the future looks somewhat bright" were positive.

Objective 2.2: 75% of the 200 youth program participants will not re-offend for the duration of their program participation.

Result: Of the 15 probation students enrolled in the after-school program, (80%) did not re-offend during their participation in the PWC After-School Program.

As described in the Methods, the Contra Costa County Juvenile Services Division Director of Field Services was asked to report on the number of students from

the lists who committed an offense and the number of students who "re-offended" or went to juvenile hall.

Of the 15 student names submitted there was 3 new offense, and 0 new admission to Juvenile Hall. Overall (80 %) of the program participates did not "re-offend."

Objective 2.3: 70% of 200 youth participants will report that they have a caring relationship with an adult in the community or at school during their program participation.

Result: Of the 42 students enrolled in the after-school program who answered the survey questions about caring adults on their post Student Surveys (66%) indicated that they had caring

relationships with adults in their lives; however, this does not meet the target objective that 70% of participants would have a caring relationship with an adult in the community or at school during their program participation, which could be attributed to COVID-19, and challenges in families during this troubling time.



Among the 7 youth resiliency questions were items specifically related to the role of caring adults in the lives of these youth. Four of the questions were related to caring relationships with adults. Students were presented with the following 4-point scale to answer each question (1=Not at all true, 2=A little true, 3=Pretty much true, 4=Very much true).

To see if students reported that there was a caring adult in their lives, we examined their responses to these 4 questions on their Post Student Surveys. The post surveys would best capture their feelings after having been served by the PWC program. Responses of “Pretty much true” or “Very much true” were positive. Results are presented in Table 6.

Table 6. Demonstration of Participant Relationships with Caring Adults

There is an adult (other than my parent/guardian) who...	% of positive responses
	Overall (n=62)
tells me when I do a good job	68%
I trust and could talk to	61%
believes that I will be a success	71%
notices when I am upset about something	63%
Average of all 4 questions	66%

Goal 3: Create a culture of career success among at-risk youth.

Objective 3.1: There will be a 60% increase in school day attendance among 200 youth participants for the duration of their program participation.

Results: Of the 35 students referred to the program by the PUSD Student Attendance Review Board (SARB) and attend Black Diamond High Continuation School enrolled in the after-school program with attendance data available for their respective cohort periods, 77% improved or maintained perfect attendance. This exceeds the target objective that there would be a 60% increase in student’s attendance. Attendance data was collected for each cohort in session. Student level data was compared between the first week of participation and the last week of participation in each cohort. Attendance was “perfect” if there was no indication of absence, truancy, tardiness, etc. To be considered “perfect” a student had to attend every full period of class for the entire week.

Attendance data was available for 35 of the 37 students referred to the program through the Student Attendance Review Board (SARB), for attendance and behavior issues, and attend Black Diamond Continuation School, (not including those who participated in the program for less than 10 days, and/or outreach students), Of the 37 students with attendance data available for their respective cohort periods, 77% improved or maintained perfect attendance between the beginning and ending weeks of their cohorts.

Objective 3.2: There will be a 60% decrease in the number of school tardiness among the 200 youth participants for their program participation.

Results: Of the 35 students referred to the program by the PUSD Student Attendance Review Board (SARB) and/or attend Black Diamond High Continuation School enrolled in the after-school program with attendance data available for their respective cohort periods, 66% decreased or maintained a rate of 0 tardiness. This exceeds the target objective that 60% of participants would decrease tardiness.

Summary of Findings

Of the five program objectives, *four* were fully achieved (increased knowledge, improved resiliency factors, low rates of re-offense, increased school day attendance and decrease tardiness), and one was close (caring relationships with adults). (See Table 9)

Table 9. Actual Outcomes as Compared to Target: Fiscal Year 2019-2020

Outcome Measure	Target	Actual	Percent
65% of the total number of green jobs program participants will increase their knowledge and skills related to entrepreneurship, alternative energy resources and technologies, and “green economy” according to program curricula for the duration of their program participation.	N/A	N/A	N/A
65% of the youth program participants will show improved youth resiliency factors (i.e., self-esteem, relationship, and engagement.)	65	79	122%
75% of the youth program participants will not re-offend for the duration of their program participation.	75	80	107%
70% of youth participants will report that they have a caring relationship with an adult in the community or at school during their program participation.	70	66	94%

There will be a 60% increase in school day attendance among youth participants for the duration of their program participation.	60	77	128%
There will be a 60% decrease in the number of school tardiness among the youth participants for their program participation.	60%	66%	110%

Overall, PWC has fully met their targets regarding the resiliency items in the surveys. One of the biggest tributes to the program is that there are youth who continue to choose PWC to complete their community services hours, despite the ability to complete their hours with other programs, churches or in another city.

This year PWC Clinical Success After-School Program has been a huge success. Currently, we believe we have created a formula for success alongside with learning that will serve our community and our cohorts well. Our clients realize the program’s success is based on their performance on the projects that we set before them. They have responded extremely well and care about the most important goal of all – to believe, achieve, and succeed.

**PEI ANNUAL REPORTING FORM**

**PREVENTION FORM**

**FISCAL YEAR:** 2019-2020

**Agency/Program Name-** The Contra Costa Clubhouses, Inc. DBA Putnam Clubhouse

**PEI STRATEGIES:**

***Please check all strategies that your program employs:***

**X Provide access and linkage to mental health care**

**X Improve timely access to mental health services for underserved populations X Use strategies that are non-stigmatizing and non-discriminatory**

**SERVICES PROVIDED / STRATEGIES:**

***Please describe the services you provided in the past reporting period. Please include types of problems/needs addressed, any activities that address these problems/needs, and any functional outcomes targeted by the services provided.***

For Project A, during the contract year of this report (2019/2020), 456 unduplicated members (target: 300) spent 57,290 hours engaged in Clubhouse programming activities (target: 40,000 hours). 55 newly enrolled Clubhouse members (target: 70) participated in at least one Clubhouse activity; 11 of these new members were young adults aged 18 to 25 years (target: 12 young adults). In addition, at least 60 activities (target: 40) were held specifically for the young adult age group.

Table 1: Clubhouse Membership Activity

	Target Goal	Actual	% of Target
Number of unduplicated members served	300	456	152%
Number of Hours spent in Clubhouse programming	40,000	57,290	143%
Number of new members participating in at least one Clubhouse activity	70	55	79%
Number of young adults (age 18-25 yrs.) participating in at least one Clubhouse Activity	12	11	92%
Number of activities specifically for young adults (age 18-25 yrs.)	40	60	150%

Other services:

Members helped prepare and eat 30,938 meals at the Clubhouse (target: 9,000). This is significantly higher than in past years due in large part to the implementation of a food pantry in response to COVID-19. Although a target had not been set for rides, 1,543 rides were provided to members to and from Clubhouse activities, job interviews, medical appointments, and more. During the contract year 1,403 in-home outreach visits (no target set) were provided. Again, the significant increase is directly attributable to shifts made in response to COVID-19 which resulted in more outreach visits, walks, mobile wellness calls, and visits to members receiving food delivery.

Additionally, under Project B, 131 postings (target 124) were made on the Career Corner Blog and 4 career workshops were held (target 4). The workshops included 1) Interagency Meet N Greet Workshop-learn about the resources in the community, September 19, 2019 (67 Attendees); 2) Friendship: Making Friends, Developing Best Friends, Becoming Ready for Romance, January 16, 2020 (49 Attendees); 3) Ways to Cope with Strong Feelings related to COVID-19, April 9, 2020 (56 Attendees); and 4) Sweep Away Barriers, Community Mental Health Awareness, May 8, 2020 (92 Attendees).

Table 2: Other services provided to Clubhouse Members

	Target Goal	Actual	% Target
Number of Meals prepared and eaten at Clubhouse	9,000	30,938	344%
Number of Rides to and from Clubhouse Activities	No target set	1,543	N/A
In-home outreach visits	No target set	1,403	N/A
Number of Blog Postings	124	131	106%
Number of Career Workshops	4	4	100%

For Project C, the SPIRIT graduation was successfully coordinated by the Clubhouse and attended by 378 people on 7/29/19. The holiday party on 12/18/19 had 389 people in attendance with the collaboration of multiple agencies along with the OCE. The annual Community Picnic was held virtually on 6/26/20 and was well attended with 397 participants. Catered BBQ meals were delivered via volunteers to each home. The volunteers came to the Clubhouse and stayed in their cars while the meals were loaded into their cars for no-contact delivery to their assigned homes. Attendees Zoomed in for virtual picnic activities like trivia,

bingo, Paint Night, and musical performances. By all accounts, all three events were highly successful, but the picnic was a special achievement considering the adaptations that had to be made during the pandemic, and the extra importance of gathering during such a difficult time.

The final portion of Project C requires the Clubhouse to recruit, coordinate, and supervise volunteer consumers to assist the County with the Adult Consumer Perception Surveys (MHSIP) administration at three Contra Costa County mental health clinics twice a year. The first Survey Week took place in November 2019 in three clinics: East/West/Central Adult Mental Health. However, due to COVID, the second Survey Week was cancelled in May 2020.

Under Project D, the Clubhouse assisted County Mental Health in implementing the Portland Identification and Early Referral (PIER) program for individuals at risk of psychosis, First Hope, by providing logistical and operational support as per contract.

#### **OUTCOMES AND PROGRAM EVALUATION:**

***Please provide quantitative and qualitative data regarding your services. List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning. Please include how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served.***

Project A data is collected upon initial membership in the Clubhouse and then daily through a combination of self-completed forms, surveys, sign-on logs, and phone calls. None of the program-level outcome data is confidential and it is recorded in the program database. Any confidential information provided on individual intake forms is securely kept in the locked office of the Director of Putnam Clubhouse. Data from annual self-reported member surveys, including the hospitalization survey, is collected on Survey Monkey, an online survey site, and analyzed by Hatchuel Tabernik and Associates, an external evaluation firm.

In June 2020, members, and their family members (called caregivers in this report) were encouraged to complete the annual Clubhouse survey via Survey Monkey. The number of members and caregivers completing the survey was 124 (the target was 120), of whom 34 were caregivers and 90 members. Among members in the survey, 2.2% were aged 18-21, 3.3% were 22-25, 24.4% were 26-35, 20.0% were 36-45, 28.9% were 46-59, and 21.1% were 60 years or older. The age distribution is representative of the age range of Clubhouse members overall.

Because not all respondents answered each item, all survey data reported below reflects the responses of those completing each individual survey item. The survey percentages referenced in this report consist of those who 'Agree' or 'Strongly Agree' with the given statement. Those who responded 'Don't know' or 'No opinion' were not included in the analysis.

#### Caregiver Respite

The data in this report represents only those caregivers completing the survey who reside in Contra Costa County (N=34). Of the 34 Contra Costa County caregivers who responded to the survey, 72.7% were parents or guardians of a Clubhouse member, 15.2% were siblings, 6.1% were Aunts/Uncles or Cousins, 3.0% were the child of the Clubhouse member, and 3.0% were a husband/wife.

As in previous years, caregivers who participated in this year’s survey reported the highest level of satisfaction with Clubhouse activities and programs that their family member attended (96.9% satisfied), as well as with the Clubhouse activities/programs that they themselves participated in (90.9% satisfied). In both areas the target of 75% was exceeded. A large proportion of caregivers (90.6%) also reported that Clubhouse activities and programs provided them with respite care. Such respite is intended to reduce their stress and lead to more independence for the Clubhouse members. Seventy percent of the members agreed or strongly agreed that in the last year, their independence had increased. This is lower than the goal of 75% but may reflect the shift to virtual programming due to the impact of COVID-19 and the shelter in place order. Although exceeding the target of 75%, a slightly lower proportion of the caregivers (79.4%) also perceived that their family member had become more independent in the last year.

Table 3: Caregiver Respite

		GOAL	ACTUAL
Measures of Success	N	%	%
% caregivers reporting Clubhouse activities provided them with respite care	34	75	90.6%
% caregivers reporting high level of satisfaction with Clubhouse activities and programs in which their family member participated	34	75	96.9%
% caregivers reporting high level of satisfaction with Clubhouse activities and programs in which they participated	34	75	90.9%
% caregivers reporting an increase in member’s independence	34	75	79.4%
% members reporting an increase in independence	90	75	70.0%

Below are some responses from the caregiver survey to the question of what was liked best about the Clubhouse:

"I love Putnam. X has always a safe place with the Putnam family. It provides a good guidance for his well-being" (caregiver)

"Follow up calls, having her take accountability ... acknowledging her birthday. Career finding and motivating her" (caregiver)

"It's a safe and calming environment and it kept my wife purposeful during the shelter in place order. Being able to do outreach and food deliveries to members kept my wife mentally healthy." (caregiver)

"Supportive, caring staff & interest in well-being of its members, creating a social environment and positive outlook on life. Outreach to members in community." (caregiver)

And from the members survey:

"Being involved with the community and all that Putnam has done for this community during shelter in place" (member)

"Everything. Loves staff and members. Keeps me out of the hospital. best program to have for people with mental illness. Makes me feel connected to the community without stigma." (member)

"everyone there is welcoming with a friendly smile People are glad to see me" (member)

"Friendship and meeting new people." (member)

"camaraderie, people care for each other, staff is so nice, showing respect and concern" (member)

### Member and Caregiver Well-Being

Several survey items addressed improvements to the well-being of the caregivers and the members in terms of emotional, physical, and mental health. When combining responses to self-perceived improvement of their own mental, physical and emotional well-being, 84.4% of caregivers agreed or strongly agreed their health (emotional, physical, mental well-being) had improved. When asked the same questions about the well-being of their family member, 87.5% also agreed or strongly agreed that their family members overall health had improved.

The member ratings for their own improvements in these categories averaged 86.7%, greater than the goal of 75%. The combined family members rated improvement and the member's self-ratings for improvement in these areas averaged 85.6%. Additionally, 85.4% of the members reported that they had more interactions with peers during the year (75% target).

Table 4: Member and Caregiver Well-Being

		GOAL	ACTUAL
Measures of Success	N	%	%
% caregivers reporting increase in their own health (mental, physical, emotional well-being)	34	75	84.4
% members reporting increase in their own health (mental, physical, emotional well-being)	90	75	81.1
% members & caregivers combined reporting increase in their health (mental, physical, emotional well-being)	124	75	82.6
% members reporting an increase in peer interactions	89	75	85.4

Other comments made on the surveys by members and caregivers include the following:

"There's a lot of independence for members. The members help create the program. The clubhouse tends to see what the members want. I appreciate and benefit from the scholarship program. I like the structure of the clubhouse it has a good balance between social and nonsocial activities." (member)

"we work as a cooperative partnership; I can work at the gym it's important to my mental well-being" (member)

"It is a community within itself. You learn how to broaden your horizons. A place that is safe. Everyone there for each other." (member)

"interactions with people teach you to be more independent. People are so friendly" (member)

"It gives me somewhere to go so I'm not home depressed." (member)

"The staff are always inclusive and supportive of the members. Always reaching out and always providing a listening ear. They are like a second family to me. (: (member)

"The independent the members have as well as the input they are able to provide into decisions. Plus, very supportive." (caregiver)

"Variety of activities; the Clubhouse always looks after my brother's well-being and is there for him when he needs it." (caregiver)

"The staff is very professional, friendly, objective and helpful." (caregiver)

"Its non-judgmental caring attitude with families of and their loved one(s) living with mental health challenges." (caregiver)

"It provides a structured, supportive and compassionate environment to its members. Most importantly, it provides hope." (caregiver)

### Hospitalizations

For the tenth year in a row, members were asked to report on their hospitalizations and out-of-home placements (residential treatment) for the three years prior to joining the Clubhouse and for three years since joining the Clubhouse. Data was collected from a total of 54 active members in June 2020. If data had already been collected for the member in the previous year (June 2019) then this data was entered, and information was garnered for the previous reporting year only (since July 1, 2019). Data was not collected from those who had been Clubhouse members for more than four years since the date of their joining since the period of observation is a six-year span from three years prior to membership to three years post-joining the Clubhouse.

Information on hospitalization was gathered in terms of "episodes" with an episode defined as each time a member was hospitalized or placed in a residential treatment program (NOT including board and cares or other long-term group living situations that are simply where the member lives but don't involve receiving treatment at his or her place of residence). Data was also collected on total number of days hospitalized or in residential care.

Of the 54 members, one member was dropped from the analysis because they showed that they had been hospitalized for an extended time prior to Clubhouse (an extended period comprises at least 1 episode of 800 plus days). The final number of members included in the analysis was 53.

The number of hospital days prior to Clubhouse membership for those 53 members included in the analysis ranged from 0-228 days, with a mean of 19.6 days. Post Clubhouse membership, the number of days hospitalized ranged from 0-82 days with a mean of 2.3 days of hospitalization. In terms of episodes of hospitalization prior to Clubhouse membership, the Clubhouse members experienced 0-5 episodes of hospitalization (a mean of 1.11 episodes). After Clubhouse membership, members experienced on average 0.17 episodes of hospitalization (range 0 - 5 episodes). In terms of change of episodes, 53% of those providing data showed a decrease in hospitalizations or maintained zero hospitalizations (43%), and 4% showed an increase in hospitalization episodes from before to after Clubhouse membership.

Table 5: Percentage of # of episode changes before and after Clubhouse Membership

Episode Change (prior & after Clubhouse membership)	N	%
Decrease Episodes	53	53%
Maintained 0 episodes prior and after	53	43%
Increase Episodes	53	4%

In terms of number of days (total) that Clubhouse members were hospitalized or in out-of-home placements, paired T-tests were used to look at change in days before Clubhouse membership and after Clubhouse membership. Findings showed a significant decrease in average number of hospitalization days from 19.6 days (range 0-228 days) before Clubhouse membership to 2.3 days (range 0-82 days) after Clubhouse membership ( $t=2.73$ ,  $df=52$ ,  $p<.01$ ).

Hospitalizations were assessed in terms of change in number of episodes and days of hospitalization prior to and since Clubhouse membership, both of which decreased from before to after membership. In conclusion, the program achieved its goal (100%) of reducing hospitalizations in Clubhouse members.

Members were split into three groups according to their number of years as a Clubhouse member (less than 1 year ( $n=12$ ), 1 to less than 2 years ( $n=11$ ), and 2 to 3 years, but less than 4 years ( $n=30$ ) (see Table 6). Although there is a slight decrease in the proportion of those who showed a decrease or no change in episodes of hospitalization from those who have been Clubhouse members for less than 2 years (100%) to those who have been Club members from 2-3 years but less than 4 (93%), the proportion of those who show a decrease or no change in episodes remains high independent of how many years of clubhouse membership.

Table 6: Percentage of # of episode changes before and after Clubhouse Membership

	Years of Membership					
	Less than 1 year		1 to less than 2 years		2-3 years but less than 4 years	
Episode Change (prior and after Clubhouse membership)	N	%	N	%	N	%
Decrease	6	50%	9	82%	13	43%
Maintained 0 prior and after	6	50%	2	18%	15	50%

Increase	0	0	0	0	2	6%
TOTAL	12		11		30	

When looking at actual number of Hospitalization episodes Before and After Clubhouse membership (Table 7a) using paired t-tests, there is a statistically significant decline in number of episodes from Before to After Clubhouse membership independent of how many years of clubhouse membership.

Table 7a: Change in number of episodes from before (Prior) to After (Post) Club Membership

	Years of Membership					
	Less than 1 year		1-2 years		2-3 years but less than 4 years	
Episodes Hospitalization Prior Membership	12	1.08	11	2.0	30	.80
Episodes Hospitalization After Membership		.08*		.09***		.23*

\*p<.05; \*\*p<.01; \*\*\*p<.001

Paired t-tests were also used to look at number of hospitalization days prior to Clubhouse membership compared to number days after clubhouse membership for each membership category (<1 year, 1 to < 2 years, 2-3+ years) (see Table 7b). Although members showed a decrease in number of hospitalization days from prior to post membership for all categories of clubhouse membership (< 1 yr, 1-2 yrs and 2 to <4 years), only those who had been Clubhouse members for 1-2 years demonstrated a statistically significant decrease.

Table 7b: Change in number of days from before (Prior) to After (Post) Club Membership.

	Years of Membership					
	Less than 1 year		1-2 years		2-3 years but less than 4 years	
Days Hospitalization Prior Membership	12	28.75	11	21.18	30	15.40

Days Hospitalization After Membership		0.50		2.73**		2.90
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\*p<.05; \*\*p<.01; \*\*\*p<.001

Overall, using the self-report data of Clubhouse members, it seems evident that members of Putnam Clubhouse consistently show a decrease in hospitalization in terms of episodes and total days from before to after Clubhouse membership.

Career Development Unit

During the 2019-2020 contract year the Clubhouse made career support services available to all members including the 195 members working in paid employment and the 92 members who attended school during this period. The Clubhouse provided support to all members who worked and attended school during the contract year including the 49 who began jobs during the year and the 28 who returned to school. Of the members completing the member survey who used career services (n=58) 86.2% said they were satisfied or very satisfied with the services related to employment or education (target 75%).

During the contract year Clubhouse members completed personal career plans (28 had employment goals and 30 had education goals). 100% of members who indicated employment as a goal in their career plan successfully completed their goal (target: 80%) and were referred to employers, applied for jobs, and/or has a job interview within three months of indicating goal. In addition, 100% of the members who indicated education in their career plan as a goal (return to school/finish degree/enroll in a certificate program) were referred to appropriate education resources within 14 days (target: 80%).

Table 8: Career/ Educational Development of Clubhouse Members

		GOAL	ACTUAL
Measures of Success:	N	%	%
% members satisfied/very satisfied with services related to employment/education (of those using Career Unit services)	58	75	86.2
% members referred to appropriate education resources within 14 days (of those indicating education as goal)	30	80	100
% members referred to appropriate employment resources, applied for a job, or had a job interview within three months (of those indicating employment as goal)	28	80	100

"(likes) Follow up calls, having her take accountability ... Career finding and motivating her."  
(caregiver)

"(likes) Work programs helping member have duties at the club and the assistance to help find job" (caregiver)

"(suggests) Have more transitional employment opportunities or allow members rotating paid employment at the clubhouse itself." (caregiver)

Importance of Clubhouse programs to Members and Caregivers

Clubhouse Members and Caregivers were asked to indicate how satisfied they were with the different programs and activities provided by Clubhouse during the 2019-20 contract year.

Table 9 shows the percentage of members and caregivers were satisfied or very satisfied with the program. Those who did not participate in the program or whose family member did not participate did not respond to the survey item. As can be seen from the responses in Table 9, members and caregivers alike were satisfied or highly satisfied with Clubhouse programs, with a satisfaction rate of over 90% for most programs and activities. Members were most satisfied with the Friday Night Socials/TGIF Fridays, Meals and Rides and least satisfied with the Career program. Caregivers were most satisfied also with Friday Night Socials/TGIF Fridays and Meals and least satisfied with the Career program.

Table 9: Member and Caregiver Satisfaction with Program Activities that Member or Caregiver's Member Participated in (% Satisfied/ Very Satisfied)

Clubhouse Programs/Activities	Member	Caregiver
	% Very Satisfied/Somewhat satisfied (N)	% Very Satisfied/Somewhat satisfied (N)
Friday Night Socials/TGIF Fridays	98.4% (63)	96.3% (27)
Meals	97.6% (83)	96.3% (27)
Rides Program (transportation to/from Clubhouse)	97.4% (38)	94.4% (18)
Healthy Living Program	96.4% (55)	90.9% (22)
Wednesday Nights Expressive Arts Program (music and/or art)	94.0% (50)	96% (25)
Work-Ordered Day (Monday – Friday daytime activities)	93.8% (81)	96% (25)

Holiday programs	91.8% (61)	95.8% (24)
Young Adult Activities	88% (25)	94.7% (19)
Weekend Activities	88.5% (52)	96.0% (25)
Career Development Unit (assistance with education and/or employment)	86.2% (58)	88.5% (26)

Finally, both members and caregivers were separately asked to rank 10 Clubhouse programs/activities in order of importance to them. Programs/activities were ranked from 1-5 in terms of importance. Using a point system where #1 Rank carried 5 points and #5 Rank carried 1 point, points were added for each activity and the highest mean indicated the most important activity. For the members the top three ranked programs/activities were Work Ordered Day, Meals and TGIF Fridays. For caregivers, the top 3 ranked activities/programs were Career Development Unit, Work-Ordered Days, followed by Young Adult Activities.

Table 10: Ranking of Program Activities in terms of Importance by Caregiver and Member

Clubhouse Programs/Activities	Member	Caregiver
Work-Ordered Day (Monday – Friday daytime activities)	1	2
Meals	2	6
TGIF Fridays	3	7
Career Development Unit (assistance with education and/or employment)	4	1
Healthy Living program	5	5
Rides Program (transportation to/from Clubhouse)	6	4
Young Adult Activities	7	3
Holiday programs	8	9
Weekend Activities	9	8
Wednesday Nights Expressive Arts Program (music and/or art)	10	10

\*program/activities ranked for Members

Overall, the caregivers and members alike had many positive things to say about the Clubhouse programs and activities:

"nowhere else is like the clubhouse it's an oasis which prevents negativity around mental illness" (member)

"It is a community within itself. You learn how to broaden your horizons. A place that is safe. Everyone there for each other." (member)

"I like interacting with fellow members at TGIF and the meals." (member)

"I like the people interaction during the WOD and lunch time." (member)

"It gives us a new focus and looking at things you could be doing in your life. You can learn by doing the WOD using computers, etc. It helps me knowing those things in the future." (member)

"What I like best about the clubhouse is how everyone works together to get all the important activities done in the day. The work order day tasks and hospitality work as well, are all accomplished in a very well-organized way." (member)

"I like the friendly atmosphere and the incredible variety of programming." (member)

"It gives me a place to go better than staying at home. It provides resources." (member)

"Love the social activity and getting to meet everyone on holiday events." (caregiver)

"Large variety of activities available for members." (caregiver)

"Past 10 years it has been a place of support and healing and great sense of community. Invaluable resources to growth and development" (caregiver)

"I love the way staff came up with Zoom virtual Clubhouse so quickly and also reached out to members by the phone and organized social distance walks." (caregiver)

"I have been a supporter for many years, and I have been recommending Putnam to other families with mental health issues children." (caregiver)

The Clubhouse was successful in achieving most of its contract goals and objectives for the year 2019-20 contract, although the shift to a virtual clubhouse format due to COVID-19 may have had a negative impact on recruitment. However, the Clubhouse pivoted admirably in response to COVID, shifting to a virtual format and substantially increasing their at-home support in terms of food service (344% of the target!) and home-visits (an increase from 103 in 2018-19 to 1,403 in 2019-20). A supplemental review of the new Virtual Clubhouse can be found as an attached Appendix. Overall, the Clubhouse has demonstrated highly positive outcomes this year, with high satisfaction ratings of services and programs, as well as high ratings for member and caregiver wellness. This year's outcomes again bode well for a promising and sustainable future.

**DEMOGRAPHIC DATA:** *X Not Applicable (Using County form)*

Please refer to Aggregate Data Reporting Form Not Applicable

**EVIDENCE-BASED OR PROMISING PRACTICES:**

***What evidence-based, promising practice, or community practice-based standard is used in your program and how is fidelity to the practice ensured?***

Since 2011, Putnam Clubhouse has been continuously accredited by Clubhouse International, the SAMHSA-endorsed, evidence-based recovery model for adults with serious mental illness. All Putnam Clubhouse programming meets the 37 standards of Clubhouse International. A rigorous accreditation process and maintaining fidelity to the model require Putnam Clubhouse to provide comprehensive program data to Clubhouse International annually, participate in ongoing external Clubhouse training, conduct structured self-reviews, and receive an onsite reaccreditation review every three years by Clubhouse International faculty. Learning about, discussing, and adhering to the 37 standards of the model are built into the work-ordered day structure. All program staff and program participants of Putnam Clubhouse commit to following the standards during program activities. Program participants are included in all aspects of program evaluation and accreditation.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Putnam Clubhouse is an intentionally formed, non-clinical, working community of adults and young adults diagnosed with SMI. The Clubhouse Model followed has been designed to promote recovery and prevent relapse. Putnam Clubhouse operates under the belief that participants are partners in their own recovery—rather than passive recipients of treatment. That’s why Clubhouse participants are intentionally called members rather than patients, clients, or consumers. These members work together as colleagues with peers and a small, trained staff to build on personal strengths, rather than focusing on illness. The term “member” reflects the voluntary, community-based nature of the Clubhouse, making clear that members are significant contributors to both the program and to their own well-being. Thus, the term “member” is empowering rather than stigmatizing. Clubhouse membership is voluntary and without time limits. It is offered free of charge to participants. Being a member means that an individual is a valued part of the community and has both shared ownership and shared responsibility for the success of the Clubhouse.

All activities of the Clubhouse are strengths-based, emphasizing teamwork and encouraging peer leadership while providing opportunities for members to contribute to the day-to-day operation of their own program through what's called the work-ordered day. The work-ordered day involves members and staff working side-by-side as colleagues and parallels the typical business hours of the wider community. Work and work-mediated relationships have been proven to be restorative. Clubhouse participation reduces risk factors while increasing protective factors by enhancing social and vocational skill building as well as confidence. The program supports members in gaining access to mainstream employment, education, community-based housing, wellness and health promotion activities, and opportunities for building social relationships.

Putnam Clubhouse operates under the belief that every member has individual strengths they can activate to recover from the effects of mental illness sufficiently to lead a personally satisfying life. Fundamental elements of the Clubhouse Model include the right to membership and meaningful relationships, the need to be needed, choice of when and how much to participate, choice in type of work activities at the Clubhouse, choice in staff selection, and a lifetime right of reentry and access to all Clubhouse programming including employment.

Additional components include evening, weekend, and holiday activities as well as active participation in program decision-making and governance. Peer support and leadership development are an integral part of the Clubhouse. The programming also incorporates a variety of other supports include helping with entitlements, housing, and advocacy, promoting healthy lifestyles, as well as assistance in finding quality medical, psychological, pharmacological and substance abuse services in the wider community.

#### **VALUABLE PERSPECTIVES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Throughout this report we have included quotes from program participants and family members describing personal experiences and perspectives about the Clubhouse's impact on their lives.

## PEI ANNUAL REPORTING FORM

### IMPROVING TIMELY ACCESS TO SERVICES FOR UNDERSERVED POPULATIONS REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Rainbow Community Center of Contra Costa County

#### PEI STRATEGIES:

*Please check all strategies that your program employs:*

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

During fiscal year 2020, The Rainbow Community Center provided services to members of Contra Costa County's Lesbian, Gay, Bisexual, Transgender, Questioning and Intersex (LGBTQI+) community through the implementation of three different projects: Pride and Joy, LGBTQ Youth Support Programming, and Inclusive Schools Coalitions.

**Project #1: Pride and Joy** – Pride and Joy, an outreach and early intervention project, targets members of Contra Costa County's LGBTQI+ community. Special emphasis is placed on reaching LGBTQI+ seniors, people living with HIV, and community members with unrecognized health and behavioral health disorders. Pride and Joy assists our historically underserved community members in finding culturally affirming health and behavioral health support services, increasing their ability to cope with oppression when they are required to access health and behavioral health services in less affirming settings. Pride and Joy also raises awareness about existing health/behavioral health disparities within the LGBTQI+ community (e.g., community members' increased rates of depression, anxiety, suicide, substance abuse, and victimization), delivers health promotion messages, and increases LGBTQI+ community members' knowledge of local and national behavioral health resources.

**Tier 1: Outreach and engagement, isolation reduction and awareness building** – Rainbow Community Center organized outreach programming through multiple in-person events/groups up until California's "shelter in place" order March 16 including weekly HIV+ group for self-

identified men and monthly HIV+ group for self-identified women, bi-monthly Senior Luncheon and Gender Voice support group, annual Crab Feed Fundraiser, and Concord Pride. Through our email newsletters alone, Rainbow was able to reach and deliver health promotion messages and raise awareness about behavioral health/health disparities throughout Contra Costa County, in addition to Facebook and Instagram.

**Tier 2: Support groups and services promoting resilience and self-efficacy for individuals with identified mild to moderate mental health needs** – Rainbow carried out one-on-one brief-intervention services to the target community in our convening group level services, which are designed to support at-risk LGBTQ community members who are HIV+, low-income, coming-out, transgender, diagnosed with a Serious Mental Illness (SMI), and/or in need of early intervention behavioral health and psycho-education services.

**Tier 3: In depth and individualized support for those with high levels of need due to crisis issues or mental health disorders** – Rainbow provided one-on-one brief-intervention services (Tier 3/Indicated) to the target community in FY20. Tier 3 services are designed to assist at-risk community members in accessing needed care and treatment.

**Senior Programming:** Rainbow has identified LGBTQI+ seniors as a particularly vulnerable population. As such, programming for LGBTQI+ Seniors includes Tier 1, Tier 2, and Tier 3 components. Services include organizing two congregate meals (Outreach/Tier 1) per month, up until mid-March 2020. Zoom Senior Lunches restarted in June 2020. Before sheltering in place Rainbow was delivering regular in-person and telephonic Social and Support Groups in collaboration with Meals on Wheels (Tier 2) and offering brief-intervention and screening services through the Friendly Visitor Program with the support of Rainbow's Clinical Department (Tier 3). Additionally, Rainbow transitioned to crossing over our Kind Hearts Food Pantry program and transitioned into a Supply Train Program. This program continues to provide essential services to our community members living with HIV/AIDS and to LGBTQI+ people over the age of 55. Our weekly Supply Train staff and community volunteers deliver food boxes to the homes of people living with HIV/AIDS and qualifying seniors, and weekly we conduct extensive check in calls with all our seniors, especially those who are sick and cannot leave their homes before sheltering in place. Rainbow is a distribution program for the Senior Food Program, Gleanings Program through the Food Bank of Contra Costa, and Solano Counties. Additionally, our community members work with registered dietitians that prescribe nutritional supplements to our HIV positive clients that are enrolled in the Extra Helpings Program.

