



# SUSTAINABILITY COMMITTEE

**\*\*DATE/TIME OUT SIDE REGULAR SCHEDULE\*\***

**May 29, 2020, 10:00 A.M.**

**To slow the spread of COVID-19, the Health Officer's Shelter Order of April 29, 2020, prevents public gatherings ([Health Officer Order](#)). In lieu of a public gathering, the SUSTAINABILITY COMMITTEE meeting will be available via remote access per Governor's Executive Order N29-20.**

Supervisor Federal D. Glover, Chair  
Supervisor John Gioia, Vice Chair

## Agenda Items:

Items may be taken out of order based on the business of the day and preference of the Committee.

*Persons who wish to address the Sustainability Committee during public comment or with respect to an item that is on the agenda may submit public comments before or during the meeting by email or voicemail as described below:*

- 1) Via email to [sustainability@dcd.cccounty.us](mailto:sustainability@dcd.cccounty.us). Email should list agenda number in subject line.
- 2) Via voicemail at 925-674-7871. The caller should start the message by stating "public comments – not on the agenda" or "public comments – agenda item #", followed by the caller's name, followed by the caller's comments.

Friday, May 29, 2020 10:00 am, Pacific Daylight Time (San Francisco, GMT-07:00)

JOIN ON THE WEB :

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Audio Conference:

US Toll Free

1-844-517-1271

Access code: 962 158 959

1. Introductions
2. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to three minutes).
3. **APPROVE** Record of Action from the February 3, 2020, meeting of the Sustainability Committee. (Jody London, DCD)
4. **RECOMMEND ADOPTION** of Climate Emergency Resolution by the Board of Supervisors. (Jody London, DCD)
5. **RECEIVE UPDATE** on the County's Asthma Initiative Project through the Green and Health Homes Initiative. (Demian Hardman, Conservation and Development)
6. **RECEIVE UPDATE** on solar energy and energy storage installations at County facilities. (Frank DiMassa, Public Works)
7. **RECOMMEND APPROVAL** by the Board of Supervisors for the Director, Department of Conservation and Development, or designee, for County to apply for Sustainable Agricultural Lands Conservation grant. (Jody London, DCD)

8. **RECEIVE REPORT** from Sustainability Commission Chair. (Howdy Goudey, Chair, or designate)
9. **RECEIVE REPORT** from Sustainability Coordinator. (Jody London, DCD)
10. The next meeting is currently scheduled for July 27, 2020.
11. Adjourn

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*The Sustainability Committee will provide reasonable accommodations for persons with disabilities planning to attend Sustainability Committee meetings. Contact the staff person listed below at least 72 hours before the meeting.*

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*Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the County to a majority of members of the Sustainability Committee less than 96 hours prior to that meeting are available for public inspection at 651 Pine Street, 1st floor, during normal business hours.*

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*Public comment may be submitted via electronic mail on agenda items at least one full work day prior to the published meeting time.*

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For Additional Information Contact:

Jody London, Sustainability Coordinator  
Phone: (925) 674-7871  
Jody.London@dcd.cccounty.us



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** APPROVE Record of Action from the February 3, 2020, meeting of the Sustainability Committee.

**Submitted For:** Jody London, Sustainability Coordinator

**Department:** Conservation & Development

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Jody London, DCD

**Contact:** Jody London (925)674-7871

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### **Referral History:**

County Ordinance (Better Government Ordinance 95-6, Article 25-205 [d]) requires that each County body keep a record of its meetings. Though the record need not be verbatim, it must accurately reflect the agenda and the decisions made in the meeting.

### **Referral Update:**

Any handouts or printed copies of testimony distributed at the meeting will be attached to this meeting record. Links to the agenda and minutes will be made available at the Committee web page, <http://www.contracosta.ca.gov/7029/Sustainability-Committee>.

### **Recommendation(s)/Next Step(s):**

Staff recommends approval of the attached Record of Action for the February 3, 2020, meeting of the Sustainability Committee.

### **Fiscal Impact (if any):**

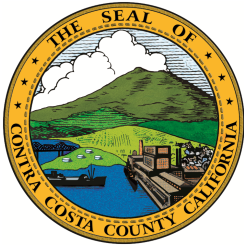
N/A

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### **Attachments**

02-03-20 Sustainability Committee Mtg Minutes

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## SUSTAINABILITY COMMITTEE

RECORD OF ACTION FOR  
February 3, 2020

Supervisor Federal D. Glover, Chair  
Supervisor John Gioia, Vice Chair

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Present: Federal D. Glover, Chair  
John Gioia, Vice Chair

Staff Present: Lisa Chow, Office of Supervisor Mitchoff; Michael Kent, Hazardous Materials Ombudsperson; Cindy Cortez, Climate Corps Fellow, Dept of Conservation and Dvt; Demian Hardman, Energy Planner, Dept of Conservation and Dvt; Jody London, Sustainability Coordinator; Jason Crapo, Deputy Director, Dept of Conservation and Dvt; Dom Pruett, Office of Supervisor Andersen

Attendees: Mike Moore, Art Ungar, Marti Roach, Howdy Goudey, Nick Despota, Lisa Chang, Rebecca Auerbach, Jan Warren

1. Introductions
2. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to three minutes).

There was no public comment.

3. Staff recommends approval of the attached Record of Action for the September 23, 2019, meeting of the Sustainability Committee.

The Record of Action was approved.

4. RECEIVE REPORT on benefits of building electrification and PROVIDE DIRECTION as appropriate.

Demian Hardman provided an overview of building electrification reach codes. He reported on the health benefits of building electrification and the negative impacts of gas use in residential buildings, including the direct correlation between asthma and gas use. The Committee discussed an electric-preferred reach code as a potential option for the County. Hardman reported that electric-preferred ordinances require 10 to 15% more efficiency than all-electric ordinances. Supervisor Gioia recommended providing alternatives to choose from in order to understand the process the County would go through to adopt an ordinance. He mentioned it is important to include the perspective from the development community and other stakeholders during the process.

Members of the community offered comments on this issue. Marti Roach encouraged the County to educate stakeholders and the public about the economic benefits and implementation timelines of a building electrification reach code. Arthur Ungar emphasized the importance of the County to act as a leader in adopting these ordinances in order to set the example for other cities to follow. Lisa Chang reported on a New England Journal of Medicine article, "False Promise of natural gas", which discusses high Asthma correlations and other health harms from natural gas. The article recommends new residential gas hookups be banned. Jody London highlighted the challenge of applying this ordinance to existing buildings, including expense and equity. Howdy Goudey commented that the Sustainability Commission meeting in February will receive a presentation by Hardman and is hoping to provide feedback for the Sustainability Committee at its next meeting.

The Committee directed staff to report on the building electrification ordinance by March 23, and recommended staff to look at the City of San Jose's adopted ordinance as a model.

**5. RECOMMEND SUPPORT for the federal Green Act.**

Jody London reported on the Green Act. The Committee voted to move forward on this.

**6. REVIEW and ADOPT 2020 Sustainability Committee Discussion Schedule and 2019 Progress Report**

The Committee agreed on the 2020 calendar and discussion schedule.

**7. REVIEW Sustainability Staff 2020 Work Plan.**

The Sustainability Coordinator provided an overview of the work plan developed by the County's sustainability staff at the Department of Conservation and Development. The Committee directed staff to come back with reports on the climate emergency mobilization and reach code ordinance.

**8. RECEIVE report from Sustainability Commission Chair.**

Howdy Goudey, Sustainability Commission Chair, reported that the 2019 Annual Report and Work Plan had been approved at the last Sustainability Commission meeting. He reported that members of the Sustainability Commission are interested in seeing the County pursue a low carbon concrete standard. He added that building electrification will be included at an upcoming Commission meeting.

**9. RECEIVE REPORT from County Sustainability Coordinator.**

The Sustainability Coordinator provided an overview of her activities since the last meeting and reported on the Climate Action Plan update. Demian Hardman reported that BayREN had been approved for ongoing funding to exist as a permanent program, with \$287,000 as baseline funding and additional funding for special projects. He reported that a grant has been approved for a pilot program to assess health impacts and building status correlations for the Green and Healthy Homes Initiative, and DCD and the Health Department continue to look for additional grant opportunities.

10. The next meeting is currently scheduled for March 23, 2020.

11. Adjourn

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For Additional Information Contact:

Jody London, Sustainability Coordinator  
Phone (925) 674-7871  
[Jody.London@dcd.cccounty.us](mailto:Jody.London@dcd.cccounty.us)



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** RECOMMEND ADOPTION of Climate Emergency Resolution by the Board of Supervisors.

**Submitted For:** Jody London, Sustainability Coordinator

**Department:** Conservation & Development

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Jody London, DCD

**Contact:** Jody London (925)674-7871

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### **Referral History:**

On November 19, 2019, the Board of Supervisors (Board) received a proposal from the Contra Costa County Sustainability Commission that the Board adopt a Climate Emergency Resolution. The Board referred this item to the Sustainability Committee.

On December 9, 2019, the Sustainability Committee discussed options for structuring a climate emergency resolution. Supervisors expressed their opinion that resolutions have greater value when they identify tangible actions we can take. They cited to the recent State Executive Order N-19-19 on reducing greenhouse gas emissions and mitigating impacts of climate change in State government as an example. The Committee expressed interest in seeing the County take action on those issues where it can have the greatest impact. The Committee recognized that the County must balance priorities, it cannot invest in everything people might want at this time. Community members offered many ideas for a climate emergency resolution. They stressed that this is an emergency and the County should provide bold leadership and action. Community members urged the Board include in any resolution deadlines or dates by which action can be expected. Community members expressed interest in the Board taxing the refineries located in Contra Costa County and determining how the County should plan for a situation where the refineries and other fossil-fuel based industries are not viable.

The Committee directed the Sustainability Coordinator to develop a draft climate emergency resolution in consultation with the Sustainability Commission, and come back to the Committee.

### **Referral Update:**

The attached draft Climate Emergency Resolution was developed by staff, in consultation with the Sustainability Commission, which has discussed this at several meetings, most recently its February 24, 2020 meeting. The draft Resolution reflects the new realities of the COVID-19 pandemic. It recommends three actions:

1. The County Department of Conservation and Development is directed to work with the

County Administrator and other departments to establish an interdepartmental task force of Department heads, or their immediate deputies, that will focus on implementing the County's Climate Action Plan and identifying additional actions, policies, and programs the County can undertake to reduce and adapt to the impacts of a changing climate.

2. The County Sustainability Commission is directed to seek input from the community to help the County anticipate and plan for an economy that is less dependent on fossil fuel extraction and processing, helps plan for a transition from a fossil-fuel dependent economy, and considers how the County's recovery from the COVID-19 pandemic can incorporate the County's climate goals. As the State of California adopts policies and goals for reducing pollution and addressing climate change, the County will consider with the assistance of the Sustainability Commission what this will mean for County revenues, jobs, health, and infrastructure, including new opportunities and how frontline communities will realize economic and other benefits. The Commission will include this topic in its ongoing advice to the Board of Supervisors.
3. Health, socio-economic, and racial equity considerations should be included in policymaking and climate solutions at all levels and across all sectors as the consequences of climate change have significant impacts on all County residents, but especially the young, the elderly, low-income or communities of color, and other vulnerable populations.

**Recommendation(s)/Next Step(s):**

RECOMMEND ADOPTION of Climate Emergency Resolution by the Board of Supervisors

**Fiscal Impact (if any):**

N/A

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**Attachments**

Draft Climate Emergency Resolution

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RESOLUTION NO. \_\_\_\_  
CONTRA COSTA COUNTY, STATE OF CALIFORNIA

\* \* \* \* \*

RESOLUTION ENDORSING THE DECLARATION OF A CLIMATE EMERGENCY IN  
CONTRA COSTA COUNTY THAT DEMANDS ACCELERATED ACTIONS ON THE  
CLIMATE CRISIS AND CALLS ON LOCAL AND REGIONAL PARTNERS TO JOIN  
TOGETHER TO ADDRESS CLIMATE CHANGE.

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**RESOLVED**, by the Board of Supervisors of the County of Contra Costa, State of California,  
that:

**WHEREAS**, according to the Intergovernmental Panel on Climate Change (IPCC),  
increasing emissions of greenhouse gases (GHG) will cause global temperatures to rise 1.5  
degrees Celsius by as early as 2030; and

**WHEREAS**, on June 24, 2019, more than 70 health organizations including the  
American Medical Association and the American Public Health Association declared climate  
change to be a health emergency and issued a call to action for government, business, and civil  
society leaders to recognize climate change as a health emergency; and

**WHEREAS**, California's Governor Gavin Newsom in Executive Order N-19-19 has  
committed state agencies to immediate and bold actions that reduce greenhouse gas emissions,  
curb the impacts from climate change, and develop a Climate Investment Framework; and

**WHEREAS**, the State of California has established goals to reduce greenhouse gas  
emissions 40 percent below 1990 levels by 2030, provide 100 percent of the State's electricity  
from clean energy sources by 2045, reduce methane emissions and hydrofluorocarbon gases by  
40 percent, and add five million zero-emission vehicles to California's roads by 2030; and

**WHEREAS**, the State of California has recognized the need for careful study and  
planning to decrease demand and supply of fossil fuels, while managing the decline in a way that  
is economically responsible and sustainable; and

**WHEREAS**, for Contra Costa County, rising global temperatures will cause sea levels to  
rise (up to six feet or more by year 2100 under certain scenarios), contribute to increasingly  
extreme weather, including intense rainfall, storms, and heat events, and heightened risk of  
wildfires; and

**WHEREAS**, the consequences of climate change pose risks to life, safety and critical infrastructure in Contra Costa County and throughout the world, and threaten physical, social, and economic well-being; and

**WHEREAS**, climate change impacts in Contra Costa County will be most acutely felt by children, seniors, low income populations, communities of color, and residents with unstable economic or housing situations; and

**WHEREAS**, the Vulnerability Assessment developed for the Envision Contra Costa 2040 General Plan indicates that the most vulnerable County residents, including households in poverty, low-income households, and persons experiencing homelessness, are more likely to be severely impacted by a changing climate, including flooding, wildfires, extreme heat, and poor air quality; and

**WHEREAS**, the Vulnerability Assessment also indicates that there is severe vulnerability in the County's agriculture sector, industrial and manufacturing centers, including oil refineries, rangelands, and the Delta due to climate impacts, as well as infrastructure including major roads and highways, flood control, parks and open space, railroads and BART, and wastewater treatment plants and infrastructure; and

**WHEREAS**, fossil fuels are recognized as a primary contributor to the rapidly changing climate; and

**WHEREAS**, seven of the ten largest industrial pollution sources in the San Francisco Bay Area are located in Contra Costa County; and

**WHEREAS**, twenty-five census tracts in Contra Costa County are recognized by the State of California as being in the top twenty-five percent of "disadvantaged" or "frontline" communities that are disproportionately burdened by sources of pollution; and

**WHEREAS**, rates of asthma, obesity, and breast, colorectal, lung, and prostate cancer are higher in Contra Costa County than in the rest of California, and in some cases, the nation, particularly in census tracts that are located near large industrial facilities; and

**WHEREAS**, the world is facing an unprecedented crisis with the COVID-19 pandemic, which has swept across the world causing global human tragedy and an historical economic setback, forcing a rebuild of our economy and a need to introduce the necessary recovery plans to restore sustainable progress and prosperity to the citizens of Contra Costa; and

**WHEREAS**, long-term exposure to air pollution increases vulnerability to experiencing the most severe COVID-19 outcomes, further burdening the disproportionately affected communities that traditionally carry the brunt of the negative impacts of climate change, particularly in census tracts recognized as disadvantaged communities; and

**WHEREAS**, PBF Energy, which purchased the former Shell Martinez refinery in February 2020, on March 30, 2020, during a period of rapid decrease in fossil fuel usage announced that it plans to sell two hydrogen plants at the Martinez facility “as part of a strategic plan for PBF to navigate current extraordinary and volatile markets,” creating economic uncertainty for Contra Costa County; and

**WHEREAS**, the COVID-19 crisis could mark a turning point in progress on climate change and there will be a need for a resilient recovery after the pandemic, and Contra Costa County’s capacity to act depends largely on our ability to work together in solidarity to build the bridge between fighting Covid-19, biodiversity loss, and climate change; and

**WHEREAS**, the County has taken a number of actions to address climate change, some of which include: adopting and implementing the 2015 Climate Action Plan; selecting MCE as the electricity provider for unincorporated Contra Costa County, in large part because of the higher clean energy content MCE offers; investing in clean energy, efficient building technologies, and alternative fuels for County operations; providing opportunities to generate more clean energy in Contra Costa County; developing an electric vehicle readiness blueprint; providing energy efficiency programs to County residents; increasing composting and recycling in County facilities; and

**WHEREAS**, the current pace of climate actions may still fall short of reducing the projected harm to people and places and accelerated actions need to be taken to reduce our GHG emissions and implement solutions to prepare and protect our communities; and

**WHEREAS**, by declaring a climate emergency, Contra Costa County will join the over 1,000 national, international and local jurisdictions, including many in the Bay Area, that have made similar declarations that commit to reducing GHG emissions and planning for climate change; and

**WHEREAS**, the County invites all Contra Costa cities and agencies to also approve a Climate Emergency Declaration to create a unified Countywide voice around climate change and

to strengthen the call for state and federal actions and funds to address the economic, social, public health, and national security threats posed by the climate crisis.

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Supervisors of the County of Contra Costa declares a climate emergency that threatens the long-term economic and social well-being, health, safety, and security of the County.

**BE IT FURTHER RESOLVED** that the County Department of Conservation and Development work with the County Administrator and other departments to establish an interdepartmental task force of Department heads, or their immediate deputies, that will focus on implementing the County's Climate Action Plan and identifying additional actions, policies, and programs the County can undertake to reduce and adapt to the impacts of a changing climate.

**BE IT FURTHER RESOLVED** that the County Sustainability Commission seek input from the community to help the County anticipate and plan for an economy that is less dependent on fossil fuels, helps plan for a transition from a fossil-fuel dependent economy, and considers how the County's recovery from the COVID-19 pandemic can incorporate the County's climate goals. As the State of California adopts policies and goals for reducing pollution and addressing climate change, the County will consider with the assistance of the Sustainability Commission what this will mean for County revenues, jobs, health, and infrastructure including new opportunities and how frontline communities will realize economic and other benefits. The Commission will include this topic in its ongoing advice to the Board of Supervisors.

**BE IT FURTHER RESOLVED** that health, socio-economic, and racial equity considerations should be included in policymaking and climate solutions at all levels and across all sectors as the consequences of climate change have significant impacts on all County residents, especially the young, the elderly, low-income or communities of color, and other vulnerable populations.



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** RECEIVE UPDATE on the County's Asthma Initiative Project through the Green and Healthy Homes Initiative.

**Submitted For:** Jody London, Sustainability Coordinator

**Department:** Conservation & Development

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Demian Hardman, Conservation and Development

**Contact:** Demian Hardman, (925) 674-7826

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### **Referral History:**

None.

### **Referral Update:**

Since 2017, the County Department of Conservation and Development (DCD) and Health Services Department (HSD) staff have been coordinating with County public health nurses to refer medically vulnerable clients to the County's Federal and State Low-Income Weatherization Program administered by DCD to improve home energy efficiency and health outcomes.

In 2018/2019, the County's Community Choice Aggregator, MCE in partnership with HSD and DCD were awarded a Phase 1 Technical Assistance Grant through the Green and Health Homes Initiative (GHHI) to develop a Business Plan for a comprehensive home-based asthma program to expand services to improve health outcomes. The Business Plan (Attachment 1) was completed in November 2019. In late 2019, HSD in partnership with DCD and MCE was awarded a Phase 2 Technical Assistance Grant through GHHI to research the feasibility of integrating the project into the State health care billing system. The technical assistance grant also provides support for finding other funding to support the implementation of the completed Business Plan.

To implement the Contra Costa Asthma Initiative Business Plan, in April 2020, HSD in coordination with MCE and DCD submitted a \$500,000 grant for a three-year period to the Sierra Health Foundation for the Public Health Division and Contra Costa Health Plan to provide asthma home visiting services. HSD is expected to hear by June 2020 if the County will be awarded funding.

In addition, HSD staff was advised that the Bay Area Air Quality Management District (BAAQMD) staff was interested in the County's Asthma Initiative project and is recommending that its Board allocate \$100,000 towards the project.

A verbal update on the status of this project and its potential funding opportunities will be

provided to the Sustainability Committee.

**Recommendation(s)/Next Step(s):**

**RECEIVE UPDATE** on the County's Asthma Initiative Project through the Green and Health Homes Initiative.

**Fiscal Impact (if any):**

This project may allow the County to receive grant funds to expand the project's existing efforts.

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**Attachments**

Green and Healthy Homes Initiative Business Plan

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# Contra Costa Asthma Initiative

A business plan for a comprehensive home-based asthma program



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*Our communities don't get the attention we need. I feel most healthcare services are negligent towards us. I'm thankful that our communities are being targeted. It's making a difference for my family and is very helpful.”*

- Contra Costa Health Plan asthma pilot participant

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<b>REPORT PRIMARY AUTHOR</b>	<b>WILL KLEIN, GREEN &amp; HEALTHY HOMES INITIATIVE</b>
<b>PROJECT TEAM</b>	<b>MICHAEL KENT, CONTRA COSTA HEALTH SERVICES</b>
	<b>DEMIAN HARDMAN, CONTRA COSTA DEPARTMENT OF</b>
	<b>CONSERVATION AND DEVELOPMENT</b>
	<b>MICHELLE NOCHISAKI, MCE</b>
	<b>KAREN SCHLEIN, CONTRA COSTA HEALTH PLAN</b>



# Executive Summary

**Problem Statement:** 300,000 Contra Costa residents live in a census tract that ranks in the 95<sup>th</sup> percentile or higher of asthma Emergency Department (ED) rates statewide. This is the highest number of people in any county in the state and the fourth highest by percent of County residents in the state. An estimated 4,950 people visit the ED for asthma each year in the County and they disproportionately are of lower socio-economic status and African-American than the general population. Asthma exacerbations are largely avoidable, but significant portions of the federally recommended asthma care guidelines (home-based education and remediation of asthma triggers) are not traditionally covered by Medicaid or included in traditional clinical care.

**Proposal:** The initiative expands upon existing asthma home visiting efforts in two ways: 1) by incorporating home assessment and remediation service provision into current program efforts, and 2) developing operational proficiency in a home-based delivery model, which can serve as a blueprint for securing sustainable funding to address social determinants of health from the healthcare, housing, and energy sectors. The initial phase of the initiative targets 50 high-risk members (adults and children) on the Contra Costa Health Plan (CCHP) over one year with a coordinated home-based delivery model that supplements traditional clinical care. Additional phases may include a) expansion of the target population to include low- and middle-income residents (i.e. those not on CCHP) through partnerships with BayREN and other insurers or b) expansion of services to include additional healthy home measures for other health issues (e.g. COPD, trip/falls). The initial phase consists of the following services and impacts:

Program Component	Service Partner	Potential Funding Source (Budget for 50 enrollees)
<b>Home visits</b> for asthma education and medication management, including consumer supplies to address asthma triggers (e.g. green cleaning supplies).	Contra Costa Health Plan	State Asthma Fund  \$55,000 - \$85,000
<b>Assessment and remediation</b> of asthma triggers in the patients' homes (e.g. mold remediation, carpet removal/cleaning, ventilation)	<i>Single-family:</i> County Weatherization <i>Multi-family:</i> Association for Energy Affordability (AEA)	CDBG supplemented with foundations  \$77,500 - \$135,000
<b>Energy efficiency and weatherization</b> services	BayREN, MCE, County Weatherization	Leverages existing funding sources
<b>Program support functions</b> , such as database, tablets, evaluation, assessor training, outreach time	TBD	State Asthma Fund + foundations \$27,500 - \$55,000
<b>Total</b>		<b>\$160,000 - \$275,000</b> (\$3,200 - \$5,500 per member)

Direct Impacts (3-yr estimates of serving 50 members)	Long-term Impacts
<ul style="list-style-type: none"> <li>\$175,000 savings to CCHP (\$3,500 per member)</li> <li>140 fewer ED visits and its associated reduction in overcrowding (2.5 per member)</li> <li>70 fewer ambulance trips and decrease in associated wait time</li> <li>20% increase in Asthma Medication Ratio (AMR) from .5 to .6</li> <li>20% Decrease in missed school and work days</li> </ul>	<ul style="list-style-type: none"> <li>Development of coordinated health, energy, and housing delivery model that is a blueprint for: <ul style="list-style-type: none"> <li>Addressing root of housing-related health inequities</li> <li>Blueprint for sustainable health insurer funding of services</li> <li>Leveraging energy efficiency expertise and funds</li> </ul> </li> </ul>

# Problem Statement

David<sup>1</sup>, a man in his late fifties with respiratory failure, congestive heart failure, renal failure, and a history of homelessness, was recently housed in an apartment in Antioch. Although he now had a roof over his head, the apartment lacked air conditioning, the windows had been painted shut, and the apartment was infested with rodents. With these living conditions, David was frequently going in and out of the emergency room for breathing problems.

The proposed asthma program is designed to supplement existing primary care services by providing a home-based asthma program with visiting health workers (either community health workers or nurses) to engage patients with personalized, in-home asthma education and remediation of their underlying asthma triggers. Evidence shows that while medication and clinical care can help mitigate David's respiratory challenges, until the temperature and rodent hazards in his home are fixed, he will continue to struggle.

In David's case, his Public Health Nurse, Veronica, connected him to County Weatherization services through a pilot program to develop referral processes between the two programs. The Weatherization program provided him with an air conditioning unit, opened his windows, and talked to his landlord about the rodent challenge, in addition to working with him on asthma self-management. He no longer needed to be on oxygen 24/7. David felt better, "I'm getting a little stronger. I just started back walking three days ago."

There are an estimated 4,950 people in Contra Costa County who, like David, visit the Emergency Department each year for asthma<sup>2</sup>. Asthma is one of the most common chronic diseases affecting the U.S. population, with one in 13 individuals having ever been told they had asthma<sup>3</sup>. As of 2017, Contra Costa ranked in the top 25% of California counties in terms of active and lifetime asthma prevalence, asthma ED visits, and hospitalization admits<sup>4</sup>. Within Contra Costa, however, this is even more concentrated by geography, race, and income. 300,000 Contra Costa residents live in a census tract that ranks in the 95<sup>th</sup> percentile or higher of asthma ED rates statewide (Figure 1), the highest number of people in any county in the state and the fourth highest by percent of County residents in the state (after Kings, Imperial, and Merced)<sup>5</sup>. Additionally, African-Americans are 3 times as likely to visit the ED for asthma compared to the general population and CCHP members are 2 times as likely relative to the general County population (Table 1).

**Table 1. Annual Asthma ED Visit Rates by Race/Ethnicity**

*Avg. number ED visits per 100 people in single year (expressed as percentage)*

	<b>National (2016)</b>	<b>California (2017)</b>	<b>Contra Costa County (2017)</b>	<b>CCHP Medi-Cal ('18-'19)</b>
African-Americans	1.6%	1.7%	2.2%	3.2%
Latino/Hispanic	0.8%	0.5%	0.7%	1.4%
White	0.4%	0.5%	0.4%	0.9%
Asian/Pacific Islander	-	0.2%	0.3%	0.9%
Other	-	0.8%	0.7%	0.7%
Total	0.6%	0.5%	0.6%	1.3%

*Data Sources: National (CDC); California & County (Tracking California); CCHP (CCHP internal, RMC & CPN Networks)  
CCHP: Contra Costa Health Plan; ED: Emergency Department  
See Appendix A for further methodology*

<sup>1</sup> Name has been changed. Read more at <http://www.rampasthma.org/D:Web%20Siteswww.rampasthma.orgwp-content/uploads/2018/12/Energy-Efficiency-and-Health-Guide-for-Public-Health-and-Health-Care-Professionals.pdf>

<sup>2</sup> GHFI estimate based on extrapolation from CCHP, OSHPD, and American Census Data. See Appendix A for methodology

<sup>3</sup> See [https://www.cdc.gov/asthma/most\\_recent\\_national\\_asthma\\_data.htm](https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm)

<sup>4</sup> Prevalence from California Breathing via CHIS; utilization from Tracking California via OSHPD

<sup>5</sup> Cal Enviro Screen. See supplementary excel files and Appendix A for methodology

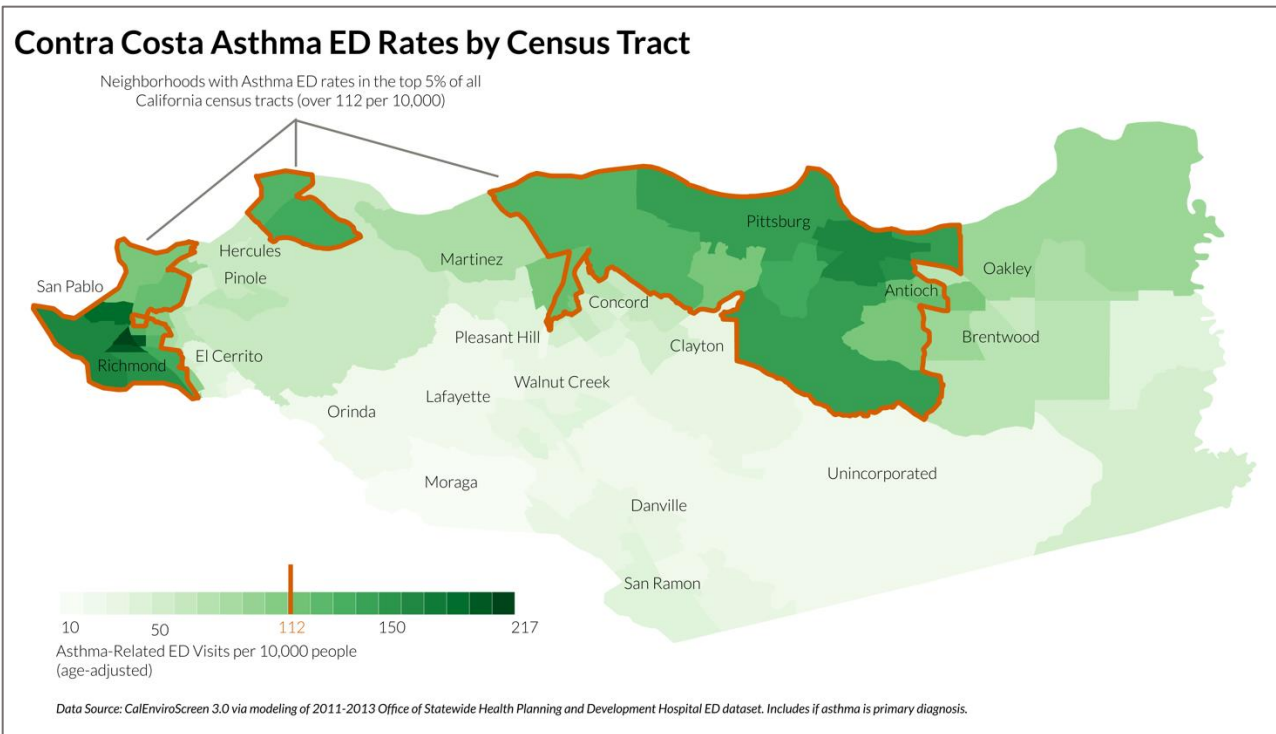


Figure 1

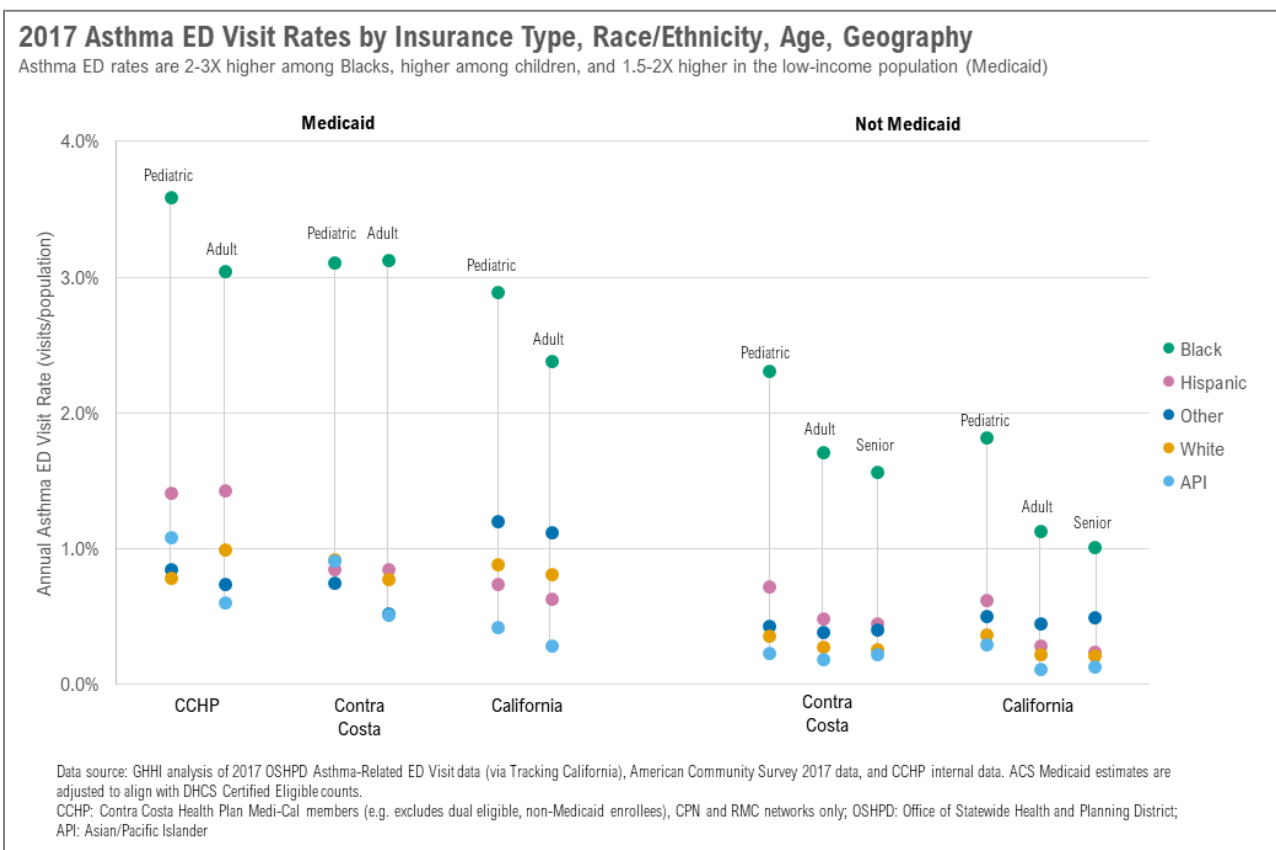
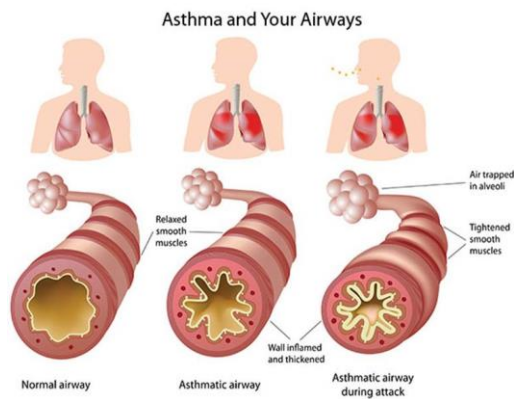


Figure 2

Asthma typically develops by age 7, although it may develop later in life, and is caused by both environmental (physical, psychosocial, and microbial) and genetic factors. Once somebody has developed asthma, it remains present whether or not they have symptoms. While there is limited understanding of how to prevent the development of asthma, there is extensive evidence of medical and community-based care that can help patients manage their asthma and prevent asthma exacerbations.