**Project #2: LGBTQI+ Youth Support Programming** – Rainbow has identified LGBTQI+ youth as a particularly at-risk population. As such, programming for this group incorporates components from all three tiers with services provided at Rainbow offices and in school and community-based locations throughout the county. Efforts also include continued development of support

services designed to work with youth within a family-based context and transgender/gender nonconforming youth. During the second half of the FY, the Rainbow Community Center Youth Program served a total of 285 youth; 69 unduplicated youth; 85 school-based youth served through one-on-one counseling. Our youth services with LGBTQI+ and ally youth ages 11 to 25 includes: youth groups, workshops, special events, community collaborative events and field trips. These activities are typically centered on social-emotional learning (SEL), professional, and life skills development. Additional youth services included our QscOUTs program (psycho-social educational group) and/or one-on-one clinical services took place offsite at schools within the Acalanes Union High School District and Diablo Valley College, Pleasant Hill. During the months of “shelter-in-place” due to the state’s order, we adapted our services, facilitating virtual activities. For example, youth groups and clinical one-on-one services were moved to online platforms through video conferencing (Zoom).

Youth services consisted of ongoing youth groups, such as: Artistic Expressions, Youth Gender Voice, and Queer Open Mic, TAY HIV+ Support, movie screenings and support groups for parents/guardians and transgender/gender nonconforming children ages 11 and under. In many cases, groups centered around LGBTQ+ awareness and/or celebratory months/days. These groups were developed through an educational and empowerment lens to promote self and group development. To bring youth to these groups, we outreached to local school Gender and Sexuality Alliance/Queer Straight Alliance (GSA/QSA) clubs, managed resource tables, facilitated trainings, and hosted special events, while posting on social media and mobile outreach consistently. We also promoted our youth program through flyers, email newsletter, and monthly calendars to school staff, health/service providers, GSA/QSAs, contacts within our Inclusive Schools Coalition and community at large. During shelter-in-place, we highly promoted our virtual activities via the platforms mentioned above. In response, we were able to provide a safer, brave, and confidential space for our LGBTQI+ local youth and additionally had participation of youth from out-of-state, i.e., Gender and Sexuality Alliance (GSA) from Seattle, WA.

Due to COVID-19 and “shelter-in-place”, The Rainbow Community Center’s Youth Program has had to shift how we provide services and outreach to our LGBTQI+ youth. We continued, more intentionally, our cross-department collaborations within our programming, training, and clinical services, to meet the various needs of our clients. We partnered with another social services agency, who also serves LGBTQI+ youth, hosting co-facilitated virtual youth groups, to provide enrichment and education *and* processing and emotional support during these challenging times. Additionally, we heavily promoted our mental health services for any youth who may be in need, while continuing to provide relevant resources on how to navigate the “shelter-in-place” and pandemic.

**Project #3: Inclusive Schools** – The Inclusive Schools Coalition continued the work of the MHSA Innovations Project to promote acceptance for LGBTQI+ youth in Contra Costa County schools,

families, and faith communities. Rainbow ran the Central/East County Coalition, which focuses on collaborative work with school leaders, staff, and students to expand and solidify a base of action within local school districts, such as: Mt. Diablo Unified School District, Pittsburg Unified School District/Pittsburg High School, and Acalanes High School District.

The Coalition also contributed to the ongoing development of county-wide collaborative efforts to establish a strong network of schools, faith communities, service providers, parents, and community leaders that will make a commitment to shared values, principles and practices in advancing acceptance of LGBTQI+ youth in Contra Costa County. Target populations included: a) LGBTQI+ students, their peers, and groups of students who were bullied and marginalized due to racial, ethnic, class, sex, gender identity, gender expression, physical, and emotional differences; b) school boards, school teachers and staff, parents and other adults whose attitudes and behavior are intrinsic to creating an inclusive climate in Contra Costa County schools; and c) school and community-based organizations that interface with students and schools on a regular basis in order to create a seamless, “no- wrong-door” network of supportive services for marginalized students across Contra Costa County.

The Coalition held monthly meetings to outreach and promote inclusive services, while advocating for LGBTQI+ students/youth. To better meet the needs of the youth/students, the Coalition shifted its efforts to more collaborative work through partners, agencies, and individuals who work with LGBTQI+ youth/students. The Coalition planned collaborative educational events and the “Welcoming Schools and Communities Summit” in the fall 2019. Due to COVID-19 and “shelter-in-place” orders, meetings were paused, to meet the immediate needs of our community members, however, Coalition members were still able to connect with Rainbow regarding consultations, best practices, and solutions on how to support LGBTQI+ youth/students.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Please include: Numbers served during the fiscal year. Describe any adaptation of services due to COVID-19 that may be relevant. How are participants identified as needing mental health assessment or treatment? List of indicators measured, including how often data was collected and analyzed.***

Rainbow’s mental health counseling program aims to increase the resiliency of our community, help stabilize high-risk people with acute mental illness, and help our community thrive. Rainbow provides culturally competent virtual services, such as Individual Therapy, Partners’ Counseling, and Family Counseling. We also offer coaching sessions for Mental Health professionals on how to work with LGBTQI+ folks.

LGTBQI+ people are often reluctant to access mainstream services due to experiences of feeling unsafe or unwelcomed by other agencies. As a result, many do not access mainstream services,

and some feel compelled to hide their HIV status or LGBTQI+ identities. These fears mean that LGBTQI+ people, especially those in the aging older adult population, struggle with greater isolation and other discrimination-related health concerns in comparison to their peers who are not living with HIV or do not identify as LGBTQI+. Within Rainbow's social and support programming and clinical services, we provide a welcoming, culturally competent environment and various opportunities to identify the needs of the community members who utilize the services that we offer.

One of our primary methods of identifying the need for behavioral health assessment or treatment is through intake. Rainbow has continued with its adjusted intake procedures established in the previous fiscal year to ensure that all who seek services at Rainbow are assessed in a manner that is *trauma-informed and culturally responsive*.

In conjunction with Rainbow's intake process, staff identify clients who might benefit from further health assessment or treatment through interaction and conversation. For example, if a participant in youth group brings up serious issues with our Youth Coordinators, they make sure they have a warm handoff to our intake coordinator.

Sometimes individuals choose to self-disclose their need for further treatment, which is encouraged by the Rainbow's dedication to a safe, LGBTQI+-affirming environment and through our promotion of health/behavioral health services.

We also participate in various intra-agency case rounds and care team meetings. Rainbow clinicians in the first three quarters of the school year at Ygnacio Valley High School, Las Lomas High School, Campolindo, Acalanes, Mt. Diablo High School, and Concord High School attend care team meetings where they collaborate with other educators. When LGBTQI+ youth are discussed, clinicians work to connect them to services at Rainbow, other CBOs, and/or county programs. Within adult services, we participate in multi-disciplinary team meetings for human trafficking and domestic violence (as part of Contra Costa's Zero Tolerance for Domestic Violence Initiative). Lastly, we attend the Children's, Teens', and Young Adult's Reducing Health Disparities Meetings and Contra Costa Health Department AIDS Program's case rounds.

We continue to use our Salesforce database to collect data on consumers, including address, name, birthdate, ethnicity, sexual orientation, gender identity, and the types of agency programs that they attend, when bravely disclosed. We also collect service utilization data on every time the consumers attend a program or service. This data is summarized monthly and submitted with our PEI demands for payment. With our intake procedures we are tracking the amount of time between initial contact and initial assessment. Counseling charts note the amount of time symptoms were present.

During fiscal year 2020 Rainbow served a total of 941 (1174 last fiscal year) contacts. For

*Tier 1* and *Tier 2* we served total of 583 (904 last fiscal year) unduplicated contacts. Within the contacts, 217 (596 last fiscal year) are part of the Pride and Joy groups, 140 (266 last fiscal year) belong to youth programs. Some contacts are part of both groups, reflecting the gap when summing the two programs. Counseling and case management *Tier 3* met 216 (181 last fiscal year) contacts unduplicated. Within School based counseling Rainbow met with 142 contacts. (184 last fiscal year).

The chart on the next page accurately reflects Rainbow's **Pride and Joy program** attendance.

*(please note some of the services also apply to youth)/*

Contact ID	Full Name	Event Date	Number of Attendance	Number of Contacts
<b>Program Tier: Tier 1 (569 records)</b>			569	217
<b>Program: Amigos (20 records)</b>			20	16
<b>Program: Community Events (41 records)</b>			41	40
<b>Program: Men's Social Group (26 records)</b>			26	13
<b>Program: Rainbow Game Night (49 records)</b>			49	15
<b>Program: Senior Program (302 records)</b>			302	73
<b>Program: Social Guy-zing (91 records)</b>			91	67
<b>Program: Walk Ins (9 records)</b>			9	7
<b>Program: Womxn's Social Group (31 records)</b>			31	20
<b>Program Tier: Tier 2 (2,048 records)</b>			2,048	266
<b>Report Group: Kind Hearts (1,467 records)</b>			1,467	161
<b>Program: Food Pantry Brown Bag (268 records)</b>			268	61
<b>Program: Food Pantry Brown Bag Home Delivery (35 records)</b>			35	16
<b>Program: Food Pantry Extra Helpings (202 records)</b>			202	46
<b>Program: Food Pantry Extra Helpings Home Delivery (19 records)</b>			19	6
<b>Program: Food Pantry Gleanings (929 records)</b>			929	160
<b>Grand Totals (2,617 records)</b>			2,617	433

## LINKAGE AND FOLLOW-UP:

***Please explain how participants are linked to mental health services, including how the PEI program: 1) provides encouragement for individuals to access services; and 2) follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.***

Rainbow uses multiple strategies to link participants into behavioral health services. One strategy is to bring resources directly to Rainbow programming. We routinely include speakers from outside agencies in our community programming.

Additionally, to support LGBTQI+ youth, collaborative events helped boost our outreach and advocacy.

With the planning and execution of weekly, monthly, and weekend special events, we were able to outreach to youth who may not otherwise attend our program. We collaborated with new and current community partners, to promote and provide services to marginalized LGBTQI+ youth. Overall, these youth groups and special events helped promote resiliency, collectivity, reduction of isolation, and youth leadership.

Another strategy we employ is utilizing our Inclusive Schools Coalition and our training program to outreach to other behavioral health and social service agencies. As we increase our partnerships, referrals for services increase as a result.

Rainbow Community Center staff are trained to understand the importance of meeting people where they are at, to create a safe, welcoming, and friendly space. Having the 3 Tier Service Model is critical to connecting community members. Staff spend considerable time working to link participants to mainstream services and programs. As brokers for care between our participants and other providers, we are often able to educate providers who may be well-meaning but unsure or unfamiliar with how best to serve LGBTQI+ Seniors and people living with HIV/AIDS. We also help our community members by encouraging them to use social service programs, as well as inviting providers to partner with us and introduce themselves to our participants.

Once a referral is made to Rainbow's clinical program, we use a brief intake screening tool that is completed over the phone. This tool screens for needs of the individual, couple, or family. A clinician then completes the initial assessment and uses this opportunity to build rapport with community members, as well as share information about the variety of services and programs offered at Rainbow and with our community partners. Through use of the intake screening tool and staff's welcoming approach to engaging with clients, we encourage individuals to access services that are beneficial to their immediate and long-term needs.

As stated previously, Rainbow has intake procedures which track the amount of time between initial contact and initial assessment.

***DEMOGRAPHIC DATA: X Not Applicable (Using County form)***

Please refer to Aggregate Data Reporting Form

***CULTURAL RESPONSIVENESS:***

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Rainbow has secured an Associate Clinician who is fluent and bilingual in Spanish to serve and center a marginalized part of our community who are Spanish speaking and Latinx more intentionally moving forward more expansively.

A new strategy of diversifying Rainbow's cultural growth and reach and management with implementing a Training and Curriculum Manager position with a seasoned SOGIE (Sexual Orientation, Gender Identity and Expression) national trainer and published educational curriculum writer that joined in March 2020. This has enabled Rainbow to launch within the two months of the state's "shelter in place" orders, a meaningful update to culturally informed work through virtual SOGIE workshops and trainings. This position has the goal of building out and providing a more "expansive" and accessible educational LGBTQI+ experience through serving more professional sectors within our communities that directly serve and impact the livelihood and well-being of our most marginalized LGBTQI+ community members in additions to populations that Rainbow has served previously. This position's goal works in concert with our community partners, targeting and building cultural responsiveness through the launch of virtual models of Educator Subscriptions, Adult Affinity Groups, Consultation and Coaching, Workshops, Trainings, Keynote Addresses, and the launch of Digital Curriculum for sale online later in the fall of 2020.

***COLLABORATIVE PRACTICES:***

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

Rainbow has continued partnership, through this past fiscal year with Planned Parenthood around safer sex education and barrier access and started partnering with the local Good Vibrations' Training and Education Department within our HIV Prevention Program and Senior Older Adults Program to help destigmatize intimacy with holding an HIV positive status and generational aging.

Additionally, due to the pivot of several of our in-person senior and food security programs we have partnered with Putnam Clubhouse, Monument Crisis Center, and Shepard Lutheran Church with safer and lessened stigmatized food access.

Rainbow has been building greater alliance with youth and family LGBTQI+ education opportunities with all three of the county's PFLAG chapters: Claycord, Lamorinda (new chapter this year!) and Danville – San Ramon Valley through a Gender and Sexuality Alliance (GSA) Forum, advocating for the first Pride flag raising in Clayton, and a Summer Bridge Youth Zoom Support Group that is carrying on into the fall with two Rainbow Youth Coordinators stepping in as facilitators after a community-based clinician was unable to continue to guide the group.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

In our mental health and case management programs we utilize strengths-based and trauma-informed approaches in all our interactions with clients. We believe that our mission to build community and promote well-being is accomplished through providing high quality services while being mindful of the whole person and ways the programming that we offer, throughout our 3 Tier Service Model, may benefit everyone we serve. Through ongoing training and utilization of a team-based approach to the work we do, Rainbow staff provide a safer environment where our clients receive non-judgmental, supportive services that help them feel welcome and accepted.

**VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

**Freddie: Rainbow Is a Light at the End of the Tunnel**

Freddie, 23, shares his Rainbow experience:

*Being at Rainbow feels very calming. You don't have to stress. I'm staying in a shelter right now, and my case manager there connected me to Rainbow. It's really helped me out a lot.*

*When you're at Rainbow, your stress levels go down, and it's cool to have that support. It's a community of people just like myself. Everybody is not the same as who I am but it's like we all have a basic general understanding that it's ok to be yourself here. And that's cool.*

*I'm currently attending community college, studying psychology. I go to the library every chance I get. I got interested in psychology in high school when I took psychology and sociology classes, and they were cool and fun to go to. After I get my degree, I'd like to go into social work because I want to give back to the community. Being a homeless LGBTQ youth, I'd like to help people out the way people have helped me out.*

*Rainbow has really helped me regain my confidence and feel comfortable in the work environment so I could get a job. They help LGBTQ youth get clothes and transportation they need for job interviews and on the job, which is cool. I couldn't have gotten my job without Rainbow and having this job has given me an opportunity to grow as a person, to learn how to take care of myself and be responsible with my own life. It's a lot of fun, honestly. My coworkers are sweet, and the customers are cool, hardworking people.*

*My job has given me a window of opportunity because I can see that I can go to school, I can go to work, and I can work toward something cooler than just minimum wage forever. My coworkers and I get along great. We look forward to seeing each other which is cool.*

*You can get support at Rainbow that you might never have had but always needed. If you need transportation or a place to live, Rainbow has your back. You could call them really late, and they'll always answer your call. They won't leave you hanging. They'll always be there and make sure you're not out in the street. Rainbow's services are important for your mental health and your general safety.*

*Everybody needs support and foundation, and you can't get that foundation without having support. If you're lost and don't know where to go, Rainbow is a light at the end of the tunnel. They've helped me out in so many ways I wouldn't even think to get help.*

## PEI ANNUAL REPORTING FORM

### PREVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: RYSE

#### PEI STRATEGIES:

Please check all strategies that your program employs:

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please describe the services you provided in the past reporting period. Please include types of problems/needs addressed, any activities that address these problems/needs, and any functional outcomes targeted by the services provided.*

MHSA services provided by RYSE in the past reporting period continue to facilitate access and linkage to mental health care (through a racial & gender justice, trauma-informed, healing centered approach), improve timely access to mental health services for young people in West County strategies that non-stigmatizing, non-discriminatory, and which actively address stigma and discrimination that creates physical, mental, and emotional harm and burden for young people in West County. We are pleased to report achievement of and meaningful progress towards key activities:

#### Direct Service

RYSE's integrative program model works to improve the social and material conditions for young people in Richmond and West Contra Costa County. RYSE recognizes that a community mental health model must incorporate multiple modalities and points of entry for a youth to seek out the services they need to thrive. RYSE engaged young people and community members onsite through drop-in and structured programs and events (on-site and/or online) and offsite through trainings and workshops in high schools, continuation schools, partner agency sites and within juvenile hall. Beginning in March 2020, virtual programming and teletherapy were developed and activated. Over the grant period, 283 new members enrolled, for a total of 613 unduplicated members attending. Since March 2020, we experienced an additional 322 youth participants (not unduplicated) who are not formally enrolled as members

via our virtual program offerings. Health and wellness content promoted via social media (Instagram Live videos and TikTok) also engaged youth in our community, with over 2,000 views.

### *Health and Wellness*

- COVID-19 Response: On March 13, 2020 RYSE closed our physical center and [posted resources for the community](#), and a few days later a shelter-in-place order was implemented across the Bay Area. Within a week, RYSE had quickly pivoted to setting up new virtual systems and safety protocols to continue to provide creative youth development programming, teletherapy, and leadership outlets for young people across the city. In the last months of the funding period, RYSE successfully shifted our services, supports, and systems change efforts to online and telehealth platforms to the fullest extent possible. Knowing that in crisis response, it is rare that youth of color are prioritized; public safety policies can put Black and brown youth at risk of surveillance and criminalization; school-based and distance-learning decisions are made without student input and don't address the realities of those with highest needs; and disinvestment threats to youth programming loom on the horizon, RYSE has:
  - Developed online resources and youth-specific materials about COVID-19 and school requirements/policies/supports.
  - Held space during all programming to answer questions and provide information about SIP and COVID-19, including hosting "Ask a Doc" on Instagram.
  - Supported students across WCCUSD to respond to distance learning policies, survey over 282 fellow youth about needs and ideas, organize a Youth Town Hall for over 100 participants on distance learning, and participate in local, statewide, and national forums to share their experiences and expertise.
  - Cultivated space for youth to express themselves, decompress, and engage in wellness activities and skill-building during this time.
  - Provided individualized outreach to each youth member to check in about emotional, physical and economic needs and maintain relationships, including triage of urgent needs for their families and providing teletherapy and case management.
  - Engaged systems such as the West Contra Costa Unified School District, Contra Costa District Attorney's Office and Department of Probation regarding young people whose circumstances are not prioritized by system policies such as undocumented youth, youth with special needs, youth looking to reenroll/transition back into school after incarceration, youth who are homeless or housing unstable, and youth who are in foster care.
  - Prepared a robust safety and reopening plan that has begun to be implemented this Summer season and allows RYSE to monitor public health regulations and

make adjustments that center the safety, needs, and well-being of young people and of RYSE staff, as well as provide support to community and systems partners serving young people in West Contra Costa.

- Created a Youth COVID-19 Care Fund, providing direct cash disbursements to nearly 200 youth and their families, as well as assisted the City of Richmond with establishing a community-guided Richmond Rapid Response Fund.
- Convened biweekly COVID Collective Care calls where up to 100 WCCC public system and CBO partners cultivate resilience and interdependence strategies, with RYSE youth artists and cultural workers sharing wellness and arts practices with adult partners.
- Uprising Against State Violence and Racial Trauma Response:

**Statement of Solidarity with Black Youth Organizers 6/3/2020 and [Black Healing Resources](#):**

RYSE stands in love and solidarity with Black young people and young people of color across the Bay as they stand in their power and speak out against white supremacy and state-sanctioned violence. We stand in love and solidarity with young people who are taking to the streets or organizing virtually. We stand in love and solidarity with young people however they are holding, coping, struggling, surviving, and sustaining.

To our young people— RYSE loves you, we see you, we are sorry that our systems have not cared for you, and we know we have work to do to show up rightfully with you and for you. We commit to centering your emotional, physical and political safety. We commit to holding adults and the systems accountable to your safety, your humanity.

This commitment is ever present in this time of the COVID-19 pandemic and the ongoing pandemic of white supremacy and state-sanctioned terror against Black communities.

To our adult and system partners— We are aware of actions across the Bay, including in Pinole, that have been organized by Black youth leaders. There have been numerous attempts to violently threaten and dismantle their efforts towards peaceful demonstration. We STRONGLY condemn those who choose to mischaracterize and co-opt their efforts. We STRONGLY encourage and insist you use your places of power, influence, and responsibility to support our young people, to let them know they are loved, to apologize and commit to do better, and to hold each other in mutual support and accountability.

Ways we can show up for Black young people and young people of color to support their physical and political safety:

- Listen and show up ready to take their lead—support their leadership and ask them what they need.
- Offer support, guidance, and resources.

- Ensure their safety—be a buffer between young people and law enforcement or white supremacists, support as peacekeepers, and legal observers.
- Show them love & compassion, not shame or judgment—we are all learning and mistakes may be made.
- Affirm their showing up and taking leadership as acts of courage.
- Provide emotional support—do not censor their righteous rage, anger, and grief.

To our white and non-Black community members— here is a list of [anti-racism resources and funds](#) to support.

We must all continue to hold each other accountable in dismantling and ending white supremacy so that we can all dream, build, and flourish in the loving, just systems we deserve.

- Education and economic justice: 107 young people completed Education, Career, Let’s Get Free or Case Management Plans and received tailored education and career support and linkages supporting mental health. This included individualized education advocacy provided in partnership with 22 young people in areas such as IEP support, support navigating a suspension, or with school transfer/ credit completion challenges. Individualized homework support, tutoring and SAT prep was provided in partnership with UC Berkeley’s Upward Bound and AJ Tutoring.
  - Youth participants in Education for Liberation programming planned and facilitated community discussions about how schools should develop safety plans to protect undocumented youth and their families in school. They also planned and facilitated a Know Your Rights workshop for their peers about different types of police interactions and how to positively and safely respond in each situation, and held a bilingual Know Your Rights workshop in Spanish that built capacity for sharing information with their parents.
  - 22 young people completed Community Service requirements with support from RYSE. While completing service learning, most were able to participate in Youth Leadership Institutes and gender justice or racial justice workshops held in the center, as well as receive tailored case management support to work toward their health and wellbeing goals.
  - College navigation support included individualized and group higher education workshops (financial aid, scholarship information, higher education exposure activities, and a college resource fare), a field trip to the Black College Expo, and resources for undocumented students.
  - Youth participants in Hire Up, Rysing Professionals, and Side Hustle programming cultivated their creative, professional, interpersonal and healing/wellness skills as essential to career development. Participants received resume and job application support, participated in career panels, community projects and job

shadowing. Programming engaged at least 33 young people who came to RYSE through reentry/transition from juvenile confinement.

- RYSE continued our ongoing partnership with the Hidden Genius Project (HGP), a Tech Literacy and Skill-Building program for Black-identified males in the areas of computer science and entrepreneurship. The 3rd HGP cohort, RICH3, completed a 15-month intensive training program to a total of 23 young men ages 15-18, which included skill-based training in the areas of computer science and software development; critical thinking and problem solving; business law and entrepreneurship; leadership development; and identity development. In addition to the intensive, HGP alumni supported the Side Hustle program, offering peer-to-peer business mentorship; co-facilitated workshops; and HGP staff offered feedback for the Side Hustle small business pitch event. Amidst the transition to virtual programming, HGP and RYSE have stayed in consistent communication around best practices, coordination of services for youth, and monthly updates.
- Food justice: Tasty Tuesday programming continued to be held weekly, providing healthy cooking and community-building workshops addressing food scarcity. Our center maintains a full refrigerator for young people to access after-school-snack as needed. Other highlights included Smoothie Pop-Ups and food as a centerpiece for cultural community events held at RYSE (e.g., Night Out for Safety and Liberation; La Feria de Septiembre; Black Futures When Culture Speaks). Our garden has been closed for the past year due to RYSE Commons construction and will reopen with our expanded campus. We continue to receive donations from the food bank, however, navigate the challenge of receiving few nutritious options, and will be seeking new partnerships.
- Culturally affirming identity groups and peer support: RYSE peer support groups are designed for establishing emotional, physical, political safety to acquire tools and skills that combat and actively dismantle harmful norms. These affiliation groups - Young Men's Group, Sister Circle, Alphabet Group (LGBTQ youth and allies), Tribe Asé and Breaking the Frame: Anger Management Group - are spaces to gather to build connections to young people's own and one another's experiences through art, storytelling, somatic experiences and movement, and activities that highlight topics that impact young people's lives and healthy relationships. Over 89 young people participated in these groups.
- Leadership cohorts: 19 youth leadership cohorts were activated, with 3-10 members in each. Cohorts included HERE Action Researchers, Hidden Genius Project Rich 1, Hidden Genius Project Rich 2, RYSing Professionals, Side Hustle, Youth Justice Fellowship, CCA + RYSE Create Cohort, Climate Justice Posters Cohort, Video Advanced Media Producers, Music & Audio Advanced Media Producers, Visual Arts Advanced Media Producers, Spoken Tides, We So Bay Collaboration, Public Health Interns, Census Outreach Cohort,

District Local Control Accountability Plan Fellows, Phone Banking Interns, and Richmond Youth Organizing Team, and 116. Interns engaged in political education and organizing and leadership skill-based trainings including non-violent communication, feminism, gentrification, education justice, school to prison pipeline, immigration industrial complex, voter registration, healing practices, self/community care, and culture building/keeping. In July and August 2019, interns planned and hosted “This is How We RYSE: Remember, Reclaim, Resist, Reimagine,” a 7-week program of training, workshops, and field trips to local youth organizations in WCCC. Interns built curriculum and facilitated the academy, centering identity, shared leadership, and new definitions of health and success.

- Arts-based healing: Young people have identified Creative Youth Development (CYD) as fundamental for healing from violence and distress (interpersonal and institutional), and for building power to dream and enliven beloved community. CYD is embedded in RYSE’s model for atmospheric healing in WCCC, and heals and humanizes through reflection, connection, meaning-making, and narrative building. RYSE engaged over 326 young people through arts-based healing programming from July 2019-June 2020. Our arts-leadership pathway, Advanced Media Producer interns (AMP), engaged 27 young people in Visual Arts/ Multimedia Production, Music/ Performing Arts, and Video with weekly artistic mentorship, project-based learning, and opportunities to facilitate workshops, produce work, and apply their skills at RYSE and in the community. All AMP interns participated in the Summer Youth Leadership Institute. Visual Arts AMP interns developed a 2-month summer visual arts exhibition for Kaleidoscope Coffee in Point Richmond, which ended with a closing reception of young spoken word poets, dancers and open mic. Music/ Performing Arts AMP interns collaborated on a national We Are the World remix music video with the Music and Youth Development Alliance (MYDA), featuring two RYSE poets’ original poetry and one RYSE singer’s performance.
  - Daily arts workshops, pop-ups, and creativity-fueled youth events occurred each month and were integrated with health, education, and leadership programming, actively addressing trauma, stigma, healing and healthy relationship-building for young people using a variety of modalities.
  - AMP interns and core youth from RYSE’s Youthtopia production collaborated with Neutral Zone in Ann Arbor, MI to explore gentrification in Ypsilanti, MI and Richmond, CA. Throughout the summer and fall, youth met through weekly video calls to develop a script, and RYSE youth visited Neutral Zone and performed in their culminating production in December 2019. Artwork from RYSE youth was included in the production, entitled *Staying Power: Concrete, Not Wood*.
  - The RYSE x George Miller Center collaboration builds bridges between RYSE members and the members of George Miller Center with the goal of building artistic confidence, community, and capability for all involved. The George Miller

Center works with young people in Richmond with developmental and intellectual disabilities to increase their confidence and connection to their peers. This ongoing partnership with Visual Arts AMP builds upon RYSE's Theory of Liberation and equity framework, where community building and resistance to narratives of disabled individuals are essential in pushing for our unified liberation. Sessions to date have included a step dance workshop, screen printing on fabric and murals, where Visual Arts AMP Interns co-facilitate the Visual Arts sessions.

- For the entire month of February 2020, RYSE youth celebrated African, Black, Caribbean History and Futures. The month kicked off with a "Woke Diaspora" Spirit Week to celebrate Black youth power, pride, resilience, and joy, and included professional photo shoots, youth-led open mics, and viewing parties of films that centered Black communities. The month culminated with a large-scale community event, When Culture Speaks, with over 120 community members in attendance and included a fashion show, visual arts exhibition, and musical performances.
- RYSE completed our collaboration with the Green Patriot Poster Project in March, where members developed posters addressing climate injustices and its effects on the future of our environment. During a series of workshops, youth learned about the climate crisis and mobilization actions. The workshops included presentations from young leaders of the Sunrise Movement and Richmond Groundworks, as well as a visit from the National Park Service's Principal Climate Change Scientist, Patrick Gonzales, and guest teaching artist and activist, Nancy Pili Hernandez. The program concluded with an interactive tour of the Rosie the Riveter/WWII Home Front National Historical Park to learn more about the rich history of the shipyards and World War II "Total Mobilization."
- In the spring of 2020, RYSE partnered with Youth Speaks on a collaborative 10-week performance process and production with three RYSE youth who wrote and performed original poems about identity, community, belonging, displacement, gentrification, and their love for the Bay Area. They, along with other local arts organizations and Youth Speaks, performed in Richmond and on the BART line, as well as in San Francisco in early March. Performances included poets, dancers, and storytellers, and allowed for transformational community building.
- RYSE began a pilot program which trains youth to present and facilitate trauma informed and healing arts professional development workshops. Youth facilitated trainings were held at the Alameda County Office of Education's Inventing Our Futures Institute in Oakland summer 2019, Creative Arts Charter

School in San Francisco fall 2019, and the National Guild for Community Arts Education National Conference in Austin, TX fall 2019. RYSE Video Fellow, Isaiah Grant, participated on two filmmakers' panels- Ecology of Place at IMPACT Film Forum (SF Green Film Festival 2019) as well as Richmond Rainbow Pride Film & Culture Event. RYSE transitioned this program to a virtual space in March 2020, where 15 RYSE artists joined and led webinars and virtual workshops with partners including, the National Guild for Community Arts Education, Arts Education Alliance for the Bay Area, the Alliance for Media Arts + Culture, and WCCUSD.

- RYSE continued our partnership with California College of the Arts on a design program, RYSE with Design. RYSE members and CCA Design and Architecture students are developing a design element centered on the theme of belonging that will be installed and on permanent display in RYSE Commons when it opens in 2021. Workshops began in December 2019 and continued onsite through March 2020. Students and members continue to attend virtual workshops and studio design sessions. The program will culminate at the end of July through a community presentation of the design renderings.
- Projects completed by AMP Interns and youth artists include:
  - RYSE Pride [Video](#) by Isaiah Grant
  - Police Brutality Music [Video](#) by Anii (Jashawna Chaney):
  - Youth poet, Adriana Avalos, reads her [collaborative poem](#) written with fellow youth poet, Geovanni Jahiem Jones, in response to the We Are the World song:
  - RYSE youth artists and activists, Isaiah Grant, and Geovanni Jahiem Jones, joined the Alliance for Media Arts + Culture's Summer Youth Summit Video [Roundtable](#) on Rebuilding Systems for Equity
- Youth-led community events: Community events such as Youth Justice Month, Health is a Humxn Right, the Black History/Black Futures Lit Diaspora Fashion Show, Not-So-Silent Night, La Feria de Septiembre, Night Out for Safety and Liberation, and RYSE Pride included healing circles, workshops, trauma-informed reflection, skill-building, and arts based activities like screen printing, photography, fashion, spoken word, beadmaking, dance, poetry, performance, design and event production activities. Events were designed to connect to the broader community and families of young people, and to position young people as leaders in telling their stories and healing themselves and their communities. Our last physical events in the building were during African, Black, Caribbean History and Futures Month with a "Woke Diaspora" Spirit Week to celebrate Black youth power, pride, resilience, and joy. Each day of the week was themed so Black youth members, and allies, could dress up and engage in fun activities. Members enjoyed professional photo shoots, performed in youth-led open mics, watched and

discussed movies that centered Black communities. To close out the week, staff and members organized a Block Party outside of RYSE, coming together for food, music, games, and dancing. This month culminated with a community fashion show centering young Black designers and models, where youth members walked the runway, performed, danced, and felt powerful in their own bodies.

As the intersecting crises of a global pandemic and state sanctioned racial trauma/violence permeated our community beginning in March 2020, youth participants have increasingly stepped into leadership roles in virtual forums, school board/city council/statewide advocacy calls, and in organizing their peers and community members in centering the experiences of undocumented youth, youth with disabilities, Black families, and youth who are reentering from incarceration in public health, public safety, and education system responses.

### *Trauma Response and Resiliency*

RYSE directly supports victims of critical injury through our hospital-based violence prevention program and community referrals. Our clinical team works to ensure that all participants in our program have

access to both immediate and primary care options as well as a range of other resources to ensure safety, recovery, and wellbeing.

RYSE works with youth to provide transitional support and reentry services for youth leaving juvenile hall and the Boy's Ranch to establish a youth-led process for successful transition back into the community. Many of these engagements require assessments of needs including coordination of care for legal, medical, and resource navigation. RYSE has successfully deepened our relationship with the Contra Costa Probation Department.

RYSE launched a collaborative agreement with the District Attorney's Office to bring restorative justice diversion to Contra Costa County. The program is post-arrest/pre-charge where the young person will be diverted instead of processed through the juvenile legal system. The program will be run by RYSE independent of any law enforcement or systems partner. RYSE staff began training and preparation in August 2019 to launch in early 2020. To date, 11 young people have participated.

RYSE's continuum of direct services to systems change approach is critical to our partnership with WCCUSD. Over the past year there have been numerous incidences of violence profoundly impacting young people, including the loss of student's lives. RYSE has worked to support the school system as best we can during persistent and heightened moments of crisis occurring at the schools and District levels and build from there.