The development of asthma increases the sensitivity of an individual's airways, which then are more prone to becoming irritated and inflamed when exposed to asthma triggers. This exposure then causes the airways to swell and develop mucous, constricting airflow (Figure 3). While considerable investment has been made in developing asthma medications, researchers have estimated that eliminating home-based asthma triggers, if causally associated, would reduce up to 44% of asthma diagnoses among children<sup>6</sup> and adolescents.<sup>7</sup>

Figure 3

A 2015 update to the Institute of Medicine's literature review of asthma triggers found causal evidence for two types of home-based asthma triggers, allergens and dampness-related agents, and suggestive evidence for a third, irritants<sup>8</sup>:

- **Allergens** (e.g. dust mites, cats, cockroaches, outdoor fungi, rodents) These are often correlated with moisture, but can also exist in bedding, carpets, HVAC systems, and trash.
- **Irritants** (e.g. tobacco smoke, NO<sub>x</sub>, VOCs). NO<sub>2</sub> is a combustion byproduct. Combustion appliances include gas stoves, space heaters, poorly vented furnaces, and fireplaces.
- **Dampness/Moisture** Damp conditions are favorable for many biological allergens, such as dust mites, bacteria, mold, and pests, to grow and thrive. The chemicals released from damp conditions or the biologic activity may also trigger asthma. Home dampness is the result of water infiltration (leaks in walls, roof, windows) and sub-optimal humidity or condensation from poor temperature control and ventilation.

<sup>6</sup> Lanphear, B. P., Aligne, C. A., Auinger, P., Weitzman, M., & Byrd, R. S. (2001). Residential exposures associated with asthma in US children. *Pediatrics*, 107(3), 505-511.

<sup>7</sup> Lanphear, B. P., Kahn, R. S., Berger, O., Auinger, P., Bortnick, S. M., & Nahhas, R. W. (2001). Contribution of residential exposures to asthma in US children and adolescents. *Pediatrics*, 107(6), e98-e98.

<sup>8</sup> Kanchongkittiphon, W., Mendell, M. J., Gaffin, J. M., Wang, G., & Phipatanakul, W. (2014). Indoor environmental exposures and exacerbation of asthma: an update to the 2000 review by the Institute of Medicine. *Environmental health perspectives*, 123(1), 6-20.

# Target Population

The first phase of the initiative will occur over one year and target approximately 50 Contra Costa Health Plan members with poorly controlled asthma, as identified via medical records or health professional referral. While there is no age or geographic eligibility restriction, the program may want to target outreach to areas or physicians with higher concentrations of eligible members. The number 50 was selected based on expectation of a full case load for a health worker and may be adjusted depending on future staffing decisions.

## Estimates of Asthma ED Visits in Contra Costa County

Of the 1.1M Contra Costa residents, an estimated 4,950 visit the ED each year for asthma. This disproportionately affects those on Medi-Cal or under the 200% Federal Poverty Line, who comprise an estimated 56% of all asthma ED visits despite being only 28% of the total population (Table 2)

**Table 2. Distribution of Contra Costa Residents with Asthma ED Visits By Income (2017)**

*Population rounded to thousands and people with asthma ED visit rounded to tens*

	<b>Lower Income</b>	<b>Middle Income</b>	<b>Higher Income</b>	<b>Total</b>
	<200% FPL or Medi-Cal	>200% FPL & <\$125,000 (hh)	>\$125,000 (hh)	
<b>Total Population</b>	316,000	375,000	457,000	1,148,000
<b>% of Total Population</b>	28%	33%	40%	100%
<b># People with Asthma ED Visit</b>	2,740	1,110	1,050	4,900
<b>% Population w/ Asthma ED Visit</b>	0.9%	0.3%	0.2%	0.4%
<b>% of Total People w/ Asthma ED Visit</b>	56%	23%	21%	100%

*Data Sources: GHFI analysis of OSHPD, DHCS, ACS, and CCHP data  
FPL: Federal Poverty Line; (hh): household income; ED: Emergency Department  
See Appendix A for further methodological details*

The initial phase of this initiative will target a subset of the Lower Income group – Contra Costa Health Plan Medi-Cal members in the Regional Medical Center (RMC) or Community Provider Network (CPN), which represent approximately 40% of this group both by population (120,000 members) and people with an asthma ED Visit (1,200 members). The remainder of this Lower Income Group reflects additional CCHP members (e.g. dual eligible, those in the Kaiser network), Anthem Blue Cross members, Medi-Cal members who are served directly by the state, and the uninsured. These non CCHP Medi-Cal groups can be served through expansion of this initial phase.

Additionally, this initiative can expand to serve the Middle-Income population through partnership with BayREN, a regional energy efficiency initiative that targets those with a household income under \$125,000 but don't qualify for Weatherization and other income-eligible energy efficiency programs (typically under 200% FPL).

Finally, this initiative can expand its scope of intervention services to provide a comprehensive healthy homes program and to address other housing-related health conditions, such as COPD, trip/fall hazards, and those at risk of thermal stress (e.g. heat vulnerability). In terms of services,

the initiative is currently scoped to prioritize asthma-related home modifications (see later sections for more details), but the intended goal is to eventually identify funding to provide a comprehensive healthy homes program – addressing hazards like lead paint, asbestos, injury hazards.

### Characteristics of the Target Population

CCHP members with poorly controlled asthma differ from the general population in several ways, each of which is described below along with how the program is designed to address the specific characteristics.

#### *Housing Tenure*

CCHP members are more likely to rent and live in multi-family buildings than others in the County. Based on ACS estimates, over 50% rent, with 20% living in apartment buildings (Table 3). The program addresses this in a few ways:

- The home assessment and remediation partners (see later section) are very experienced in running multi-family energy efficiency and weatherization programs. They are also able to offer the building owner a free energy assessment and significant rebates which may help to incentive the owner to allow improvements in the patients' units.
- The program identified several multi-family buildings in the County with multiple tenants with asthma. This both a) helps identify buildings that likely have the biggest need for improvements and b) increases the program efficiency by serving multiple patients at a single address.
- The County Weatherization program is experienced at working with landlords to serve single-family renters.

**Table 3. Contra Costa County Housing Type by Income Category (2017)**

*% is of individuals, not of housing units*

	<b>Lower Income</b> <200% FPL or Medi-Cal	<b>Middle Income</b> >200% FPL & <\$125,000 (hh)	<b>Higher Income</b> >\$125,000 (hh)
<b>% SF Owner-Occupied</b>	40%	62%	85%
<b>% SF Rental</b>	32%	21%	10%
<b>% MF Rental</b>	21%	14%	4%
<b>% Other</b>	7%	3%	1%
<b>Total</b>	100%	100%	100%

*Data Source: GHHL analysis of 2017 American Community Survey estimates*

*FPL: Federal Poverty Line; (hh): household income; SF: single-family; MF: multi-family*

*See Appendix A for further methodological notes*

#### *Demographics*

This initiative has the opportunity to address racial health inequities, as CCHP members with asthma are more likely to be African-American and female than the general population. Meanwhile, they are similar to the general population in that roughly a quarter are primarily Spanish speaking (Table 4). The initiative addresses this primarily through the use of bilingual service providers who bring deep understanding of Hispanic culture.

**Table 4. Demographics of CCHP Medi-Cal Members ('18-'19) Relative to County Population (2017)***CCHP Medi-Cal members participating in either CPN or RMC network (excludes Kaiser) w/ at least one asthma-related claim in given year*

	CCHP Members w/ Asthma Claim			County-wide Pop.	
	Adults	Kids	Total	Medicaid	All
People	2,326	1,847	4,173	273,882	1,147,575
<b>Race/Ethnicity</b>					
% Black	23%	19%	21%	13%	8%
% Hispanic	34%	54%	43%	42%	26%
% API	9%	7%	8%	13%	17%
% Other	10%	11%	10%	7%	5%
% White	24%	10%	18%	24%	44%
Total	100%	100%	100%	100%	100%
<b>Gender</b>					
Male	30%	58%	42%	47%	49%
Female	70%	42%	58%	53%	51%
Total	100%	100%	100%	100%	100%
<b>Primary Language</b>					
% Spanish	15%	36%	24%	38%	23%
% English	82%	61%	73%	39%	54%
% Other	3%	3%	3%	20%	22%
Total	100%	100%	100%	100%	100%

*Data Source: GHHI analysis of CCHP, ACS, DHCS data  
See Appendix A for further methodology details*

### *Healthcare Utilization and Costs*

Of the 4,170 CCHP Medi-Cal members (RMC & CPN Networks only) with an asthma claim, 388 members had at least one inpatient admission for asthma, totaling 477 inpatient admissions (1.2 per member). 1,220 members visited the ED for asthma, totaling 1,631 visits (1.3 per member). The 572 members with multiple asthma-related ED visits or 1+ asthma inpatient admit from April 2018 – April 2019 were responsible for nearly 60% of all asthma-related hospitalizations or ED visits (Figure 4).

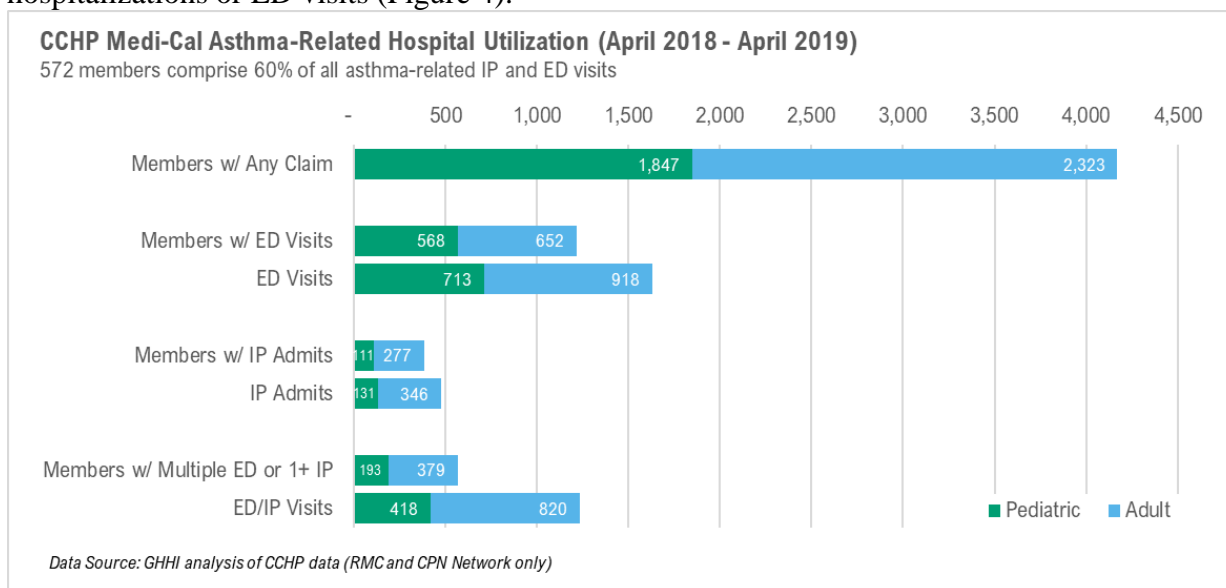


Figure 4



### *Primary Care Network*

Approximately 80% of the identified CCHP members with a recent asthma claim receive their primary care through the RMC (Regional Medical Center) network, a County-provided service (Table 5). This calculation excludes those in the Kaiser network. A key finding from CCHP's initial asthma home visiting pilot was that partnering with physicians for referrals of high-risk asthma patients was far more effective at recruitment than cold-calling based upon medical utilization data. Targeting physicians at the highest utilized clinics will build upon this.

**Table 5. Assigned Primary Care Provider for CCHP Members w/ Asthma ('18 - '19)**

*CCHP Medi-Cal members participating in either CPN or RMC network (excludes Kaiser) w/ at least one asthma-related claim in given year*

<b>Primary Care Provider</b>	<i>Count</i>	<i>% of total</i>
<b>CPN (Community Provider Network) Network</b>	<b>863</b>	<b>21%</b>
Independent Clinics	549	13%
Lifelong	173	4%
La Clinica	141	3%
<b>RMC (Regional Medical Center) Network</b>	<b>3307</b>	<b>79%</b>
Pittsburg Health Center	891	21%
West County Health Center	575	14%
Antioch Health Center	449	11%
Concord Health Center	430	10%
Brentwood Health Center	356	9%
Miller Wellness Center	205	5%
Martinez Health Center	204	5%
North Richmond Health Center	99	2%
Bay Point Health Center	45	1%
Concord Willow Pass Wellness	17	0%
Other	36	1%
<b>Total</b>	<b>4,170</b>	<b>100%</b>

*Data Source: GHFI analysis of CCHP internal data*

### *Geography*

Nearly half of CCHP members with an asthma claim in the last year live in three zip codes – 94565 (Pittsburg), 94509 (Antioch), or 94520 (Concord). This reflects the higher number of people living in these zip codes relative to West County zip codes (Richmond, San Pablo), which also have some of the highest concentrations of asthma ED rates in the state (Figure 1). The inclusion of West County and neighboring zips comprises 83% of all CCHP members with asthma claims. Targeting the program towards where higher total number of CCHP members



with asthma live, rather than based only upon asthma ED rates allows for increased efficiencies from a service delivery perspective.

#### Hotspot analysis of CCHP members with any asthma-related claim (Apr 2018 – 2019)

46% of all CCHP members with asthma claims reside in one of 3 zipcodes (highlighted in darkest green)

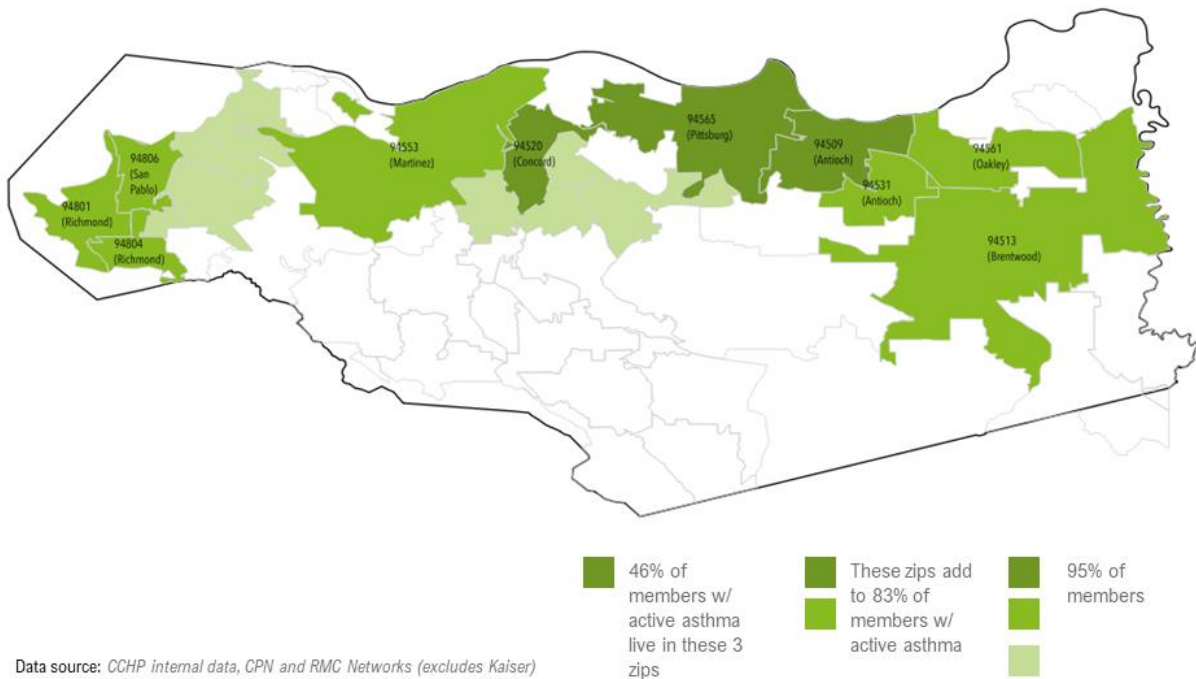


Figure 5

**Table 6. Zipcodes of Primary Residence, CCHP Members ('18 - '19)**

CCHP Medi-Cal members participating in either CPN or RMC network (excludes Kaiser) w/ at least one asthma-related claim in given year

Zip (City)	# w/ claim	% of Total
94565 (Pittsburg)	922	22%
94509 (Antioch)	658	16%
94520 (Concord)	316	8%
94806 (San Pablo)	245	6%
94804 (Richmond)	242	6%
94801 (Richmond)	237	6%
94531 (Antioch)	233	5%
94513 (Brentwood)	202	5%
94561 (Oakley)	201	5%
94553 (Martinez)	166	4%
Rest of zip codes	748	17%
Total	4,170	100%

Data Source: GHFI analysis of CCHP internal data

# Intervention Design

The program's home visiting and remediation services are designed to fill the gap between traditional clinical care and the recommendations from the National Heart, Lung, and Blood Institute Expert Panel 3 (NHLBI EPR-3)<sup>9</sup> for effective asthma management (Table 7). The program addresses the gaps in two ways: 1) they provide education and medication management in the patient's home, rather than in the physician's office and 2) they assess and address the root causes of the patient's asthma triggers by removing the underlying asthma triggers in their home.

**Table 7. NHLBI EPR-3 recommendations for effective asthma management**

<b>EPR-3 Recommended Component</b>	<b>Traditional Clinical Care</b>	<b>Gap Addressed by Program</b>
Measures of <b>assessment and monitoring</b> , obtained by objective tests, physical examination, patient history and patient report, to diagnose and assess the characteristics and severity of asthma and to monitor whether asthma control is achieved and maintained	Physician	(Home Visits)
<b>Education</b> for a partnership in asthma care	Physician (in clinic)	Home visits
Control of <b>environmental factors</b> and comorbid conditions that affect asthma		Home assessment Consumer Supplies Remediation of asthma triggers
<b>Pharmacologic therapy</b>	Clinical/Pulmonology Clinic as needed	

The program staffing model leverages three strengths in the County: the experienced staff who have run asthma home visiting pilots, the integrated care model of Contra Costa Health System (CCHS), and leveraged resources and housing expertise of energy efficiency programs. It consists of 5 direct service components, as further described in Figures 6 and 7 and below:

1. Home visits for asthma education and self-management
2. Home assessment to identify asthma triggers
3. Consumer supplies to manage asthma triggers (can be bought at store)
4. Minor to moderate home repair to remediate asthma triggers
5. Leveraged energy efficiency services

Additionally, there are 3 support functions:

- Outreach and enrollment
- Coordination with other providers
- Data management and evaluation

<sup>9</sup> National Heart, Lung, and Blood Institute Expert Panel Report 3 (NHLBI EPR-3)







	Program Component	Staffing Organization	
Home Visits	<b>3 Home Visits for Asthma Education</b> Coordinate with PCP on Asthma Action Plan, medication usage training, environmental triggers training, follow up with PCP and care managers <hr/> <b>Consumer Supplies to reduce asthma triggers</b> e.g. green cleaning supplies, hypo-allergenic mattress and pillow covers, integrated pest management, food storage containers		
Home Assessment	<b>Environmental assessment</b> Identify home-based asthma triggers and write remediation scope	Single-Family: County Weatherization	Multi-Family: Association for Energy Affordability
Trigger Remediation	<b>Remove asthma triggers from home</b> Moisture issues (mold removal, ventilation, plumbing leaks) Allergens (carpet removal/cleaning), and Irritants (HVAC, combustion gases, VOCs)		
EE/ Weatherization	<b>Lower energy bills and improve comfort of home</b> <i>Leveraged funds</i> Lighting, heat pumps, energy-efficient appliances, HVAC	 	

Figure 6

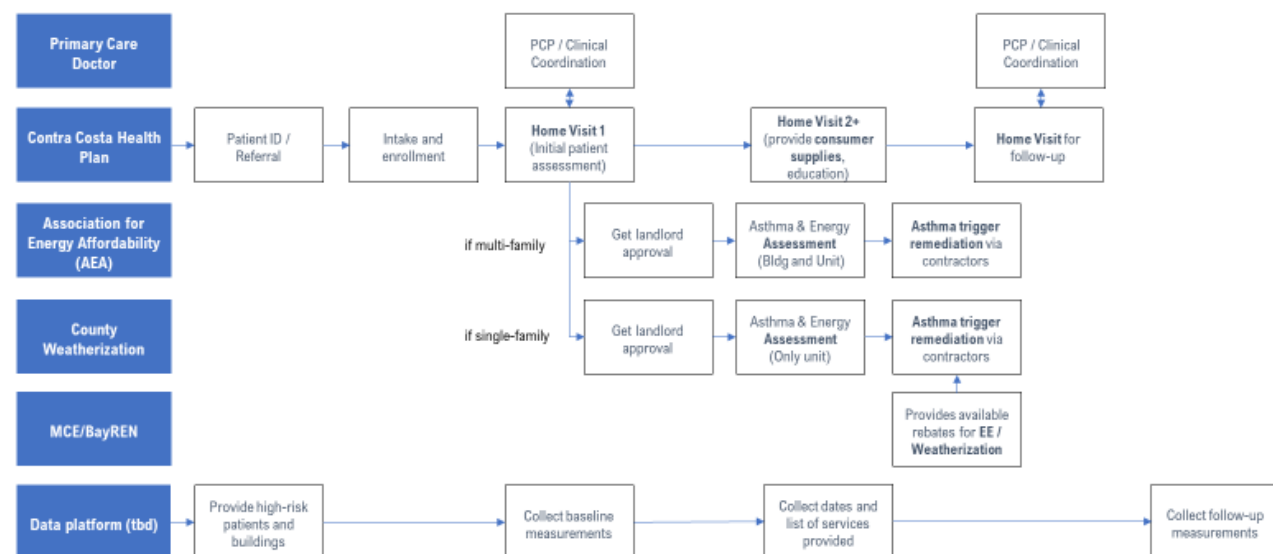


Figure 7

## *Program Process Flow*

1. **Eligibility** – For Phase 1, there are no restrictions on age or geography. However, participants must be a member of Contra Costa Health Plan (CCHP) and have been identified as an at-risk asthma member through one of the following pathways:
  - a. *Have had multiple asthma-related ED visits within a calendar year or an asthma-related inpatient admission.* These members can be identified via two ways: 1) the claims record by CCHP staff with outreach via phone calls or through physicians or 2) at their Emergency Department or Hospital admission with the local hospital staff trained to provide program materials or for the EMR to flag CCHP staff to conduct outreach shortly after their discharge. Prior experience from the CCHP pilot found that of ~120 members contracted from a claims list, ~19 enrolled. This is similar to what GHHI has found nationwide, with enrollment rate from claims records in the range of 15 – 30%.
  - b. *Live in a multi-family building with multiple asthma patients.* The County has analyzed Contra Costa Health Plan data to identify several buildings in the County with multiple residents with asthma. AEA would reach out to their property managers to offer BayREN and MCE energy efficiency services, while CCHP would reach out to individual patients to ask if they would like to participate in the asthma program.
  - c. *Referred to the program by a physician or Public Health Nurse as somebody with poorly managed asthma.* Both physicians and Public Health Nurses have discretion to refer their patients who, based on their judgement, have poorly managed asthma, are at-risk of asthma hospitalizations, or live in a home that has uncontrolled asthma triggers. The CCHP asthma pilot is currently using this method for its second phase and has been able to enroll ~9 of 14 referrals.
  - d. *Referred to the asthma program by a Weatherization or Energy Efficiency program.* Weatherization and Energy Efficiency staff who have been trained in asthma trigger assessments have discretion to refer their customers, whether individuals or building owners of multi-family buildings into this program based on assessed need.
2. **Home Visiting and Consumer Supplies-** The home visits will be staffed by Contra Costa Health Plan’s Population Health program, which has overseen an asthma home visiting pilot that has served ~30 members over the last two years. The credentials of the home visiting staff will still need to be determined and will either be a community health worker or registered nurse. The home visiting staff will provide the consumer supplies, based on their assessment of patient need.

The home visit staff will conduct an initial assessment of the home for asthma triggers and review the participant’s eligibility for energy efficiency programs, such as LIFT (Low Income Family and Tenants), and then coordinate the more comprehensive energy and asthma assessment with the energy program implementer, who would manage the home modifications.

Housing the program within CCHP and CCHS provides two key advantages: 1) easy integration into Medi-Cal data systems and 2) ability to coordinate with other care management programs such as Community Connect and the Public Health Nursing Program.

3. **Home Assessment and Remediation** - The assessment and home remediation will be managed by two organizations with experience in the energy efficiency sector: Association for Energy Affordability and the County Weatherization program. If the patient lives in a multi-family building that is eligible for an existing energy efficiency program, Association for Energy Affordability will provide the asthma assessment and manage the contractors for home repairs. If the patient lives in a single-family home or an ineligible multi-family building, the County's weatherization program will provide the assessment and contractor management. MCE, BayREN, and County Weatherization will layer in additional energy efficiency services, with other funding streams.

Partnering with the energy-efficiency sector provides two key advantages: 1) their staff are experts in building performance and can quickly be trained in asthma home assessments and program management and 2) they are able to provide additional energy efficiency services, by leveraging existing funds from other programs. This allows these energy programs to allocate their resources towards those who need it the most – the medically vulnerable. Table 8 provides a summary of the consumer supplies and contracted work, as well as which of these measures may be covered through existing weatherization or energy efficiency programs. A goal of this initiative is to secure funding for the unfunded measures.

**Table 8. Home Remediation Measures by Asthma Trigger**

<b>Asthma Trigger</b>	<b>Consumer Supplies</b>	<b>Contracted Work</b>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>• Dehumidifier</li> <li>• DampRid</li> </ul>	<ul style="list-style-type: none"> <li>• Plumbing (water leaks)</li> <li>• Building Envelope leaks (broken windows, roof, walls)</li> <li>• Remove humidity (ventilation*, air conditioner^, insulation**)</li> <li>• Landscaping to keep water away</li> <li>• Duct sealing**</li> </ul>
<b>Allergens</b>	<ul style="list-style-type: none"> <li>• HEPA vacuum cleaner</li> <li>• Hypo-allergenic bedding</li> <li>• Food storage/garbage cans</li> <li>• HEPA air filters</li> </ul>	<ul style="list-style-type: none"> <li>• Ventilation*, HEPA air filters^</li> <li>• Carpet cleaning and/or removal</li> <li>• Mold removal</li> <li>• Integrated pest management</li> </ul>
<b>Irritants</b>	<ul style="list-style-type: none"> <li>• Green cleaning supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Improve ventilation and clean air filters around appliances (water heater, boiler, stove)</li> <li>• Fix gas leaks**</li> </ul>
<b>Other health/safety</b>	<ul style="list-style-type: none"> <li>• CO/Smoke detectors</li> </ul>	<ul style="list-style-type: none"> <li>• Leveraged funding (lead-hazard control, weatherization, injury prevention)</li> </ul>

\*Covered by Weatherization, not AEA

\*\* Covered by both Weatherization and AEA

^Weatherization provides non-HEPA filters and can provide air conditioning with physician note of medical necessity.

4. **Data Management and Evaluation** – While currently each partner uses a different data system, they will develop a shared data platform that meets both healthcare privacy and client confidentiality requirements. Currently, the partners use the following data platforms:

- a. *AEA – Salesforce*
- b. *MCE – ServTraq, a database developed by Central Coast Weatherization*
- c. *County Weatherization – paper forms*

GHHI, in consultation with a national stakeholder group, recommends selecting from the following metrics to evaluate this program<sup>10</sup>:

- Core Metrics
  - Reduced hospitalizations for asthma, asthma hospitalization rate
  - Reduced ED visits for asthma, asthma ED visit rate
  - Asthma Medication Ratio (AMR)
  - Medication Management for Asthma (MMA)
  - Asthma Control
  - Asthma Severity
  - Reduced proportion of nonsmokers exposed to secondhand smoke
  - Increased proportion of smoke-free homes
  - Increased proportion of person with current asthma who receive formal patient education Asthma Action Plan
  - Increased proportion of persons with current asthma with prescribed inhalers who receive instruction on their use
  - Increased proportion of person with current asthma who do not use more than one canister of short-acting inhaled beta agonist per month
  - Increased proportion of persons with current asthma who have had at least one routine follow-up visit in the past 12 months
  - Primary Care connection after ED visits for asthma
- Supplemental Metrics
  - Asthma-specific cost of care
  - Total cost of care
  - Reduced proportion of persons with asthma who miss school or work days; missed school or work days due to asthma
  - Improved Quality of Life for patient and caregiver

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<sup>10</sup> Recommendations for Evaluation Metrics for Asthma Home Visiting Programs (2019). See [https://www.greenandhealthyhomes.org/wp-content/uploads/GHHI\\_EMHOME\\_Publication\\_2019.pdf](https://www.greenandhealthyhomes.org/wp-content/uploads/GHHI_EMHOME_Publication_2019.pdf)

# Program Costs

The program's cost for 50 enrollees were estimated by synthesizing program cost data from asthma programs partnered with GHHI, RAMP's estimated program costs for their legislative bill, and discussions with program staff on their experience running similar programs. The home visiting staff assumes a Community Health Worker position – this would increase if using a nurse or other staffing level. Additionally, the program budget and participants served may be adjusted to reflect a full-time load for the home visiting staff (i.e. if they need to serve more than 50 enrollees to pay for a full FTE).

Program Component	Service Partner	Potential Funders (Prioritized)	Avg Cost (Per Enrollee)	Total Program Cost (50 enrollees)
<b>Recruitment and Intake</b>				
Outreach Forms/Intake	Contra Costa Health Plan (Population Health)	\$15M Asthma Fund CCHP/CCHS	\$300 - \$500	\$15,000 - \$25,000
<b>3 Home Visits for Education</b>				
Medication Usage Training Environmental Triggers Training Coordination with PCP, care managers, and social services Follow-up with patient	Contra Costa Health Plan (Population Health)	\$15M Asthma Fund CCHP/CCHS	\$800 - \$1,200	\$40,000 - \$60,000
<b>Consumer Supplies</b>				
Allergens: bedding, vacuum cleaner, Pest Management, Air filters Irritants: Green cleaning supplies Moisture Reduction: Dehumidifier, Damp-Rid	Contra Costa Health Plan (Population Health)	\$15M Asthma Fund Foundations	\$300 - \$500	\$15,000 - \$25,000
<b>Environmental Assessment</b>				
Asthma and Energy Efficiency Assessment	Multi-family: AEA Single-family: County Weatherization	\$15M Asthma Fund Foundations	\$350 - \$700	\$17,500 - \$35,000
<b>EE/Weatherization</b>				
Ventilation, Duct Sealing, Insulation, combustion safety	AEA, County Weatherization, MCE/BayREN	LIHEAP/WAP MCE LIFT** MCE** / BayREN	<i>leveraged funds</i>	
<b>Home Modifications</b>				
Allergens: Mold removal, carpet cleaning/removal Irritants: Ventilation Moisture Reduction: Plumbing, air sealing, HVAC, Drainage	Multi-family: AEA Single-family: County Weatherization	CDBG*** BAAQMD Foundations	\$1,200 - \$2,000*	\$60,000 - \$100,000
<b>Data</b>				
Software Evaluation	TBD	CCHP/CCHS Foundations	\$250 - \$600	\$12,500 - \$30,000
<b>Total</b>			\$3,200 - \$5,500	\$160,000 - \$275,000



# Program Benefits

## *Evidence Base*

There is substantial evidence documenting the effectiveness of home-based asthma programs in reducing avoidable acute care healthcare visits (e.g. hospital visits). A systematic review by the Centers for Disease Control and Prevention's Community Preventive Services Task Force found that similar asthma programs to this one had a median decrease of 0.57 healthcare visits per year for pediatric populations<sup>11</sup>. Evaluations of specific programs of both pediatric and adult populations have found significant decreases in unnecessary healthcare utilization when compared to a control group, which correlates to cost savings in the range of \$1,100 - \$2,200 per year for up to five years, totaling up to \$10,000 in potential savings over five years per program enrollee (Figure 8).

In partnership with Milliman, one of the nation's leading actuary firms, GHHI developed estimates for reductions across a range of specific impact metrics from home-based asthma programs:

- 25 – 40% reduction in acute care visits (adults vs kids)
  - Hospital admissions
  - Emergency Department visits
  - Ambulance trips
  - Urgent care visits
  - Unscheduled physician and specialist visits
- 20% increase in Asthma Medication Ratio adherence
- 20% decrease in missed school and work days
- 10-20% decrease in total cost of care for Medicaid members
- Improvement in caregiver/health worker satisfaction

These programs range in design – some only include home repairs (e.g. Cuyahoga, OH), while others only include home visits for asthma education with consumer supplies (e.g. Boston, MA). There have not been (and likely won't be because of inherent variability in the population and small sample sizes) studies that have identified the optimized asthma program design in terms of precise number of home visits or specific remediation measures. It is generally understood that including these components is effective, and that developing a service delivery model that works for the program partners and enrolled program members is the suggested route.

## *Applied to Contra Costa*

GHHI applied these estimated utilization impacts to one year of Contra Costa Health Plan data to estimate the financial impact to CCHP of this asthma initiative. The potential savings depends significantly on the underlying utilization of the enrolled population – adults average more avoidable ED and IP visits than children<sup>12</sup> and members with multiple ED or IP visits for asthma are more likely to visit the ED or IP for asthma in the future than those that do not. These differences translate to increased Medi-Cal expenses for adults and higher utilizers (Figure 9). Those with higher asthma-related expenses tend to have greater savings opportunities.

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<sup>11</sup> Asthma Control: Home-Base Multi-Trigger, Multicomponent Environmental Interventions. Community Preventive Services Task Force. 2011. Accessed August 2016. <http://www.thecommunityguide.org/asthma/multicomponent.html>.

<sup>12</sup> CCHP internal data



## Home-Based Asthma Program Efficacy: Evidence Base from High Quality Studies

Program	Intervention	Population	Eligibility	(ED, Inpatient, Unscheduled Doctor) vs. Control					Avg Savings (TCOC)		Avg Program Cost
				Year 1	2	3	4	5	PMPY	Per Member, 5-year	Per member, one-time
<b>Rainbow Babies and Children Hospital</b> Cuyahoga, OH	Primarily Remediation	29 Children (2-17)	Asthma-related hospitalizations + visible mold	69%							\$3,458
<b>Green &amp; Healthy Homes Initiative</b> Baltimore, MD	Home Visits + Remediation	111 Children (2-14)	Asthma-diagnosis						\$2,061		\$5,089
<b>Children's Community Asthma Initiative</b> Boston, MA	Home Visits	268 Children	Asthma-related hospitalizations	30%	39%	21%	60%	50%	\$1,137*	\$5,685	\$2,132
<b>National Inner-City Asthma Study</b> Boston, Bronx, Chicago, Dallas, New York, Seattle, Tucson	Home Visits	408 Children (5-11)	Asthma-related hospitalizations + positive allergy test	14%	16%						\$1,750
<b>Changing High-Risk Asthma in Memphis Through Partnership (CHAMP)</b> Memphis, TN	Home Visits	476 Children (2-17)	Asthma-related hospitalizations	26%	26%	26%			\$2,180	\$6450 (three-year)	\$5,000
<b>Supporting Asthma Self-Management Behaviors in Older Adults (SAMBA)</b> New York, NY	Home Visits	90 Adults (60+)	Asthma-diagnosis	51%							
<b>Home-Based Asthma Support and Education trial (HomeBASE)</b> King County, WA	Home Visits	161 Adults (18-65)	Asthma-diagnosis	6%							\$1,300

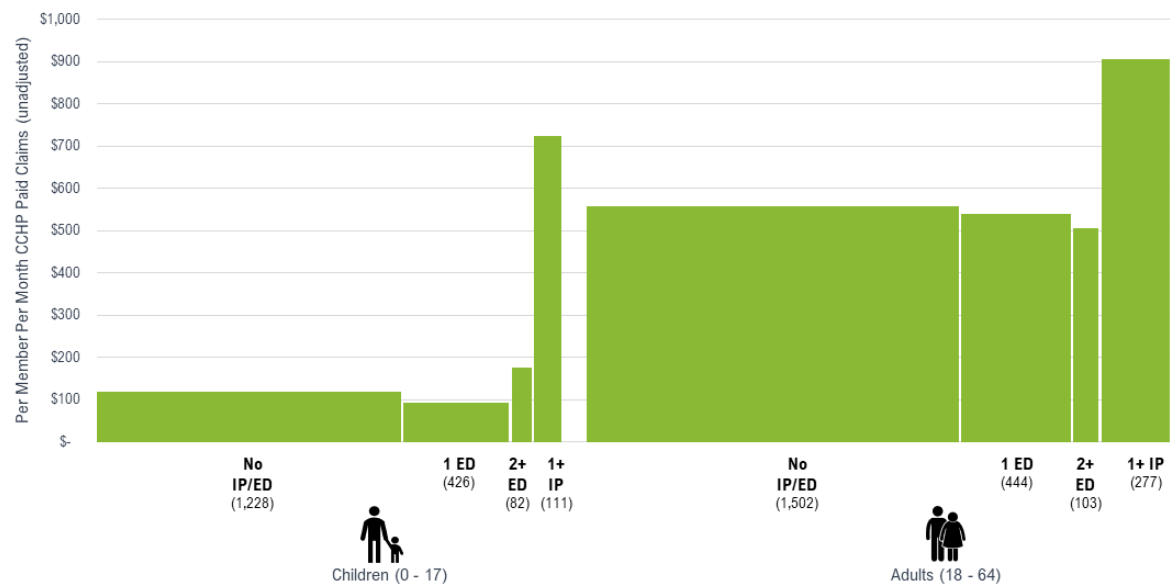
\*Hospital-related costs only

TCOC: Total Cost of Care; PMPY: Per Member Per Year; ED: Emergency Department

Figure 8

## One-Year Per Member Per Month (PMPM) Costs by Age and Asthma Utilization

CCHP Medi-Cal members participating in either CPN or RMC network (excludes Kaiser) w/ at least one asthma-related claim, April 2018 – April 2019



Data source: GHFI analysis of CCHP internal data

Trigger Group (width represents # of members who meet criteria)

Figure 9

GHHI estimated the financial impact of two enrollment scenarios: 1) Enrolling any CCHP member with an asthma diagnosis (4,170 members over one year) and 2) Targeting enrollment to CCHP members with multiple asthma-related ED visits or an asthma-related inpatient visit (572 members). These estimates are calculated against a control group – even in the absence of an intervention, healthcare costs typically go down in years following an asthma hospitalization, referred to as ‘regression to mean.’ Additionally, these estimated cost savings account for enrollees who drop off the health plan, and thus no longer accrue savings to the health plan, which is referred to as ‘attrition.’ Figure 10 illustrates the cumulative savings estimated for an average enrollee under the two scenarios. When the program targets high utilizers, **it reaches a positive ROI within 3 years**, while it does not reach positive ROI within 5 years when open to the broader asthma population. This may also suggest that members with less severe asthma need a smaller intervention budget – several successful asthma home visiting programs that don’t fully address housing-related asthma triggers have budgets under \$1,000 per enrollee.