Individual students, parents, teachers and administrators continue to turn to RYSE for support and coordination. RYSE Center opened early for students who did not feel safe attending school

providing sanctuary amidst distress; and facilitated conversations and meetings amongst District staff to develop a protocol and communication tree that is responsive, trauma-informed and ensures comprehensive supports for all school community members impacted. RYSE served as a space for students to process and work to address the saturation of trauma they experience in schools from holding altars to facilitating arts-healing activities to developing plans for how the RYSE Commons space can better meet their needs in and out of school.

During this reporting period, RYSE's clinical staff engaged 120 young people in therapeutic counseling and staff supported 41 young people in re-entry, diversion, and school-linked intensive case management and support.

- Case management was provided for all participants, building integration and access to RYSE's full model. Services provided include but are not limited to: welcome home care packages; support with transportation to and from court; providing information to incarcerated client's family; clothing support; DMV appointments; transportation; grocery shopping; housing assistance; character letters; community service hours support; anger management programming.
- Individual clinical therapy ranged from 3-6 stabilizing counseling sessions, to continuous relationship and monitoring between the therapist and young person over the entire year. During this reporting period, 17 young people who require Spanish for themselves or in communication with their parent/guardian received therapy.
- RYSE continued an arts-based healing program at the Orin Allen Youth Rehabilitation Facility entitled Freedom Beatz. This program uses hip hop history and healing-centered listening and writing exercises that include developing and recording of a Cypher, a collaborative hip-hop medium grounded in respect, community, and authenticity. A central component of the workshop series is for youth and corrections officers to be learning equally alongside one another and collaborating creatively - facilitating mutual respect and promoting healthier relationships. Workshops are designed to shift harmful power dynamics toward young people by adult officers and improve relationships among young people.
- In Spring 2020, RYSE clinical staff resumed attending the Richmond Office of Neighborhood Safety Operation Peacekeeper Fellows meetings twice weekly to provide emotional and psychosocial support to participants, as well as facilitate warm-handoff referrals to mental health services at RYSE and in the community. Breaking the Frame: Anger Management (BFAM) is a group where anger is framed within the socio-political context of trauma and violence in our communities. Participants engaged in conversations around the source(s) of their anger/trauma, developed healthy coping skills, and found ways to channel the energy into creating restorative change by utilizing music, art and media; psychoeducation; Theater of the Oppressed techniques; and Non-Violent Communication. In response to the Shelter-In-Place Order, uprisings and

environmental distress, BFAM was transformed into the podcast, No Supervision, to increase young people's access to coping tools while also providing youth with messaging that uplifts their righteous anger. Episodes created can be found here: <https://anchor.fm/nosupervision>

### *Inclusive Schools*

RYSE continues to raise visibility and promote action on gender justice and queer liberation in WCCUSD as integral to youth leadership and to creating safe space for young people of color. By staying committed to serving young people through all their varied experiences, self-discovery, and changing identity awareness and expression, RYSE served youth identifying as LGBTQ, and maintains an environment that prioritizes queer safety and leadership for all members.

- DLCAP Interns conducted an analysis of WCC District funding and mental health supports available for youth and other measures ensuring safe environments for LGBTQ youth.
- Richmond Youth Organizing Team planned and led a Summer 2019 Academy titled, 'This is How We Ryse: Remember, Reclaim, Resist, Reimagine,' providing foundational organizing and social justice training for their peers such as Organizing 101, Mental Health, Know Your Rights, Civic Engagement, Census 101 and Gender Justice and Allyship. In February was our week-long Spring Youth Leadership Institute, where youth organizers deeply engage in workshops including ones about decolonization, interrogating systems of oppression, understanding gender identity, creating life and vision boards, and solidarity across differences.
- COVID-19 Safety & Wellness: During the COVID-19 pandemic and shelter-in-place, Alphabet Group members have been meeting virtually. In addition to their workshops and activities, youth members have been researching and running a social media awareness campaign, sharing health and wellness resources specifically for queer youth. On June 23rd, they held a virtual panel discussion on their findings and reflections, where they also interviewed LGBTQ+ community leaders Carolyn Wysinger, Kiki Tapiero, and Cielo Flores on how adult allies can show up in support for queer youth.
- RYSE Pryde Month Events: Alphabet Group organized three virtual events celebrating the power and joy in their communities that persists despite the ongoing pandemics of COVID-19, racism, and hate. One event included collaborating with Drag Queen Die Anna who provided a glam tutorial to share about make-up, performance, and daily care practices. The group also organized a social media campaign highlighting historical and present-day pioneers in the equality movement for the LGBTQ+ community. The final event as mentioned above was the Ryse Pryde Panel that explored the experiences of Alphabet Group members during COVID19 and a community leader panel discussion. Select quotes from member who participated in the events:

- *This is the generation that can make a change for a better future. Youth voices are powerful and will always be powerful because we know what we want, and we know what we need.*
- *We are the future of this world, this beautiful planet we call home. It's up to us to make our voices be heard. RYSE's Alphabet Group stands in solidarity with our LGBTQ+ community, peers and allies of all backgrounds. Our arms are wide open, welcoming, and full of love.*
- Action Research Projects: The Intersections Cohort at RYSE was founded by youth fellow Dulce Garcia. Youth interns are conducting action research focusing on the impacts of gender discrimination and sexual prejudice in schools and how these factors contribute to unsafe learning spaces and negative school climate. Most recently, they have been surveying their peers and will be working on a video storytelling project.
- Youth-Directed Films: Isaiah Grant is a youth filmmaker, long-time Alphabet Group member, and now current RYSE Youth Staff. Most recently, he created a video in celebration of LGBTQ+ self and community love at RYSE.

### *Systems Change*

- **Rapid Response for Systems Transformation:**  
 Since the Shelter-In-Place began in March, we have convened an ongoing community care call with almost 100 city and public systems, health and social services providers, and the school district to elevate a range of critical supports for Contra Costa County. This [West Contra Costa COVID Community Care Coalition](#) recently launched the [Richmond Rapid Response Fund \(R3F\)](#) to support our community.
- **Youth Leadership Representation:**  
 Every RYSE leadership cohort involved in policy roundtables or committees at the District or local level have pushed for accountability to young people in the information-sharing and decision-making processes that impact their lives. They have helped frame policy decisions, ensured that parents and youth have a say, and made recommendations for reconciliatory practices that undo the exclusions and harms they witness during the meetings they attend.
  - R.O.N.A - Resilient Youth Organizing Now & Always (*Youth leaders coordinated a West Contra Costa Youth-Led Town Hall on April 30th, high school panelists presented on students navigating stress, COVID-19, the healthcare system, government actions, and distance learning. Two youth poets performed. Youth Organizers facilitated three breakout groups: Letter to you representative advocating for legislation; Our community our choice; and Centering health and wellness, distressing, self and community care in times of a pandemic.*

- Black Youth Forum (*space for black identified youth to share our needs and demands for WCCUSD*)
  - DLCAPs youth fellows Stephanie and Dawit participated in *Student Support Circle, Institutional Racism and Implicit Bias* with Tony Thurmond: [https://www.facebook.com/watch/live/?ref=watch\\_permalink&v=897173690800182](https://www.facebook.com/watch/live/?ref=watch_permalink&v=897173690800182)
- **Kids First Richmond:**  
 RYSE continues to be in deep partnership, alongside the Invest in Youth Coalition and the Richmond Kids First Campaign Committee, ensuring that the vision & goals of the Kids First Initiative are enlivened within the implementation and launching of the Department. We have provided guidance on the development and implementation of the oversight board as well as the community needs assessment which launched this summer. RYSE will host focus groups as well as participate in community forums. Simultaneously, we have also organized against the Mayor's effort to circumvent the will of voters, youth, and community by attempting to cap the Kids First measure; without using accurate data or partnering with the community. This occurred during the uprisings for Black lives and the defund movement. RYSE has joined a diverse collaborative working to reimagine public safety and protect and increase investments for essential services and programs.
  - **Training and Sharing Praxis (CCHS and Health Partners):**  
 In September, RYSE was awarded the Robert Wood Johnson Foundation Disrupting Systems of Dehumanization for Boys and Young Men of Color award, providing support for our deepening partnership with the Contra Costa County Health Services Department, Trauma Transformed, John Muir Hospital and LifeLong in designing a Health Home for youth of color. As part of this work, three Public Health Interns from WCCUSD have conducted a needs assessment into youth health needs to inform planning for the health clinic. RYSE is part of the Contra Costa Health Department Envision Health workgroup developing the next Strategic Plan and desired community impacts for the county health department. This includes serving on the Countywide Social Needs Taskforce.
  - **Speaking/training engagements included, but were not limited to the following:**
    - Baltimore City Department of Health Site Visit, July 16
    - Contra Costa Victim Assistance Center - informational training on CalVCB, July 31
    - Center for Human Development Site Visit, August 7
    - Restorative Justice Diversion Training, August 27-30
    - Healing Justice Alliance Conference, September 11-13

- WCCUSD Counseling New Hire/Interns Training, October 2
- Center for Human Development Site Visit, October 17, *RYSE staff shared best practices for hospital-based intervention programs for victims of violence.*
- Building Blocks for Kids, CELI, November 2, *Shared RYSE approach and practices to healing-centered leadership and systems change*
- Beyond Violence All Partners Meeting, November 5, *RYSE staff presented on the RYSE clinical model that centers the lived experience of young people of color.*
- Public Health Advocates Statewide Conference, Long Beach, November 21, *Presented RYSE's articulation, approach and practices in violence prevention and intervention*
- California Wellness Foundation Conference, San Diego, November 22, *Presented RYSE's articulation, approach and practices in violence prevention and intervention*
- Asian & Pacific Islander Mental Health Empowerment Conference - Clover, CA, November 21-22, *RYSE presented on the RYSE clinical model that centers the lived experience of young people of color*
- Contra Costa Community Restorative Justice Training, December 3 John Muir Residents presentation, January 2, *RYSE presented to residents at John Muir Health about RYSE approach in preparation to residents providing on-site information about health to RYSE youth.*
- CoCo RJ Training: Interpersonal Violence & Restorative Justice, January 17
- Youth Listening Session-Mental Health CA, January 23
- CPR/AED/First Aid Training, January 29,
- CoCo RJ Training: Creative Interventions- Accountability, Safety and Emergency Responses, February 13
- Supporting Male Survivors of Violence National Site Visit to RYSE, March 6, *RYSE presented our articulation, approach, and practices in violence prevention and intervention to violence interrupter programs from Philadelphia, Santa Cruz County, and Richmond*
- CoCo RJ Training: Privilege, Power, & Equity, March 11
- Webinar, Manager and Supervisors "Combating Sexual Harassment in Social Justice Organizations", March 11
- WCCAA's 60 Min in the Faculty Lounge, May 22, *Clinical Director Marissa Snoddy speaks at on the importance of mental health supports for young students during the shelter-in-place:*  
[https://www.facebook.com/watch/live/?v=957584634670730&ref=watch\\_permalink](https://www.facebook.com/watch/live/?v=957584634670730&ref=watch_permalink)

- SEL, Beyond the Checklist, June 3, *Education and Justice team members Deysi Chacon and Andrew Yeung present on Communities for Just Schools Fund panel:* <https://www.youtube.com/watch?v=czjjuUZlfgk>
- **Positive School Climate Resolution:**

RYSE continues to build community awareness and promote implementation of the WCCUSD Positive School Climate Resolution, committing to ensuring that positive behavior and restorative practices are embraced, modeled, and reinforced in the District. DLCAP Fellows hosted, attended or co-facilitated 18 community events or workshops to build transparency and community engagement in LCAP funding process, including meeting with SNAT, WCCUSD School Board and District focus groups. Meetings held since December 2019 include 5 SNAT meetings, 8 WCCUSD school board meetings, 1 School site council meeting, 3 DLCAPS Committee Meetings, and 1 District Breakout meeting with youth. After attending the school to prison pipeline training by Tia Martinez, DLCAP Fellows decided to focus on creating a cohort of organizers to focus on transforming students' experiences with policing in school. The immediate focus was to continue getting accurate data from the district about school suspension, expulsions, tardies, and referrals. It was also named the need to understand how race, gender and ability are part of the frame for these policies. Currently DLCAPS youth and SNAT members are drafting the LCAP to include funding and support systems impacted youth and youth with disabilities.
- **Census:**

Our Census 2020 outreach and education efforts were led-by and centered young people of color from West Contra Costa (WCC), utilizing many of the outreach activities and education strategies utilized in our annual civic and voter engagement programming. Activities included phone banking, door-to-door canvassing, community events, virtual youth workshops planned post-shelter-in-place and social media, which extended our reach beyond WCC. Additionally, staff and youth assumed the role of informal ambassadors for the Census 2020; posting about the census on social media after they completed the census for their household, talking to family and friends about the census and youth leaders developed content for social media. Census outreach and education was also interwoven in our general program and organizational activities; announcements were made during virtual youth programs, census education was integrated into our member check-in and case management calls after the shelter-in-place order was announced, virtual youth-led town halls, the weekly WCC Community Cares Calls and on our monthly blog post.
- **RYSE Commons:**

On September 6th, 2019 over 200 community members attended both in person and virtually for the RYSE Commons Groundbreaking Ceremony, held on the land where construction has been ongoing since July 2019. Youth-led design of space continues, as youth cohorts have and will continue to engage in design sessions for how spaces can include programs and projects they envision. Partnership conversations and collaboration with health system partners, Probation, the District Attorney, and the West Contra Costa Unified School District have been vital to developing and re-imagining ways that RYSE Commons can create and sustain healing conditions for young people. We have successfully raised \$4,526,153 of the \$10M campaign (received and committed). All funds are being used to meet our NMTC and bridge loan commitments that allowed us to receive financing for the project up front.

This current crisis is and will continue to take an inevitable, unjust toll on the community, but it can also create an opportunity to galvanize multiple efforts, generate a response which limits the negative impact of COVID-19, and bring additional partners to the table to take community health and power-building in Richmond to the next level, embedded into activation plans for RYSE Commons. RYSE Commons is the physical manifestation of the collective care work we have been leading during this crisis. It exemplifies the infrastructure needed to weather uncertain times with a community led /youth led approach. The RYSE Commons vision runs resolutely through everything that we do. The pandemic required us to call and build upon an already strong network of partners, leaders, and advocates. Our collective work, our love, rage, and hope, our radical community care—this is what RYSE Commons is all about. RYSE Commons is more than just a building. RYSE Commons is a movement led by our past, present, and next generation of youth leaders. RYSE Commons is a container for the transformative work our youth and adult leaders are presently doing and will only continue to grow. RYSE Commons is the physical home that will finally provide the space, state-of-the-art equipment, and resources to match the power of the young visionaries working within it. This property will allow RYSE to develop a Health Home for young people of color as a key component of RYSE Commons.

RYSE was also featured on and contributed to the following sites during this reporting period:

- ACES Connection: [Recommendation Roadmap for Prop 64 Expenditures](#)
- Prevention Institute : [California’s Proposition 64 Youth Education, Prevention, Early Intervention & Treatment Fund Briefing Paper](#)
- RYSE co-authored an [abstract](#) about the collaborative work on Prop 64, which was accepted and presented at the American Public Health Association November 2019 meeting
- East Bay Express: [Rising to the Challenge in Richmond](#)

- Fast Company: [This Center is a Space for At-Risk Youth to Learn How to Create Change](#)
- San Francisco Business Times: [Richmond Youth are Turning Dreams into Reality Through Innovative Economic Pathways](#)
- Insights, Volume XVII, Winter 2019: *Trauma and Child Welfare: Strategies for Preventing and Intervening to Promote Healing*
- Center for Healthy Schools and Communities: [Restorative Justice in Action](#)
- Afterschool Matters, [Trends in Creative Youth Development](#)
- The Aspen Institute: Forum for Community Solutions, *Scan of the field of healing centered organizing: Lessons learned.*
- Partnership for the Future of Learning, [CA COVID Response](#)
- Forward Promise, [Impact of COVID 19 in Communities of Color](#)
- Dhaliwal, Kanwarpal & Casey, Jill & Aceves-Iñiguez, Kimberly & Dean-Coffey, Jara. (2020). Radical Inquiry—Liberatory Praxis for Research and Evaluation. *New Directions for Evaluation*. 2020. 49-64. 10.1002/ev.20415.
- School Mental Health Crisis Leadership Lessons: [Voices of Experience from Leaders in the Pacific Southwest Region](#)
- Restorative Justice in Action: [Lesson Learned for Successful Implementation of Restorative Justice](#)

#### OUTCOMES AND MEASURES OF SUCCESS:

***Please provide quantitative and qualitative data regarding your services. List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning. Please include how often data was collected and analyzed, as well as how the program evaluation reflects cultural competency and protects the integrity and confidentiality of the individuals served.***

RYSE works in persistent proximity with young people to listen to, validate, and hold their lived experiences and articulations of distress, as well as those of resistance and resilience. We also work in proximity to the organizations and agencies responsible for young people. Amidst the profound changes and impacts of the pandemic and the uprisings on our communities, we stay steadfast in all our relationships and connection. We have had to make pivots within pivots, reacting, responding, and still stewarding our vision and values for a long-term vision of liberation. The Shelter-In-Place and pandemic required us to adjust and adapt all our operations and efforts, including our evaluation and inquiry. While we were not able to conduct our annual member survey, below are findings from our various program impact surveys conducted during Fall 2019 and Spring 2020 that reflect key measures in our service workplan. We are working with our internal team and evaluation partners to recalibrate our member impact tools to continue to stay attuned to and center member experiences, needs, and priorities.

Key measures:

- *70% of RYSE members report benefits of RYSE programs and services that support mental health and wellness.*
- *70% of RYSE members report positive or increased sense of self-efficacy, positive peer relations, youth-adult relations, and agency in impacting change in the community.*

Findings:

- *RYSE's Spring 2020 surveys of counseling, case management, and trauma response support participants found the following (N=38):*
- *→ 100% of participants felt understood and respected by case management and clinical staff.*
- *→ 100% of participants felt that case management and counseling spaces were safe spaces for them to express their needs, concerns, fears, goals and aspirations.*
- *→ 92% of participants agreed or strongly agreed that being part of counseling/ case management helped them know more about rights and choices when navigating public systems (such as health, education, juvenile justice, foster care immigration, and law enforcement).*
- *→ 100% of participants agreed or strongly agreed that counseling/ case management has helped them feel that it is okay and positive to be in programs or services that support their mental health.*
- *→ 100% of participants agreed or strongly agreed that counseling/ case management has helped them to be able to be more vulnerable and confront pain head on.*
- *→ 100% of participants believe they will be able to use what they learned in counseling/case management.*

Select quotes from Spring 2020 participants:

*"[Something new I will try is] ... mood charting to help me understand how I am feeling and what I need to get better."*

*"[Something new I will try is] ... communication with people who are important to me or have hurt me."*

*"[RYSE case managers are] ... very understanding and willing to put in the work to help one out, going the extra mile to make sure I am being taken care of during hard times."*

*"I feel loved and supported - it's a great healing space - I feel cared for."*

Key Measure:

- 70% of members demonstrate progress toward desired skills/goals related to their participation at RYSE (subset of members with a defined plan) Select results from Fall 2019 and Spring 2020 Program LITs:

#### Findings:

- → Digital Storytelling: 100% agree or strongly agree that they learned something new in the workshops and will be able to use what they learned.
- → College A-Z: 75% agree or strongly agree that they learned something new in the workshops and 74% will be able to use what they learned.
- → Education & Career Case Management: 99% agree or strongly agree that their GPA improved and 99% agree or strongly agree that they reached one or more of their education or career related goals.
- → Hire Up: 50%-75% agree or strongly agree that they feel more prepared and confident as job applicants along seven key measures.
- → Young Men's Group: 100% agree or strongly agree that they have a better understanding of how social conditions of violence affect individual and community health.
- → Transition & Reentry: 67% agree or strongly agree that RYSE supports have helped them know more about their rights and choices when navigating public systems.

#### Key Measures:

- *80% of the total number of stakeholders involved in TRRS series will report increased understanding and capacity to practice trauma-informed youth development.*
- *At least 40 stakeholders demonstrate shared commitment to trauma-informed policy that promotes the optimal health and wellness of West Contra Costa youth and young adults*

#### Findings:

- Convene biweekly West Contra Costa COVID Community Care calls where up to 100 WCCC public system and CBO partners cultivate resilience and interdependent strategies, with RYSE youth artists and cultural workers sharing wellness and arts practices with adult partners.
- RYSE partnered with Trauma Transformed to launch the Racial Reckoning Series, known in previous years as the Trauma and Healing Learning Series.
  - At least 609 adult stakeholders have attended the Series to date,
  - which has included 4 sessions. See information below on each session.
  - [Part 1: Revealing White Privilege and Healing Racial Trauma](#)
  - [Part 2: Revealing White Privilege and Healing Racial Trauma](#)

- [Part 1: Revealing the Racial Harms of Public Education and the School to Prison Pipeline](#)
- [Part 2: Revealing the Racial Harms of Public Education and the School to Prison Pipeline](#)
- 100% of session evaluation respondents from Session 1 (N=92) answered that they would recommend the series to colleagues and co-workers.
- Parts 1 and 2 of our Revealing White Privilege and Healing Racial Trauma have been required viewings of staff at Contra Costa First Five and for staff in Supervisor John Gioia's Office.
- Select quotes from Series participants:
  - *I really appreciate the series because it calls out the compliance of non-black groups in perpetuating racist thinking and policy. I was not prepared to reckon with that part of myself but am glad to start to reckon with it.*
  - *My current understanding of this is that I can't only consider how "systems" are acting upon people's lives and how I can act on them, but that I myself am a part of them. Talking about systemic oppression can make it easy, especially for white folks, to feel separate from the systemic problem. Even though I know that I am a part of white supremacy and have to be an active part of dismantling it, this statement helps me get deeper into this idea and get closer to the truth of it. It also means that I have more to do as a part of the system to be active, aware, and productive in dismantling oppression and working towards liberation.*
  - *I appreciate the deepened conversation on what it looks like for organizations to disrupt their systems for the purposes of healing racial trauma.*
  - *You (Tia Martinez) and this training and Ryse is an embodiment of change.*
- The moments of supremacy and uprising we are in have pushed some of our County leadership to put forth the call for the County Office of Racial Equity and Social Justice. Next month, Supervisors John Gioia and Federal Glover, who represent the district RYSE is in, will introduce a board order to establish such office based on the directions and recommendations from a community engaged planning process. RYSE and Contra Costa Health Services, along with partners at Family Justice Center, Trauma Transformed, and Public Health Advocates are part of the core team. This [Executive Summary](#) provides details of the planning process, which is grounded and held in radical inquiry.

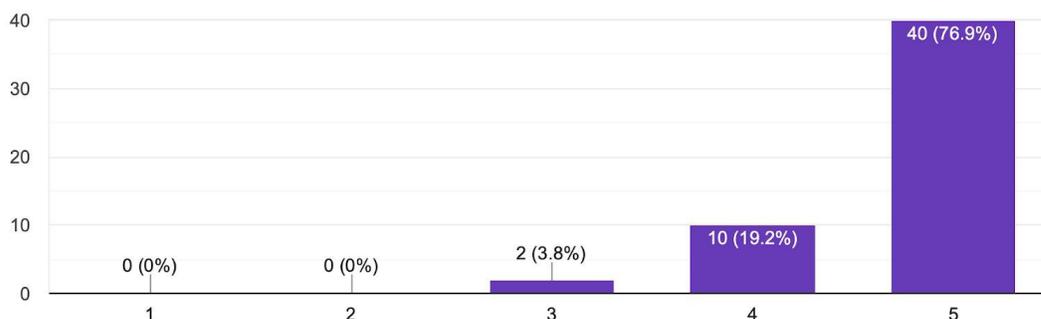
[RYSE Program Data since COVID-19 Shelter-In-Place- March 2020-July 2020](#)

### Virtual Program Survey:

- When asked if the program/ workshop was helpful or of value, approximately 50 young people responded that they felt that it was helpful and valuable to them. Not one young person selected 1 or 2 as an answer for this question. What we can learn from this data is that young people felt that:
  - It was a welcoming space It gives space to interact with others – connection
  - It felt like a safe space
  - It is a space that allows young people to express themselves
  - Understanding and open to young people’s needs

Was this workshop helpful/ valuable to you?

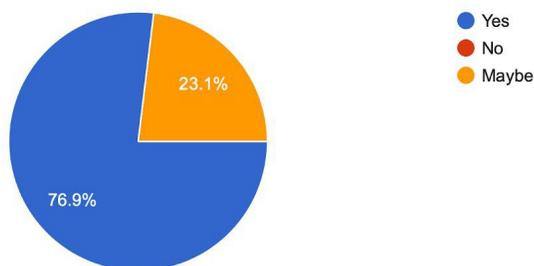
52 responses



- Out of 52 responses in the Virtual Program Survey, 40 young people said that they would recommend the program/ workshop they attended to a friend.

Would you invite a friend to attend this workshop/ program?

52 responses



- Although most youth who have filled out the Virtual Program Survey feel very positive about the programs and Workshops they are attending, the two main areas they have felt that RYSE Staff can improve are o.
  - Adding more online Polls and/ or Games
  - Making more time in the workshop/ Program to complete everything that is planned out to do

***DEMOGRAPHIC DATA: X Not Applicable (Using County form)***

***If your agency has elected to not utilize the County Demographics Form AND have chosen to not collect specific demographic domains (i.e., Veteran Status, Disability, etc.), please provide justification.***

- While the total number of youths served during this reporting period is 613, the Race section adds up to more because youth marked both more than one race and the races they identified. Similarly, the Gender Identity and Sexual Orientation sections add up to more because some youth selected multiple responses.
- Part 2 is blank because we collect info on race and ethnicity together and with some differentiated categories than MHSA.
- Part 5 is blank because RYSE does not ask about specific disability on the member application. We noticed that there is no place to document atmospheric trauma and distress our member’s experience.
- Regarding referrals out for question 9a. We do refer youth to outside services (Clinical and
- non-clinical), however they often report negative or uncomfortable experiences with outside referrals. On occasion, members will inform us that they were unable to make an appointment.
- Regarding Part 7: Item 10 requesting the average duration of untreated mental health issues.

RYSE defines and addresses trauma and distress as historical, structural, and atmospheric, operationalized through racial oppression and dehumanization of young people of color (RYSE Listening Campaign, 2013; Hardy, 2013; Leary, 2005; Van der Kolk, 2015). Therefore, RYSE’s work is focused on addressing the conditions and systems that induce and perpetuate distress and atmospheric trauma, cultivating and supporting community building for collective healing and mobilization to address the harmful conditions and their generational impacts, and providing tailored supports and services necessary to provide safety, stabilization, and hope for individual young people and as a community.

We measure impacts related to RYSE’s core strategies and prioritization of relationships as prevention and early intervention of mental health issues (reflected in our service workplan).

We do not measure duration of untreated mental health issues, as it does not fully reflect, and is dismissive of, the context and magnitude of what young people are experiencing and embodying. It falls short of the rigor and dynamism we employ as a community mental health and healing organization. That said, we work in persistent proximity with individual members to listen to, validate, and hold their lived experiences and articulations of distress, as well as those of resistance and resilience.

**EVIDENCE-BASED OR PROMISING PRACTICES:**

***What evidence-based, promising practice, or community practice-based standard is used in your program and how is fidelity to the practice ensured?***

Please see previous reports sharing RYSE’s Theory of Liberation and Radical Inquiry.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

RYSE works closely with partners to reflect youth agency and power and shift harmful practices. Examples include:

- As part of countywide and multi-system care teams, RYSE often brought a perspective about a young person that speaks to their assets and successes and counters stigmas or challenges that they face elsewhere.
- Arranging caregiver and guardian meetings to help align understanding of local resources for violently injured and criminal legal system impacted youth.
- Establishing a referral pathway to housing services and working with housing partners to better accommodate and respond to young people navigating trauma.
- Working with schools to avoid credit loss and smooth transitions for transferring, reentry and secondary school completion.
- Building coalitions and youth leadership teams focused on services for higher-need students that prioritize young people in systems.
- Naming how language within systems impacts young people, e.g., working to change practice of calling youth “wards” in response to conversations with young people.
- Outreach and coaching for local employers to design job pathways and supports that are tailored for systems-impacted young people.
- Engaging in and sharing RYSE youth participatory action research about young people’s experiences with mental health and coping, navigating gender-based violence, and

seeking/ accessing health care to inform providers about needs, gaps and desires from young people most impacted by trauma.

- Hosting site visits with La Clínica de la Raza, Trauma Transformed, and LifeLong Medical - discussing sustainability, co-location, and partnership for a youth-centered health home.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Youth Leader Check In: 4/7/20

*As we move into our second month of physical distancing during the COVID-19 pandemic, youth leaders are convening virtually to base build, organize, and advocate for their peers and families. RYSE is actively working with members to identify and respond to needs.*

*We checked in with Camila, one of our youth organizing interns, to share about her experience so far, and to identify the needs she is witnessing in her communities.*

How are you feeling during this time of physical distancing and shelter-in-place?

I'm feeling like I'm on a rollercoaster, it's a mix of emotions. I get anxious and overwhelmed but at the same time I'm happy and I feel secure. I get to spend time with my family and have more time to do stuff I'm not able to do on a daily during class time and while being safe at home. And I'm also anxious because I know I can't get out of my house and, well, the virus keeps on getting worse.

What are some concerns and needs you are hearing from youth and from the community?

Info from food banks, on what to do if you have coronavirus if you do not have medical or a health service, and what to do if you get in a position where you can't handle the stress and anxiety. Also, how to get help if you are not a U.S. since citizens are getting help from the government. I guess the most important thing is to keep calm and wash your hands as much as you can and to not touch your face.

Which virtual programs have you been a part of at RYSE, and what has that been like?

I'm currently involved in the virtual art meetings every Wednesday. I find it fun to be in and safe. I love that place, TBH, I feel like I can open my mind and not be judged even though I haven't done much. I feel like it is the safe place I'll always wanted to be in.

Is there anything that you've found inspiring or grounding lately that you'd like to share?

Yes, it's an idea that Camila Cabello (my favorite singer/idol) gave me in one of her latest live videos: the way I'm handling this quarantine is putting my emotions down on paper by drawing, or trying to get better at making poems, or even writing songs (haven't worked yet but trying). And, well, something I'd want to practice is dancing—I'm looking for salsa videos on YouTube.

*We checked in with Ann, one of our youth organizing interns, to share about her experience so far, and to identify the needs she is witnessing in her communities.*

How are you feeling during this time of physical distancing and shelter-in-place?

At first, I was calm about it because I enjoy staying at home, but I became anxious and overwhelmed when we were told it can last for weeks, all I thought was, what will I do in the next few weeks, what will happen with school, work, and everything else. It's been weird since I got used to having a schedule every day and not being able to go or do usual things is an adjustment.

What are some concerns and needs you are hearing from youth and from the community?

There are a lot of folks in the community who do not have any resources and many people who have been off work who lost their source of income. Which brings us to not having access to food and essentials. With online education happening, some households do not have Wi-Fi or students do not own technology. Also, there are youth that do not feel safe in the household which can make the Shelter-In-Place difficult for them overall.

Which virtual programs have you been a part of at RYSE, and what has that been like?

So far, I've been to the SPEAK POET virtual workshop/program. It was a new but great experience. I had a chance to connect with RYSE folks who I missed seeing and hearing from. It felt great to still be able to do workshops that involve writing poetry which has been my ways of coping during these times.

Is there anything that you've found inspiring or grounding lately that you'd like to share?

My initial reaction was to make sure I'll be able to get things done. What I have noticed is that many have been using these times to try to be productive and making sure they are constantly doing work. This pandemic should not be a sudden competition on productivity. There have been times I've lost track of days, but I've learned to go with how my mentality, emotions, and body wants to be during that day. I took some of the days to get back on activities I couldn't do during busy times. Also, I feel like this has been the moment when the world is telling everyone to slow down. To let ourselves realize what we have in life. To be able to stay home, be with loved ones or even alone. Just knowing that it is okay to let ourselves be with time, let ourselves feel any emotions about all this. Let ourselves finally be us.

Do you have a personal wellness practice that you'd like to share?

In the chances I get in the mornings before I have virtual classes, I would light a scented candle and journal to write my hopes for the coming days and what I've been grateful for or just how I'm feeling now. I've been writing poems and listening to music more than usual. I've been doing exercises to keep my body moving. Cooking has been more than usual too. I've been painting and taking naps a lot also. Lastly, I've been watching a lot of shows and movies.

### Trauma Response and Recovery

P. is a 16 yr. old young woman who came to RYSE in crisis and experiencing a high-level of distress. She had fled her home where she had been repeatedly physically and sexually abused by someone who lived with her. P. had told this to many service providers who made child abuse reports, but without "substantial evidence" the reports had been dismissed over the last two years. P. was continuously placed back in her home. Disappointed in systems that were supposed to protect her, P. felt it was safer for her to be on the streets where she was engaging in survival sex to get her needs met, than to be at home. As opposed to assuming what P. needed, RYSE staff worked with her to identify what her goals were and what safety looked like for her. We were able to get P. into a youth shelter in San Francisco, where she could stay while her case was being investigated by child welfare. Although the process had been hard on P. because she repeatedly had to "prove her abuse in court," she eventually was believed and became a foster youth. This opened more housing possibilities for her and the Trauma Response Specialist working with P. was able to connect her with two organizations, The Sparks Initiative and Voices Youth Programs, that supported finding P. a safe place to live. In addition to this work, RYSE has been able to consistently provide P. with financial supports to purchase clothes and essential items she had lost. With all that was happening in P's life, it was important to her to not fall behind in her education and to finish school. RYSE was able to support this by providing her with transportation support to be able to continue attending her school, no matter where her foster care placement was located. P. self-reported that she felt that supports she received from many RYSE staff prepared her for her future and that RYSE "feels like a family...everyone is so helpful, so loving."