These savings estimates are relatively conservative compared to the results shown in Figure 8 above for two primary reasons: 1) California’s average Medicaid costs are among the lowest in the country<sup>13</sup> and 2) GHHI uses conservative assumptions in its modeling. The high-utilizer scenario shown in Figure 10 below averages between \$800 - \$1,200 in annual savings in each of the first 3 years compared to the three programs listed in Figure 8 which range in annual savings from \$1,100 - \$2,100. Additional detail on these savings calculations and assumptions can be found in Appendix A.

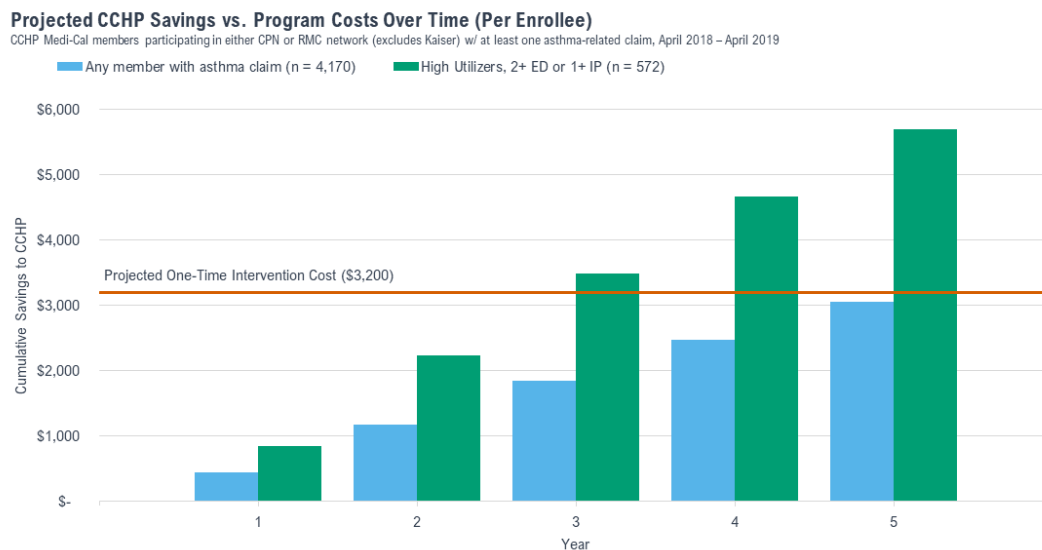


Figure 10

### Long-term benefits

Beyond the direct benefits to the patients served through this program, this initiative can be an initial investment into developing a blueprint towards addressing the social determinants of health in Contra Costa County. This initiative will:

<sup>13</sup> Kaiser Family Foundation, FY 2014, Medicaid Spending Per Enrollee. See: <https://www.kff.org/medicaid/state-indicator/medicaid-spending-per-enrollee/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>

- Develop programs that can use Medicaid dollars to address social determinants of health, bringing additional dollars via Medicaid into the County system
- Leverage energy efficiency dollars. For every dollar spent on the health aspects of the program, expect additional dollars to be spent on energy efficiency-related improvements.
- Develop operational proficiency of coordinated service delivery models that can grow into other healthy home issue areas

Additionally, while this analysis focuses on the impacts to the patients, the program is expected to have additional ancillary benefits for both the patient's family and caregiver(s). Home-based education and environmental remediation improve the housing quality for all members of the family and those that visit the family. Some of these family members may also be members of CCHP, in which case CCHP would accrue the financial benefits. These housing improvements also increase housing stability and the energy savings from the weatherization work improve disposable income for the families served.

# Funding Strategies

## Short-term funding opportunities

There are several potential funding sources for the initial phase of this initiative, which would allow the demonstration to both validate proof of concept and allow for the service provider partners to develop operational proficiency prior to scaling with long-term sustainable funding sources. High priority short-term funding sources are identified in Table 9, while additional funding sources that were investigated but deemed less likely are described below that.

**Table 9. High Likelihood Short-Term Funding Sources**

Funding Source	Description	Eligible Program Components	Income Eligibility	Geography Eligibility	Housing Eligibility
<b>\$15M Asthma Fund</b> (expected 2019 Q4 application period)	State legislature appropriated \$15M in funds for asthma home visiting programs, with up to \$1,000 for light home modifications. Awarded in FY 2020, but can be spent on up to 3 years of services	Recruitment/Intake Home Visits Consumer Supplies Environmental Assessment Data/Evaluation	Medi-Cal	any	any
<b>MCE Low-Income Family and Tenants (LIFT)</b> (existing program through 2021)	California Energy Commission (CEC) funded pilot to provide grant-funded energy efficiency, including some health/safety, measures to low income tenants.	Recruitment/Intake Environmental Assessment EE/Weatherization	<200% FPL	MCE jurisdictions (excludes Antioch, Brentwood, Clayton, Hercules, Orinda, Pleasant Hill)	Multi-family tenant focus
<b>Bay Area Regional Energy Network (BayREN)</b> (no defined application period)	BayREN has expressed interest in addressing connections between health and energy, including contractor workforce training and outreach (such as via home visits) to medically vulnerable customers	Recruitment/Intake Home Visits Environmental Assessment EE/Weatherization	>200% FPL & <\$125k hh income	any	Single-family
<b>Community Development Block Grant (CDBG)</b> (expected 2019 Q4 application period)	Funds can be used for home rehab of renters and homeowners	Home Modifications	any	Only: Antioch, Concord, Pittsburg, Richmond, Walnut Creek, Unincorporated County	any
<b>Contra Costa County Funds</b> (no defined application period)	If needed, can request staff funding, or leverage existing staff resources for service delivery	Recruitment/Intake Home Visits	CCHP Medi-Cal	any	any
<b>LIHEAP/WAP</b> (existing program)	Weatherization measures overlap with some asthma triggers	Weatherization	<200% FPL	any	any
<b>Foundations</b> (unknown application periods)	Community foundations may be interested in providing clearly defined gap funding	Gap funding	tbd	tbd	tbd

## Lower Likelihood Short-term Funding Opportunities

## **Climate/Energy**

- Cap/Trade funds (LIWP)
  - o Funds are appropriated annually
  - o While LIWP funds are being re-allocated to other regions besides the Bay Area, there is opportunity for other types of Cap/Trade funding for this program. For example, these dollars were allocated to high speed rail, but because that project is currently stalled, those funds are now potentially available.
- Chevron Settlement
  - o These funds are to address cumulative air impacts in areas with high levels of pollution from the Chevron refinery in Richmond. There are four refineries in the County, including two in Martinez (Shell, Marathon). There may be a settlement from the NuStar refinery fire near Martinez. The funds are currently allocated to a one-year monitoring project in Richmond but may be available after that for projects to address air impacts.
  - o To access these funds, the project needs to make the case for weatherization to reduce exposure to outdoor pollutants via weatherization, as a complement to reducing source of pollution.
- Partnerships (not necessarily funding opportunities)
  - o Cleaner Contra Costa is a targeted climate adaptation effort within the County and relates to its Sustainability Plan.
  - o OhmConnect is a software platform to reduce energy consumption through behavior change. Jamie Fine has discussed partnership opportunities with the team.
  - o TURN is a program for disconnections from overdue utility bills and two of the zip-codes with the highest number of participants are in Contra Costa County.
  - o Solar installations are often provided for multi-family housing by partners such as AEA (Association for Energy Affordability), Grid Alternatives, and CSE (Center for Sustainable Energy)

## **Housing/Community Development**

- Partnerships (not necessarily funding opportunities)
  - o Insurance companies may be interested in reducing health-related causes of missed rent payments or damage to units. HAI is the largest insurer of public housing in the U.S.
  - o The County Housing Authority has homeless shelters and contracts with landlords for Section 8 and homeless. There may be opportunity to work with them on landlord education and/or requirements and referrals.
  - o CASA is a regional housing initiative run through the MTC that has recently adopted housing quality into its goals around housing access.

## **Healthcare**

- Hospitals
  - o Hospitals allocate their community benefit dollars based on the priority needs identified through their Community Health Needs Assessment, which is conducted every 3 years.

- Hospitals may be interested in reducing their uninsured expenses
- Kaiser
  - Kaiser offers health insurance to the income bracket covered by BayREN and is a vertically integrated, progressive health care organization that is interested nationally at how to address housing-related health issues, including operating a fund for supportive housing
- Partnerships (not necessarily funding opportunities)
  - The SF Community Foundation / Bay Area Regional Health Inequalities Initiative may be interested in the project as it relates to its foci on People, Place, and Power
  - CARE is a medical baseline program to help with utility bills if a utility customer has a medical condition. It is run through Contra Costa Health Services rather than Department of Conservation and Development.
  - The Breathmobile is a mobile van targeting schools with high numbers of students with asthma and other respiratory issues
  - Health Leads is an organization that helps people sign up for social service programs and could help refer people into this program.
  - The YMCA has a school-based clinic at Coronado Middle School
  - School-based clinics typically focus on teenage behavior issues rather than asthma

### *Long-term Funding Opportunity*

Beyond the demonstration phase of this initiative, there is considerable opportunity to secure long-term sustainable financing of home-based asthma programs through Medi-Cal and other healthcare funding sources. Four similar efforts supported by GHHI have recently secured, or are in the process of securing, Medicaid funding for addressing asthma's home-based triggers (Figure 11). While there is considerable flexibility for Managed Care Organizations or states to provide additional Medi-Cal benefits to their members, the primary objective is to ensure that the federal government agrees to provide its share of the specific benefit offered. There are several pathways towards this objective available to Contra Costa Health Plan, including the following:

- **Value-Based Contracting** allows health plans to pay for improved health outcomes generated from non-traditionally covered services, such as home modifications or home visiting services. Through a value-based contract, health plans can pay retrospectively for these outcomes, through metrics such as total cost of care savings or improved quality metrics. Providers can secure third-party financing, such as pay for success investments, to provide upfront funds if needed. Value Based Purchasing (VBP) is consistent with the long-term direction of payment model reform across the United States, including California. The California Department of Health Care Services (DHCS) has proposed VBP requirements for MCOs in the FY 2019-2020 year.<sup>14</sup>
- **Classify program components as covered benefits through existing fee schedules.** There is some flexibility in the existing fee schedule, such as through Early and Periodic Screening, Diagnostic and Treatment (EPSDT) codes, for including home visits and assessments. This is the primary focus of the pending Senate Bill 207 in the California

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<sup>14</sup> See [https://www.dhcs.ca.gov/provgovpart/Pages/VBP\\_Measures\\_19.aspx](https://www.dhcs.ca.gov/provgovpart/Pages/VBP_Measures_19.aspx)

legislature – to expand the definition of billable codes to cover home visits, assessments, and up to \$1,000 of minor environmental remediation.

- **Administrative payments** are often used to pay for supplementary services or pilot programs. GHHI is currently involved in a 2-year pilot with a health plan in Maryland. Under this payment model, the health plan pays for each member who is enrolled in the program - 75% is paid after the first home visit and 25% is paid after month 5 of enrollment. Because payments come from the health plan’s administrative budget, payments are not included in the numerator of the plans MLR, nor are they included in the plans rate-setting process. A focus of CalAIM is to build upon existing care management programs (e.g. Whole Person Care), which often are classified as administrative expenses. Additionally, a workgroup within CalAIM is investigating the opportunity to define services like the asthma home visiting program as an ‘in lieu of service’ (i.e. fix the member’s home in lieu of treating them in the emergency room)<sup>15</sup>.

While the primary focus of this plan focuses on demonstrating the business case for a home-based asthma program, GHHI offers additional technical assistance to further investigate these policy pathways.

	Baltimore, MD	Houston, TX	Salt Lake City, UT	New York, NY
Medicaid MCO	 An Anthem Company			
Healthy Homes Contractor				
Home Visiting Organization				
Housing Scope	Assessment Consumer Supplies	Assessment Consumer Supplies Home Modifications	Assessment Consumer Supplies Home Modifications	Assessment Consumer Supplies Home Modifications
Payment Type	Per member set payment (vendor agreement)	Per member per month + value-based contract (proposed)	Per member set payment (vendor agreement)	Retrospective outcomes payment based on TCOC savings (proposed)
Why?	<b>Cost Savings</b> Pilot lowered TCOC 33% (\$2,544) over 12 mo (Amerigroup calc)	<b>MCO requirement</b> Texas requires certain portion of MCO spending to be on VBP	<b>Cost Savings</b> Pilot lowered TCOC 67% (\$686 pmpm) over 6 mo (UUHP calc)	<b>MCO Requirement</b> Affinity required to have VBP and CBO contracts to address SDOH

Figure 11

<sup>15</sup> See [https://www.dhcs.ca.gov/ecm\\_ilos](https://www.dhcs.ca.gov/ecm_ilos)

# Appendix A: Methodologies

The analysis in this report are primarily derived from the following four data sources:

- *Contra Costa Health Plan (CCHP) data.* CCHP provided internal claims-based data for the time period April 23, 2018 – April 23, 2019 on members that met the following requirements:
  - Continuous CCHP enrollment in six months prior to April 23, 2018
  - Enrolled in RMC (Regional Medical Center) and CPN (Community Provider Network) networks only; excludes Kaiser network
  - Enrolled on CCHP Medi-Cal Medicaid plan (~2/3 of total CCHP enrollment)
    - Does not include Commercial plan or County employees
    - Does not include other Medicaid plans, such as SPD (Seniors and Persons with Disabilities)
  - Had an asthma related claim between April 23, 2018 – April 23, 2019. Diagnoses within the QIP ASTHMA GROUPER ID 108194 are being used for this requirement.
  - The specific data is not shared in the attached excel workbooks for privacy reasons.
- *Office of Statewide Health Planning & Development* was the primary source for asthma-related ED visits and inpatient admissions at the County and State level. The data is derived from mandatory reporting requirements of hospitals to the Emergency Department and Patient Discharge Datasets. Diagnosis codes, used to identify asthma-related claims, are recorded by hospitals for reimbursement purposes and not for public health surveillance. Data from Tracking California, which based its report to GHHI on a 2017 OSHPD dataset, was the primary source throughout this report with one exception. The map in Figure 1 relied on Cal-Enviro Screen data which used a 2011-2013 OSHPD dataset.
- *American Community Survey, 2017 one-year estimates*, was the primary source for County-level demographic and housing data. The data was calculated using its public-use files. ACS historically undercounts Medicaid enrollment – this was adjusted for calculating County-level rates by using the Department of Health Care Services (DHCS) Certified Eligible counts.
- *GHHI Reference data* was the primary data source for projecting savings to Contra Costa Health Plan from this asthma home visiting initiative. It is based upon historical cost data from high-utilizing asthma Medicaid members at 12 different insurance companies across the country, totaling 1,600,000 member months of data. States represented include Maryland, New York, Texas, Michigan, Tennessee, Pennsylvania, Rhode Island, Salt Lake, Massachusetts, and Virginia.

Specific notes for tables and figures are provided below. Additional calculations can be found in the supplementary excel workbooks.



**Table 1.**

- *National rates:*
  - Accessed from Table B, CDC Healthcare Use 2016 at <https://www.cdc.gov/asthma/healthcare-use/healthcare-use-2016.htm> in October 2019.
  - Source data is CDC/NCHS. National Hospital Ambulatory Medical Care Survey (NHAMCS)
  - Asthma-related ED visit is defined as ED visit with any asthma-related primary diagnosis.
  - Rate is crude rate
  - Latino/Hispanic as presented is Hispanic rate, which is not exclusive of the White/African-American rates.
- *California and Contra Costa County rates:*
  - Accessed from Tracking California - Public Health Institute custom data report in October 2019. These queries can be replicated at <https://trackingcalifornia.org/asthma/query>, as of November 2019.
  - Source Data is Emergency Department and Patient Discharge Datasets from the State of California, Office of Statewide Health Planning and Development (OSHPD). Denominators for county level rate is based on population estimate from Department of Finance.
  - Asthma-related ED visit is defined as ED visit with any asthma-related primary diagnosis.
  - Rate is age-adjusted rate.
  - Latino/Hispanic as presented is defined as anyone identified as Hispanic. This can include Hispanic and any race.
- *CCHP Medi-Cal rates:*
  - Accessed from internal CCHP data. Report included any CCHP Medi-Cal member who had an asthma-related claim between April 22, 2018 – April 22, 2019. Report run on May 8, 2019 by Karen Schlein and Duane Eikleberry per definitions requested by Will Klein at GHHL.
  - Source data is CCHP claims.
  - Asthma-related ED visit is defined as an ED visit with either a) asthma as primary diagnosis or b) asthma as secondary diagnosis with a selected respiratory issue (pneumonia, bronchitis, upper respiratory tract infection, wheezing, or reactive airways disease).
  - Rate is crude rate, but is not meant to be population estimate, only actual rates of CCHP members.
  - Latino/Hispanic as presented is defined as anyone identified as Hispanic. This can include Hispanic and any race.

**Figure 1.**

- The figure maps asthma ED rates (visits per 10,000 people, averaged over 2011 – 2013) by census tract, using data from Cal Enviro Screen 3.0. This data can be accessed at <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30> as of November 15, 2019.
- The source data is California Office of Statewide Health Planning and Department (OSHPD), which is the same as used by Tracking California in other tables.

- The rate is age-adjusted and spatially modelled to convert the data from zip codes to census blocks using areal apportionment and then combined to arrive at census tract estimates by CalEnviroScreen.

## **Figure 2.**

- The asthma ED visit rates for both California and Contra Costa were calculated as follows:
  - Numerator: Number of asthma ED visits by race/ethnicity and Medicaid status
    - These counts were provided by Tracking California. This is the same dataset as described in Table 1.
  - Denominator – Number of people by race/ethnicity and Medicaid status
    - This data is from the 2017 ACS estimates and follows the same methodology as Table 2 with one significant difference. The American Community Survey is known to undercount Medicaid enrollment<sup>16</sup> and the California Department of Health Care Services (DHCS) does not release county-level estimates of Medicaid enrollment by age and race/ethnicity.
    - The ACS estimates of Medicaid enrollment were adjusted to match the DHCS count of ‘Certified Eligibles’<sup>17</sup>. The ACS estimates grouped individuals into three categories: 1) receiving both Medicaid and Medicare benefits (“Dual”), 2) receiving Medicaid benefits, but not Medicare, and 3) those receiving neither Medicaid nor Medicare benefits.
    - A multiplier was created based on the ratio between the DHCS count and the ACS estimate. This multiplier was applied evenly across race/ethnicities and ages.
- The CCHP rates were calculated as described in Table 1.

## **Table 2.**

- Income Categories are classified by 2017 American Community Survey estimates, public use file:
  - Low Income: Any individual classified as meeting either the definitions below:
    - Medi-Cal: Any individual classified as receiving Medicaid benefits.
      - HINS4 = 1
    - 200% FPL: Any individual living in a household with household income less than the 200% of the 2017 Federal Poverty Guidelines (referred to as Federal Poverty Level in this document, “FPL”).
      - 2017 Federal Poverty Guidelines accessed from <https://aspe.hhs.gov/2017-poverty-guidelines#guidelines> in November 2019.
      - 200% FPL is based on number of people in household. “NP” was used to determine this count. The household 200% FPL was calculated by correlating the NP field with the 2017 FPL table cited above.

<sup>16</sup> Boudreaux, M., Noon, J. M., Fried, B., & Pascale, J. (2019). Medicaid expansion and the Medicaid undercount in the American Community Survey. Health services research.

<sup>17</sup> <https://www.dhcs.ca.gov/dataandstats/statistics/Pages/Medi-Cal-Certified-Eligibles.aspx>

- Household Income = HINCP
    - Group or institutional housing, as defined by the housing weight (WGTP) = 0
  - Middle Income: Any individual that does not meet the Low-Income criteria and lives in a household with household income above 200% FPL and below \$125,000. This income criteria was selected to align with BayREN's target income criteria, according to project staff.
  - Higher Income: Any individual that does not meet either of the above categories and lives in a household with household income above \$125,000.
- Estimates of the number of people with an asthma-related ED visit are calculated as follows:
  - Tracking California provided a table with the number of asthma ED visits in 2017 by primary payer (Medicaid, Medicare, Private, Other, Self-Pay), age, and race/ethnicity. This is the same dataset as used in Table 1.
  - Asthma ED visit rates were calculated using 2017 ACS estimates. Individuals were classified to the 5 primary payer categories as follows:
    - Medicaid: Any individual receiving Medicaid, Medical Assistance, or any kind of government-assistance plan for those with low-incomes or a disability benefits (includes those also receiving Medicare)
      - HINS4 = 1
    - Medicare: Any individual receiving Medicare benefits that is not also receiving Medicaid benefits.
      - HINS4 = 0 & HINS3 = 1
    - Private: Any individual a) receiving insurance through a current or former employer or union or b) purchased directly from an insurance company that is not also receiving Medicaid or Medicare
      - (HINS1 = 1 or HINS2 = 1) & HINS4 = 0 & HINS3 = 0
    - Other: Any individual receiving insurance through a) TRICARE or other military health care, b) Veteran's Affairs, or c) Indian Health Service who also are not receiving Medicaid, Medicare, or Private insurance as defined above.
      - (HINS5 = 1 or HINS6 = 1 or HINS7 = 1) & HINS4 = 0 & HINS3 = 0 & HINS2 = 0 & HINS1 = 0
    - Self-Pay: Any individual who is not classified as having any of the insurance types listed above
      - HINS7 = 0 & HINS6 = 0 & HINS5 = 0 & HINS4 = 0 & HINS3 = 0 & HINS2 = 0 & HINS1 = 0
  - Rates were calculated by dividing the Asthma ED Visit counts (Tracking California) by the population counts (ACS). The ACS under-counts Medicaid enrollment. However, for this purpose, the ACS estimates were not adjusted to match the California Department of Health Care Services (DHCS) count of 'Certified Eligibles' (i.e. Medicaid enrollment) because it is unclear which insurance type would decrease to compensate for the increase in Medicaid enrollment.
  - Asthma ED Visit rates were converted to estimates of people with at least one asthma ED visit by using data from CCHP Medi-Cal to calculate an average

number of asthma ED visits per person (only including those with at least one visit in a given year). These rates were applied by age group and assumed constant across race/ethnicity and insurance type.

- Specific calculations can be found in Appendix XX and in the corresponding Excel workbook.

**Table 3.**

- Income categories are the same as Table 2
- Individuals are assigned housing type as follows:
  - Multi-family: Any individual living in a housing unit defined as 5 or more units, regardless of rental status
    - BLD = 6, 7, 8, or 9
  - SF-rent: Any individual living in housing unit defined as a) rented (TEN = 3) and b) is classified as one of the following building types (BLD):
    - 2 (One-family house detached)
    - 3 (One-family house attached)
    - 4 (2 apartments)
    - 5 (3-4 apartments)
  - SF own-occ: Any individual living in the building types defined above for SF-rent, but with a housing tenure of either a) Owned free and clear (TEN = 2) or b) Owned with mortgage or loan (TEN = 1).
  - Other: Any other combination of building type and tenure, including the following:
    - Occupied without payment of rent (TEN = 4)
    - Mobile home or trailer (BLD = 1)
    - Boat, RV, van, etc. (BLD = 10)
  - The other category also includes those living in group homes

**Table 4.**

- CCHP Medi-Cal Member data is derived from CCHP.
  - Hispanic is defined as anybody reporting ethnicity as Hispanic or race as Latino
  - The numerator, CCHP asthma ED visit count, is derived from data from April 23, 2018 – April 22, 2019.
  - The denominator, CCHP enrollment count, is as of October 2019.
- County-Wide Population estimates are derived from ACS 2017 estimates.
  - Race/Ethnicity is defined as follows:
    - Black: Not Hispanic (HISP  $\neq$  1) & RAC1P = 2
    - Hispanic: HISP > 1, regardless of Race
    - Asian Pacific Islander: Not Hispanic (HISP  $\neq$  1) & (RAC1P = 6 or RAC1P = 7)
    - White: Not Hispanic (HISP  $\neq$  1) & RAC1P = 1
    - Other: Not Hispanic (HISP  $\neq$  1) & none of the races identified above
  - Gender: Based upon SEX variable, 1 = Male, 2 = Female
  - Primary language is defined based on the household language as defined below:
    - English: HHL = 1
    - Spanish: HHL = 2
    - Other: HHL = 3 or 4 or 5 or b

- While the number enrolled in Medicaid listed is based upon DHCS Certified Eligible count, the percentages are calculated based upon ACS estimates for those who are classified as receiving Medicaid assistance, without adjustment.

**Figure 4.**

- CCHP Medi-Cal Member data is derived from CCHP.
- Asthma-related inpatient admits (IP) and Emergency Department visits (ED) are defined as having asthma as primary diagnosis or asthma as secondary diagnosis with a related respiratory as primary diagnosis.
- The data excludes those in the Kaiser network.

**Table 5.**

- CCHP Medi-Cal Member data is derived from CCHP.
- The data excludes those in the Kaiser network.

**Figure 5 and Table 6.**

- CCHP Medi-Cal Member data is derived from CCHP.
- The data excludes those in the Kaiser network.

**Figure 8**

*Rainbow Babies and Children Hospital*

Kercsmar, C. M., Dearborn, D. G., Schluchter, M., Xue, L., Kirchner, H. L., Sobolewski, J., ... & Allan, T. (2006). Reduction in asthma morbidity in children as a result of home remediation aimed at moisture sources. *Environmental Health Perspectives*, 114(10), 1574-1580.

*Green & Healthy Homes Initiative*

Medicaid analysis of GHHI program by University of Maryland Baltimore County. *Pending Publication*.

*Children's Community Asthma Initiative*

Bhaumik, U., Sommer, S. J., Giller-Leinwohl, J., Norris, K., Tsopelas, L., Nethersole, S., & Woods, E. R. (2017). Boston children's hospital community asthma initiative: Five-year cost analyses of a home visiting program. *Journal of Asthma*, 54(2), 134-142.

*National Inner-City Asthma Study*

Morgan, W. J., Crain, E. F., Gruchalla, R. S., O'Connor, G. T., Kattan, M., Evans III, R., ... & Walter, M. (2004). Results of a home-based environmental intervention among urban children with asthma. *New England Journal of Medicine*, 351(11), 1068-1080.

*Changing High-Risk Asthma in Memphis Through Partnership (CHAMP)*

NORC at the University of Chicago (2017). *Third Annual Report Addendum, HCIA Disease-Specific Evaluation*. (Contract No. HSSM-500-2011-00002I, Order No. HHSM-500-T00009). Bethesda, MD: Adil Moiduddin.

*Supporting Asthma Self-Management Behaviors in Older Adults (SAMBA)*

Federman, A. D., O’Conor, R., Mindlis, I., Hoy-Rosas, J., Hauser, D., Lurio, J., ... & Wisnivesky, J. P. (2019). Effect of a Self-management Support Intervention on Asthma Outcomes in Older Adults: The SAMBA Study Randomized Clinical Trial. JAMA internal medicine.

*Home-Based Asthma Support and Education trial (HomeBASE)*

Krieger, J., Song, L., & Philby, M. (2015). Community health worker home visits for adults with uncontrolled asthma: the HomeBASE Trial randomized clinical trial. JAMA internal medicine, 175(1), 109-117.

**Figure 9**

- The data is based on a GHHI analysis of CCHP internal data
- The PMPM does not include pharmacy costs and has not been adjusted based on GHHI reference data. It does include an estimate of incurred, but not paid, claims for the final month of the selected year – the data was run in early May 2019 for claims through April 23, 2019.

**Figure 10**

The savings estimate for CCHP Medi-Cal members with asthma is the difference between the members’ projected CCHP costs with (‘treatment’) and without (‘baseline’) the home asthma program. These calculations were done for two different eligibility groups: 1) a broad eligibility criterion that includes any member with an asthma-related claim over a single year and 2) a high-utilizer criterion that only includes the members with multiple asthma-related ED visits in a single year or at least one asthma-related inpatient admission. The 572 members in this high-utilizer group comprised 60% of all asthma-related ED and inpatient admissions for CCHP’s Medi-Cal members between April 2018 – April 2019.

The specific methodology for these calculations is included in the attached Excel workbooks – CCHP Financial Impact Analysis – and is briefly summarized below.

The members’ 5-year baseline cost estimate is based upon the following (“Summary Tab”):

- “Year 0 PMPM (Per Member Per Month)” – effectively the average monthly CCHP expenses in the year of their trigger event
  - The total expenses are adjusted to estimate lagged claims that have yet to be paid and then divided by total months enrolled of all members who meet the criteria to generate the PMPM
  - This PMPM is adjusted twice more:
    - 1) Estimated pharmacy costs are added using GHHI reference data (they were not included in initial data pull)
    - 2) This adjusted amount is weighted with GHHI reference data to account for inherent variation in the data
- Years 1 – 5 PMPM are estimated by using GHHI reference data that measures the regression to mean, or the phenomenon in which people with severe acute health issues (e.g. asthma inpatient admission) are not all likely to have an inpatient admission every

year after that – i.e. as a group, their costs will decrease on average in years following their inpatient admission.

The members' 5-year projected costs after receiving the home-based asthma program are then calculated as follows (“Optimistic and Conservative Savings Calcs”):

- A *treatment effect*, based upon a review of the literature and in consultation with Milliman, is applied to these projected baseline cost curves. A conservative and optimistic treatment effect are applied in two different scenarios.

The group's aggregate savings are then estimated by applying an attrition factor to this savings estimate (“Graphs”). The attrition factor accounts for CCHP members who fall off the Medi-Cal rolls, and would no longer accrue savings to the plan. It is based upon GHHI reference data.

## Appendix B: Acronyms

ACS – American Community Survey  
AEA – Association for Energy Affordability  
API – Asian / Pacific Islander  
BAAQMD – Bay Area Air Quality Management District  
BayREN – Bay Area Regional Energy Network  
CCHP – Contra Costa Health Plan  
CCHS – Contra Costa Health Services  
CDBG – Community Development Block Grant  
CHIS – California Health Interview Survey  
COPD - Chronic Obstructive Pulmonary Disease  
CPN – Community Provider Network  
DHCS – Department of Health Care Services  
ED – Emergency Department  
EMR – Electronic Medical Records  
FPL – Federal Poverty Level  
HEPA – High Efficiency Particulate Air  
HH - Household  
HVAC – Heating, Ventilation, and Air Conditioning  
IP - Inpatient  
LIFT – Low Income Family and Tenants  
MCE – formerly Marin Clean Energy (now known as “MCE”)  
MF – Multifamily  
MLR – Medical Loss Ratio  
OSHPD – Office of Statewide Health Planning and Development  
PCP – Primary Care Provider  
RMC – Regional Medical Center  
SF – Single-Family  
VBP – Value Based Purchasing  
VOC – Volatile Organic Compounds  
WAP – Weatherization Assistance Program



## Appendix C: Organization Overview

**MCE** is dedicated to providing its customers with an integrated and comprehensive approach to resource conservation – providing a single point of contact for everything from traditional building efficiency upgrades and water efficiency, to health and safety modifications through its Green & Healthy Homes Initiative (GHHI) Marin program. MCE administers programs with the 3 belief that promoting resource conservation through an integrated platform that engages local program partners is a critical approach to achieving greener, healthier homes within its communities. MCE administers the collaborative GHHI Marin effort and has expanded its home assessments and local partnerships to fulfill GHHI National’s comprehensive model. MCE is the default electric provider for 14 of the 19 Contra Costa jurisdictions. While current GHHI efforts are only administered in Marin County, MCE’s goal is to provide green and healthy home services in all its territories and is committed to facilitating an asthma initiative in Contra Costa County

**Contra Costa Health Services (CCHS)** is an integrated health system, providing hospital and clinical care, health insurance, and Public Health Nursing and other public health services to all residents of the County. The mission of CCHS 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. CCHS provides services to approximately 175,000 county residents receiving Medicaid (Medical). The number of these Medical patients currently identified as having asthma is 15,660, and many of these Medical recipients have other medical vulnerabilities that will benefit from weatherization services and asthma trigger reduction measures. In addition, one of the goals of the Public Health Division’s recently adopted Strategic Plan is to promote improved respiratory health by addressing asthma triggers in the home and community environment, further strengthening the Public Health Division’s commitment to this effort.

**The Contra Costa County Department of Conservation and Development (DCD)** implements four (4) energy efficiency programs throughout the County. These programs are the Bay Area Regional Energy Network (BayREN), East Bay Energy Watch (EBEW), Neighborhood Preservation Program, and Weatherization Program. Each program provides resources to make homes or businesses more energy efficient based on building type and/or resident income. Implementation of these programs achieve the goals of the County’s Climate Action Plan adopted in 2015. DCD is committed to coordinating with MCE and CCHS in order to develop a local green and healthy homes program.

**Green & Healthy Homes Initiative (GHHI)** is a nonprofit organization whose mission is to break the link between unhealthy housing and unhealthy families. GHHI has 30 years of experience in fundraising, delivering high-quality evidence-based services, working with governments in jurisdictions around the country, and forming innovative cross-sector partnerships. GHHI has provided support to over 20 sites seeking to build strong, comprehensive asthma care management services and utilized this expertise to provide technical assistance to this project.



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** RECEIVE UPDATE on solar energy and energy storage installations at County facilities.

**Submitted For:** Brian M. Balbas, Public Works Director/Chief Engineer

**Department:** Public Works

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Frank DiMassa, Public Works      **Contact:** Jody London (925) 674-7871

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#### **Referral History:**

The Sustainability Committee regularly receives updates on the County's progress in increasing the use of renewable energy at County facilities.

#### **Referral Update:**

The Department of Public Works is working on several projects that will increase the amount of renewable energy used at County facilities, as well as add solar-powered battery storage of energy. After the Public Safety Power Shutoffs in the fall of 2019, it has become evident that the County would benefit from better energy resiliency. These projects help the County toward that end.

#### **Recommendation(s)/Next Step(s):**

**RECEIVE UPDATE** on solar energy and energy storage installations at County facilities.

#### **Fiscal Impact (if any):**

Costs and benefits associated with solar energy and energy storage are described in the attachment.