## PEI ANNUAL REPORTING FORM

### PREVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Stand! For families Free of Violence

Project (if applicable): Youth Education and Supportive Services (YESS)

#### PEI STRATEGIES:

Please check all strategies that your program employs:

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

*Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.*

Contractor will assist the department to implement the Mental Health Services Act (“MHSA”) Prevention and early Intervention (“PEI”) Program. Specifically, Contractor’s services hereunder will include, but not limited to, the following:

- The contractor will assist the department with implementing the “You Never Win with Violence” and “Expect Respect” program.
  - Contractor will provide primary prevention activities to educate seven-hundred fifty (750) middle and high school youth about teen dating violence.
  - Contractor will provide up to sixty (60) school personnel, service providers, and parents, subject to their capacity to participate with Contractor’s outreach efforts, with knowledge and awareness of the scope and causes of dating violence, including bullying and sexual harassment, to increase knowledge and awareness of the tenets of a healthy dating relationship.
- Assist the department with implementing the “Expect Respect” programs.
  - Contractor will provide secondary prevention activities for up to Two hundred (200) youth experiencing or at risk for teen dating violence.
  - Contractor will conduct up to sixteen (16) gender-based support groups that are each ten (10) weeks long as feasible within school’s semester schedule.
- CCC residents receiving services under this contract are referred to as “clients”.

## **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year. Describe any adaptation of services due to COVID-19 that may be relevant For PEI – Prevention programs, please describe: List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning. Please include how often data was collected and analyzed.***

- During this reporting period we served 1445 participants in 55 presentations of *You Never Win with Violence* curriculum. Goal exceeded.
- *Expect Respect* and *Promoting Gender Respect* curricula-based Groups: 146 participants and seventeen 17 groups were served. Goal achieved.
- Provided 17 gender-based support groups that were 10-sessions each. Goal exceeded.
- Adult Allies: Provided teachers and other school personnel training. Goal achieved. (Please see attached evaluation report.)

All data collected from pre and post evaluation surveys are initially reviewed after each presentation and/or support group to determine if clients completed the questionnaire and if the surveys contained information requiring staff immediate follow up and/or intervention.

***DEMOGRAPHIC DATA:***  *Not Applicable (Using County form)*

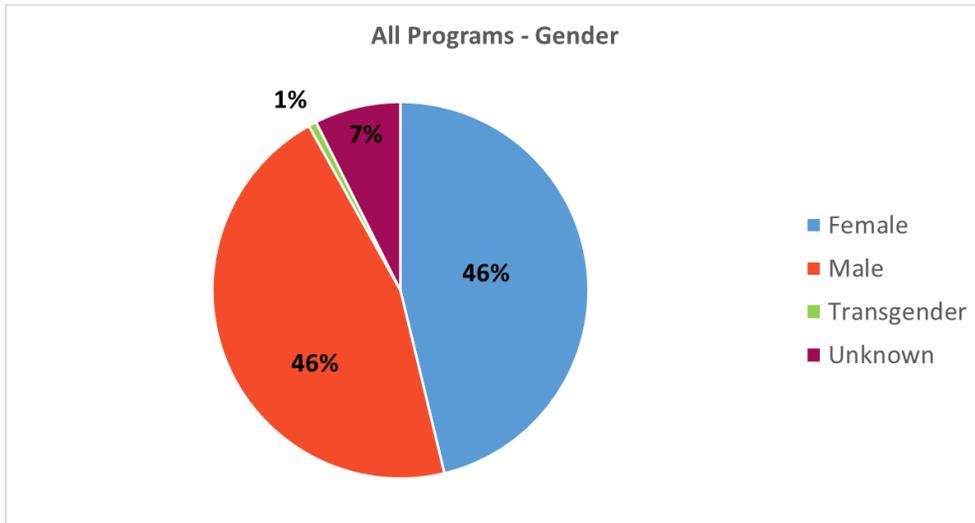
Please refer to Aggregate Data Reporting Form and tables provided in this report.

### **Total Clients Served:**

We have served a total of 1778 clients through all our Prevention programs throughout the Fiscal Year.

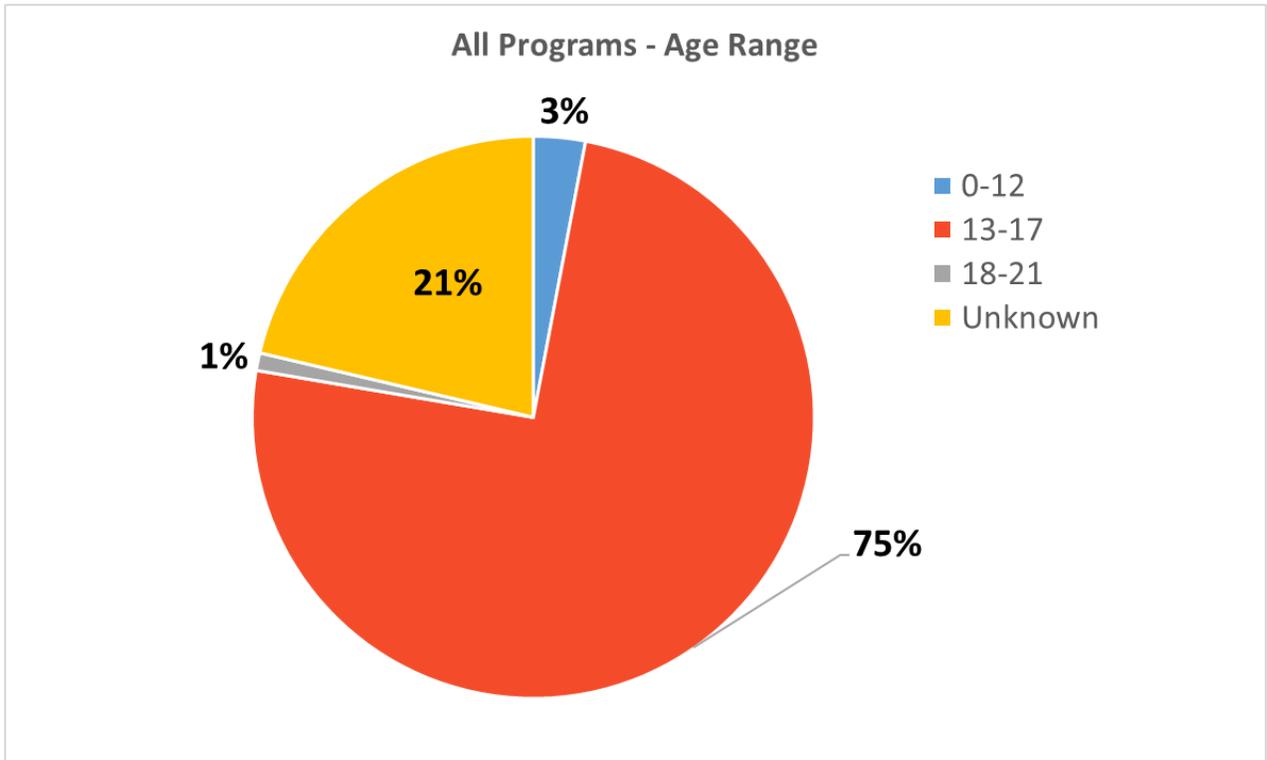
### **Gender:**

Male Identified: 851 clients; Female Identified: 862 clients; Transgender: 13 clients; Unknown/Unreported: 52 clients.



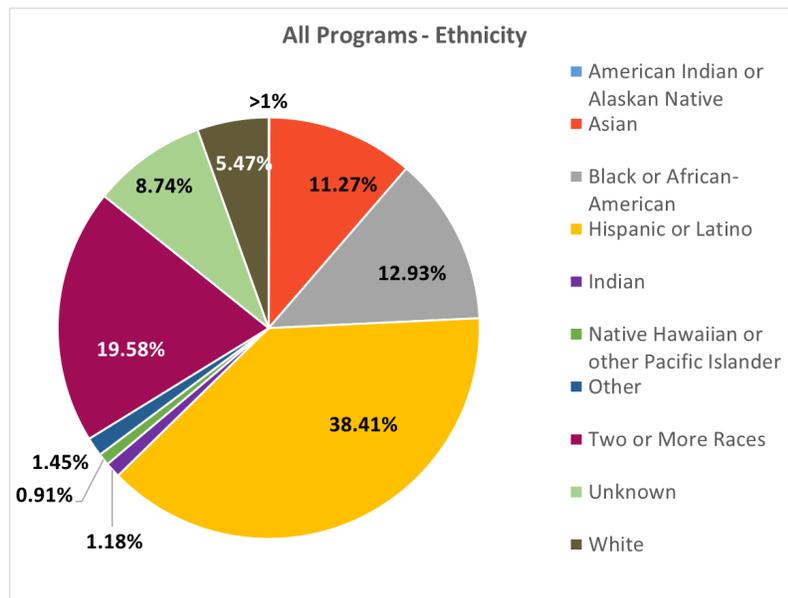
**Age:**

0-12: 53 participants; 13 – 17: 1328 participants; 18-21: 18 participants; Unknown/Unreported: 379 participants.



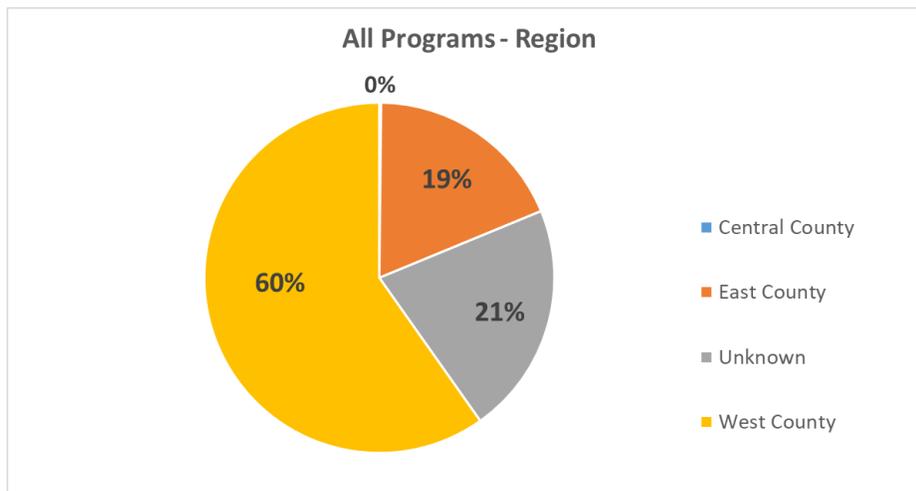
**Ethnicity:**

African American/Black: 241 participants; American Indian/Alaska Native: 1 participant; Asian: 210 participants; Native Hawaiian/Pacific Islander: 17 participants; Caucasian/White: 102 participants; Hispanic/Latino: 716 participants; Indian: 22 participants; Other: 27 participants; Multi-racial: 365 participants; Unknown/Unreported: 77 participants



**Region:**

Central County: 3 participants; East County: 331 participants; Unknown: 381 participants; West County: 1063 participants.



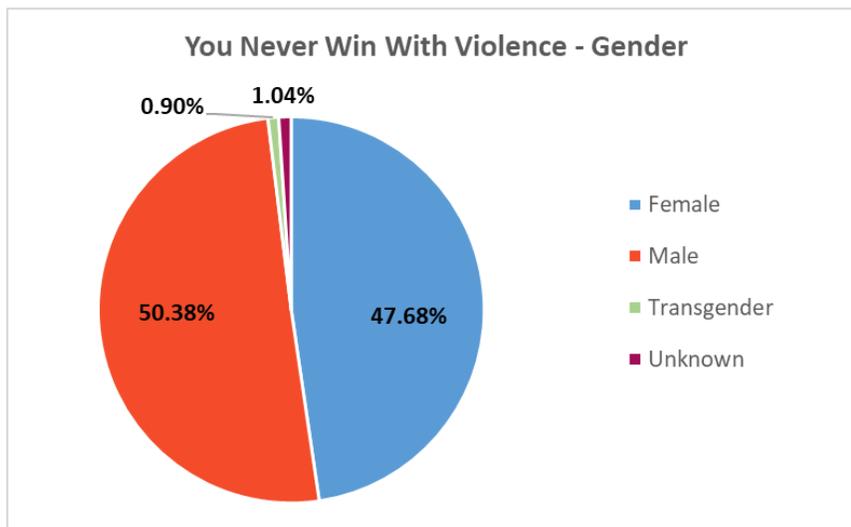
## You Never Win with Violence

### Total Youth Served

We served a total of 1,445 youth through our YNWWV presentations this Fiscal Year.

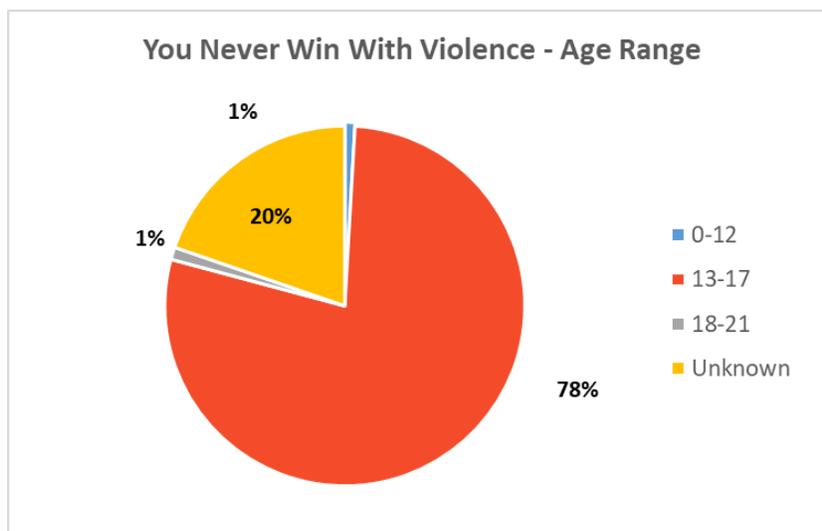
### Gender

Male Identified: 728 participants; Female Identified: 689 participants; Transgender: 13 participants; Unknown/Unreported: 15 participants



### Ages

0-12: 13 participants; 13-17: 1131 participants; 18-21: 16 participants; Unknown/Unreported: 285 participants



## Race/Ethnicity

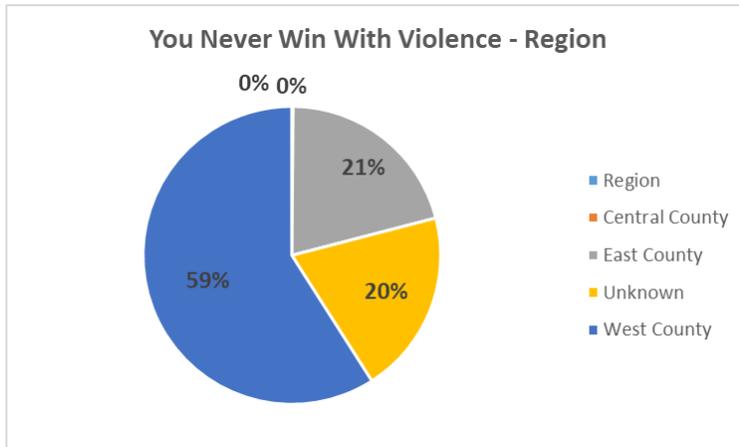
African American/Black: 195 participants; American Indian/Alaska Native: 1 participant; Asian: 195 participants; Native Hawaiian/Pacific Islander: 16 participants; Caucasian/White: 97 participants; Hispanic/Latino: 556 participants; Indian: 21 participants; Other: 23 participants;



Multi-racial: 308 participants; Unknown/Unreported: 33 participants.

## Region

Central County: 2 participants; East County: 301 participants; Unknown: 289 participants; West County: 853 participants



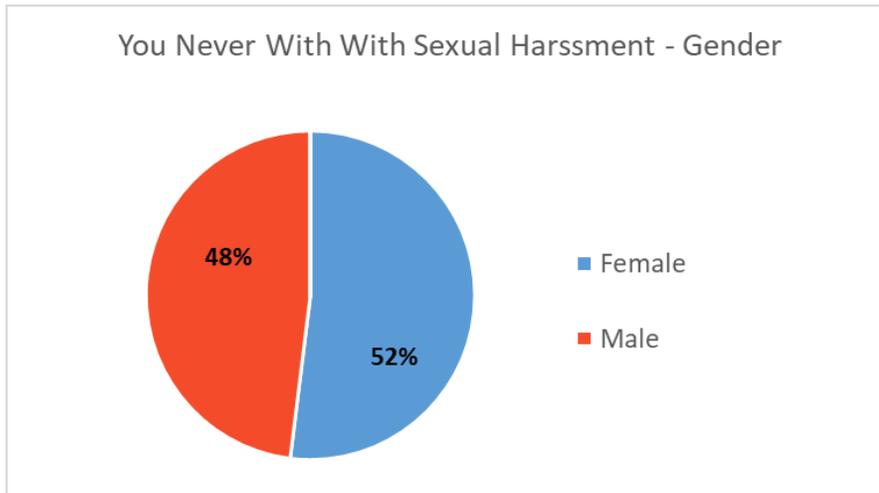
**You Never Win with Sexual Harassment**

**Total Youth Served**

We served a total of 152 youth through our YNWSH presentations this Fiscal Year.

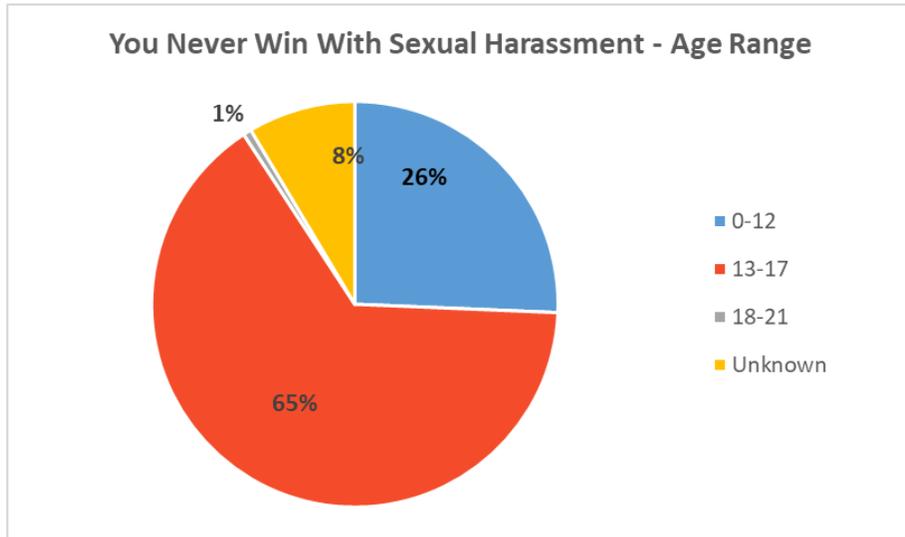
**Gender**

Male Identified: 73 participants; Female Identified: 79 participants.



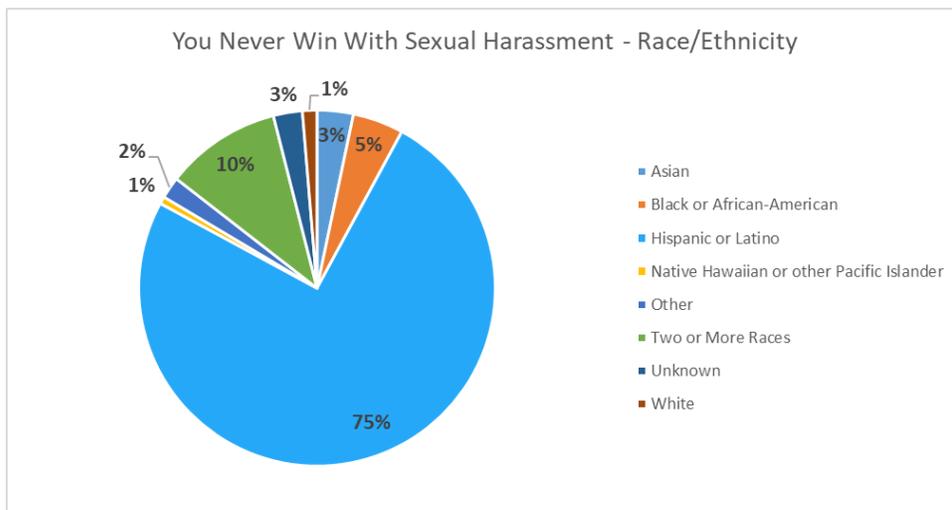
**Ages:**

0-12: 39 participants; 13-17: 99 participants; 18-21: 1 participant; Unknown: 13 participants



**Race/Ethnicity:**

African American/Black: 7 participants; Asian: 5 participants; Native Hawaiian/Pacific Islander: 1 participant; Caucasian/White: 2 participants; Hispanic/Latino: 114 participants; Other: 3



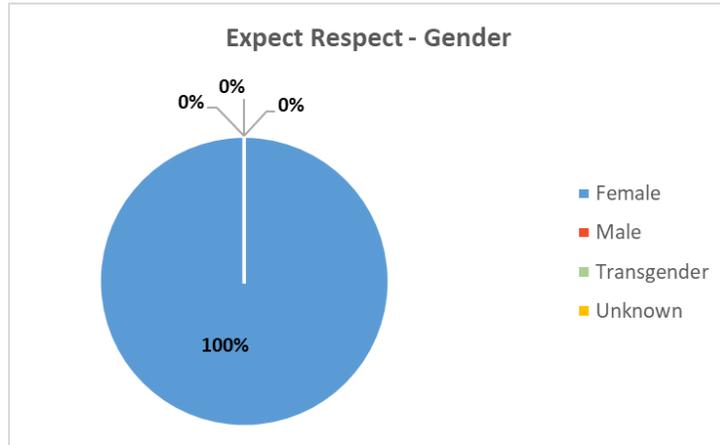
participants; Multi-racial: 16 participants; Unknown/Unreported: 4 participants.

**Expect Respect:**

**Total Youth Served:** We have served a total of 87 participants through our Expect Respect support groups this Fiscal Year.

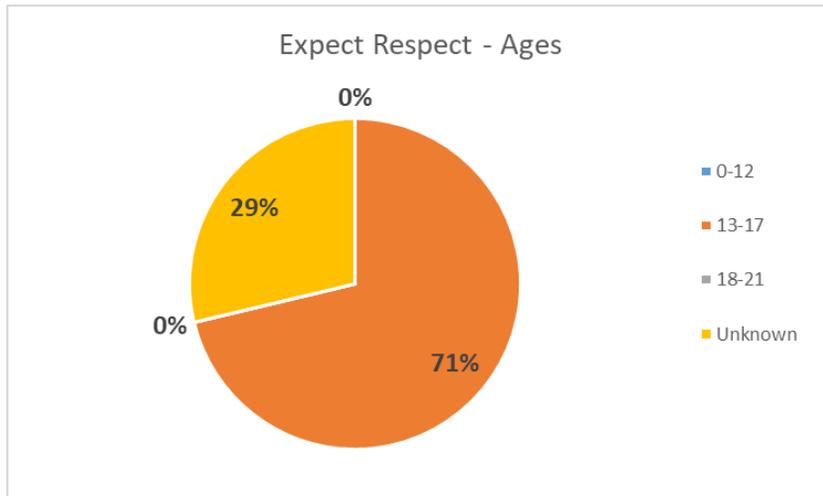
**Gender:**

Female identified: 87 participants.



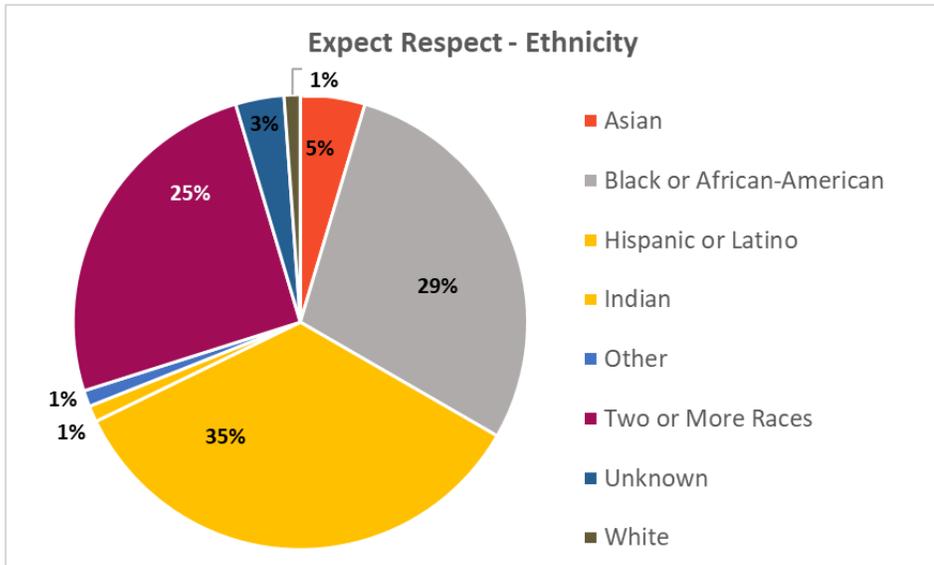
**Ages:**

13-17: 62 participants; Unknown/Unreported: 25 participants.



**Race/Ethnicity:**

African American/Black: 25 participants; Asian: 4 participants; Caucasian/White: 1 participant; Hispanic/Latino: 30 participants; Indian: 1 participant; Other: 1 participant; Multi-racial: 22 participants; Unknown/Unreported: 3 participants.

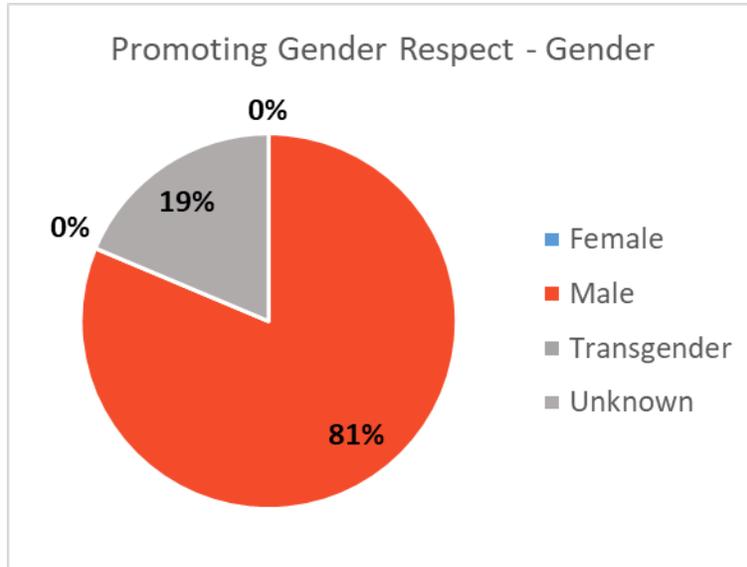


**Promoting Gender Respect:**

**Total Youth Served:** We served a total of 59 participants in our Promoting Gender Respect support groups this fiscal year.

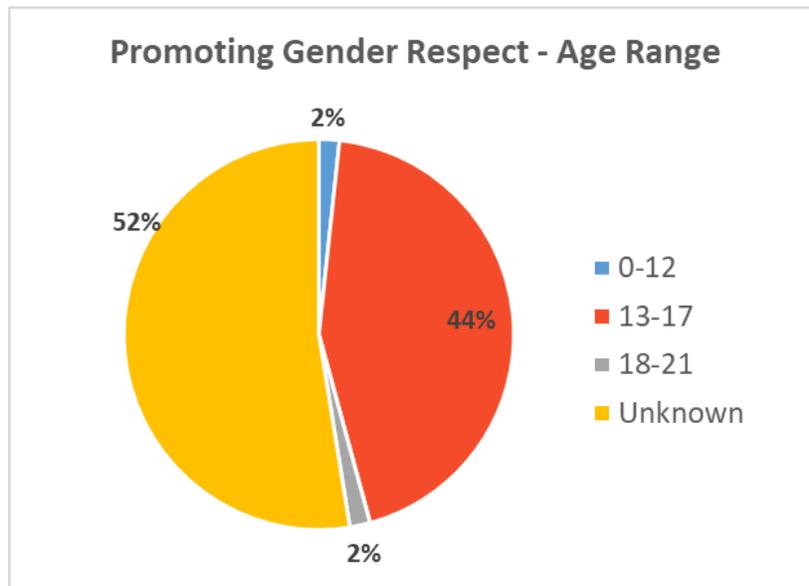
**Gender:**

Male identified: 48 participants; Unknown/Unreported: 11 participants.



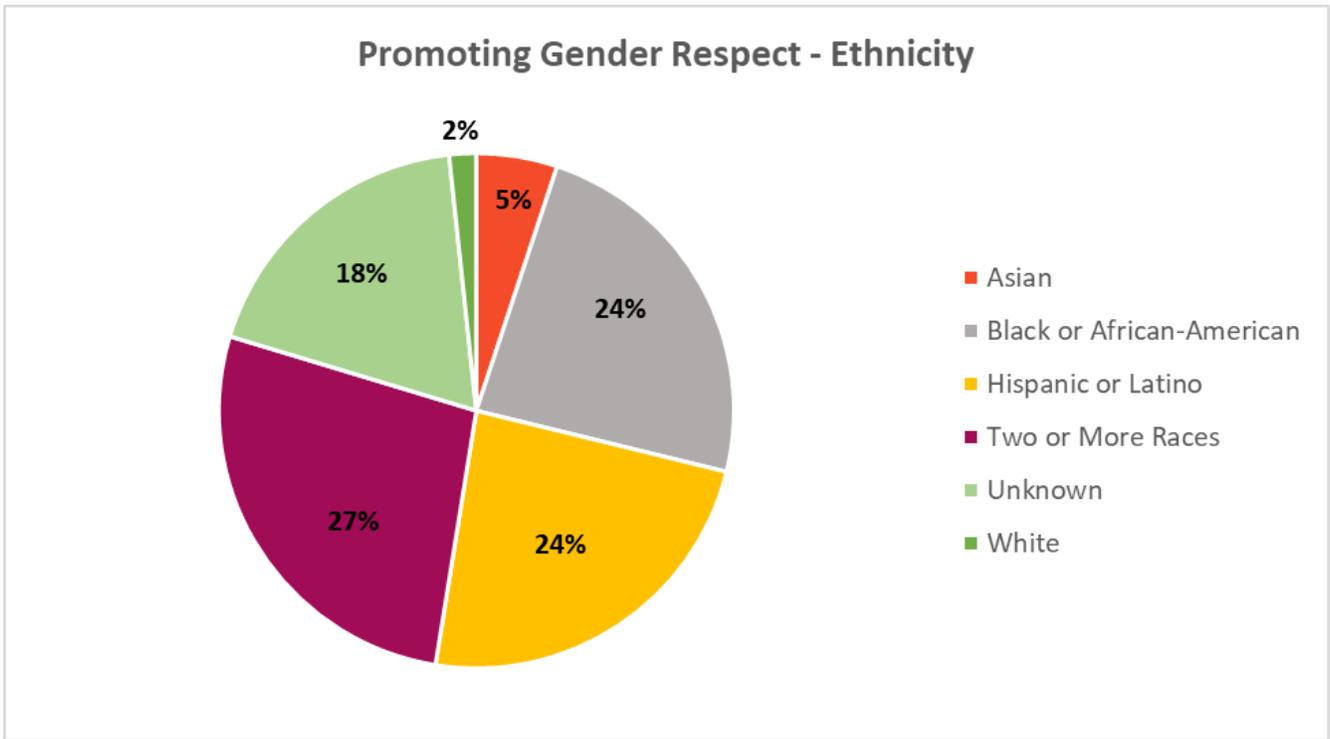
**Ages:**

0-12: 1 participant; 13-17: 26 participants; 18-21: 1 participant; Unknown/Unreported: 31 participants.



**Race/Ethnicity:**

African American/Black: 14 participants; Asian: 3 participants; Caucasian/White: 1 participant; Hispanic/Latino: 14 participants; Multi-racial: 16 participants; Unknown/Unreported: 11 participants



**CULTURAL RESPONSIVENESS:**

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

STAND! provides services to populations living on the margins. Agency policies instruct staff to be inclusive in their provision of services as reflected in the policies and procedures. STAND! services are client centered, with the use of inclusive tools including: a language line, bi-lingual staff, availability of ethnic/cultural foods and celebration of cultural holidays and special events.

STAND!'s staff are regularly trained on numerous culturally responsive approaches to family dynamics, values etc.

STAND! partners with other culturally specific agencies and organizations to provide culturally responsive services to our clients. Coordination among the culturally specific organizations includes trainings, meetings, shared resources, as well as referrals and resources.

STAND! provides a warm and welcoming environment in all work and service sites including: Pictures, posters and a website of diverse cultural images, informing the public of STAND!'s policy on cultural diversity and website with infographics regarding: Current trends and activities and positions on diversity and social justice activities. A statement of all-inclusive cultures and racial/ethnic groups.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

The YESS Program provides services in West and East Contra Costa County School Districts. The school health centers, and administrative staff are the primary contacts for student referrals and access to students at each of the schools receiving our services. We also collaborate with the following agencies in the provision of services of our student clients:

- Community Violence Solutions (CVS) provides services to victims of sexual assault and sexual harassment. Clients are provided services and support based on the presenting issues.
- California Partnership to End Domestic Violence invites our YESS program to participate in the annual state-wide Teen Dating Violence Campaign on panel discussions and community presentations.
- Waymakers Statewide Family Violence Campaign coordinates with our YESS program YAV volunteers in focus groups and evaluation surveys and outreach activities.

- STAND! also partners with the following organizations in our effort to provide services and supportive resources to our clients: CAL CASA, East Bay YMCA, Bay Area Community resources (BACA), Ryes Youth Center and the CCC Family Justice Centers.

#### VALUES:

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

The YESS program operates within the policies and procedures of our parent organization STAND! for Families Free of Violence.

STAND! is a catalyst for breaking the multi-generational cycle of violence, promoting safe and strong families, and rebuilding lives. This requires that all staff adhere to state laws governing client confidentiality and professionalism.

STAND!'s policies and procedures require staff employ a client centered, trauma informed approach to service provision. STAND!'s policy requires staff to respond to client's inquiry within 24 hours of contact with follow up services and support.

STAND! services include: A twenty-four (24)-hour Crisis Line, twenty-four (24) Bed Emergency Shelter, seven (7) Transitional housing units, Community Services program located in east, central and west Contra Costa County; a clinical Services Program, and a Non-Violence Program for individuals who've caused harm and many other programs and services.

#### VALUABLE PERSPECTIVES:

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Stand's YESS Team program most proud of events in this reporting period:

- STAND's YESS Team conducted presentations on: Sexual Harassment and Victim Blaming, per special request by Richmond High School. This event included approximately eleven to twelve hundred (1100-1200) students and fifty-six (56) presentations in every classroom, over a three (3) day period.
- We were able to successfully transition our operation to virtual programming of services to student volunteers during Covid-19, practicing Contra Costa County guidelines for "Shelter in Place" and health safety precautions.
- STAND! staff and Youth Against Violence (YAV) volunteer's participation in this year's statewide Teen Dating Violence Campaign in Sacramento on Orange day. Two (2) of our

YAV volunteers, Cate, and Sarah, were selected as hosts at the Orange Day Rally at the California State Capital. This event was sponsored by the California partnership to End Domestic Violence.

- The Youth Against Violence Program was awarded at the Annual Rebuilding Lives Luncheon with the Rollie Mullin Leadership Award. Fourteen (14) of our YAV volunteers received award.
- Two of our YAV youth volunteers received awards from the Contra Costa County Youth Hall of Fame.
- YAV volunteers participated, along with staff in a Teen Dating Violence Campaign at five (5) High schools, during the Teen Dating Violence Awareness Month.

**Special Events/Activity/Outreach focus:**

February 2020 was an action-packed month with activities and events. We conducted our 5th annual Teen Dating Violence (TDV) and Awareness month campaign. This year's theme was "Love is Not a Game," meaning that no one wins in abusive relationships, a relationship should not feel competitive, nor should anyone suffer. We are teammates and partners not two opposing teams. YAV did a phenomenal job coming up with the theme and activities, as well as the designs behind the campaign and imagery. We did 4 lunch time outreach sessions at Pinole Valley High, Hercules, De Anza, and El Cerrito high schools. YAV led TDV related games to get their peers and other students involved as well as teaching them random trivia about facts behind abuse. Also, goodie bags filled with customized lanyards, shirts, informational cards, pens as well as customized sweatshirts bearing "Love is not a game" to all YAV members and staff. On each campus, our staff and youth leaders reached out to health center staff, teachers, youth peers, on campus support officers, via PA announcements, school clubs and more to spread awareness of the campaign and the message. A video was also created to continue sharing the message regarding "Love is not a game". ([Please see link to view.](#))

In another Teen Dating Violence awareness month activity, YAV volunteers coordinated with athletes at their schools to wear orange during a sporting event. YAV attended the games and photographed the athletes wearing the symbolic orange color during TDV month. This portion of the campaign was to highlight that often athletes get a bad rap for being hyper aggressive or even abusive. The display of the orange color brought awareness and understanding that it is supported by many of these perceived school role models and popular students.

## PEI ANNUAL REPORTING FORM

### PREVENTION REPORTING FORM

FISCAL YEAR: 19-20

Agency/Program Name: Vicente Martinez High School

Project: C.O.R.E. of Vicente - Community Optimizing Resources for Empowerment

#### PEI STRATEGIES:

Please check all strategies that your program employs:

Provide access and linkage to mental health care

Improve timely access to mental health services for underserved populations

Use strategies that are non-stigmatizing and non-discriminatory

#### SERVICES PROVIDED / ACTIVITIES:

***Please summarize the Scope of Services as outlined in the Service Work Plan. Please also address any other relevant activities or events that took place during the reporting period.***

The Prevention and Early Intervention (PEI) program at Vicente Martinez High School and Briones School is called C.O.R.E. which stands for Community Optimizing Resources for Empowerment. C.O.R.E. is an integrated mental health focused learning experience for 10th-12th grade at-risk students of all cultural backgrounds. The program is facilitated by Martinez Unified School District (MUSD). We provide 9th-12th grade at-risk students a variety of experiential and leadership opportunities that support social, emotional, and behavioral health, career exposure and academic growth while also encouraging, linking, and increasing student access to direct mental health services.

Key services include student activities that support:

- Individualized learning plans
- Mindfulness and stress management interventions
- Timely access and linkage to direct mental health counseling
- Team and community building
- Character, leadership and asset development
- Career-focused preparation and internships
- Parent involvement

Services support achievement of a high school diploma, transferable career skills, college readiness, post-secondary training and enrollment, democratic participation, social and emotional literacy and mental/behavioral health. PEI services are provided by credentialed teachers and an administrator, qualified office staff, marriage family therapist, a Pupil Personal Services credentialed academic counselor. All students also have access to licensed Mental Health Counselors for individual and group counseling.

All students enrolled in Vicente and Briones have access to the variety of PEI intervention services through in-school choices that meet their individual learning goals. Students sometimes switch between Vicente and Briones schools at different points in the school year. Mental health and social emotional activities and services are offered to all students at both schools and are deeply integrated into the Vicente school day. Data is collected for all students who participate in these programs no matter which school they attend, but demographics and statistics are based upon Vicente total enrollment.

This year the PEI program continued providing students experiential opportunities that fostered a strong sense of positive, personal identity, leadership skills and intergenerational connection to the community and place that they live. These opportunities provided students an alternative to a traditional high school education while they continue to make progress toward earning the necessary credits for an accredited high school diploma. Experiences that enriched the curricula are presented below in the following categories:

- Service Learning
- Team-based Projects
- Career-Focused Internships
- Mental Health Focus
- Leadership Development
- Academic Skills Development
- College and Careers
- Teacher Professional Development
- Outreach

**Service Learning:** Students continue to be involved in short-term, one-day service-learning opportunities and team-based, hands-on, service-learning projects that benefit the local community and environment.

**Career-Focused Internships:** The internship program continues to be an increasingly important and valuable tool in our efforts to prepare students for rewarding and successful futures as individuals, citizens and community members. To ensure the success of the internships and the growth of the interns, interns learn, present and are evaluated through a series of tiered experiences designed to prepare them for future college and career opportunities. Our

academic counselor continues to organize the internships in partnership with community professionals. Academic support is provided by the Vicente teaching staff.

**Mental Health Focus:** Students continue to participate in holistic health activities and seminars that support their emotional, social and academic health.

**Leadership Development:** Students continue to participate in leadership programs and mentorships that support students needing increased academic or emotional skill development.

**Academic Skills Development:** Students continue to receive academic instruction and support from teachers/contracted service providers through integrated, project-based curriculum, specific academic skills instruction and individualized, differentiated instruction.

**College and Careers:** Students continue to be exposed to a variety of careers and colleges through guest speakers, introduction to internship seminars and field trips to help them prepare for a successful transition into independent adulthood.

**Teacher Professional Development:** Teachers continue to attend professional development opportunities to increase knowledge about supporting at-risk students.

**Outreach:** Vicente Martinez High School continues to advertise the program and to inform the public about the educational opportunities that the school offers for at-risk students and to dispel misconceptions about the school and the population who attend the school. This year Vicente had a waiting list of students wanting to attend due to the focus that is placed on mental and social emotional wellness.

Vicente/Briones staff and outside service providers have worked cooperatively to continue to create opportunities for all students to develop academically, socially, emotionally, and mentally through participation in hands-on, place-based learning and experiential projects. Currently, all Vicente teachers and staff are actively engaged in supporting and implementing PEI program services.

Of the 155 students who were enrolled at Vicente and Briones over the course of the school year, 97% of the Vicente student body and 54% of Briones students participated in PEI activities.

Overall, students participated in an average of six different services per individual over the course of the year.

**Service Learning:** One of our PEI fundamental values is Service. To that end, staff place great emphasis upon student participation in service-learning opportunities. Vicente and Briones require seniors to volunteer for at least 15 hours their final year and many participate in more than that. Students were involved in short-term, one-day service-learning opportunities and

team-based, hands-on, service-learning projects that benefited the local community and environment. Note: This year, due to the school closure because of COVID-19 some students did not complete all hours and were given a waiver for these hours.

- ***Alameda Food Bank:*** Over the Thanksgiving holiday break, students worked with the Alameda Food Bank to prepare food packages for those in need.
- ***Día de Los Muertos:*** Students enjoyed volunteering at the Día de Los Muertos event in downtown Martinez.
- ***Downtown Martinez Clean-up:*** Students volunteered at the annual Downtown City Clean-up Day to remove graffiti, power wash windows and streets, remove trash, weed, and prune trees and bushes in the downtown blocks of Martinez. Students reported an increased sense of connection to and pride in their community.
- ***MEF Run:*** Students and staff volunteered at the Martinez Education Foundation Run for Education, which is a fundraiser for Martinez Unified School District schools.
- ***Service-learning guest speakers & presentations:*** Service-learning focused guest speakers shared their experience, passion and expertise with students. Students were positively engaged, asking questions and some of whom committed to participating in various aspects of the speakers' groups.

**Career-Focused Internships:** The internship program continued to grow. All students at Vicente and Briones were given the opportunity to apply, interview and participate in these career-focused internships. Internships for the year included:

- ***Culinary Academy:*** Sixteen students participated in a culinary training program hosted and facilitated by Loaves and Fishes. For ten weeks these students went to Loaves and Fishes headquarters in Martinez to learn culinary skills four days a week after school. Training in a state-of-the-art kitchen provided by Loaves and Fishes has inspired some of our students to move forward in this career pathway. Students reported going long hours or entire days without eating in their homes, and since attending the culinary program they've gained skills to make food on their own. The sixteen students who participated and completed the program are now certified food handlers. All students have been hired in the hospitality industry and have been offered enrollment in Diablo Valley College's culinary certificate program, which is an impacted program.
- ***Martinez Early Intervention Preschool Program:*** Five students held internships with MEIPP. For the first semester of the school year, twice per week they were classroom aides in special needs classrooms at our district's pre-school program. Our Vicente - Briones principal is now the principal of MEIPP as well, so this has helped the availability of internships for our students.
- ***Martinez Teen Police Academy:*** Three students participated in an eight-week teen police academy sponsored by Martinez Police Department. They learned about the work

of a police officer and had real life experiences such as working with a police dog, going on a ride along and many other experiences.

- **National Park Service Cultural Landscapes & Phenology Internship:** Students were offered the opportunity to work with the National Park Service at the John Muir National Historic Site.
- **Career and Internship Focused Guest Speakers:** There were a variety of guest speakers throughout the school year.

**Mental Health Focus:** All Vicente and Briones staff seek to infuse a social emotional and mental health focus into every aspect of each student's experience. Students participate in holistic health activities and seminars that support their emotional, social and academic health. This school year we had one full time mental health counselor on campus daily. When once students were resistant to participating in mental health counseling, now it is the norm among our students.

- **COPE Family Support Services:** PEI funds were utilized to contract with COPE Family Support Services. A social work intern was on campus four days per week to provide individual counseling, workshops to augment individual counseling, parent coaching and workshops.
- **Feet First:** Thanks to a generous donor, a group of our students participated in Feet First through the local FightKore gym. This program promotes discipline, self-awareness, empathy, and self-control while building self-confidence and increasing focus.
- **Girls' Groups:** Our mental health counselor continued her Girls Group for each age group: Sophomores, Juniors and Seniors. These groups met weekly to discuss challenges that they were having personally or at school. They also planned some special events to give back to our school community, including a teacher appreciation breakfast and a few spirit days to bring the community together.
- **Guest Speakers:** Speakers from Martinez Unified School District presented on their career path and educational experience. Mental Health focused guest speakers included a School Psychologist and Special Needs high school teacher. Various other fields were represented as well.
- **Lunch & Games Club:** Before school and at lunch our mental health counselor welcomed students to sit with her and either play board games or get together for lunch. This allowed our students to have a group to be a part of and feel a sense of belonging.
- **MFT Counseling Opportunities:** Vicente and Briones students have access to individual and group mental health counseling.
- **NAMI School Workshop:** Three students attended this workshop to learn how to create a NAMI Club on campus.
- **Psychology Club:** Psychology Club met once a week for hour long sessions during the school day with the mental health counselor. Students created group norms which were

reviewed and agreed upon at the beginning of each session. Students were given the opportunity to choose what to learn about along the lines of behavioral health, throughout the year twelve students participated in Psych Club. Topics that were covered in depth included:

- stigma of mental and behavioral health
- substance abuse
- parent child relationships
- coping strategies

Allowing students to have a say in what they were learning and using teaching tools they were familiar with created a platform for safe sharing of personal experiences with the content they were learning about simultaneously. Often students had valuable moments of clarity regarding their past or present experiences. Psychology Club students also took field trips to Sacramento to serve on the Mental Health Advisory Workgroup at the California Department of Education that included meeting both the outgoing and incoming State Superintendent. They were invited to speak at a variety of organizations who were interested in mental health in schools and/or who wanted to learn more. The club continued their weekly podcast where they would interview professionals in the field of psychology. They also produced a public service announcement about suicide prevention for the Directing Change contest.

- **Restorative Practices:** Vicente and Briones continued the work they did over the last two years with Services that Encourage Effective Dialogue and Solutions (SEEDS) for restorative conversations and practices. We began holding restorative circles with students when a wrong needed “righting” and to remedy challenges on campus instead of turning students away through suspension. Teachers and staff also learned strategies for working with students in the classroom in lieu of sending students to the office.
- **Sandy Hook Promise:** Students were trained in the Say Something Program. Students also participated in a variety of Sandy Hook Promise activities that took place throughout the year. The Vicente Psychology Club members were featured in the SAVE Promise Club newsletter.
- **Suicide Prevention:** A representative from the Contra Costa Crisis Center provided a forty-five-minute workshop to all our students about suicide prevention.
- **Welcoming Schools Summit:** Several students attended this summit to learn more about creating an inclusive and accepting school community for LGBTQ students.

**Leadership Development:** Many students volunteered for leadership roles in activities and events that were offered.

- **Get Real Academy:** Our Vicente mental health counselor and academic counselor took sixteen senior girls to the Get Real Academy. The girls attended various workshops on

how to manage their finances, their health, solutions to violence, how to secure a job and insurance.

- **Senior Community Service:** All Vicente and Briones seniors completed a minimum of 15 hours of community service at various events and organizations. Students reported this assignment was pivotal in learning how to work in a professional environment, as well as manage their time. Note: These hours were adjusted when the school closure took place due to COVID-19.
- **Teens Tackle Tobacco:** Ten Vicente students attended this event that took place at UC Berkeley and was hosted by Alameda County Office of Education. Students participated in conversations about tobacco use, presentations about the effects of drug and tobacco on the body and other workshops.

**Academic Development:** Students continued to receive common core centered academic instruction and support from their Vicente and Briones teachers. Strategies used included integrated instruction, project/place-based curriculum, specific skill instruction and individualized and differentiated instruction.

- **Alternative School Setting:** Vicente Martinez High School and Briones School are both alternative school options. Both schools offer individualized, scaffolded, and differentiated instruction, small class sizes, engaging activities, project-based learning, skills instruction, on-line courses, self-pacing, flexible scheduling and chunking of instructions and assignments.
- **Individual Success Plans:** Teachers, the academic counselor and principal facilitated weekly appointments with students. Students created goals for academic skills, attendance, and self-care. Their ultimate goals were chunked into small weekly goals and adjusted which the student reviewed every Friday.
- **Multi-Tier System of Support & Response to Intervention:** Vicente staff met weekly to discuss students of concern and academic progress of students. Staff came up with interventions and supports for each individual student as needed based on their challenges and struggles. The principal developed a shared Google Doc where data was recorded on each individual student including attendance, credit accrual and social emotional wellness. Teachers and staff could view the document for insights about each student as well as provide their own comments about what was working for the student.

**College and Careers:** Students continued to be exposed to a variety of careers and colleges through guest speakers, introduction to internships, seminars, and field trips in order to help them successfully transition to young adulthood.

- **College Visits:** Students had the opportunity to visit and tour Diablo Valley College. Diablo Valley College staff visited our campus as well to facilitate a FAFSA application

workshop. Note: Some of our other college visits were cancelled due to the school closure due to COVID-19.

- **Concurrent College Enrollment:** Ten Vicente and Briones students were concurrently enrolled at Diablo Valley College over the course of the school year. Our academic counselor and internship coordinator supported the students who were enrolled by checking in with them weekly. The objective was to provide support for students for them to be able to complete their courses successfully. Discussions took place among students regarding their successes and challenges.
- **FAFSA Workshop:** All seniors received a workshop on how to complete and file the Free Application for Federal Student Aid (FAFSA). Most of our students qualify for some level of free assistance for college and most are unaware of this. Once they realize that funding is available this removes the financial obstacle for our students moving on to college.
- **Internship Coordination:** The academic counselor and English teacher worked
- one-on-one with students to develop their resumes, job search, interview tips, volunteer hours and career exploration opportunities. Students have the option to explore individual internships or to join group internships. There were dozens of events and activities throughout the year.
- **Resume & Cover Letter Workshop:** In addition to individual appointments with the internship coordinator, students worked in groups to complete their resumes. Support was also given to students to create cover letters for job and internship applications.
- **Senior Portfolios and Exit Interviews:** Each senior was required to complete an extensive career portfolio and prepare a written packet and multi-media presentation that then was subsequently presented at an exit interview in front of staff. The internship coordinator supported students with this process and coordinated the presentations. Note: Due to the school closure due to COVID-19 some students were not able to complete their senior portfolio. Emphasis was placed on completing high school credits in a distance learning environment over completing the portfolio.

**Teacher Professional Development:** Teachers continued to participate and lead professional development opportunities to increase their knowledge about how to better support at-risk students.

- **Brief Intervention: An Approach for Substance Using Adolescents:** Our administrator was trained in this restorative approach and will be implementing it in the coming school year for students who show up to school under the influence of a substance or who are being impacted by substance use.
- **Restorative Practices:** Vicente and Briones continued to hone the skills they gleaned from their work with Services that Encourage Effective Dialogue and Solutions (SEEDS) for restorative conversations and practices. We held restorative circles with students

when a wrong needed “righting” and to remedy challenges on campus instead of turning students away through suspension.

**Outreach:** Vicente and Briones continued its efforts to promote the program and to inform the public about the PEI opportunities.

- **Community Events:** The staff supported the development and student involvement in many community events such as Martinez Run for Education, Earth Day, Dia de Los Muertos, City Clean Up, Kiwanis Club, etc.
- **Community Organizations:** The principal and other staff members were invited to present to various groups in our community, such as Kiwanis and Rotary. The Vicente-Briones Psychology Club presented to the Martinez Unified School District School Board regarding the mental health services at Vicente-Briones and advocating for services in other schools in the district.
- **Mental Wellness Conference:** Two staff members attended the 2020 California Mental Wellness Conference sponsored by the California Department of Education. They made a presentation entitled: Using Data to Strengthen Your School-Based Mental Health Program.
- **Model Continuation School Recognition:** Vicente was again a recipient of the Model Continuation High School Recognition through the California Department of Education and the California Continuation Education Association. The award highlights the mental health focus and other schools have sought guidance from Vicente regarding best practices to support the social emotional growth and development of students.
- **New Family Orientation:** The principal meets one-on-one with each family before enrolling a student to orientate the family as to the school program, including the PEI services offered.
- **Partnerships:** We continued to work in partnership with Martinez Unified School District personnel and other local organizations to connect to various funding streams to support additional internships and service projects. We continued our work with the Contra Costa Crisis Center, Loaves and Fishes, Feet First, Sandy Hook Promise, Contra Costa Food Bank, Roary, Kiwanis, COPE Family Services and the California Department of Education as well as local private families who provide funding for scholarships for our graduating seniors.
- **Western Association of Schools and Colleges:** We remain fully accredited by the Western Association of Schools and Colleges (WASC). This means that all graduates receive a fully accredited high school diploma. In the Spring of 2021, we will have a mid-term visit as a part of our six-year accreditation cycle.

**School Closure:** A relevant event that took place during this reporting period was the school closure due to the COVID-19 pandemic. Our last day of in-person instruction was Friday, March

13. On Monday, March 16 we instituted distance learning. This was a significant change for students, staff, families and our community in general. This shift caused our staff great concern for students since so many of our students rely upon our school as a safe place with caring adults that they depend on. We increased outreach to students during this time. Knowing our students well, we did frequent checks with students who let us know previously that home life was extremely difficult or chaotic. We also increased our support for parents who now had children at home and were responsible for making sure they were completing their work. We continued our regular services for students, including individual and group mental health and academic counseling using virtual means. Our social work intern from COPE Family Services also continued her individual and group work with students and families virtually.

#### **OUTCOMES AND MEASURES OF SUCCESS:**

***Please provide quantitative and qualitative data regarding your services. Numbers served during the fiscal year. Describe any adaptation of services due to COVID-19 that may be relevant. For PEI – Prevention programs, please describe: List of indicators that measured reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning. Please include how often data was collected and analyzed.***

The following are our outcome measures of success from the 2019-20 PEI work plan.

#### Engagement Focus:

- Increase identification of students that have greater risk of developing a potentially severe mental illness and those who need additional supportive/protective factors.
- Increase engagement of identified Vicente/Briones students in services.

#### Short Term Focus:

- Increase timely access and linkage to supportive and mental health services.
- Increase mental health resilience among Vicente/Briones students.

#### Intermediate Focus:

- Increase student ability to overcome social, emotional, and academic challenges by working toward reduction of stigma and discrimination while increasing academic success, vocational awareness, relational vitality and the ability to set and achieve life goals.

#### Outcome Measures of Success

#### Engagement Focus:

- At least 85% of enrolled students will receive a) an orientation on program offerings, b) a self-identified needs assessment targeting risk factors that may include, but are not limited to, poverty, ongoing stress, trauma, racism, social inequity, substance abuse, domestic violence, previous mental illness, prolonged isolation.
  - Met. This goal was met at a rate of 97%. The Adverse Childhood Events (ACE) needs assessments showed that Vicente students have an average score of 6. Those with a score of 4 or more are 460% more likely to experience depression and 1220% more likely to attempt suicide.
- At least 90% of identified students will participate in four services per quarter that supports their individual learning plan.
  - Met. The average number of PEI activities of those who participated was seven.

Short Term Focus:

- At least 90% of students identified as facing risk factors will be referred to supportive services and/or referred to mental health treatment and will participate at least once in referred support service or mental health treatment during the school year.
  - Met.
- At least 70% of students participating in four or more services within at least one full semester will report an increase in their Developmental Asset Profile or other risk management tool.
  - Not Met. We did not administer the Developmental Asset Profile. We will revise this goal and use the California Healthy Kids Survey (CHKS) which is completed annually. The goal will need to be an overall percentage since the CHKS does not disaggregate the individual student data, only schoolwide data is available.

Intermediate Focus:

- At least 70% of students who participate in four or more services and who have had chronic absenteeism will increase their attendance rate by 5% as measured at the end of the school year.
  - Met.
- At least 70% of students who participated in four or more services and who regularly participate in mental health counseling will earn 100% of the expected grade level credits as measured at the end of the school year.
  - Met.

Our schools closed and transitioned to a distance learning model on March 16, 2020. We continued providing PEI services and even increased services during this time. All services were provided via virtual means. Our outreach increased to families and students seeing that we

understood the impact this model was having on our students. We offered times for families and students to meet so that we could provide support.

Indicators that measure reduction of risk factors and/or increase in protective factors that may lead to improved mental, emotional and relational functioning:

- ACE (Adverse Childhood Experiences) Questionnaire
  - Measured: When all students begin at Vicente
- Individual Success and Achievement Plan
  - Measured: Quarterly for all students
- School Attendance
  - Measured: Quarterly, individual, and schoolwide percentages
- Credit Accrual
  - Measured: Quarterly, individual, and schoolwide data
- Disciplinary Data
  - Measured: Semi-annually, schoolwide data
- Multi-Tier System of Support
  - Measured: Weekly by staff on an individual student basis
- Student Work Samples
  - Measured: Quarterly
- California Healthy Kids Survey
  - Measured: Annually
- Brief Mood Survey
  - Measured: At every mental health counseling session

***DEMOGRAPHIC DATA: X Not Applicable (Using County form)***

Please refer to Aggregate Data Reporting Form

***CULTURAL RESPONSIVENESS:***

***How have services been informed and structured to meet the diverse cultural needs of your clients/members/participants? What is being done by your organization to support cultural responsiveness both within the workforce and for those served by your organization?***

Services have been informed and structured to meet the diverse cultural needs of our students and families by listening to the needs of our community members. Also, when there is a common thread of concern or need happening in our community, we take it upon ourselves to find a solution in the way of counseling, education, or support. When a need is identified, we respond by adjusting programming to meet that need.

Vicente Martinez High School staff supports cultural responsiveness by having a willingness to embrace the complexities of diversity and we are open to new ideas, contradictory information

and advice. We also strive to acknowledge gaps in each of our cultural knowledge and understanding. We embrace the practice of equal access for all our students and uphold non-discriminatory practices in service delivery. We are constantly collaborating with our students and families to identify and understand their needs, strengths and culturally based behaviors. We design and implement our program to meet the diverse needs of our families and students. Our staff participates in the Martinez Unified School District's Equity Committee and parents and students are invited to participate as well.

**COLLABORATIVE PRACTICES:**

***Describe how you are working with any other agencies or organizations to better serve clients/members/participants? If this is currently not being done, please describe any effort to build relationships with other community service providers?***

We contracted with COPE Family Services. COPE provided a social work intern to help support our work with our at-risk students and their families. Services provided included: workshops for students focusing on organization, mindfulness, mindset, bettering school attendance, planning and support with addiction (cell phone use, vaping, marijuana). We also started extensive parent support with the help of COPE Family Services. They provided weekly parent workshops as well as individual parent coaching. In March, when our schools closed due to COVID-19 these services continued through a virtual model.

Loaves and Fishes provided three sessions of a ten-week culinary academy for Vicente and Briones students. This was provided free of charge to our students and Loaves and Fishes raised funds so that our students could participate. Students worked in the Loaves and Fishes professional kitchen, learning a variety of culinary techniques and skills useful for the job market. Students earned high school elective credit for their participation and most students were placed in jobs at the end of the internship. During the experience, students prepared and served food to members of the Martinez community in need. After attending the internship, several students became assistants at the next culinary academy. Due to COVID-19, the final culinary academy was cut short by a few weeks. Once we are available to resume the academy the students will be able to finish out their experience. Loaves and Fishes is committed to continuing to offer our students this opportunity for years to come.

**VALUES:**

***Reflections on your work: How does your program reflect MHSA values of wellness, recovery, and resilience; provide access and linkage to mental health care, improve timely access to services for underserved populations, and use strategies that are non-stigmatizing and non-discriminatory?***

Our program reflects MHSA values of wellness, recovery and resilience. Our whole staff embraces these values for our students, and we strive to ensure our students are held

accountable and are supported in these ways for them to thrive. We provide access and linkage to mental health care by providing individual and group services during the school day and referrals to outside mental health services for students needing longer term support and services. The students at Vicente and Briones are some of our most underserved and at-risk students in our school district. Sixty-eight percent of students are on free and reduced lunch which means their families are in a low socio-economic status. The teaching staff, mental health counselor, principal and special education teacher meet regularly to discuss the needs of students and to review and analyze data. We practice the Multi-Tier System of Support or Response to Intervention Model to provide students with the individualized supports that they need to be successful. While there are interventions built into the regular school day such as small class sizes, explicit expectations, and universal responses to students, those who need something more are discussed, and it is determined what they need. As a staff we also utilize restorative practices and restorative conversations among ourselves and our students.

#### **VALUABLE PERSPECTIVES:**

***Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.***

Here is what current students have said about Vicente Martinez High School:

Throughout my academic history I've struggled to thrive or even succeed in a school environment. Every day was a cycle of stress, anxiety, fear, and eventually regret. Even after starting a new year fresh, I eventually fell behind. After transferring to Vicente all those problems dissipated. I was finally meeting and surpassing expectations, becoming more involved with extracurricular activities and volunteer work, and just in general becoming a better version of myself. Classes were no longer just a chore, and I was properly understanding the curriculum.

I believe that the experiences I've had at Vicente and the skills that I've learned here have more than properly prepared me for life post-high school. I am grateful for the opportunities I have been given and, with all this pushing me forward, I am more than eager to continue my journey through life.

I feel like there are many things about this school that has helped me personally. With that being said, I think that being able to have one on one conversations with teachers is a great way to ask questions. Being at another school where not many teachers really care is sad because they don't pay attention to students as much. Here the teachers ask if "we are ok"? or "How is your day"? This is something you don't see in schools with so many students. I really like how we are still being taught our academics by lectures. We as students also have independence to work freely and be flexible with our work. We can work on our Math independently but still feel

comfortable asking our teachers for help. In conclusion this school has helped my mental health in many, many ways which is very important to me. This is why I like this school.

I like Vicente Martinez High School because the small classes have helped my anxiety. The teachers are very welcoming, as well as very helpful. Credits are easy to make up with the teachers' help. Teachers are available to help whenever students need it. If it wasn't for Vicente my grades would still be bad and that goes with my attendance. I love coming to school and talking to the Counselors when I need it. Whenever I leave school, I get very sad and can't wait for the next day to get started.

My proposed graduating date is June 2020. Before I went to Vicente Martinez High School, I never liked school. I stopped going to school and I would just stay at home. When I started Vicente I remember being scared, however, I made friends easily and started to catch up on my credits. When I'm in class I feel like I'm being heard and understood. The support the teachers give makes me feel smart, capable and cared for. The thing I like the most is the flexible schedules. I can leave school at noon each day. This allows me more time to focus on myself and my goals outside of school.

This school has helped me in many ways. They offer internships and help us apply for jobs. I struggle with school a lot and suffer from anxiety, depression, and ADHD. Sometimes these prevent me from working effectively. I would often get overwhelmed and leave class. The teachers here help me to stay motivated and they are very supportive. Not having any homework to bring home each night has helped me majorly. I know at the end of each class that I'm done for the day and I can go home and work on myself and my happiness.

By attending Vicente I've had a much better experience than I have in the past at other schools. The classes are small, and the teachers and counselors are amazing. I get up and go to school now. Whereas before while I was attending Alhambra it seemed to make my life worse. The people and energy here at Vicente are much better. I will also get to graduate early if I stay on track. The staff at Vicente has also help me to get a job by helping with writing my resume and check to see who is hiring. They also offer me many other experiences here that I couldn't get anywhere else.

The things I like about Vicente is I don't have any homework and I can earn my credits faster. This will allow me to start college earlier. Here at Vicente they offer outside activities like kickboxing. I enjoy kickboxing as it is a great way to get rid of stress. The teachers here have helped me with me resume so I could get a job. The teachers are also available to help me whenever I need it. The school also offers Girls Group so we can talk to each other and what is bothering us. This group has helped me a lot and has helped prepare me for the Big World.

Thank you, Lori and staff, for all you do. He is so much happier at your school. His grades are so much better. I always knew it was all the homework at AHS that made him receive low grades.

A ton of stress has been lifted off his shoulders. When he does good, he is happy and so are we. Our home life is less stressful. ~ Parents of J.D.

Using the brief mood evaluation of therapy form, here are a few comments from students...

"Learning how to deal with negative thoughts."

"Thinking about the pros of being shy."

"I got helpful tips to help resolve my problems."

"Fighting my anxiety."

"The fact that I was able to express myself."

"Being able to talk."

"Always a good listener and understands."

"Evaluating my problems."

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# **Innovation Annual Report FY 19/20**

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Contra Costa Behavioral  
Health Services

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Mental Health Services Act

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## Innovation Introduction

Innovation is the component of the Three-Year Program and Expenditure Plan that funds new or different patterns of service that contribute to informing the mental health system of care as to best or promising practices that can be subsequently added or incorporated into the system. Innovative projects for CCBHS are developed by an ongoing Community Program Planning Process that is sponsored by the Consolidated Planning Advisory Workgroup (CPAW) through its Innovation Committee.

New Innovation Regulations went into effect in October 2015. As before, Innovative projects accomplish one or more of the following objectives: a) increase access to underserved groups, b) increase the quality of services, to include better outcomes, c) promote interagency collaboration, or d) increase access to services. While Innovation projects have always been time-limited, the Innovation Regulations have placed a five-year time limit on all projects. During FYs 2015-16 and 16-17, CCBHS staff and stakeholders reviewed and ensured that all existing and emerging Innovation projects complied with the Innovation Regulations.

### *Approved Programs*

The following programs have been approved, implemented, and funds have been allocated for Fiscal Year 2019-20:

1) Center for Recovery and Empowerment (CORE). CCBHS recognizes substance abuse/dependence in adolescence as it negatively affects physical, social, emotional and cognitive development. Early onset of alcohol or other drug use is one of the strongest predictors of later substance dependence. This is a priority because CCBHS does not have a coordinated system of care to provide treatment services to youths with substance use and co-occurring mental health disorders. The CORE Project is an intensive outpatient treatment program offering three levels of care: intensive, transitional, and continuing care to adolescents with co-occurring substance use and mental health disorders. Services are provided by a multi-disciplinary team, and include individual, group, and family therapy, as well as linkage to community services. The Center for Recovery and Empowerment project began implementation in FY 2018-19.

2) Cognitive Behavioral Social Skills Training (CBSST). Many consumers spend years residing at County augmented Board and Care (B&C) facilities with little or no mental health treatment provided, and little or no functional improvement taking place. Often this lack of progress results in multiple admissions to the County's Psychiatric Emergency Services and other, more costly, interventions. Cognitive Behavioral Social Skills Training (CBSST) is an emerging practice with demonstrated positive results for persons with severe and persistent mental illness. The CBSST Project applies this therapeutic practice to the population of individuals that have been placed in augmented Board and Care facilities. The CBSST Project includes a clinical team, consisting of a licensed clinician and peer support worker, to lead Cognitive Behavioral Social Skills Training groups at Board and Care facilities. Adults with

serious mental illness learn and practice skills that enable them to achieve and consolidate recovery-based skills. The Cognitive Behavioral Social Skills Training project began implementation in FY 2018-19.