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#### **Attachments**

Solar and Energy Storage on County Facilities Report

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# Public Works Department

## Solar/Storage Summary and Forecast

May 29, 2020

Frank Di Massa  
Energy Manager  
Public Works Department  
Capital Project Management Division

## Existing Solar PV Systems

- ❖ Power Purchase Agreement (PPA) with AES Distributed Energy (Main Street Power)
- ❖ Regional Renewable Energy Project (R-REP)

## PV PPA with SunPower in Progress

- ❖ PPA for 10 County facilities with SunPower

## Solar/Energy Storage Resiliency Opportunities

- ❖ CEC Equity SGIP – 5 County facilities with SunPower
- ❖ MCE Resiliency Program



# Existing Solar PV Systems

## PPA w/AES (Main Street Power)

Project	Address	Type	Operation Date	System Size kW	Energy Produced (kWh)	Reduced CO2 Metric Tons
Main Street Power	4491 Bixler Rd, Byron	PPA	January-12	197	2,800,000	666
Main Street Power	12000 Marsh Creek Rd, Clay	PPA	February-12	144	2,170,000	516
Main Street Power	1750 Oak Park Blvd, Pleasant Hill	PPA	February-12	99	1,232,000	293
Main Street Power	2467 Waterbird Way, Martinez	PPA	January-12	78	1,050,000	250
Main Street Power	2475 Waterbird Way, Martinez	PPA	March-12	78	970,000	231
Main Street Power	5555 Giant Hwy, Richmond	PPA	January-13	900	9,530,000	2,265
Main Street Power	2530 Arnold Drive, Martinez	PPA	February-12	90	1,400,000	333
Main Street Power	4549 Delta Fair Blvd, Antioch	PPA	January-12	87	1,130,000	269
Main Street Power	4800 Imhoff Place, Martinez	PPA	January-12	323	4,610,000	1,096
Main Street Power	1305 MacDonald Ave, Richmond	PPA	December-11	48	609,000	145
Main Street Power	1650 Cavallo Rd, Antioch	PPA	December-11	42	531,000	126
Main Street Power	300 South 27th St, Richmond	PPA	November-12	51	632,000	150
			<b>Totals</b>	2,135	26,664,000	6,338

- ❖ Current price: \$0.21/kWh
- ❖ Annual 4% increase
- ❖ O&M included
- ❖ Pleasant Hill Library Buyout  
Termination rate: \$3.44/Watt
- ❖ Excellent Monitoring System
- ❖ 9 years into 20 yr. agreement
- ❖ Micro-grid or battery storage opportunities?

# Existing Solar PV Systems

## Regional Renewable Energy Program (RREP)

Project	Address	Type	Operation Date	System Size kW	Energy Produced (kWh)	Reduced CO2 Metric Tons
R-REP	50 Glacier Dr, Martinez	County owned	August-15	214.2	857,305	204
R-REP	255 Glacier Dr, Martinez	County Owned	October-15	87.1	457,367	109
R-REP	1960 Muir Rd, Martinez	County Owned	August-15	388.7	1,879,250	447
R-REP	1980 Muir Rd, Martinez	County Owned	August-15	255.1	1,139,000	271
R-REP	202 Glacier Dr, Martinez	County Owned	October-15	457.7	1,990,010	473
R-REP	13601 San Pablo Ave, San Pablo	County Owned	December-15	363.7	1,836,000	436
			<b>Totals</b>	<b>2,219</b>	<b>8,158,932</b>	<b>1,939</b>



- ❖ Bankrupt Contractor SunEdison
- ❖ O&M Contract in place
- ❖ Inadequate monitoring
- ❖ 50 Glacier EOC system transferred to 1850 Muir requires new Interconnection Application w/PG&E
- ❖ PG&E requirement for Grid Interactive Inverters
- ❖ High penetration of solar, EV chargers – potential for a micro-grid (Grants)

# PV PPA with SunPower in Progress

Project	Address	Type	Operation Date	System Size kW	EES Size kW/kWh
SunPower	1000 Ward St, Martinez	PPA	End 2020	342	500/950
SunPower	30 Muir Rd, Martinez	PPA	End 2020	166	
SunPower	50 Douglas Dr, Martinez	PPA	End 2020	566	
SunPower	597 Center Ave, Martinez	PPA	End 2020	121	
SunPower	595 Center Ave, Martinez	PPA	End 2020	352	500/950
SunPower	2530 Arnold Dr, Martinez	PPA	End 2020	526	500/950
SunPower	30 Douglas Dr, Martinez	PPA	End 2020	776	
SunPower	4549 Delta Fair BLVD, Antioch	PPA	End 2020	278	
SunPower	4545 Delta Fair BLVD, Antioch	PPA	End 2020	437	
SunPower	1305 MacDonald, Richmond	PPA	End 2020	282	
			<b>TOTALS</b>	<b>3,846</b>	<b>1,500/2,850</b>

**154 million kWh produced and 36,600 Metric Tons of CO2 reduced, \$16.5 million saved**

- ❖ Advantageous rate: \$.134/kwh
- ❖ Rate fixed for duration of contract
- ❖ Rooftop and Carport
- ❖ Battery Storage at 3 locations
- ❖ Construction to begin in June
- ❖ Construction anticipated to be complete by end of 2020



# Solar/Energy Storage Resiliency Opportunities

## CEC Equity SGIP Storage Battery Grant with SunPower

Site	Storage Size (kW / kWh)	Year 1 Expected Savings (\$)	Guaranteed Savings (\$/Year)	15 Year Nominal Savings (\$)
1000 Ward	964 kWh increase	+\$7,700	+\$7,000	+\$132,800
1305 MacDonald Ave	182 kW / 928 kWh	\$7,100	\$7,000	\$123,000
4549 Delta Fair Blvd	184 kW / 928 kWh	\$8,800	\$8,500	\$152,000
4545 Delta Fair Blvd	163 kW / 928 kWh	\$13,700	\$7,574	\$238,000
– Amend existing PPA agreements to add storage if sites are allocated Equity SGIP incentive				
*15 year nominal savings are base on a 2% degradation rate and 4% utility escalation rate				

Site	Storage Size (kW / kWh)	Year 1 Expected Savings (\$)	Guaranteed Savings (\$/Year)	10 Year Nominal Savings (\$)
5555 Atlas	464kW / 1856kWh	\$74,000	\$43,600	\$805,200

- ❖ No cost to the County
- ❖ To be paired with solar
- ❖ Guaranteed Savings
- ❖ 4-hour battery discharge versus 2-hour
- ❖ SunPower has submitted applications



# Solar/Energy Storage Resiliency Opportunities

## MCE's Evolving Resiliency Program

- ❖ County Library Solar/Storage Grant
  - ❖ El Sobrante, Pinole, and Ygnacio Valley Libraries identified as potential sites
  - ❖ Focus on increasing resiliency and increased usefulness of selected public facilities
  - ❖ Significant benefit year-round optimizing use of renewable energy, reducing emissions, and reducing electricity demand and bills
- ❖ New Larger Initiative under development
- ❖ MCE has indicated a desire to pursue a solar/storage project at a County library under a direct grant
- ❖ Larger initiative to focus on MCE-owned storage assets that provide resiliency benefits for both customers and the grid
- ❖ Assets controlled by comprehensive software platform

# THANK YOU



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** RECOMMEND APPROVAL for Director, DCD, or designee, to apply for Sustainable Agricultural Lands Conservation grant.

**Submitted For:** Jody London, Sustainability Coordinator

**Department:** Conservation & Development

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Jody London, DCD

**Contact:** Jody London (925)674-7871

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#### **Referral History:**

N/A

#### **Referral Update:**

Contra Costa County is in the process of updating its Climate Action Plan. A strategy that is recommended as an effective way to reduce greenhouse gas emissions is carbon sequestration. Carbon sequestration refers to practices that increase the ability of soil and plants to pull carbon from the atmosphere and sequester it deep in the soil, restoring the natural soil that organic carbon sinks. Carbon sequestration also increases water-holding capacity, reduces erosion, and creates healthier soil ecosystems, making it one of the most cost-effective carbon capture strategies available. Carbon sequestration can be used in a variety of land uses. The attached fact sheet provides more information.

The draft goals and strategies for the Climate Action Plan update, which the Sustainability Committee, has reviewed, include studying the feasibility of carbon sequestration. Staff seeks authorization to apply to an upcoming California Department of Conservation grant, the Sustainable Agricultural Lands Conservation program, for funding to support a carbon sequestration feasibility study for Contra Costa County. The deadline to submit pre-proposals is July 1, and full proposals are due August 28.

Staff anticipates collaborating with a range of stakeholders for this study, including the Costa Costa Resource Conservation District, University of California Agricultural Extension, County Integrated Pest Management Program, urban agriculture organizations, the East Bay Regional Park District, Save Mount Diablo, East Contra Costa Habitat Conservancy, and others as appropriate.

#### **Recommendation(s)/Next Step(s):**

RECOMMEND APPROVAL by the Board of Supervisors for the Director, Department of Conservation and Development, or designee, to apply for Sustainable Agricultural Lands Conservation grant.

**Fiscal Impact (if any):**

The grant carries an expectation that winning applicants will provide a 10% match, of which half (5%) can be in-kind contributions. So there would be a small monetary contribution. Staff is in the process of determining the cost of the Carbon Sequestration Feasibility Study.

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**Attachments**

Carbon Sequestration Fact Sheet

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## Why Carbon Sequestration: Need for Action

Contra Costa County shares California's goals to create a cleaner, healthier state. Energy technologies alone — renewables and electrification — will not be enough to achieve California state goals for carbon neutrality by 2045. Fossil fuel reductions must be supplemented with decarbonization practices in order to significantly impact greenhouse gas emission reductions. Carbon can be stored long term in soils in a process called *carbon sequestration*, or *carbon farming*.

Carbon sequestration refers to practices that increase the ability of soil and plants to pull carbon from the atmosphere and sequester it deep in the soil, restoring the natural soil that organic carbon sinks. Carbon sequestration also increases water holding capacity, reduces erosion, and creates healthier soil ecosystems, making it one of the most cost-effective carbon capture strategies available.

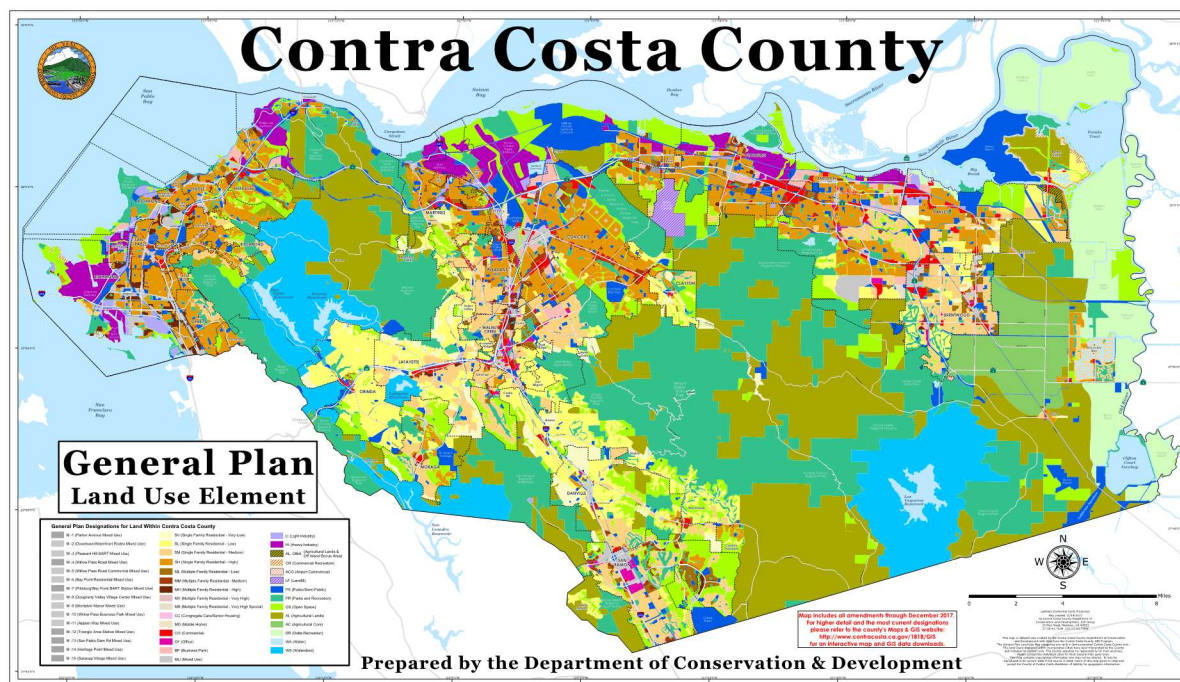
Carbon sequestration provides an opportunity to restore balance within the carbon cycle in a way that will protect biodiversity, reduce emissions, build resilience to drought, and mitigate climate change.

## Applications for Sequestering Carbon

There are many management practices that can be applied to open space lands, croplands, grasslands, and grazing lands to increase soil organic carbon:

### 20 United States Department of Agriculture (USDA) Natural Resources Conservation Service Approved Practices for Sequestering Carbon

Forests, Trees & Shurbs	Grasslands, Pastures & Rangelands	Streams & Wetlands	Ranch Facility & Operations
<ul style="list-style-type: none"> <li>• Tree/Shrub Establishment</li> <li>• Silvopasture Establishment on Grazed Grasslands</li> <li>• Windbreak/Shelterbelt Establishment</li> <li>• Hedgerow Planting Grass</li> </ul>	<ul style="list-style-type: none"> <li>• Range Planting</li> <li>• Restoring Degraded Rangeland with Compost</li> <li>• Prescribed Grazing</li> <li>• Forage Biomass Planting</li> <li>• Conservation Cover</li> <li>• Improved Nutrient Management</li> <li>• No Till</li> <li>• Field Border</li> </ul>	<ul style="list-style-type: none"> <li>• Riparian Restoration</li> <li>• Riparian Herbaceous Cover</li> <li>• Riparian Forest Buffer</li> <li>• Critical area Planting</li> <li>• Wetland Restoration</li> <li>• Filter Strip / Grassed Waterway</li> </ul>	<ul style="list-style-type: none"> <li>• Anaerobic Digester</li> <li>• Combustion System Improvement (for Farm Equipment)</li> </ul>



Contra Costa County Land Use Map

The County's land use map identifies land with potential for implementing carbon sequestration opportunities within the County, including: open space lands, agricultural lands, parks and recreation lands, watershed lands, delta recreation, and landfills.

## How effective is Carbon Sequestration?

Sequestration of just one metric ton per hectare on half the rangeland area in California would **offset 42 million metric tons of CO<sub>2</sub>e**, an amount equivalent to the annual greenhouse gas emissions from energy use for all commercial and residential sectors in California.<sup>1</sup> Carbon dioxide (CO<sub>2</sub>) is naturally captured from the atmosphere through biological, chemical, and physical processes. These changes can be accelerated through better management practices and changes in land use and agricultural practices. Carbon sequestration is successful when carbon gains resulting from enhanced land management or conservation practices exceed carbon losses.

It is important to know the impacts of practices when it comes to increasing soil carbon. Measurement techniques for soil carbon can help to track changes in soil carbon. Models can be used to estimate total possible carbon sequestration from changes in management practices. Both measurement and modeling can be used to develop carbon credits or other standards and premiums that add value to good produced under healthy soil practices or in a climate-beneficial manner.

## Implementation Needs and Considerations

The following are recommendations for successful implementation of carbon sequestration projects, including:

- Collaboration with multiple partners;
- Increase funding and resources for carbon sequestration;
- Coordinate cross-agency implementation;
- Prioritize capacity building, technical assistance, and collaborative planning;
- Recognize restoration economies;
- Invest in education and outreach;
- Leverage cross-sector interactions;
- Continue to support ongoing research; and
- Consider and measure carbon benefits

## Moving Forward

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The potential is high for finding natural and working lands solutions in Contra Costa County. Sufficient and consistent program funding is needed to scale up, accelerate, and achieve maximum carbon sequestration benefits.

Successful work is only possible with the input of numerous stakeholders, both within County government and other governmental entities, as well as external stakeholders including community organizations, environmental groups and nonprofits, local landowners, and agricultural organizations. An initial list of potential partners includes:

Agriculture Resource Conservation District UC Agriculture	Parks EBRPD Save Mt. Diablo
Rangelands East Contra Costa County Habitat Conservancy	Solid Waste RecycleMore (West Contra Costa Integrated Waste Management Authority) Central Contra Costa Integrated Waste Management Authority
Urban Agriculture Urban Tilth Watershed Project Planting Justice others to be identified	

Contra Costa County must increase its efforts to conserve, restore, and manage its rangelands, farms, urban green spaces, wetlands, and soils. We expect to continue to lose carbon from the land as a result of extreme events exacerbated by climate change, drought, wildfire, land subsidence, development, and other disturbances. Actions to protect, restore, and sustainably manage the health and resiliency of these lands can greatly accelerate our progress to mitigate climate change and our ability to reduce worsening climate change impacts.

For more information, contact Jody London, Contra Costa County Sustainability Coordinator, [Jody.London@dcd.cccounty.us](mailto:Jody.London@dcd.cccounty.us), 925-674-7871.



**Appendix:**

Several state agencies in California collaborated to compile the “California 2030 Natural and Working Lands Climate Change Implementation Plan,” which is a blueprint for action on natural and working lands that aims to maximize climate benefits and serve other important environmental and ecological objectives, specifically, a suite of State-supported land management, restoration, and conservation activities that can be pursued to help change the current emissions trajectory and move the sector closer to becoming a resilient carbon sink.