3) Overcoming Transportation Barriers. Transportation challenges provide a constant barrier to accessing mental health services. A comprehensive study was completed via the County's Community Program Planning Process, and a number of needs and strategies were documented. Findings indicated a need for multiple strategies to be combined in a systemic and comprehensive manner. These strategies include training consumers to independently navigate public transportation, providing flexible resources to assist with transportation costs, educating consumers regarding schedules, costs, and means of various modes of public transportation, and creating a centralized staff response to coordinate efforts and respond to emerging transportation needs. Two Peer Specialists address these needs and provide a means to inform the mental health system of care regarding solutions for improving transportation access to care. The Overcoming Transportation Barriers Project began implementation in FY 2016-17.

4) Partners in Aging. Older adults who are frail, homebound, and suffer from mental health issues experience higher rates of isolation, psychiatric emergency interventions, and institutionalization that could be prevented. When fully implemented, this project will field three field-based peer support workers to engage older adults who have been identified by their IMPACT clinicians, primary care providers, or Psychiatric Emergency Services as individuals who need additional staff care in order to avoid repeated crises, engage in ongoing mental health treatment, increase their skills in the activities of daily living, and engage appropriate resources and social networks. The Partners in Aging Project began implementation in FY 2016-17.

The allocations for these projects are summarized below:

Project	County/Contract	Region Served	Number to be Served Yearly	MHSA Funds Allocated for FY 19-20
Partners in Aging	County Operated	Countywide	45	176,222
Overcoming Transportation Barriers	County Operated	Countywide	200	191,842
Center for Recovery and Empowerment	County Operated	West	80	614,467
Cognitive Behavioral Social Skills Training	County Operated	Countywide	240	168,334
Administrative Support	County	Countywide	Innovation Support	430,184

*Total 565 \$1,581,049*

The above concepts have been recommended by the Innovation Committee for development and submittal to the Mental Health Services Oversight and Accountability (MHSOAC) for approval. Detailed project descriptions were submitted to the MHSOAC for approval in a separate document. These concepts have been discussed by stakeholders in this year's Community Program Planning Process and are consistent with stakeholder identified priorities.

The Mental Health Services Act (MHSA) states that five percent of MHSA funds will be used for Innovation Projects. In order to meet this five percent requirement, additional funds will be set aside for the emerging projects listed above.

### **Innovation (INN) Component Yearly Program Budget Summary for FY 19-20**

Projects Implemented			1,581,049
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*Total \$1,581,049*

## Aggregate Innovation Demographics

In response to the new Innovative Project Regulations issued in July 2015, per California Code of Regulations, Title 9, Section 3580 and 3580.010, Contra Costa County begun collecting new outcome indicators for all innovation projects. Starting in July 2016, projects started capturing demographic data, such as age group, race/ethnicity, primary language and sexual orientation. This data defines outreach to all underserved populations for the current fiscal year. Data not included in this report can be found within the innovation annual reports submitted in this document.

**Total Served FY 19/20 = 128**

**Out of 128 total clients served 6 Demographics Forms were submitted for current fiscal year.**



<b>Table 1. Age Group</b>		
	<b># Served</b>	
Child (0-15)	0	
Transition Age Youth (16-25)	0	
Adult (26-59)	3	
Older Adult (60+)	3	
Decline to State	0	

<b>Table 2. Primary Language</b>		
	<b># Served</b>	
English	6	
Spanish	0	
Other	0	
Decline to State	0	

<b>Table 3. Race</b>		
	<b># Served</b>	
More than one Race	1	
American Indian/Alaska Native	0	
Asian	0	
Black or African American	1	
White or Caucasian	3	
Hispanic or Latino/A	1	
Native Hawaiian or Other Pacific Islander	0	
Other	0	
Decline to State	0	
<b>Table 4. Ethnicity (If Non-Hispanic or Latino/A)</b>		
	<b># Served</b>	
African	0	
Asian Indian/South Asian	0	
Cambodian	0	
Chinese	0	
Eastern European	0	
European	2	
Filipino	0	
Japanese	0	
Korean	0	
Middle Eastern	0	
Vietnamese	0	
More than one Ethnicity	2	
Decline to State	0	
Other	0	

<b>Table 5. Ethnicity (If Hispanic or Latino/a)</b>		
	<b># Served</b>	
Caribbean	0	
Central American	1	
Mexican/Mexican American /Chicano	1	
Puerto Rican	0	
South American	0	
Other	0	

<b>Table 6. Sexual Orientation</b>		
	<b># Served</b>	
Heterosexual or Strait	4	
Gay or Lesbian	1	
Bisexual	0	
Queer	0	
Questioning or Unsure of Sexual Orientation	0	
Another Sexual Orientation	0	
Decline to State	1	

<b>Table 7. Gender Assigned Sex at Birth</b>		
	<b># Served</b>	
Male	2	
Female	4	
Decline to State	0	

<b>Table 8. Current Gender Identity</b>		
	<b># Served</b>	
Man	2	
Woman	4	
Transgender	0	
Genderqueer	0	

Questioning or Unsure of Gender Identity	0	
Another Gender Identity	0	
Decline to State	0	

<b>Table 9. Active Military Status</b>		
	# Served	
Yes	0	
No	6	
Decline to State	0	

<b>Table 10. Veteran Status</b>		
	# Served	
Yes	0	
No	6	
Decline to State	0	

<b>Table 11. Disability Status</b>		
	# Served	
Yes	4	
No	2	
Decline to State	0	

<b>Table 12. Description of Disability Status</b>		
	# Served	
Difficulty Seeing	0	
Difficulty Hearing or Having Speech Understood	0	
Physical/Mobility	1	
Chronic Health Condition	1	
Other	2	

<b>Table 13. Cognitive Disability</b>		
	# Served	
Yes	0	
No	0	

## Program Profiles

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**Program: Center for Recovery and Empowerment (CORE)**

The Center for Recovery and Empowerment (CORE) program is an intensive outpatient treatment program that contains three levels of care: intensive, transitional, and continuing care. Because recovery is not linear, teens are able to move between these levels of care depending on their need. These levels of care begin with an Intensive Care phase of treatment, where teens attend the program four days a week and family members attend twice weekly. An individual treatment plan and attendance contract with the teen is developed, and they are drug tested weekly to encourage honesty and accountability. The 12-Step principles of recovery are introduced through educational presentations and weekly individual and group sessions facilitated by therapists and counselors. Teens are then linked with Young People's 12-Step in the community to begin building connections with a sober peer group that will continue to be a support for ongoing recovery. Phone contact is maintained between CORE staff and client on offsite days.

- a. **Target Population:** Adolescents between the ages of 14-17 with substance use disorders and co-occurring mental health disorders will be the targeted group.
- b. **Total MHSA Funding for FY 2019/20:** \$619,579
- c. **MHSA-funded Staff:** 5.0 Full-time 1.0 Part-time equivalents
- d. **Total Number served:** For FY 19/20: 11 individuals
- e. **Outcomes:**
  - Evaluation of the program included pre- and post-enrollment of T-ASI indicators.
  - Other proposed indicators include utilization rate of involuntary Psychiatric Emergency Services admissions and/or acute psychiatric admissions.
  - Child and Adolescent Level of Care Utilization System (CALOCUS).

**Program: Cognitive Behavioral Social Skills Training in Augmented Board and Care (CBSST)**

The CBSST project will involve having a team designed of one Mental Health Clinical Specialist (MHCS) and one Community Support Worker (CSW) whose primary responsibility will be to lead CBSST groups at Board and Care's (B&C's) that house Contra Costa County (CCC) consumers. CBSST is a combination of Cognitive Behavioral Therapy (CBT) Social Skills Training (SST) and Problem-Solving Therapy (PST). This differs from traditional CBT because it not only includes the general concepts of CBT, which focus on the relationships between thoughts, but works with improving communication skills through SST and basic problem-solving skills through (PST). This intervention will be new to the public mental health system and currently has only been implemented in private hospitals or universities.

- f. **Target Population:** Adults aged 18 years and older who are currently living in Board and Care Homes, receiving services at a County-operated Adult clinic, and are diagnosed with a serious mental illness.
- g. **Total MHSA Funding for FY 2019/20:** \$168,334
- h. **MHSA-funded Staff:** 2.0 Full-time equivalents
- i. **Total Number served:** For FY 19/20: 30
- j. **Outcomes:**
  - Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder (GAD-7) will be given to all group participants.
  - Additional measuring tools would include the Recovery Assessment Scale (RAS) and the Independent Living Skills Survey (ILSS).
  - Clinic and agency case managers are asked to fill out the Level of Care Utilization System (LOCUS).
  - 5150's will be tracked for pre/post data and length of hospital stay.

## **Program: Overcoming Transportation Barriers**

The Overcoming Transportation Barriers (OTB) program is a systemic approach to develop an effective consumer-driven transportation infrastructure that supports the entire behavioral health system of care. The goals of the program are to improve access to mental health services, improve public transit navigation, and improve independent living and self-management skills among consumers. The program targets consumers throughout the behavioral health system of care.

- a. **Target Population:** Consumers of public mental health services and their families; the general public.
- b. **Total MHSA Funding for FY 2019/20:** \$191,842
- c. **MHSA-funded Staff:** 2.0 full-time equivalents
- d. **Total Number served:** For FY 19/20: 55 encounters
- e. **Outcomes:**
  - Increased access to wellness and empowerment knowledge and skills by consumers of mental health services.
  - Decreased stigma and discrimination associated with mental illness.
  - Increased acceptance and inclusion of mental health consumers in all domains of the community.

## **Program: Partners in Aging**

Partners in Aging is an Innovation Project that was implemented on September 1, 2016. Partners in Aging consists of up to two Community Support Workers (CSWs), up to three Student Interns and 8 hours/week of Psychiatric Services to the IMPACT program. The project is designed to increase the ability of the IMPACT program to reach out to underserved older adult populations through outreach at the Miller Wellness Center and Psychiatric Emergency Services. Through Partners in Aging, IMPACT has provided more comprehensive services, including providing linkage to Behavioral Health, Ambulatory Care, and Alcohol and Other Drugs services. Peer support, rehab, and in-home and in-community coaching will allow the skills learned through psychotherapy to be practiced in the community. Partners in Aging also to provided SBIRT (Screening, Brief Intervention, and Referral to Treatment) services and referrals to IMPACT consumers who screen positive for alcohol or drug misuse.

Community Support Workers and Student Interns provide linkage, in-home and community-based peer support, and health/mental health coaching to consumers open to or referred to the IMPACT program. In addition, the CSWs and Student Interns provided outreach to staff at Psychiatric Emergency Services (PES) and Miller Wellness Center (MWC). They were available to meet with consumers at PES and MWC that meet the criteria for IMPACT to provide outreach, and linkage to services. The Student Interns also provide brief AOD screening and referrals, as well as conducting intakes, assessments, and providing individual psychotherapy. Additionally, a Gero-psychiatrist is available 8 hours/week to provide consultation, and in-person evaluations of IMPACT clients.

- a. **Target Population:** The target population for the IMPACT Program is adults age 55 years and older who are insured by Medi-Cal, Medi-Cal and MediCare, or are uninsured. The program focused on treating older adults with moderate to severe late-life depression or anxiety and co-occurring physical health impairments, such as cardio-vascular disease, diabetes, or chronic pain. Partners in Aging also focused on providing outreach and services to older adults who are experiencing both mental health symptoms and alcohol or drug misuse.
- b. **Total MHSA Funding for FY 2019/20:** \$176,222
- c. **MHSA-funded Staff:** 2.0 full-time equivalents
- d. **Total Number served:** For FY 19/20: 32
- e. **Outcomes:**
  - Reductions in Level of Care Utilization System (LOCUS) scores.
  - Reductions in Psychiatric Emergency Service visits and hospitalizations.
  - Decreased Patient Health Questionnaire (PHQ-9) scores.

## Innovation Project Annual and Final Reports

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**INNOVATIVE PROJECT ANNUAL REPORTING FORM**

FISCAL YEAR: 2019/20

Agency/Project Name: **Center for Recovery and Empowerment (CORE)**

**INNOVATIVE PROJECT TYPE:**

Please check all that apply:       PEI – services for individuals at risk of SMI/SED  CSS – services for individuals with SMI/SED

**SERVICES PROVIDED:**

*Please describe the services you provided in the past reporting period.*

The Center for Recovery and Empowerment (CORE) Project is an intensive outpatient treatment program located in West Contra Costa County for adolescents with co-occurring substance use (SUD) and mental health disorders. CORE follows the disease model of addiction describing addiction as a disease associated with biological and neurological sources of origin. CORE provides a multitude of full-day services to youth that include individual therapy, family therapy, group therapy, nursing (including medication management and toxicology screening), social skills training, high school education support, adventure therapy, connection to community recovery services, transportation, and healthy meal and nutrition education.

Referrals to the CORE program are made by psychiatrists, social workers, school counselors and nurses, probation, Kaiser, John Muir Behavioral Health Center, community-based organizations or self-referrals. Referrals are initially screened over the phone by the Program Supervisor or other dedicated staff and then the client and/or family member are asked to come to the center for an assessment. To be accepted into the project, clients need to meet an appropriate mental health diagnosis, SUD level of need and willingness/ability of client and family (if appropriate) to participate in program. Once admitted, program enrollment and on-site treatment begin.

Day program schedule is as follows:

- 1) Transportation provided by van pick-up
- 2) Check-in with teacher for Golden Gate School Program
- 3) Complete Daily Goals Worksheet
- 4) School
- 5) Lunch and social skills integration

- 6) Individual therapy – clients are pulled from milieu twice a week, or as needed throughout the day.
- 7) Group therapy: Moral Reconciliation Therapy – 1x/week, Recovery Assignments are done in group 5x/week
- 8) Toxicology screening and individual consultation with nurse to discuss results 1x/week
- 9) Adventure Therapy – ecotherapy, mindfulness, and recreational activities for youth after lunch
- 10) Family therapy – Family therapy is conducted 1x/week per client in the late afternoon or evening
- 11) Community recovery meetings – Clients are transported to and from Young People in Alcoholics Anonymous (YPAA) meetings 2x/week. They attend with Recovery Coach and work with an individual sponsor from YPAA
- 12) Sober social events – Clients attend social sober events, weekly, in order to develop and establish a sober peer group. These events are sponsored by YPAA and linkage is provided by Recovery Coach. They include events such as sober dances, parties, bowling, dinners, camping, etc.

### **Service Impact from Shelter-in-Place Restrictions (COVID-19)**

Services offered through the CORE program were significantly impacted by COVID-19. In-person programming was suspended when the Shelter-In-Place went into effect on March 16, 2020. Clients were provided with telephonic support and resources while the center was temporarily closed. In June 2020, half-day in-person services commenced, as permitted by safety protocols, and the program was able to resume a modified curriculum. In-person services primarily included the adventure therapy component, including bike rides and other outdoor activities. Education support through Golden Gate Schools and YPAA meetings were offered daily via Zoom. Individual therapy was provided via telehealth. Some key services such as sober social events were difficult to provide during COVID, due to public safety precautions. In addition, the program experienced high staff turn-over.

### **LESSONS LEARNED:**

*Please describe any lessons learned (positive and negative) throughout the implementation of this project. If applicable, how have you used these lessons to change the model?*

Many obstacles were faced for this project during the 19-20 fiscal year, particularly around staffing. A new Mental Health Clinical Specialist started on July 5, 2019 which brought the program to a nearly full staffing pattern as outlined in the concept. Unfortunately, in January and February of 2020 both the original Mental Health Clinical Specialist and the Psychiatric Nurse Practitioner left the program, making it very challenging to continue providing the full scope of services. Problems with staffing continued to develop and it became difficult to fill positions, particularly during COVID. At the time this report was written, all of the original staff left the program. A workgroup has been established which includes leadership from Behavioral Health Services and Substance Use Disorder departments, to create a strategy and plan around filling positions and restructuring the project. Future goals for CORE include providing more direct clinical and administrative support and oversight, as the program is in a stand-alone location. Workflows and policies are being reviewed to allow for greater enrollment and program completion/success. In addition, feedback has been solicited from former

families and participants, in an effort to improve parent & family support and engagement.

Another obstacle that developed due to COVID was the inability to deliver core elements of the program that were not conducive to telehealth or virtual platforms. Many work-arounds had to be implemented to keep clients present and engaged. For example, there was low attendance when YPAA meetings initially went to a virtual platform and students were asked to participate from home. The Community Support Worker began picking kids up and offering YPAA Meetings on the large screen television in main room at the CORE site. Another work around involved the food program, which occurred on Wednesdays prior to COVID. An agency called White Pony delivered food to the CORE site for youth and their families. When the center closed due to COVID, staff began delivering food to families at home. This helped keep families engaged in the program and provided some support to those struggling financially due to the pandemic.

**PROJECT CHANGES:**  No changes

*Please explain whether any changes were made to the Innovative Project during the reporting period and the reasons for the changes, if applicable.*

Many staffing changes have occurred over the project's term, particularly during the reported fiscal year. High staff turnover created challenges in providing services to fidelity of the model. This was particularly true for substance use related programming, and such services sometimes had to be referred out to other agencies.

Regarding groups, staff learned that certain formats worked better than others. Mindfulness was introduced into groups, following the guidelines of the UCLA Mindfulness Project. The group therapist was trained in the project and began providing many new techniques including meditation and different creative measures to use as coping tools. Groups also resumed outside on the patio with families and caregivers. Moving forward, staff want to incorporate further parent-to-parent support groups that include a psycho-education feature.

Originally, the project outline consisted of three levels, in which the clients would be in each level for 12-weeks. As the project progressed, it was determined that this duration should be shortened to eight weeks. This would allow for quicker movement into the next phase and also allow for the mentorship portion of the project to be rolled out sooner to increase flow between levels.

At the time this report was written, further minor modifications to the program were being considered. A workgroup was established to review existing policies and procedures. Changes will be reflected in the next (FY20-21) annual report. Stakeholder involvement and feedback related to the project is additionally garnered through the Consolidated Planning and Advisory Workgroup (CPAW) meeting and Innovation CPAW Sub-Committee meeting.

**OUTCOMES AND PROGRAM EVALUATION:**

*Please provide quantitative and qualitative data regarding your services.*

- *What are the learning goals of the project?*

- *Which elements of the project are contributing to outcomes?*
- *List of indicators measured; including results and an explanation as to how often data was collected and analyzed.*

***The learning goals of the project are to see if treating adolescents with substance related and co-occurring mental health conditions in an ASAM compliant intensive outpatient program will 1) result in abstinence or reduced use of substance; 2) reduce symptoms of mental illness; 3) reduce/prevent need for/or return to inpatient mental health/substance dependence treatment; 4) increase academic success.***

**Assessment Tool.** This project used the Teen Addiction Severity Index (T-ASI) to measure many of its outcome goals upon enrollment and at discharge. The T-ASI can be defined as a semi-structured interview tool that was developed to fill the need for a reliable, valid, and standardized instrument for a periodic evaluation of adolescent substance abuse. The T-ASI uses a multidimensional approach to assessment and is an age-appropriate modification of the Addiction Severity Index. It yields 70 ratings in seven domains: chemical (substance) use, school status, employment/support status, family relations, peer/social relationships, legal status, and psychiatric status.<sup>1</sup>

**Demographics.** During the 19-20 FY, the program served a total of 11 youth (four males and seven females). They ranged in age from 14 – 17 years old, with an average age of 15.4 years. Nine of the youth enrolled (82%) identified as being of LatinX/Hispanic decent and 2 (18%) identified as African American. Approximately 90% were from the West County (Richmond) region of the county and 10% from Central County (Martinez). Duration of time enrolled in the program ranged from approximately one week to one year, with an average enrollment of 3.5 months.

### **Learning Goal Outcomes:**

#### **Learning Goal #1: Abstinence or reduced substance use**

All clients enrolled in the program during the reporting period who completed both a pre- and post- T-ASI assessment (n=7) reported a reduction in substance use. All were able to attain stretches of sobriety that were longer than reported in the year prior to enrollment in the program. Program leadership is considering moving to a harm reduction model, to allow clients to stay enrolled in the program (if they are motivated to so), even if they have a relapse or if a family member is using substances.

#### **Learning Goal #2: Reduce symptoms of mental illness**

Of clients enrolled in the program during the reporting period who completed both a pre- and post- T-ASI assessment (n=7), 57% reported a reduction in number of days during the month that they experienced symptoms of a mental illness. The remaining 42% reported no change in mental health symptoms. None reported an increase in symptoms.

#### **Learning Goal #3: Reduce the need for in-patient mental health/substance abuse treatment**

Of the clients enrolled in the program during the reporting period (n=11), three (or 27%) had contact with the Mobile Crisis Response Team or were evaluated at Psychiatric Emergency Services (PES)

during enrollment or within one year post enrollment. One was connected to Juvenile Probation within the year following discharge from CORE.

**Learning Goal #4: Increase academic success**

Of clients enrolled in the program during the reporting period who completed both a pre- and post- T-ASI assessment (n=7), six (86%) reported an improvement in school attendance and/or grades. One reported no change.

**Other observations regarding data.** Peer & Family Relationships are another key data point measured in the T-ASI. The majority of students reported an improvement in peer and family relationships, marked by less conflict with parents and friends. Youth who were enrolled for longer periods of time also reported choosing friends who engage in less substance use.

**LINKAGE AND FOLLOW-UP:**  Not applicable

*Please explain how participants are linked to mental health and/or support services, including, how the INN program follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.*

CORE provides an extensive intake process upon enrollment. If the program cannot meet the needs of the client, they may be referred out to various other services. Besides residential SUD, CORE refers youth and parents/providers on behalf of youth to the following:

- WCCAS (West County Child & Adolescent Services) mental health
- WCCAS outpatient SUD
- PES
- Seneca Mobile Response Team
- Kaiser CDRC
- John Muir Behavioral Health
- EBYPAA
- Young People Narcotics Anonymous
- REACH
- Hanna Boys Center (residential but not primarily SUD)
- Rebekah House (residential but not primarily SUD)
- RYSE Center
- MISSEY (for CSEC youth)
- Golden Gate Schools/County Office of Education - Alternative Education
- Contra Costa County Child & Family Services (CFS)
- First Hope
- James Morehouse Project
- Behavioral Health Access Line
- West County Health Center
- Richmond Works Program
- West County High Schools Health Centers

- Monument Crisis Center
- Familias Unidas
- Latina Center

If a client is enrolled in the program and needs additional services specifically in phase two, they may be referred to activities such as sports, art, dance, summer jobs and other similar programs. There is no lapse in referral time therefore this is not a measured outcome.

### **VALUABLE PERSPECTIVES:**

*Please include the stories and diverse perspectives of project participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.*

### **Case Vignette 1:**

**Al (pseudonym) is a 17-year-old Latinx male. His preferred pronouns are he/him/his.**

Al lives with his mother and a younger sibling. He has minimal contact with his biological father. Al had been expelled for using substances at school. He had several physical altercations with peers at school. He was failing all of his classes. Per parent's report, client was leaving home without permission. Al and his mother would argue frequently about his grades and cannabis use. His mother found cannabis vape pens in his room. Parent contacted the program in the fall. Al agreed to participate and attend the intensive outpatient program at CORE. Al's attendance was inconsistent in the beginning. CORE staff met with Al and his mother to problem-solve regarding his attendance. Al and his mother agreed they would make a commitment to participate. Al would attend the program daily. Parent would wait with Al for the CORE van to arrive at his home. Al took an interest in his classes with the help of a tutor from the Golden Gate Day school. He started earning his high school credits and improved his grades. He participated in daily bike rides, walks and hikes with the adventure therapist. Al shared he enjoys riding bikes with the group. He participated in a weekly mindfulness group. He participated in a bi-weekly peer recovery group. He participated in individual therapy as well as family sessions with his parent. He met with the peer recovery coach daily. He reduced his use of cannabis and eventually stopped using cannabis daily. Per parent report, the client no longer leaves home without permission, and they argue less. Al has a goal to participate in a youth employment program this summer. Al wants to apply for Job Corps next fall.

### **Case Vignette 2:**

**Andrea (pseudonym) is a 17-year-old Latinx female. Her preferred pronouns are her/she/hers.**

Andrea lives with her parents. She is an only child. Andrea was skipping school, stealing money from her parents, and failing her classes. She was rude and disrespectful to teachers and school staff. She would leave her house when her family was sleeping. Andrea would go out with peers to parties. She would use alcohol, methamphetamine and cannabis. Andrea's parents were extremely worried about her safety and substance use. Andrea had conflicts with her parents daily. She would yell, curse, and leave home. Her parents called CORE and scheduled an intake. Andrea denied having issues with substances. She blamed her parents for making such a big deal. Andrea had challenges when she

started the CORE program. She would refuse to participate in the groups. She would yell at staff. It took her a month to adjust to the routine and schedule of CORE. She met with the substance use counselor and the peer recovery coach daily. She participated in socialization groups, mindfulness groups and recovery groups daily. She slowly started to share in the recovery groups and learned about the 12 steps of recovery. Andrea became interested in school. Andrea would turn in her assignments and took pride in her work. The teacher shared that Andrea was a quick learner and a good student. Andrea responded well to praise from the teacher and staff at CORE. Andrea participated in individual and family sessions weekly. Andrea and her parent's relationship improved over time. She set a goal for herself of getting in good physical shape. She participated in daily hikes and bike rides with the adventure therapist. She enjoyed the once-a-week visits to the gym. Andrea became a leader among her peers. She started talking about her recovery and not wanting to use substances. She showed off the 30-day chip she earned at a recovery meeting. Andrea has a year and six months of being sober. Andrea's grades are A's, and she is on track to graduate from high school. She is interested in going to college. Andrea participated in the summer Youth Works program. She received positive feedback from the work site. Andrea was invited to return next summer.

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<sup>1</sup>. Kaminer, Y., Wagner, E., Plumer, B. & Seifer, R. (1993). Validation of the teen addiction severity index (T-ASI): Preliminary findings. *American Journal on Addictions*, 2(3), 250-254.

***INNOVATIVE PROJECT ANNUAL REPORTING FORM***

FISCAL YEAR: 19/20

**Agency/Program Name:** Contra Costa Behavioral Health/Cognitive Behavioral Social Skills Training in Augmented Board and Cares

**INNOVATIVE PROJECT TYPE:**

Please check all that apply:     PEI – services for individuals at risk of SMI/SED     CSS – services for individuals with SMI/SED

**SERVICES PROVIDED:**

*Please describe the services you provided in the past reporting period.*

Cognitive Behavioral Social Skills Training (CBSST) in Augmented Board and Cares can be described as a new emerging practice that consists of a combination of Cognitive Behavioral Therapy (CBT), Social Skills Training (SST) and Problem Solving Therapy (PST) in the County’s Board and Care Homes (B&C’s). The project involves a team designed of one Mental Health Clinical Specialist (MHCS) and one Community Support Worker (CSW) whose primary responsibility is to lead CBSST groups at B&C’s that house Contra Costa County (CCC) consumers.

At the beginning of this fiscal year, the project was underway and serving six B&C’s located throughout the county. This included both group and individual rehabilitation services. The individual services were provided by either the MHCS or the CSW. The team completed the first module during February and were beginning to start the second module in March when the risk of COVID-19 impacted further care. Through June there was still a mix of supportive contact with individual rehabilitation. Additionally, the team continued to work with clients for crisis informed care.

The CBSST project is designed to enhance the quality of life for those residing in B&C’s by incorporating meaningful activity and skills into their daily routines and increasing overall functional improvement. As of this fiscal year, the project has provided the following services:

- Served six small (6-bed) ARF’s (adult residential facilities)
- Served 1 large (70-bed) RCFE (residential center for the elderly)
- Provided CBSST individual and group rehabilitation services to 30 individuals
- Support to Board and Care operators (psychoeducation, partnering on goals utilizing CBSST framework and skills, consultation re: concerns/consumer needs)
- Collateral with Board and Care Operators

From April - June the team received training around how to talk with the B&C operators about best practices for infection control due to the risk of COVID-19. This included site visits and working with

B&C's to ensure survey completion. The surveys included information about Personal Protective Equipment (PPE) needs. The team delivered PPE to the sites to ensure safety and helped manage fears around new Shelter-in-Place guidelines by providing psycho-education and support.

**LESSONS LEARNED:**

*Please describe any lessons learned (positive and negative) throughout the implementation of this project. If applicable, how have you used these lessons to change the model?*

The process of working with working with B&C operators (from engagement to completion of all three modules) expanded from ten months to one year. This was due to the engagement period taking longer than initially anticipated, as well as the length of time it took to work through each module. The goal setting process took approximately three weeks and then module content was repeated to consolidate learning, due to a significant number of clients presenting with cognitive impairment and/or symptoms interfering with learning. Going at a slower pace improved clients' ability to absorb and retain information, as well as strengthening the therapeutic relationship.

During the Shelter-in-Place restrictions, there was more opportunity to work with individuals one on one. Staff discovered some people did better with this type of engagement. It signified to the team that this service should be investigated further because it provided more time for individual processing of the modules. It also allowed those who were reluctant or less able to participate in group due to symptoms of their mental illness such as paranoia, thought blocking, or active auditory hallucinations, to engage more successfully with providers and better learn content. Individual rehabilitation with people through telehealth (virtual) platform also worked very well. In some cases, it was a preference for clients. Some challenges did arise around using Zoom, such as access to electronic devices or wi-fi, a learning curve around how to navigate the platform, and low-quality audio or video connection.

The team held some in-person sessions in backyards or other outdoor settings. Some clients had challenges with social distancing and mask requirements, and for some, in-person meetings increased their anxiety. Excessive heat also led to cancelling outdoor sessions. The team decided that overall Zoom seem to work better for most encounters.

**PROJECT CHANGES:**  No changes

*Please explain whether any changes were made to the Innovative Project during the reporting period and the reasons for the changes, if applicable.*

The project has experienced a decrease in the number of B&C's served, due to only one client being involved in the project at a particular site. When that client transitioned out of the project to work directly with his case manager, there was no longer a need to include that B&C.

When Shelter-in-Place restrictions began, the team figured out how to successfully work with clients to use technology and operate Zoom. They shared these resources with the mental health clinics which helped to continue additional services within the system.

The closing of one B&C required the team to transition clients to other living situations. These clients were stepped down and the team used the Problem-Solving Skills module to help with this transition. Clients were transitioned to alternative housing such as MHSA Housing, Room and Board, other B&C's and one client moved in with her family.

When clients got to module three, the team started to incorporate outings into the curriculum. Two trips included picnics that were located at local regional parks. As a group, they would plan the event including, menu, transportation, and any activities they wanted to do while there. This involved coordinating with staff and using skills they learned in the modules. Two outings were planned to visit different museums right before COVID, but plans had to be postponed due to the Shelter-in-Place.

### **OUTCOMES AND PROJECT EVALUATION:**

*Please provide quantitative and qualitative data regarding your services.*

- *What are the learning goals of the project?*
- *Which elements of the project are contributing to outcomes?*
- *List of indicators measured; including results and an explanation as to how often data was collected and analyzed.*

### **The goals of the project are to learn the following:**

- 1) Will the modality of CBSST have an effect on the consumer's mental stability and growth?
- 2) Will the intervention lead to a higher overall functionality and quality of life?
- 3) Will the intervention reduce 5150 involuntary holds?
- 4) Will a client change level of service within placement?
- 5) Will client maintain placement?

In the first stages of this project we explored the use of four surveys to measure impact on participants' symptoms, self-perception and functioning. These include:

- **PHQ-9 (Patient Health Questionnaire)** assessment monitoring presence/severity of depressive symptoms (self-report, self-administer) – Pre and post each module
- **GAD-7 (Generalized Anxiety Disorder)** assessment monitoring presence/severity of anxiety symptoms (self-report, self-administer) pre and post each module
- **RAS (Recovery Assessment Scale)** assessment measuring aspects of recovery with focus on hope and self-determination (self-report) Pre and post each module
- **ILSS (Independent Living Skills Survey)** assessment obtaining individual's view of his/her own community adjustment (self-report structured interview) Pre and post for all three modules. Only administered once all three modules were completed.

We adopted the PHQ-9 and GAD-7 to align with tools utilized in the regional specialty mental health clinics to track symptoms for all clients. Use of the ILSS aligns with the clinics’ use of this tool to assess functional impairment primarily for individuals with schizophrenia-related diagnoses. Using the RAS aligns with our goal of increasing recovery orientation for project participants. In line with the recovery model, this assessment looks beyond “what’s wrong” to participants’ view of their own capabilities, hopes and sense of self. We met with an Evidence Based Practice Workgroup and CBSST lead staff in the clinics and discussed adding an addendum to the ILSS. We came up with additional questions for specific components such as leisure and community, that seemed more relevant to consumers’ actual experiences.

We attempted to have participants complete all assessments prior to beginning the program, as well as after completing the program (all 3 modules). We also implemented the PHQ-9/GAD-7/RAS after completion of the first and second modules.

Strengths of the tools used: Surveys create an opportunity and platform that has a consistent structure, for more in-depth conversation about participants’ well-being. The PHQ-9/GAD-7 in particular seemed most helpful as a way to flag any uptick in symptoms. The RAS provides insight into cognitions/beliefs that may be “unhelpful thoughts” that CBSST participants can work on challenging, while also insight into participants’ own view of strengths they can tap into. And the ILSS identifies issues to tackle and because it is an interview format, can allow for space to discuss where participants hope to make changes and build independent skills. These discussions can relate directly to the goal setting work of CBSST.

Lessons learned: Surveys, especially PHQ-9/GAD-7, may feel intrusive and are better completed when not linked to group sessions. The responses are less likely to be genuine until trust is gained. Completing with an individual one on one and reviewing each question out loud supports comprehension of the questions, increases completion rate and hopefully validity of responses, and also fosters the aforementioned conversations. For the ILSS, the questions provided are at times outdated and do not capture as wide a range of independent living skills as we observe in participants (e.g., education-related activities).

**Table 1: Percent Change in Average PHQ 9 Scores, July 1, 2019 through June 30, 2020**

Fiscal Year	Average Score of First Survey of this Fiscal Year	Range	Average Score of Second Survey of this Fiscal Year	Range	Average Score of Third Survey of this Fiscal Year	Range	Percentage of Change
2019/2020 (n=19)	6	(0 to 15)	2.8	(0 to 8)	2.5	(0 to 4)	-58.3%
Board and Care Homes that were not calculated in the totals were missing surveys due to modules not completed.							

PHQ 9 Score Key: 1-4 Minimal Depression, 5-9 Mild Depression, 10-14 Moderate Depression, 15-19 Moderately Severe Depression, 20-27 Severe Depression

Data samples included in this reporting period were minimal due to Shelter-in-Place restrictions from March to end of the fiscal year. All Board and Care homes were included in the sample, but Menona only had one client during the reporting period. Client was only able to complete one round of surveys. Additionally, Family Courtyard did not complete the PHQ-9 during reporting period.

**Table 2: Percent Change in Average GAD-7 Scores, July 1, 2019 through June 30, 2020**

Fiscal Year	Average Score of First Survey of this Fiscal Year	Range	Average Score of Last Survey of this Fiscal Year	Range	Percentage of Change
2019/2020 (n=26)	5.7	(0 to 17)	4.5	(0 to 17)	-21.0%
Board and Care Homes that were not calculated in the totals were missing surveys due to modules not completed.					
GAD-& Score Key: 0-4 Minimal Anxiety, 5-9 Mild Anxiety, 10-14 Moderate Anxiety, 15-21 Severe Anxiety					

**LINKAGE AND FOLLOW-UP:**  Not applicable

*Please explain how participants are linked to mental health and/or support services, including, how the INN Project follows up with the referral to support successful engagement in services. Additionally, please include the average length of time between referral and entry into treatment and the methodology used.*

All clients that participate in the CBSST group sessions are clients that are connected to the County behavioral health clinics. Many have psychiatrists and/or case managers and have regularly scheduled visits. If a client is not participating in services and needs to be linked the CBSST provider will proceed with linking the client with necessary services toward improving treatment outcomes. This can include the CBSST provider reaching out to clients' assigned clinic and collaborating to engage client with different types of service connections. The CBSST team also advocates with clinics for providing the appropriate level of service (i.e. case management services instead of money management services), as well as the optimal level of housing.

**VALUABLE PERSPECTIVES:**

*Please include the stories and diverse perspectives of Project participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.*

**Perspectives: Board and Care Operator**

**Feedback on working with program, provided by an owner/operator (Evangeline C.)**

I just want to tell you that Johnson Care Home is so fortunate to have you continue to provide us with your program. Working with the CBSST team has made an impact on the residents. It helps them to stay motivated with their future goals. They feel supported. My experience of working with Contra Costa Behavioral Health has been different since working with the CBSST team because we are receiving additional support for our residents. I observed that having CBSST group has helped residents to be connected and get a chance to engage and be able to express themselves in ways because of the group. The residents are comfortable with the CBSST team and if they need to speak to anyone about an issue or need someone to talk to, the CBSST team is the first one they want to call. CBSST team is doing a wonderful job!! We really appreciate having the CBSST team to continue to provide us help for our Board and Care. The team is always responsive.

### **Perspectives: Janet, CBSST group participant**

Janet began participating in a CBSST group at her 6-bed Board and Care in May 2019. As we got started, Janet let us know that she “hadn’t enjoyed” CBSST when doing group prior at a different location. She demonstrated some suspiciousness/paranoia regarding engagement with people she didn’t know including providers. It’s likely that group being held at her home made it easier to give CBSST a second chance.

In December 2019, the operator determined to close the home and retire. Residents had six weeks to find alternative housing. We utilized the “Problem Solving Skills” module of CBSST to help group participants through this transition. Janet initially discussed going back to her previous placement, an enhanced Board and Care, due to fear that she would not have a place to live. Through exploring options in group, however, she became open to the idea of applying for a spot in MHSA-funded shared housing. Historically it has been difficult for consumers living in licensed Board and Cares to access these limited spots, in part because it can be hard to assess whether an applicant is ready when they have not been living independently and demonstrating the necessary skills. We knew Janet well enough due to the intensive nature of our work with her, to advocate with the clinic to consider this level of care. Additionally, we could support her referral directly, rather than wait for a case manager to be assigned in order to refer and possibly lose the bed. Ultimately Janet was approved for the shared housing, avoiding a return to a level of care that she no longer needs.

Janet moved to her new residence, a house she shares with three other women in February 2020, right before the COVID-19 pandemic and Shelter-in-Place began. She has done amazingly well adjusting to her new home, especially given the context of the pandemic. The CBSST team shifted to providing Janet support as an “alumna” of CBSST, through a combination of individual check-ins and joint calls with another alumna/former housemate, who moved to a room and board. We thus could help Janet consolidate what she learned in our program and apply this to her new situation.

As restrictions have recently eased and everyone is vaccinated, Janet was able to invite the CBSST team to her home in April 2021 for an in-person visit. Her pride in a well-maintained living space, the lovely garden she cares for, the meals she shops for and cooks, was wonderful to see.

**Q&A with Janet regarding our program:**

*What was helpful about group on site at Concord Hill Home?* “Catch up on my goals and my wishes, a place to open up and get to know each other, safely.”

*How was it different from going to a group at the clinic or RI?* “More personable and more enjoyable, and I like the subjects. They’re good for my health.”

*What has been helpful about working with our team, including through the move to a new place?* “Keeping up the support I needed, and I was able to re-locate safely. I was made sure to be comfortable.”

*What did or do you like about the curriculum for group? What did you not like?* “Every day that we (providers) came and the goals and the three C’s.” *(There’s nothing she didn’t like about group)*

*What changes would you recommend?* “The only changes I would recommend is for you to come more often to have more visits”

**Case vignette: Richard**

Richard is a 74-year-old male living in Family Courtyard, Residential Center for the Elderly, a 70-bed facility. He participated in CBSST group from the outset in January 2019 through March 2020 when this group ceased due to Covid-19 restrictions. Richard initially had a difficult time identifying personal meaningful goals. He focused instead of his physical health issues that he wanted to manage but did not feel would ever go away. Richard had symptoms of anxiety and depression and a demonstrated sense of hopelessness about his life holding possibility of positive change.

Richard did share, upon assessment and later during group, that he loved music, and had been a performing singer. He talked about his experiences as a young adult doing auditions in Hollywood, as well as performing more recently as a street performer near the UC Berkeley campus. These were fond memories for Richard and clearly a core part of his identity. However, he was pessimistic about having any way to perform again, and dismissive of setting this as a goal.

Richard began to demonstrate confidence in the group as a leader, in terms of understanding the concepts and practicing the skills taught. This shift was particularly noticeable as group focused on the Social Skills module. He also became a leader and a voice amongst the residents who had multiple complaints about feeling unheard by staff in the facility. Richard practiced voicing these concerns in group, in preparation for resident council meetings where he shared complaints with staff.

This confidence developed during the Social Skills module served as a foundation for Richard to turn toward his music as a goal. The (third and final) Problem Solving module saw Richard working on ways to perform again. His girlfriend, another group member, became his “manager” and together they tackled questions of what venues he could approach to perform, how to advertise, even developing a stage name. Richard had always frequented the local library for reading, but often complained about



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the noise level there and wondering if it was worth going. His goal of being a performer rejuvenated his relationship with the library—he printed fliers there, and successfully set up a performance to be held onsite there.

“Rick Starr” was scheduled to perform at the library on March 17<sup>th</sup>, 2020. This unfortunately was the day before Shelter-in-Place went into effect, and the libraries had already shut down all services. Still, Richard remained hopeful in the weeks to follow that he may have another chance in the future.

**INNOVATIVE PROJECT ANNUAL REPORTING FORM**

FISCAL YEAR: 2019/20

**Agency/Project Name:** Contra Costa Behavioral Health/Overcoming Transportation Barriers

**INNOVATIVE PROJECT TYPE:**

*Please check **all** that apply:*       PEI – services for individuals at risk of SMI/SED     CSS – services for individuals with SMI/SED

**SERVICES PROVIDED:**

*Please describe the services you provided in the past reporting period.*

The Overcoming Transportation Barriers (OTB) innovation project began implementation in September 2016 and started providing services by April 2017. This project was established to help clients build self-sufficiency and apply independent travel skills while increasing access to mental health services. As of June 30, 2020, 40 clients accessed help from the OTB team for this fiscal year. A total of 15 inquiries were also made by staff in various programs.

Client services received from the OTB team range from peer support, mapping bus routes, links to resources, referrals, and fare information. Application assistance is provided for discount/disabled transit passes, Regional Transit Connection (RTC), Senior Youth Cards and Paratransit. Clients typically access these services by calling the dedicated phone line for transportation assistance. A Commute Navigation Specialist (CNS) assesses their needs and provides one-on-one support on how to access services and get to appointments.

**LESSONS LEARNED:**

*Please describe any lessons learned (positive and negative) throughout the implementation of this project. If applicable, how have you used these lessons to change the model?*

During Shelter-in-Place, OTB moved the Community Sub-Committee meetings to a virtual platform via Zoom. The program continued bi-weekly planning meetings and facilitated four of six Community Sub-Committee meetings. At these meetings, it was noted that new participants were gained, while some ongoing participants were lost for various reasons. Sub-Committee members were asked their preferences about continuing meetings via Zoom after Shelter-in-Place. Members requested to have the option of attending either in person or virtually, to accommodate instances in which a participant felt unwell yet wanted to still receive support and stay informed while not having to leave their home.

In the early summer, one of the two Commute Navigation Specialists left her position due to a promotion. Currently the program is operating with 1 FTE and has requested freeze approval to backfill the other position. The OTB workgroup continues to monitor concerns shared by clients while accessing public transit and other transportation resources, as well as staffing a transportation hotline for clients and families/caregivers to seek support.

**PROJECT CHANGES:** No changes

*Please explain whether any changes were made to the Innovative Project during the reporting period and the reasons for the changes, if applicable.*

In January 2020, OTB rolled out a Flex Fund initiative at the Central County Adult Mental Health Clinic to help support clients in attending their mental health appointments. Through a collaboration with a community-based organization, clients receive financial support to cover transportation costs when there is no alternative funding source. Flex funds are for time-limited transportation services or supports and are not intended to pay for ongoing expenditures. Flex funding requests are tracked in a database and reviewed by the OTB team before funding is approved and distributed. It is required that clients have an upcoming appointment and attendance is confirmed. Flex fund distribution is detailed below in the outcomes section.

In March 2020, the Flex Fund effort was suspended due to COVID-19. However, in that short period requests were processed in approximately one week. This is significant because previous flex fund efforts took an excessive amount of time and often did not meet expectations for clients in need.

During the pandemic, and as the project was adjusting to changes, the Commute Navigation Specialists acted as liaisons between County Behavioral Health staff and transit authorities. They analyzed existing County transportation and public transit resources and kept participants up-to-date on the changes in transit systems. This happened via email, as well as announcements at Social Inclusion meetings and Overcoming Transportation Barriers Community Sub-Committee meetings.

Per feedback by clients in the Transportation Sub-Committee, physical wallet/pocket cards were created for clients who experience high-stress situations or need a quick coping strategy. Referenced coping strategies on the cards included: meditation, deep breathing, riding with friends, prayer, listening to music, journaling, reading, and practicing a hobby. Cards were distributed at all CCBHS outpatient clinics and included bus vouchers upon request. Per recommendations from the Sub-Committee, the OTB workgroup revised the wallet cards into trifold wallet cards in both English and Spanish. The OTB brochure that outlines the available services and resources continues to be distributed throughout the clinics and in the welcoming packets for new clients.

Additionally, a request was made to pilot transportation packets for new clients to be provided in the East County Adult Mental Health Clinic. The packets were prepared in English and Spanish and contained a welcoming letter from the Commute Navigation Specialists and an ADA Paratransit application, introduction to BART, transit schedules, Reduced Transit Card application, OTB brochure

Posters were also created that depicted transportation services available within the County. These posters were distributed in East County Adult and Children's Clinics. Posters were printed in both English and Spanish and reflected important information around support for filling out transportation paperwork, available peer support, and mapping bus routes. Contact information was also included.

### **OUTCOMES AND PROJECT EVALUATION:**

*Please provide quantitative and qualitative data regarding your services.*

- *What are the learning goals of the project?*
- *Which elements of the project are contributing to outcomes?*
- *List of indicators measured; including results and an explanation as to how often data was collected and analyzed.*

### **The goals of the project are to learn the following:**

- 1) To improve service access through client education on transportation usage and encouragement of independent living skills in getting to and from services.
- 2) To promote efficient use of transportation resources through navigation support: how to use public transit, read transit schedules, plan travel routes, and apply for discount passes.
- 3) To foster clients' life skills for social engagement, increase productive and meaningful activity, and reduce isolation through the application of learned transportation skills.
- 4) To increase attendance rates at County-operated clinics by addressing both physical and emotional barriers with the development of solution-focused transportation skills.
- 5) To reduce stigma through ongoing peer support from Commute Navigation Specialists.

The OTB project started collecting data on April 25, 2017. The data collected for the project provided outcomes showing the type of support provided by the OTB team and where referrals originated. The support included providing resources, referrals and other types of educational training around different modes of transportation.

*Exploring a new transportation intervention in the adult system.*

Analysis of service improvement survey data and data from our non-clinical PIP has shown that transportation is one of the most frequently identified barriers to appointment adherence. To help address clients' transportation needs, the MHP is planning to pilot a new transportation intervention, providing clients rides to clinic appointments using Round-trip Lyft. In 2019, Contra Costa Health Plan (CCHP)

piloted this intervention with clients enrolled in Whole Person Care (WPC) and found that among clients who were open to Behavioral Health clinics, those who had round-trip Lyft rides scheduled no-showed to appointments at lower rates than those who did not have rides scheduled. CCMHP is working on implementing this intervention with clients scheduled for a co-visit appointment at East County Adult Clinic, the clinic with one of highest no-show rates and most limited transportation options. The pilot is scheduled to begin in early 2020.

Table 1., below included data for client and staff encounters for the last fiscal year. This table defines the types of services the CNS is providing. Additional types of encounters that were added included peer support as well as “other” encounters. Other can be explained as contacts that didn’t have a specific outcome. Although, the team made numerous attempts to contact clients they were not always able to provide adequate contact or assistance.

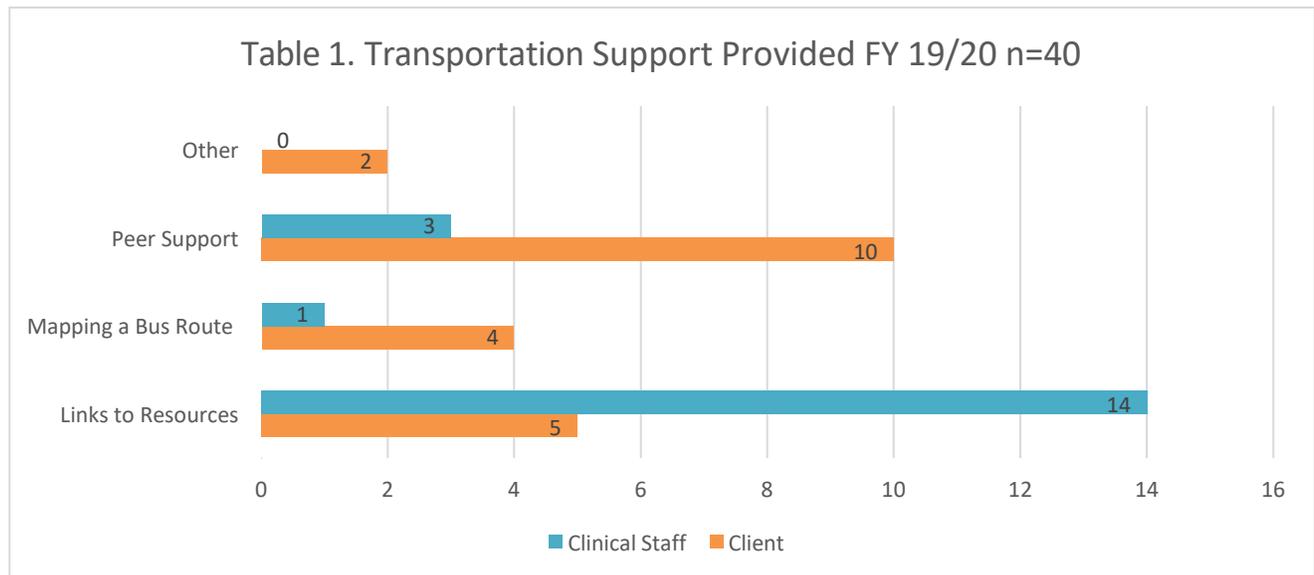


Table 2., below shows total number of calls received by clients and where the referral source originated. Referral source known as “other” describes sources such as family members, friends, word of mouth, presentations or outside therapists.

**Table 2. Call Referral Source n=40**

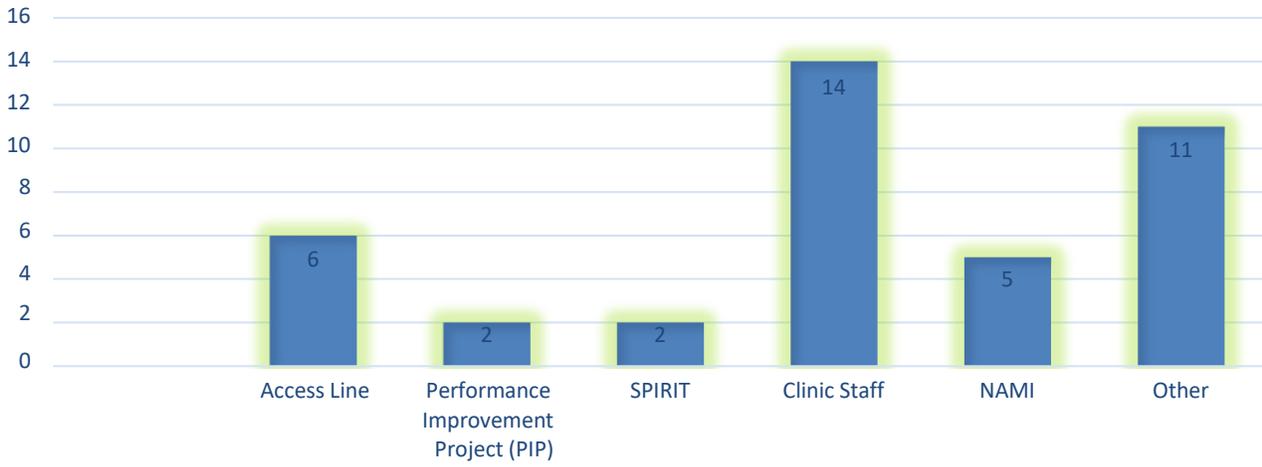
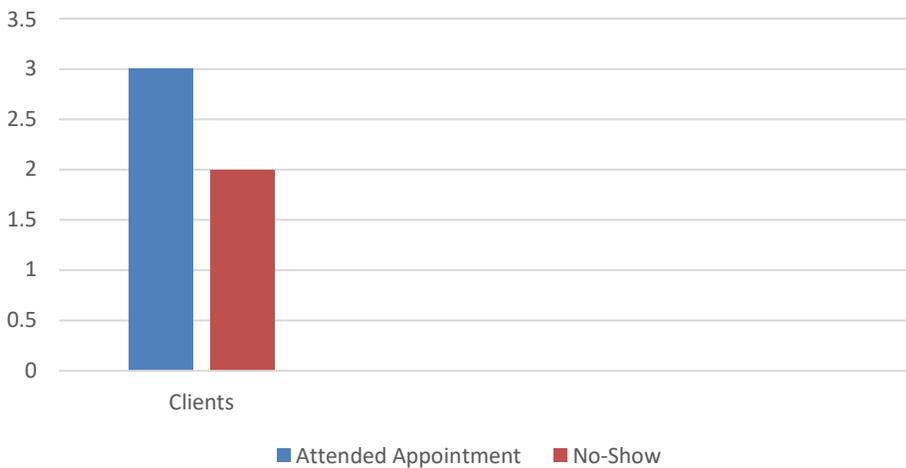


Table 3., below shows the total number of Flex Fund Forms submitted and funds requested in order for clients to access services. Requests submitted included funding for gas cards, transit fares, and DMV fees.

**Flex Funds Requested**



**LINKAGE AND FOLLOW-UP:**  Not applicable

*Please explain how participants are linked to mental health and/or support services, including, how the INN Project follows up with the referral to support successful engagement in services.*

*Additionally, please include the average length of time between referral and entry into treatment and the methodology used.*

In order to provide support services, the Overcoming Transportation Barriers project reached out to various transportation agencies, and service providers located throughout the County. This action established a process to help provide a connection between these entities and the project's team. During this process, improved access to resources and materials became available to clients and the team was better able to support clients.

The project also has a system in place that allows the project's staff to follow up on all service contacts if an outcome is not reached. Many times, a client may leave a message after hours and the team will log the contact and then make sure to get the information requested to the client. All client contacts are documented, and extensive outreach is pursued.

### **VALUABLE PERSPECTIVES:**

*Please include the stories and diverse perspectives of program participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.*

The project was able to collect valuable perspectives from staff during the current fiscal year. Collection was difficult due to the restrictions in place, so alternative methods of collection were utilized. Staff working the OTB project sent out questionnaires with the following questions:

- 1) To what extent did your client find the services received from OTB helpful?
- 2) Would you recommend our services to other clients in the future?
- 3) How did the services provided by OTB benefit your client's ability to make it to their future appointments?
- 4) Was the turnaround time fast enough for your client to get the most benefit from the services from OTB?
- 5) Is there anything you would like to have seen done differently in your experience with OTB?

Responses were received from staff at various locations. Included below are two examples:

#### **1) To what extent did your client find the services received from OTB helpful?**

Due to OTB's help, my client was able to attend in-person appointments without the fear and anxiety of breaking down on the side of the road or being in an accident. Overall, it has helped the client attend to other basic needs as well, such as getting groceries and going to medical appointments. The client has expressed deep gratitude for OTB's assistance.

#### **2) Would you recommend our services to other clients in the future?**

I would absolutely recommend the services of OTB. OTB immensely helped my client manage and reduce their environmental stressors while ensuring my client can use their funds for other necessities.

**3) How did the services provided by OTB benefit your client's ability to make it to their future appointments?**

Without this financial support, my client would likely have had to continually choose between driving an unsafe vehicle and obtaining necessary in-person care.

**4) Was the turnaround time fast enough for your client to get the most benefit from the services from OTB?**

OTB was incredibly responsive to questions, followed up, and was quick to act.

**5) Is there anything you would like to have seen done differently in your experience with OTB?**

Understandably, there were some questions the car mechanic had that I could not answer as a case manager/the person not in charge of billing. Since there were four parties involved (client, case manager, OTB, auto shop) it took some additional coordination. Perhaps in the future, if schedules allow, there could be a conference call between some of the parties. However, the auto shop may become more familiar with the process in the future as well.

**Questionnaire 2:**

**1) To what extent did your client find the services received from OTB helpful?**

Client found the service extremely helpful to be able to get around to not only appointments but other activities to improve his independent living skills.

**2) Would you recommend our services to other clients in the future? Absolutely!**

**3) How did the services provided by OTB benefit your client's ability to make it to their future appointments?**

Client lives a good distance from Bart and bus stops, so it helps cut the travel time drastically.

**4) Was the turnaround time fast enough for your client to get the most benefit from the services from OTB?**

Yes, turnaround was about 2 weeks which I thought was fast.

**5) Is there anything you would like to have seen done differently in your experience with OTB?**

Yes, once an order is submitted and approved it should not be changed. My client has a disability that requires a key lock and that was changed to a much cheaper combo lock, I had to purchase out of pocket a new key lock for my client because I wanted him to have a lock he could use.

***FINAL INNOVATIVE PROJECT REPORTING FORM***

FISCAL YEAR: 2019/20

Agency/Project Name: Contra Costa Behavioral Health/Partners in Aging

**INNOVATIVE PROJECT TYPE:**

*Please check **all** that apply:*     PEI – *services for individuals at risk of SMI/SED services*     CSS – *for individuals with SMI/SED*

**INNOVATION:**

*Please provide a brief summary of the priority issue related to mental illness or to an aspect of the mental health system for which this program/project tests the idea of an innovative concept.*

The Partners in Aging Innovation Project was based on the innovative idea to add Community Support Workers (CSWs) and Interns to the IMPACT Program. The goals were to find out if clients of the IMPACT Program would benefit from these new additions to the treatment team. Community Support Workers are able to provide linkage to community resources, advocacy and in-home and in-community rehab support and coaching. This addition expands the reach of the IMPACT Program beyond the therapy session. The addition of an Intern expanded the ability to serve additional clients and develop a workforce that has skills and passion for working with older adults.

Our IMPACT Program provides psychotherapy services to older adults, who are 55 and above. During FY 19/20 we were serving older adults with mild to moderate depression, anxiety and Post-Traumatic Stress Disorder (PTSD), who were eligible to receive services at a Federally Qualified Health Center. We had a clinician located at Concord Health Center 2, Pittsburg Health Center and West County Health Center.

Due to the COVID-19 Pandemic in March 2020 our IMPACT clinicians began to provide telehealth services by phone or Zoom to their clients. In January 2021 the eligibility for the IMPACT Program changed. Currently, we are serving older adults 55 and above, who have moderate to severe depression, anxiety and PTSD, who have Medi-Cal or Medicare/Medi-Cal benefits. Services are provided through telehealth, and in-person at the West County WIC Building adjacent to West County Health Center, Pittsburg Adult Mental Health and Older Adult Mental Health in Concord.

**PROJECT OVERVIEW:**

*Please provide an overview of the innovative project.*

The Partners in Aging Innovation Project began on September 1, 2016 with the hiring of one Community Support Worker (CSW), and one Intern. Every Fall we welcome a new Intern into our

program. Most of our Interns have chosen a dual track for the Internship with Older Adult Mental Health. They have split their time between our Intensive Care Management Program and IMPACT. This has given our Interns a breadth of experience by providing services to clients ranging from mild to severe and persistent mental illness. They have also been able to provide services that are clinic based and home or community based. They have provided a wide range of services, including individual therapy, case management, collateral contacts and crisis intervention. Our Interns have also frequently engaged in outreach or research projects, including outreach to West County, and the development of a binder of resources for clients experiencing cognitive decline. Interns always bring a spark of curiosity and passion to our clinic and we are happy to be able to increase the mental health workforce that can specialize in providing services to older adults. We were able to hire one of our Interns as a Permanent Full-Time Mental Health Clinical Specialist in January 2021.

Our first Community Support Worker joined the Partners in Aging Program on 9/1/2016. She left our program on 1/31/19 due to her extensive commute and finding a job closer to her home. We filled her position in June 2019 and expanded the program to hire a second CSW in July 2019. These two CSWs have continued with our program. One of the CSWs transitioned to a Permanent CSW II position in February 2021 on our East County Intensive Care Management Team. We have not filled her position due to not knowing whether or not this position would be funded past August 31, 2021.

Our CSWs and Interns served 27 clients during the 2019-2020 fiscal year. Most of these clients received multiple services. Our CSWs are able to build rapport and provide peer support, coaching, multiple linkage and mental health rehabilitation services. They connect with clients in different ways than our clinicians since they are in the community with the clients and can relate to them as a peer. They collaborate with the clinicians and provide a valuable perspective. The CSWs have aided in linking clients to important resources such as In-Home Support Services, legal services, Social Security Administration, housing resources (including linking to Housing Navigators at Care Centers and linking to organizations that assist with rent payments), Monument Crisis Center, food banks and medical appointments. They also provide several reminder calls to improve attendance at appointments, and link clients to their appointments with their IMPACT clinicians. They can also check in with the clients in between their sessions with their IMPACT clinician. Our CSWs have become quite knowledgeable on support service resources for older adults. The CSW that was hired in June 2019 maintains an online resource binder that is used by all of the Older Adult Mental Health staff. During the COVID-19 pandemic our CSWs have been providing weekly food deliveries to several of our vulnerable older adult clients.

We continue to see the incredible benefits of the collaborative relationship between our CSW, Intern and IMPACT clinicians. Our CSW can provide a different perspective on client functioning based on her experiences with clients in the community. This has had a positive impact on client functioning, progress towards treatment goals, and maintaining client safety.

When our original CSW left the Partners in Aging Program in January 2019 we lost the frequent communication that she was having with the CSWs at Psychiatric Emergency Services (PES). We did not receive referrals from PES during this reporting period. The lack of referrals from PES was also impacted by the switch in the IMPACT program to seeing clients with mild to moderate symptoms in

November 2017.

Our Intern served a caseload of approximately 5 IMPACT clients during FY 19/20. He completed intakes and provided psychotherapy. He was able to develop rapport with a range of clients and make progress towards therapeutic goals. Prior to terminating with his clients he provided them with community referrals, and made recommendations for the next Intern regarding next steps for treatment, or discharge from IMPACT.

**PROJECT CHANGES:**  No changes

*Please explain whether any changes were made to the Innovative Project during the reporting period and the reasons for the changes, if applicable.*

The Partners in Aging Project was impacted during FY 19/20 by the COVID-19 Pandemic. In March 2020 therapy and intake assessment services rapidly shifted from in-person to telehealth. Many IMPACT clients chose to continue receiving services through telehealth (primarily by phone). The majority of our clients preferred to use the phone rather than Zoom, which seems to reflect some older adults having difficulty with technology. This digital divide has impacted our ability to connect with clients. We continue to provide services primarily through telehealth. We began increasing our In-Person services in the Spring of 2021.

**OUTCOMES AND PROJECT EVALUATION:**

*Please provide quantitative and qualitative data regarding your services.*

- *What is the evaluation methodology?*
- *What are outcomes of the project that focus on what is new or changed compared to established mental health practices?*
- *If applicable, was there any variation in outcomes based on demographics of participants?*
- *List of indicators measured, including how often data was collected and analyzed, as well as how the project evaluation reflects cultural competency and includes stakeholder contribution.*
- *Assessment of any activities or elements of the Innovative Project which contributed to successful outcomes.*

We have evaluated the success of this project using several different methods. We began utilizing the PEARLS (Program to Encourage Active and Rewarding LiveS) Questionnaire in approximately August 2017 with Partners in Aging clients. The PEARLS is administered when the client begins receiving a service from our Partners in Aging Intern or CSW, every 6 months, and at closing. The PEARLS Questionnaire includes the Patient Health Questionnaire-9 (PHQ-9), and also includes questions on general health, social activities, physical activities and pleasant activities. This questionnaire was developed by researchers at the University of Washington to be used in their community-based, evidence-based treatment program designed to reduce depression in physically impaired and socially isolated people. We worked collaboratively with the Business Intelligence Team to develop a report that

would show differences in PEARLS scores over time. Additional indicators that we have used include PHQ-9 scores, chart review, Monthly Service Summaries, and qualitative interviews with our staff. The PHQ-9 are administered frequently by the IMPACT clinicians. We are waiting for the Business Intelligence team to complete the report that tracks the PHQ-9 scores over time.

We have not formally requested stakeholder evaluation of this project. Our clients are invited to participate in the MHSIP Consumer Perception Surveys and Focus Groups, but we are not able to determine which results may be coming from IMPACT or Partners in Aging clients. In general, these results have shown that our clients are happy with the services that they are receiving.

Cultural competency is an essential element of all our programs at Older Adult Mental Health. In addition to required yearly trainings our staff frequently engages in additional trainings and discussions related to cultural competency. We serve a diverse group of older adults and provide services in the client's native language through the use of the Language Line. We also have clinicians who speak languages other than English, including Korean, Spanish and Arabic. We are open to feedback from our clients and staff related to cultural competency and committed to continuous growth in this area.

Preliminary results of the PEARLS data indicates that all participants showed a decrease in depressive symptoms as measured by the PHQ-9. These decreases ranged an average of 1 point for clients with mild and moderate depression to 5 points for clients with severe depression, which was about 25% of the clients. Clients with severe depression were shown to improve in their overall evaluation of their physical health. Clients with mild to moderate depression were shown to improve their social connections and activities. Unfortunately, we do not have demographic data linked to this report. Demographic data was collected but was not used to create the report. This would be an area to improve in future reports and projects.

These results indicate that the Partners in Aging Program had a positive impact on these clients with different trends depending on the level of severity of the client. It is notable that clients with the most severe depression benefited the most in terms of the reduction in depressive symptoms. This indicates that the current focus of the IMPACT and Partners in Aging Programs on serving clients with moderate to severe depression is likely to lead to significant benefits for the clients served as we go forward with this project.

The outcomes that we are observing appear to be related to the combined efforts of our CSW, Intern, and IMPACT clinicians. Our CSW has expanded our ability as a program to provide linkage and rehab support, increase the independence of our clients by linking them to resources, and increase their ability to learn and utilize new life skills and self-management tools. Since clients are able to obtain a sense of safety and security through the resources offered by the CSWs they are able to focus on their mental health treatment and work towards obtaining their goals. Adding this level of support to the IMPACT model was an innovative way to improve service delivery, meet the needs of clients in the community, and integrate the peer perspective into treatment planning. Our CSWs have become critical to the functioning of all our Older Adult Mental Health Programs!

**FUNDING:**

*Please explain whether and how the project will be sustained after Innovation funding. Include the source of ongoing funding, if applicable, the reason for the decision, and how stakeholders are involved in the decision-making process.*

The plan for continued funding for the Partners in Aging Project is still being developed. Our Intern will be able to be funded through MHSA WET Funds. Our goal is to secure funding to continue to have two Community Support Workers in the Partners in Aging Program. These CSWs have become vital to the functioning of all of our Older Adult Mental Health programs and can continue to support IMPACT as well as our Intensive Care Management Program. We are working with the MHSA Team to determine how these positions will be funded beginning 9/1/21. The MHSA funding would be supplemented by the Medi-Cal billing that our CSWs and Intern complete for all billable services. We are planning to attend the Innovations Committee Stakeholder Meeting on 5/24/21 to advocate for the continuation of the Partners in Aging Program. We are also meeting with the MHSA Team on 6/1/21. We have also been discussing these plans during annual meetings with the MHSA Team.

**LEARNING GOALS:**

*Please explain whether the project achieved its intended outcomes or learning goals and a summary of what was learned.*

**The goals of the project were to learn the following:**

- 1) Do older adults access IMPACT services with the assistance of peer support workers?

Yes. Our CSWs successfully provided services to approximately 22 IMPACT clients to improve their access to IMPACT services during FY 19/20.

- 2) Do older adults engage in SBIRT?

All patients seen at the health centers engage in SBIRT evaluation.

- 3) Do older adults develop life skills with the assistance of peer support workers?

Yes, our Partners in Aging clients have developed numerous life skills with the assistance of our CSWs, including obtaining free phones and learning to utilize these phones, ensuring that medical needs are met, being able to utilize transportation resources, working towards financial independence, learning ways to manage clutter and increasing comfort with asking for help from others when needs arise. Our CSWs, in conjunction with the IMPACT clinicians, have been able to empower clients to engage in new activities and activities that they thought were no longer possible for them, and have been able to increase independence.

- Do clients use them regularly and how can we increase utilization?

Yes, they are using these skills regularly, and our CSW can continue to encourage clients, and provide reminders and support.

4) Do clients develop self-management goals?

Yes, our Partners in Aging clients have been able to identify and carry out self-management goals with the assistance of our CSWs and IMPACT clinicians. For example, clients have been utilizing sleep hygiene tools, are learning to set reminders to eat at regular intervals and also learning the benefits of creating a schedule. CSWs have also been coaching clients in decluttering their homes and organizing paperwork. In addition, clients have been assisted in setting up myccLink profiles to improve communication with their medical providers through their smartphones.

- Do clients use them regularly and how can we increase their utilization?

Yes, some clients use these skills regularly, including going for walks. We can encourage them, remind them and provide support.

5) Does the use of peer support workers increase the number of linkages made between clients and community resources?

Yes, prior to the implementation of Partners in Aging, IMPACT clients were not being linked to community resources. Referrals were provided, but it was up to the clients to obtain transportation and follow through on these referrals. Our PIA CSW has greatly expanded the scope of the IMPACT Program, and the ability to provide linkage.

6) Does the 60-day recidivism rate of older adults being readmitted to PES decrease?

Yes, our client that was referred from PES in March 2017 has not returned to PES. She was linked to psychotherapy through an IMPACT clinician and participated from June 2017 to June 2018. A review of ccLink indicate that she continues to participate in Health Coaching services.

7) Does social isolation decrease?

Yes, we have observed that social isolation decreases through the support of Partners in Aging. Our CSWs connect clients to community resources, including Senior Centers and Adult Day Health Care Programs. In addition, we have connected clients to support groups, including grief support groups. Our CSWs have formed positive rapport with many of our clients and have become important sources of support, which has also reduced social isolation.

8) Does quality of life increase?

Yes, we have observed increases in quality of life, including clients feeling more able to

engage in activities, and increase the range of activities that are available to them. For example, clients have increased their ability to use transportation independently through coaching and peer support. This greatly increases their ability to engage in social, medical and self-management activities. In addition, we have assisted one client with signing up for classes at a local community college.

9) Do older adults have improved depression scores?

Yes, over the 17/18 fiscal year on average 75.8% of IMPACT clients experienced an improvement in depressive symptoms based on their PHQ-9 scores, and 51.6% of these clients experienced a significant improvement (5 points or more). We have requested a new report to evaluate the PHQ-9 scores over time. When IMPACT started using the Ambulatory Medicine documentation tools, and the Federally Qualified Health Center model of billing in November 2017, they gradually stopped using a PHQ-9 tracker since this data was entered in ccLink. We are hoping that this report can separate the clients who received Partners in Aging services from the other IMPACT clients to see if there is a difference in the change in the scores over time between these two groups.

The initial results that we have received from the PEARLS report show that depression was reduced in all the cases with a range from approximately one point on the PHQ-9 to five points showing a small to significant decrease in depressive symptoms.

**INFORMATION SHARING:**

*Please describe how the results of this Innovative Project have been shared with stakeholders, and if applicable, beneficial to other mental health systems or counties.*

The Partners in Aging Project has been shared with stakeholders throughout Contra Costa County. We have presented on our programs to several groups, including presenting twice to the Adult Protective Services Multi-Disciplinary Team Meeting. This MDT brings together providers from several disciplines who serve older adults together to discuss complex cases. We also present our programs to newly hired Adult Protective Services Social Workers. We have also presented to the SPIRIT Program on a yearly basis. We have presented our programs to the Behavioral Health Access Line approximately once a year. In addition, we have presented our programs to the West County Senior Coalition and have presented twice to the Advisory Council on Aging.

**VALUABLE PERSPECTIVES:**

*Please include the stories and diverse perspectives of project participants, including those of family members. Feel free to attach case vignettes and any material that documents your work as you see fit.*

One of our Partners in Aging clients was a 61 year old Afghan-American female who was primarily Dari speaking. She reported a history of severe trauma, which resulted in a traumatic brain injury for herself and the death of her husband. When she began therapy, she expressed feeling inadequate and depressed. Our CSW supported this client with taking the necessary steps towards receiving Disability benefits from Social Security. She assisted the client with making medical and psychiatric appointments to obtain needed documentation and assisted and accompanied her to Social Security

appointments. This client now has a steady income and has expressed significant relief of her symptoms. She described herself as "doing much better." The CSW also assisted her with the intake process for joining groups at Choices in Aging. This is an example of the ways that our CSW was invaluable in assisting this client in obtaining the services that she needed to be able to focus on her mental health treatment, and significantly improve her quality of life.

Another client was a 66-year-old Caucasian woman who was referred for depressive symptoms. She scored an 18 on PHQ-9 at intake. She had just lost one of her dogs and was wheelchair dependent due to pain. She was very isolated despite living with family friends who often relied on her for childcare. She was estranged from her biological family, felt like a burden, had low self-esteem and would often cancel appointments due to transportation issues. Both of our CSWs helped her get set up with transportation through Contra Costa Health Plan to get free taxi vouchers to her medical appointments and Paratransit services. They also eventually helped her navigate public transportation systems (before COVID) to give her a better sense of independence. They connected her with food resources, such as Meals on Wheels, Monument Crisis Center, and food banks, so she was no longer dependent on her family friends for groceries. They also helped her get other supplies such as adult diapers through her PCP. She was also linked to Friendly Visitors which helped with her sense of isolation. During COVID they helped her apply for her stimulus check and encouraged her to engage in social activities with her housemates such as going for walks and working in her garden. At the end of treatment client was able to express needs and healthy boundaries to her housemates, engage in more independent activities which decreased her depressive symptoms and was also able to independently socialize more.

The screenshot shows the website for Contra Costa Health Services. The header includes the organization's name, a search bar, and navigation tabs for HOME, TOPICS, SERVICES, and HEALTH COVERAGE. A sidebar on the left lists various services, with 'Mental Health Services Act (MHSA)' highlighted. The main content area features a large title for the MHSA in Contra Costa County, followed by a detailed description of the program and a 'LATEST INFORMATION' section. The latter contains two public notices regarding the 30-day public comment period for the MHSA Plan Update FY 21-22, with dates in Spanish and English. The Windows taskbar at the bottom shows the system clock at 2:46 PM on 5/28/2021.

**CONTRA COSTA HEALTH SERVICES**

Search cchealth

HOME TOPICS SERVICES HEALTH COVERAGE

HOME • BEHAVIORAL HEALTH • MENTAL HEALTH • MENTAL HEALTH SERVICES ACT (MHSA) IN CONTRA COSTA COUNTY

## Mental Health Services Act (MHSA) in Contra Costa County

Contra Costa County Behavioral Health Services (CCBHS) Mental Health Services Act (MHSA) Three Year Program and Expenditure Plan integrates the components of Community Services and Supports, Prevention and Early Intervention, Innovation, Workforce Education and Training, and Capital Facilities/Information Technology.

This Plan describes county operated and contract programs that are funded by MHSA, what they will do, and how much money will be set aside to fund these programs. Also, the plan will describe what will be done to evaluate their effectiveness and ensure they meet the intent and requirements of the Mental Health Services Act.

California approved Proposition 63 in November

### LATEST INFORMATION

**PUBLIC NOTICE:** Contra Costa Behavioral Health Services has posted the [Prevention and Early Intervention \(PEI\) Evaluation Report FY 19-20](#) and [Innovation Annual Report FY 2018-2019 \(State\)](#) for 30 day public comment. Please use these public comment forms English/Spanish to make any public comment. The public comment begins on Friday May 28th, 2021 and ends on Monday June 28th, 2021.

**PUBLIC NOTICE:** The 30 day public comment period for the MHSA Plan Update FY 21-22 has begun. Please use these [public comment forms | Spanish](#) to make any public comment. The public comment begins on Tuesday, May 4, 2021 and ends on Thursday, June 3, 2021.

2:46 PM  
5/28/2021



**Contra  
Costa  
County**

To: Board of Supervisors  
From: David O. Livingston, Sheriff-Coroner  
Date: August 3, 2021

Subject: Setting Special Tax Levy for County Service Areas P-2 Zone A (Blackhawk), P-2 Zone B (Alamo) and P-5 (Round Hill)

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**RECOMMENDATION(S):**

SET the special tax levy for police services in County Service Areas P-2 (Zones A and B) and P-5 for Fiscal Year 2021-2022 as follows:

**P-2 Zone A (Blackhawk):**

Single residential: \$ 407 per parcel, per year  
Small multiple residential: \$ 407 per parcel, per year

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APPROVE  OTHER  
 RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE

---

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Heike Anderson, (925) , County Administrator and Clerk of the Board of Supervisors  
655-0023

By: , Deputy

cc: Heike Anderson, Alycia Rubio, Paul Reyes

RECOMMENDATION(S):  
(CONT'D)

Large multiple residential:	\$ 407 per parcel, per year
Commercial/Industrial/Institutional:	\$ 2,441 per parcel, per year
Commercial/Theater:	\$12,208 per parcel, per year
P-2 Zone B (Alamo):	
Single residential:	\$ 67 per parcel, per year
Small multiple residential:	\$ 67 per parcel, per year
Large multiple residential:	\$ 67 per parcel, per year
Commercial/Industrial/Institutional:	\$ 200 per parcel, per year
P-5 (Round Hill)	
Commercial recreational:	\$ 932 per parcel, per year
All other:	\$ 470 per parcel, per year

FISCAL IMPACT: There is no impact on the County General Fund.

BACKGROUND: The above action for County Service Area P-2 Zone A is required by County Ordinance No. 2019-40. The rates have increased for Fiscal Year 2021-2022. Setting the special tax levy for police services will permit the Sheriff to continue to provide police services in the Blackhawk Area. It is estimated that the special tax levy will raise an estimated \$1,047,641 for Fiscal Year 2021-2022.

The above action for County Service Area P-2 Zone B is required by County Ordinance No. 2021-01. The rates have increased for Fiscal Year 2021-2022. Setting the special tax levy for police services will permit the Sheriff to continue to provide police services in the Alamo area. It is estimated that the special tax levy will raise approximately \$253,874 for Fiscal Year 2021-2022.

The above action for County Service Area P-5 is required by County Ordinance No. 2019-02. Parcels *not used* for

commercial recreational purposes will have a special tax levy of \$470. The rate for parcels used for commercial recreational purposes is set at \$932. Setting the special tax levy for police services will permit the Sheriff to continue to provide police services in the Round Hill area. It is estimated that the special tax levy will raise an estimated \$354,682 for Fiscal Year 2021-2022.

CONSEQUENCE OF NEGATIVE ACTION:

The special tax levy will not be authorized by the Board of Supervisors resulting in the tax not being included on the 2021/2022 Property Tax Roll.

ATTACHMENTS Special Tax Levy Use Codes

P2a	BHAWK	P2b	ALAMO	P5	ROUNDH	FY21-22 Assessment Amounts
Use Code	Amount	Use Code	Amount	Use Code	Amount	Description
11	\$406.85	11	\$67	11	\$470	Single Family Residence
		12	\$67			Single Family Residence on 2 or more sites
13	\$406.85	13	\$67	13	\$470	2 or more Single Family Residences on 1 or more sites
		15	\$67			Misc Improvements
16	\$406.85	16	\$67			Misc Improvements on 2 or more sites
17	\$406.85	17	\$67	17	\$470	Vacant - 1 site
		18	\$67			Vacant - 2 or more sites
19	\$406.85	19	\$67	19	\$470	Single Family Residence with common area
		20	\$67			Vacant
		21	\$67			Duplex
		23	\$67			Fourplex
		25	\$67			Apartments 5-12 units
		26	\$67			Apartments 13-24 units
29	\$406.85	29	\$67			Attached PUD's
		30	\$67			Vacant
		31	\$200			Commercial
33	\$2,441.10	33	\$200	33	\$932	Office Buildings
34	\$2,441.10	34	\$200			Medical, Dental
		35	\$200			Svc Stns, Car Washes, Bulk Plants
		36	\$200			Garages
				38	\$932	Golf Courses
42	\$2,441.10	42	\$200			Shopping Centers
43	\$2,441.10					Financial Buildings
45	\$12,207.56					Theatres
		48	\$200			Multiple & Comm Mis
53	\$12,207.56					Light Industrial
		61	\$67			Rural 1-10 acres
		72	\$67			
		75	\$67			Fraternal & Svc Orgs
		79	\$67	79	\$470	
		88	\$67	87	\$470	Common Area



Contra  
Costa  
County

To: Board of Supervisors  
From: David O. Livingston, Sheriff-Coroner  
Date: August 3, 2021

Subject: Setting Special Tax Levy for County Service Areas P-6 Zones

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**RECOMMENDATION(S):**

SET the special tax levy for police services Zones in County Service Area P-6 for Fiscal Year 2021-2022 as set forth in Exhibit A.

**FISCAL IMPACT:**

It is estimated the department will receive \$2.4 million cumulative revenue for all zones within County Service Area (CSA) P-6 in fiscal year 2021/22. This amount reflects a 3.8% increase from the fiscal year 2020/21 cumulative amount of approximately \$2.3 million. The special tax levy for parcels in each zone within CSA P-6 is adjusted annually based on the April Urban Area Consumer Price Index (CPI-U) for the San Francisco Bay Area.

**BACKGROUND:**

The above action fixes the tax rates per parcel in the P-6 Zones as outlined in their respective ordinances. In July of each calendar year, the Board of Supervisors sets the special tax levy for parcels in each CSA P-6 zone based on the April CPI-U indicator released by the Bureau of Labor Statistics (BLS) as discussed in the fiscal impact section.

- 
- APPROVE  OTHER
  - RECOMMENDATION OF CNTY ADMINISTRATOR  RECOMMENDATION OF BOARD COMMITTEE
- 

Action of Board On: **08/03/2021**  APPROVED AS RECOMMENDED  OTHER

Clerks Notes:

**VOTE OF SUPERVISORS**

I hereby certify that this is a true and correct copy of an action taken and entered on the minutes of the Board of Supervisors on the date shown.

ATTESTED: August 3, 2021

Contact: Heike Anderson, (925) 655-0023, County Administrator and Clerk of the Board of Supervisors

By: , Deputy

cc: Heike Anderson, Alycia Rubio, Paul Reyes, Heike Anderson, Alycia Rubio, Paul Reyes

CONSEQUENCE OF NEGATIVE ACTION:

The special tax levy will not be authorized by the Board of Supervisors, and the taxes will not be included on the 2021/2022 Property Tax Roll.

ATTACHMENTS

2122 Exhibit A

Attachment A

**Exhibit A**

SET the special tax levy for police services in County Service Area P-6 for Fiscal Year 2021-2022 as follows:

**Zone 200**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$236.75
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$473.46
Apartments 5 to 24 units (Use Codes 25-26)	-	\$946.90
Apartments 25 to 59 units (Use Code 27)	-	\$1,420.36
Apartments 60+ units (Use Code 28)	-	\$1,893.80
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$946.90
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,420.36
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,893.80
Land (Use Codes 61-62)	-	\$473.46
Miscellaneous (Use Codes 88-89, 99)	-	\$473.46
Miscellaneous (Use Codes 85, 87)	-	\$946.90

This zone is in its 32nd year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 201, 1000, 1600, 2700**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$209.06
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$418.10
Apartments 5 to 24 units (Use Codes 25-26)	-	\$836.23
Apartments 25 to 59 units (Use Code 27)	-	\$1,254.33
Apartments 60+ units (Use Code 28)	-	\$1,672.44
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$836.23
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,254.33
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,672.44
Land (Use Codes 61-62)	-	\$418.10
Miscellaneous (Use Codes 88-89, 99)	-	\$418.10
Miscellaneous (Use Codes 85, 87)	-	\$836.23

These zones are in their 28th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 500, 700, 1100, 1500, 1601, 1800, 2300, 2600, 2601, 2900**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$204.24
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$408.44
Apartments 5 to 24 units (Use Codes 25-26)	-	\$816.92
Apartments 25 to 59 units (Use Code 27)	-	\$1,225.36
Apartments 60+ units (Use Code 28)	-	\$1,633.80
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$816.92
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,225.36
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,633.80
Land (Use Codes 61-62)	-	\$408.44
Miscellaneous (Use Codes 88-89, 99)	-	\$408.44
Miscellaneous (Use Codes 85, 87)	-	\$816.92

These zones are in their 27th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 202, 1501, 1602, 1603, 1604, 1801, 2701, 3000, 3100**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$201.05
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$402.08
Apartments 5 to 24 units (Use Codes 25-26)	-	\$804.16
Apartments 25 to 59 units (Use Code 27)	-	\$1,206.25
Apartments 60+ units (Use Code 28)	-	\$1,608.33
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$804.16
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,206.25
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,608.33
Land (Use Codes 61-62)	-	\$402.08
Miscellaneous (Use Codes 88-89, 99)	-	\$402.08
Miscellaneous (Use Codes 85, 87)	-	\$804.16

Year	CPI	% of increase		
15-16	257.6			
16-17	264.6	0.02717391304348		
17-18	274.6	0.03779289493575		
18-19	283.4	0.03204661325564		
19-20	294.8	0.04022582921666	\$2,222,727.94	
20-21	298.1	0.01119402985075	\$2,160,693.54	
21-22	309.4	0.03790674270379	\$2,217,772.58	

Exhibit A

These zones are in their 26th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 400, 701, 702, 1200, 1502, 2500, 2901**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$193.87
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$387.71
Apartments 5 to 24 units (Use Codes 25-26)	-	\$775.48
Apartments 25 to 59 units (Use Code 27)	-	\$1,163.22
Apartments 60+ units (Use Code 28)	-	\$1,550.96
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$775.48
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,163.22
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,550.96
Land (Use Codes 61-62)	-	\$387.71
Miscellaneous (Use Codes 88-89, 99)	-	\$387.71
Miscellaneous (Use Codes 85, 87)	-	\$775.48

These zones are in their 25th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 1001, 1503, 1605, 1606**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$187.98
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$375.94
Apartments 5 to 24 units (Use Codes 25-26)	-	\$751.89
Apartments 25 to 59 units (Use Code 27)	-	\$1,127.84
Apartments 60+ units (Use Code 28)	-	\$1,503.78
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$751.89
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,127.84
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,503.78
Land (Use Codes 61-62)	-	\$375.94
Miscellaneous (Use Codes 88-89, 99)	-	\$375.94
Miscellaneous (Use Codes 85, 87)	-	\$751.89

These zones are in their 24th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 1504, 1505, 1506, 1607, 1700, 1803, 2000, 2702**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$179.68
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$359.34
Apartments 5 to 24 units (Use Codes 25-26)	-	\$718.71
Apartments 25 to 59 units (Use Code 27)	-	\$1,078.06
Apartments 60+ units (Use Code 28)	-	\$1,437.41
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$718.71
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,078.06
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,437.41
Land (Use Codes 61-62)	-	\$359.34
Miscellaneous (Use Codes 88-89, 99)	-	\$359.35
Miscellaneous (Use Codes 85, 87)	-	\$718.71

These zones are in their 23rd year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 501, 1101, 1609, 1610, 1611, 1612, 2501, 2800**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$173.13
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$346.28
Apartments 5 to 24 units (Use Codes 25-26)	-	\$692.56
Apartments 25 to 59 units (Use Code 27)	-	\$1,038.84
Apartments 60+ units (Use Code 28)	-	\$1,385.13
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$692.55
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$1,038.84
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,385.13
Land (Use Codes 61-62)	-	\$346.27

**Exhibit A**

Miscellaneous (Use Codes 88-89, 99)	-	\$346.27
Miscellaneous (Use Codes 85, 87)	-	\$692.55

These zones are in their 22nd year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 1613, 2200, 2201, 2801**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$163.62
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$327.22
Apartments 5 to 24 units (Use Codes 25-26)	-	\$654.47
Apartments 25 to 59 units (Use Code 27)	-	\$981.72
Apartments 60+ units (Use Code 28)	-	\$1,308.96
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$654.47
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$981.72
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,308.96
Land (Use Codes 61-62)	-	\$327.22
Miscellaneous (Use Codes 88-89, 99)	-	\$327.22
Miscellaneous (Use Codes 85, 87)	-	\$654.47

These zones are in their 21st year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 502, 1507, 1614, 1804, 2502, 2902**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$161.33
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$322.64
Apartments 5 to 24 units (Use Codes 25-26)	-	\$645.25
Apartments 25 to 59 units (Use Code 27)	-	\$967.90
Apartments 60+ units (Use Code 28)	-	\$1,290.52
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$645.25
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$967.90
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,290.52
Land (Use Codes 61-62)	-	\$322.64
Miscellaneous (Use Codes 88-89, 99)	-	\$322.64
Miscellaneous (Use Codes 85, 87)	-	\$645.25

These zones are in their 20th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 900, 1509, 1510, 1511, 1615, 3101, 3102**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$158.35
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$316.68
Apartments 5 to 24 units (Use Codes 25-26)	-	\$633.38
Apartments 25 to 59 units (Use Code 27)	-	\$950.06
Apartments 60+ units (Use Code 28)	-	\$1,266.74
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$633.38
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$950.06
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,266.74
Land (Use Codes 61-62)	-	\$316.68
Miscellaneous (Use Codes 88-89, 99)	-	\$316.68
Miscellaneous (Use Codes 85, 87)	-	\$633.38

These zones are in their 19th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 203, 204, 503, 1002, 1004, 2602, 3103**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$156.91
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$313.80
Apartments 5 to 24 units (Use Codes 25-26)	-	\$627.59
Apartments 25 to 59 units (Use Code 27)	-	\$941.39
Apartments 60+ units (Use Code 28)	-	\$1,255.18
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$627.59
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$941.39

Exhibit A

Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,255.18
Land (Use Codes 61-62)	-	\$313.80
Miscellaneous (Use Codes 88-89, 99)	-	\$313.80
Miscellaneous (Use Codes 85, 87)	-	\$627.59

These zones are in their 18th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 504, 1003, 1201, 2202, 2203, 3001, 3104**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$152.80
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$305.58
Apartments 5 to 24 units (Use Codes 25-26)	-	\$611.17
Apartments 25 to 59 units (Use Code 27)	-	\$916.75
Apartments 60+ units (Use Code 28)	-	\$1,222.33
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$611.17
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$916.75
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,222.33
Land (Use Codes 61-62)	-	\$305.58
Miscellaneous (Use Codes 88-89, 99)	-	\$305.58
Miscellaneous (Use Codes 85, 87)	-	\$611.17

These zones are in their 17th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 205, 301, 2603, 2703**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$147.99
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$295.92
Apartments 5 to 24 units (Use Codes 25-26)	-	\$591.88
Apartments 25 to 59 units (Use Code 27)	-	\$887.81
Apartments 60+ units (Use Code 28)	-	\$1,183.76
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$591.88
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$887.81
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,183.76
Land (Use Codes 61-62)	-	\$295.92
Miscellaneous (Use Codes 88-89, 99)	-	\$295.92
Miscellaneous (Use Codes 85, 87)	-	\$591.88

These zones are in their 16th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 206, 207, 208, 209, 1005, 1006, 1512, 1616, 2704, 3002, 3105, 3106, 3107**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$143.17
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$286.34
Apartments 5 to 24 units (Use Codes 25-26)	-	\$572.63
Apartments 25 to 59 units (Use Code 27)	-	\$858.96
Apartments 60+ units (Use Code 28)	-	\$1,145.28
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$572.63
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$858.96
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,145.28
Land (Use Codes 61-62)	-	\$286.34
Miscellaneous (Use Codes 88-89, 99)	-	\$286.34
Miscellaneous (Use Codes 85, 87)	-	\$572.63

These zones are in their 15th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 210, 1513, 2604, 2605, 3003, 3004, 3108, 3109, 3110**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$137.40
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$274.78
Apartments 5 to 24 units (Use Codes 25-26)	-	\$549.56
Apartments 25 to 59 units (Use Code 27)	-	\$824.34
Apartments 60+ units (Use Code 28)	-	\$1,099.13

**Exhibit A**

Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$549.56
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$824.34
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,099.13
Land (Use Codes 61-62)	-	\$274.78
Miscellaneous (Use Codes 88-89, 99)	-	\$274.78
Miscellaneous (Use Codes 85, 87)	-	\$549.56

These zones are in their 14th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zones 211, 2503, 3005**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$137.09
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$274.16
Apartments 5 to 24 units (Use Codes 25-26)	-	\$548.34
Apartments 25 to 59 units (Use Code 27)	-	\$822.53
Apartments 60+ units (Use Code 28)	-	\$1,096.69
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$548.34
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$822.53
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,096.69
Land (Use Codes 61-62)	-	\$274.16
Miscellaneous (Use Codes 88-89, 99)	-	\$274.16
Miscellaneous (Use Codes 85, 87)	-	\$548.34

These zones are in their 13th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zone 2606, 2903, 3112**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$129.45
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$258.92
Apartments 5 to 24 units (Use Codes 25-26)	-	\$517.81
Apartments 25 to 59 units (Use Code 27)	-	\$776.74
Apartments 60+ units (Use Code 28)	-	\$1,035.66
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$517.81
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$776.74
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$1,035.66
Land (Use Codes 61-62)	-	\$258.92
Miscellaneous (Use Codes 88-89, 99)	-	\$258.92
Miscellaneous (Use Codes 85, 87)	-	\$517.81

These zone are in their 10th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zone 1514**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$123.02
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$246.04
Apartments 5 to 24 units (Use Codes 25-26)	-	\$492.09
Apartments 25 to 59 units (Use Code 27)	-	\$738.13
Apartments 60+ units (Use Code 28)	-	\$984.17
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$492.09
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$738.13
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$984.17
Land (Use Codes 61-62)	-	\$246.04
Miscellaneous (Use Codes 88-89, 99)	-	\$246.04
Miscellaneous (Use Codes 85, 87)	-	\$492.09

This zone is in its 6th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Zone 212, 1515, 2504**

Vacant Lot (Use Codes 17-18, 20, 30, 50)	-	\$112.67
Single, small or large multiple residential (Use Codes 11-16, 19, 21-24, 29)	-	\$225.35

**Exhibit A**

Apartments 5 to 24 units (Use Codes 25-26)	-	\$450.69
Apartments 25 to 59 units (Use Code 27)	-	\$676.04
Apartments 60+ units (Use Code 28)	-	\$901.38
Commercial/Industrial/Institutional (Use Codes 33-36, 38-40, 43, 46-49, 52-54, 56, 70, 73-75)	-	\$450.69
Commercial/Industrial/Institutional (Use Codes 31-32, 41, 44-45, 55, 76)	-	\$676.04
Commercial/Industrial/Institutional (Use Codes 37, 42, 51, 78)	-	\$901.38
Land (Use Codes 61-62)	-	\$225.35
Miscellaneous (Use Codes 88-89, 99)	-	\$225.35
Miscellaneous (Use Codes 85, 87)	-	\$450.69

These zones are in their 5th year of levy. Levy determined by the initial tax rates set in the County ordinance authorizing the special tax levy (see Attachment A), property use codes, and changes in the Consumer Price Index.

**Attachment A**

**Office of the Sheriff-Coroner**

**FY 2021/2022 County Service Area P-6 Zones, Special Tax Levy**

**Zone Number and Involved Ordinance**

Zone 200	Ord. No.	89-44	Zone 1503	Ord. No.	98-04	Zone 2503	Ord. No.	08-06
Zone 201	Ord. No.	93-45	Zone 1504	Ord. No.	97-43	Zone 2504	Ord. No.	16-13
Zone 202	Ord. No.	95-60	Zone 1505	Ord. No.	98-37	Zone 2600	Ord. No.	95-12
Zone 203	Ord. No.	03-29	Zone 1506	Ord. No.	98-29	Zone 2601	Ord. No.	93-81
Zone 204	Ord. No.	04-12	Zone 1507	Ord. No.	01-15	Zone 2602	Ord. No.	03-25
Zone 205	Ord. No.	04-37	Zone 1509	Ord. No.	01-22	Zone 2603	Ord. No.	04-41
Zone 206	Ord. No.	06-07	Zone 1510	Ord. No.	02-11	Zone 2604	Ord. No.	06-68
Zone 207	Ord. No.	06-23	Zone 1511	Ord. No.	02-14	Zone 2605	Ord. No.	07-12
Zone 208	Ord. No.	06-38	Zone 1512	Ord. No.	06-08	Zone 2606	Ord. No.	11-16
Zone 209	Ord. No.	06-67	Zone 1513	Ord. No.	07-03	Zone 2607	Ord. No.	18-01
Zone 210	Ord. No.	06-69	Zone 1514	Ord. No.	15-07	Zone 2700	Ord. No.	93-44
Zone 211	Ord. No.	08-21	Zone 1515	Ord. No.	16-03	Zone 2701	Ord. No.	95-04
Zone 212	Ord. No.	16-07	Zone 1516	Ord. No.	19-07	Zone 2702	Ord. No.	97-40
Zone 213	Ord. No.	21-08	Zone 1600	Ord. No.	94-06	Zone 2703	Ord. No.	05-13
Zone 301	Ord. No.	04-42	Zone 1601	Ord. No.	92-25	Zone 2704	Ord. No.	06-03
Zone 400	Ord. No.	96-12	Zone 1602	Ord. No.	95-10	Zone 2800	Ord. No.	99-41
Zone 500	Ord. No.	94-18	Zone 1603	Ord. No.	95-40	Zone 2801	Ord. No.	99-53
Zone 501	Ord. No.	99-30	Zone 1604	Ord. No.	96-23	Zone 2900	Ord. No.	94-50
Zone 502	Ord. No.	01-12	Zone 1605	Ord. No.	97-20	Zone 2901	Ord. No.	96-15
Zone 503	Ord. No.	03-06	Zone 1606	Ord. No.	97-26	Zone 2902	Ord. No.	01-01
Zone 504	Ord. No.	04-21	Zone 1607	Ord. No.	98-12	Zone 2903	Ord. No.	13-13
Zone 505	Ord. No.	19-09	Zone 1609	Ord. No.	99-38	Zone 2904	Ord. No.	18-29
Zone 700	Ord. No.	94-12	Zone 1610	Ord. No.	99-34	Zone 2905	Ord. No.	19-28
Zone 701	Ord. No.	96-16	Zone 1611	Ord. No.	99-33	Zone 3000	Ord. No.	95-26
Zone 702	Ord. No.	96-22	Zone 1612	Ord. No.	99-42	Zone 3001	Ord. No.	04-34
Zone 900	Ord. No.	02-18	Zone 1613	Ord. No.	00-28	Zone 3002	Ord. No.	06-41
Zone 1000	Ord. No.	94-19	Zone 1614	Ord. No.	01-14	Zone 3003	Ord. No.	07-04
Zone 1001	Ord. No.	98-17	Zone 1615	Ord. No.	02-10	Zone 3004	Ord. No.	07-05
Zone 1002	Ord. No.	03-27	Zone 1616	Ord. No.	06-02	Zone 3005	Ord. No.	08-01
Zone 1003	Ord. No.	04-02	Zone 1700	Ord. No.	98-20	Zone 3006	Ord. No.	96-17
Zone 1004	Ord. No.	05-11	Zone 1800	Ord. No.	95-11	Zone 3007	Ord. No.	21-07
Zone 1005	Ord. No.	06-15	Zone 1801	Ord. No.	95-50	Zone 3100	Ord. No.	96-17
Zone 1006	Ord. No.	06-42	Zone 1803	Ord. No.	98-47	Zone 3101	Ord. No.	01-24
Zone 1007	Ord. No.	19-29	Zone 1804	Ord. No.	01-08	Zone 3102	Ord. No.	02-21
Zone 1100	Ord. No.	94-07	Zone 2000	Ord. No.	98-30	Zone 3103	Ord. No.	03-07
Zone 1101	Ord. No.	99-21	Zone 2200	Ord. No.	99-53	Zone 3104	Ord. No.	04-29
Zone 1200	Ord. No.	95-45	Zone 2201	Ord. No.	00-02	Zone 3105	Ord. No.	06-01
Zone 1201	Ord. No.	03-35	Zone 2202	Ord. No.	04-35	Zone 3106	Ord. No.	06-24
Zone 1203	Ord. No.	18-17	Zone 2203	Ord. No.	04-36	Zone 3107	Ord. No.	06-27
Zone 1204	Ord. No.	20-24	Zone 2300	Ord. No.	94-69	Zone 3108	Ord. No.	07-13
Zone 1500	Ord. No.	95-24	Zone 2500	Ord. No.	96-14	Zone 3109	Ord. No.	07-38
Zone 1501	Ord. No.	95-49	Zone 2501	Ord. No.	99-39	Zone 3110	Ord. No.	07-39
Zone 1502	Ord. No.	96-29	Zone 2502	Ord. No.	00-37	Zone 3112	Ord. No.	10-05

Zone 3113 Ord. No. 19-30