**Table 1:** Summary of Applications in the 2030 State Natural and Working Lands Climate Change Implementation Plan.<sup>2</sup>

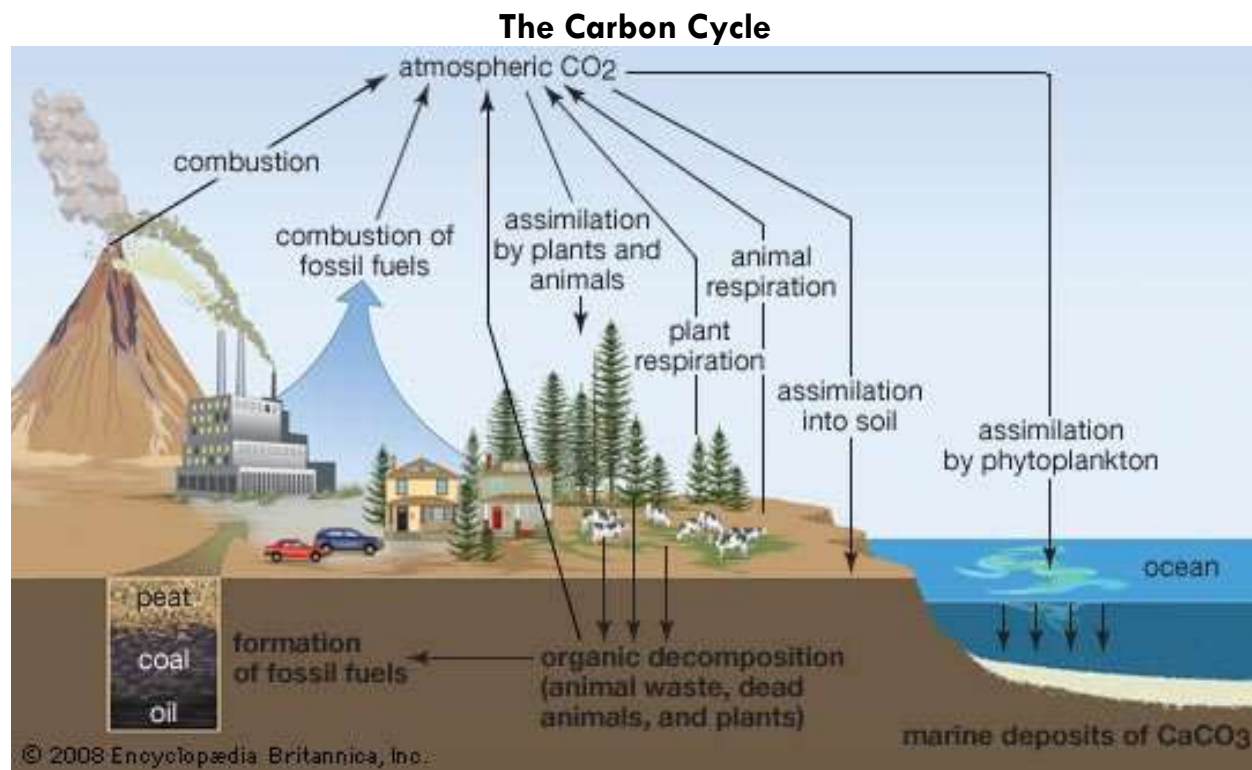
Application	Description
Conservation: avoided conversion of natural and working lands	50–75% reduction in annual rate of conversion by 2030.
Forestry: improved forest health and reduced wildfire severity, enhanced carbon in forested ecosystems, biomass utilization.	Prescribed fire, thinning, understory treatment, less intensive forest management, additional 50% of slash diverted from pile burn/decay to other uses.
Restoration	Riparian, oak woodland, coastal wetland, Delta wetland, meadow and seagrass restoration. Urban forest expansion.
Agriculture: agroforestry, cropland management, compost application	Silvopasture, hedge row establishment, windbreak establishment, riparian forest buffer, riparian herbaceous cover. Cover cropping, mulching, no-till farming, reduced-till farming. Compost application on annual cropland, perennial cropland, non-irrigated cropland, irrigated pasture.

**Table 2:** Soil carbon sequestration rates under USDA Natural Resources Conservation Service (NRCS) conservation.<sup>3</sup>

NRCS Conservation Practice Method	Atmospheric/soil Benefit (mg Carbon captured per hectare) 1Mg= 1 megagram or 1 metric ton
Conservation cover – retiring marginal soils	.42 to .94
Conservation crop rotation	.15 to .17
Residue and tillage management, no till	.15.to 27
Strip till	.07 to .17
Mulch till	.07 to .18
Contour farming	.07 to .19
Contour buffer strips	.42 to .94
Cover crop	.15 to .22
Residue and tillage management, reduced till	.02 to .15
Field border	.42 to.94



<i>NRCS Conservation Practice Method</i>	<i>Atmospheric/soil Benefit (mg Carbon captured per hectare) 1Mg= 1 megagram or 1 metric ton</i>
Filter strips	.42 to .95
Grassed waterways	.42 to .96
Strip-cropping	.02 to .17
Vegetative barriers	.42 to .94
Herbaceous wind barriers	.42 to .95



Anthropogenic activities such as the burning of fossil fuels have released carbon from its long-term geologic storage as coal, petroleum, and natural gas and have delivered it to the atmosphere as carbon dioxide gas. The amount of carbon dioxide in the atmosphere has increased since the beginning of the industrial age, and this increase has been caused mainly by the burning of fossil fuels. Carbon dioxide is a very effective greenhouse gas—that is, a gas that absorbs infrared radiation emitted from Earth’s surface. As carbon dioxide concentrations rise in the atmosphere, more infrared radiation is retained, and the average temperature of Earth’s lower atmosphere rises. This process is referred to as global warming.

Reservoirs that retain carbon and keep it from entering Earth’s atmosphere are known as carbon sinks. Carbon is transferred naturally from the atmosphere to terrestrial carbon sinks through photosynthesis; it may be stored in aboveground biomass as well as in soils. Beyond the natural growth of plants, other terrestrial processes that sequester carbon include growth of replacement vegetation on cleared land, land-management practices that absorb carbon.

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<sup>1</sup> Ryals, R. et al. (2013) "Effects of Organic Matter Amendments on Net Primary Productivity and Greenhouse Gas Emissions in Annual Grasslands," *Ecological Applications* 23, no. 1 (2013): 46–59. Ecosystem Science Division, Department of Environment Science, Policy, and Management, University of California at Berkeley.

<sup>2</sup> California Air Resources Board (2019). CA 2030 NWL Climate Change Implementation Plan.

[https://ww3.arb.ca.gov/cc/natandworkinglands/draft-nwl-ip-040419.pdf?\\_ga=2.184737389.539979434.1587673510-873784356.1575493161](https://ww3.arb.ca.gov/cc/natandworkinglands/draft-nwl-ip-040419.pdf?_ga=2.184737389.539979434.1587673510-873784356.1575493161).

<sup>3</sup> Lal, R. (2016). Soil carbon sequestration potential of Us croplands and grasslands (Vol. 71). *Journal of Soil and Water Conservation*. [https://www.c-agg.org/wp-content/uploads/Chambers\\_Paustian\\_Lal\\_Soil\\_Carbon\\_and\\_4\\_per\\_1000-1.pdf](https://www.c-agg.org/wp-content/uploads/Chambers_Paustian_Lal_Soil_Carbon_and_4_per_1000-1.pdf)



# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020  
**Subject:** RECEIVE REPORT from Sustainability Commission Chair.  
**Submitted For:** Jody London, Sustainability Coordinator  
**Department:** Conservation & Development  
**Referral No.:** N/A  
**Referral Name:** N/A  
**Presenter:** Chair or designate      **Contact:** Jody London (925)674-7871

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#### **Referral History:**

This is a standing item of the Commission.

#### **Referral Update:**

The Sustainability Commission Chair provides an update at each meeting of the Sustainability Committee on the work of the Commission.

At its August meeting the Sustainability Commission adopted the attached environmental justice assessment tool and recommends its use in updating the County's General Plan.

#### **Recommendation(s)/Next Step(s):**

RECEIVE report from Sustainability Commission Chair.

#### **Fiscal Impact (if any):**

None.

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#### **Attachments**

*No file(s) attached.*

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# Contra Costa County Board of Supervisors

## Subcommittee Report

### SUSTAINABILITY COMMITTEE

**Meeting Date:** 05/29/2020

**Subject:** RECEIVE REPORT from Sustainability Coordinator.

**Submitted For:** Jody London, Sustainability Coordinator

**Department:** Conservation & Development

**Referral No.:** N/A

**Referral Name:** N/A

**Presenter:** Jody London, Sustainability  
Coordinator

**Contact:** Jody London (925)  
674-7871

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### **Referral History:**

The Ad Hoc Committee on Sustainability has requested an update at each meeting on sustainability work by County staff.

### **Referral Update:**

This report provides an update to the Sustainability Committee on the work of the County's sustainability staff since the Committee last met on February 3, 2020. As of March 17, sustainability staff have been working remotely, in compliance with orders from the County Health Officer. While there was an adjustment period as everyone established home work stations and figured out how to use online technology to continue collaboration, staff are now operating at a similar level as prior to the pandemic. Sustainability staff also have been assisting in the County's Emergency Operations Center.

Key activities during this period are listed below.

- Sustainability staff continue to refine with staff from many departments the draft goals, tools, and measures for the Climate Action Plan. Sustainability staff are supporting the General Plan update.
- Participate in workshops to learn about opportunities to incorporate climate and sustainability goals in to COVID-19 relief and recovery work, and how other local governments across the country are facilitating this.
- Began researching carbon sequestration as a strategy to include in the Climate Action Plan, including researching grant opportunities to fund a feasibility study and initiating collaborative conversations with stakeholders.
- The solar overlay zoning ordinance was adopted by the Board of Supervisors on February 25. Staff are now processing applications from two developers for projects in solar overlay areas in East County, and fielding inquiries from others.
- The Bay Area Regional Energy Network (BayREN), in which Contra Costa County plays a leadership role, has shifted its outreach workshops to online formats. BayREN has been

providing training opportunities to contractors. BayREN has published guidance for contractors and the public on COVID-19 program response packages, options for loans and rebates, and more. See attached BayREN fact sheet.

- Facilitated the shut down of the East Bay Energy Watch (EBEW), which will no longer be funded by PG&E after June 30, 2020. Staff are identifying which elements of EBEW can continue through other channels.
- The County submitted a \$500,000 grant for a three-year period to the Sierra Health Foundation for the Public Health Division and Contra Costa Health Plan to provide asthma home visiting services to support the implementation of the County's Asthma Initiative Project through the County's Green and Health Homes Initiative (GHHI).
- Collaborated with MCE to identify potential sites for resilience centers that could operate during emergencies, as part of MCE's newly established Resilience Fund. A report on this is provided elsewhere in the agenda for this meeting.
- Continued coordinating with the Contra Costa Transportation Authority (CCTA) and MCE on an application to the California Energy Commission for the CALeVIP program, which would fund electric vehicle charging infrastructure in the MCE service territory. The CEC is expected to issue a decision on this over the summer.
- Hosted an online meeting of the Sustainability Exchange for local government staff in Contra Costa County. Over 40 people participated and learned about the contribution of paving materials and practices to greenhouse gas emissions, and how local government can help reduce GHG and other environmental impacts. The meeting featured a presentation from Dr. John Harvey, UC Davis, Director of the [City and County Pavement Improvement Center](#) and Director of the UC Pavement Research Center.
- Continue to administer the Cleaner Contra Costa Challenge.
- Participated in the Sustainable Contra Costa Virtual Earth Day celebration.
- The Sustainability Commission did not meet in April, as staff could not support an online meeting. We are hopeful the Sustainability Commission will be able to resume its meetings in June.
- Collaborated with County staff working on topics including land use and transportation, hazardous materials, green business program, the County's state and federal legislative platforms, economic development, health, codes, solid waste, energy, and related.
- Participated in regional activities.

**Recommendation(s)/Next Step(s):**

RECEIVE REPORT from County Sustainability Coordinator.

**Fiscal Impact (if any):**

None.

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**Attachments**

BayREN Response to COVID-19

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## BayREN's Response to COVID-19

### **BayREN is Empowering Our Communities When They Need It Most**

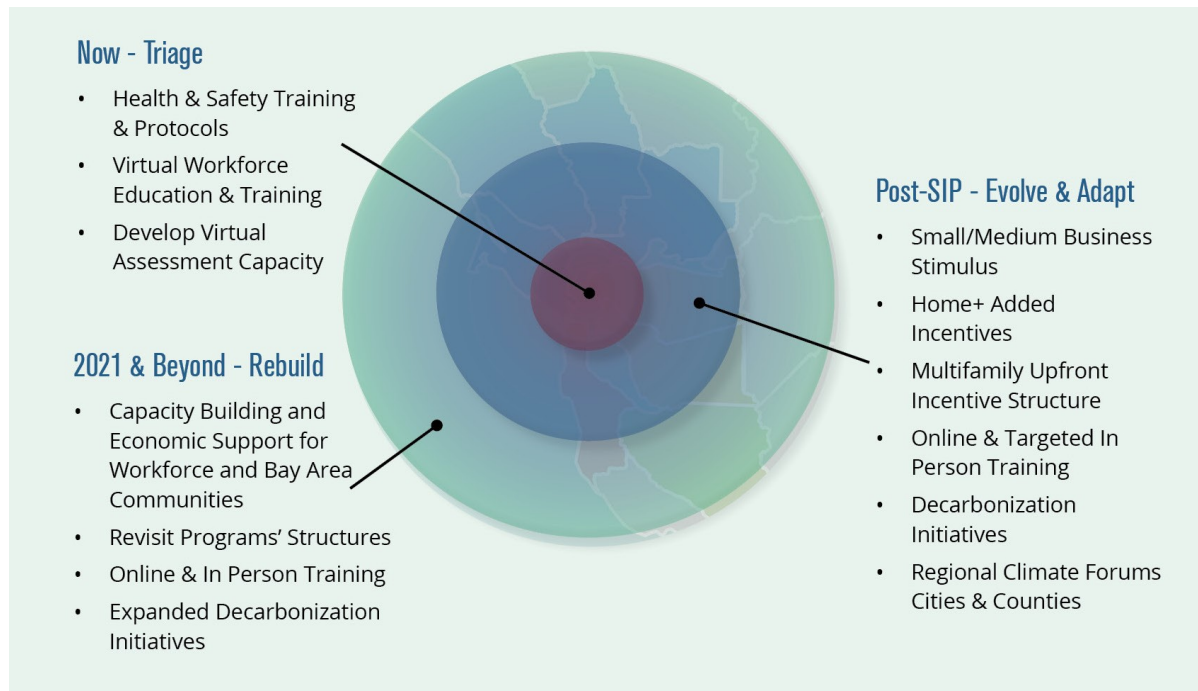
The Bay Area Regional Energy Network (BayREN) is focused on meeting the needs of our stakeholders and partners in the nine county Bay Area during this unprecedented COVID-19 crisis. [Our response](#) includes expanded programs and services designed to support small businesses, homeowners, renters, and our contractors as they work together to revitalize our communities. The graphic below highlights how BayREN will phase in new programs and responses to help our communities.

### **Regional Leadership to Rebuild a Stronger Bay Area**

Commencing in mid-May, all BayREN participating contractors will have the benefit of completing BayREN's **new Health and Safety Training** to ensure the safety of this critical workforce as well as the

communities they serve. BayREN will require that all contractors complete the training and abide by new Health and Safety Protocols before resuming any project work.

In May, BayREN is hosting the first in a series of Decarbonization Forums for city and county staff to focus on both the challenges and the opportunities of advancing decarbonization initiatives during the COVID-19 crisis. These forums will create space for focused conversations on specific challenges and opportunities that our local government staff are struggling with today. BayREN will facilitate the discussion with the goal of identifying clear, near term actions that BayREN can support to advance new opportunities and meet these challenges head on.





# BayREN COVID-19 Program Response Packages

Program Area	New Offerings	Time Available
<b>BayREN Business Program</b> For small and medium businesses and commercial property owners	<ul style="list-style-type: none"> <li>Free energy efficiency assessments and rebates for new energy efficiency equipment</li> <li>Interest-free microloans</li> <li>Contactless energy audits</li> <li>New Health and Safety Equipment Protocols</li> <li>Online hub for small business resource and links to county economic development offices and centers</li> </ul>	Summer 2020
<b>BayREN Multifamily</b> Multifamily residential property owners	<ul style="list-style-type: none"> <li>Phased incentive pathway to make 25% of project cost available prior to construction</li> <li>Health and hygiene best practices for multifamily common areas</li> </ul>	Summer 2020
<b>BayREN Home+</b> For homeowners and renters	<ul style="list-style-type: none"> <li>Virtual energy assessments</li> <li>Increased incentives</li> <li>Energy Efficiency Toolkit (available now!)</li> </ul>	May 2020
<b>BayREN Home+</b> For contractors	<ul style="list-style-type: none"> <li>New health and safety training and protocols</li> <li>Virtual training and education</li> <li>New online learning portal for participating contractors</li> </ul>	May 2020
<b>Green Labeling</b> For Real Estate Professionals	<ul style="list-style-type: none"> <li>Virtual training and education</li> </ul>	May 2020
<b>Codes &amp; Standards</b> For City and County Building Department Staff and Building Industry Professionals	<ul style="list-style-type: none"> <li>Virtual training and education</li> </ul>	May 2020



## BayREN is Here for Our Contractors so They Can Be There for You

BayREN Home+ provides cash rebates and incentives to homeowners to increase



home comfort, health, and efficiency. BayREN is developing **new, robust Health and Safety Protocols** for our certified contractors to ensure everyone's safety as they provide critical upgrades to lower home energy costs when many of us are spending more time at home than ever before.

In addition, Home+ will be offering **increased incentives for contractors and free trainings on building science practices**. BayREN also recently launched a new Online Learning Portal to support BayREN participating contractors in continuing education and training.

Homeowners can still receive a no-cost Energy Savings Kit (\$70 value), contact the Home Energy Advisors ([www.bayrenresidential.org](http://www.bayrenresidential.org)) to plan future improvement projects, and receive virtual home assessments from contractors.



## BayREN Supports Small Businesses with Microloans and Rebates

BayREN Commercial Programs provide rebates, financing, and one-stop-shop technical assistance to ensure small and medium businesses can leverage all available energy saving programs. During this unprecedented time, our goal is to support the resilience of small businesses by lowering energy and maintenance costs.

During the COVID-19 recovery period, BAYREN will offer free energy efficiency assessments and rebates for new equipment. Additionally, BayREN will offer 0% interest microloans. Microloans are available on a first-come-first-served basis and will be available through *December 31, 2020*.

**To learn more or to enroll email [michael.denevan@sfgov.org](mailto:michael.denevan@sfgov.org).**



## **BayREN Greens Multifamily Buildings to Support Cost Savings and Emissions Reductions**

BayREN offers cash rebates and no-cost energy consulting for multifamily property owners for improvements that are expected to save an estimated 15% of the entire building's energy use. During the Bay Area's Shelter in Place Order (SIP), BayREN is continuing remote program operations where possible for existing Multifamily Building projects and will continue to process new project applications. We will continue to support tenants and multifamily building owners as our local communities begin to restore economic activity.

To help ease the current and anticipated cash flow slow-down, BayREN will be offering a phased incentive for projects that demonstrate a need for upfront cash to participate in the program, or to expand scopes of work. This offering should be available by mid-summer 2020. BayREN is also collating resources for multifamily property owners to easily implement health and hygiene best practices.

Visit [www.bayareamultifamily.org](http://www.bayareamultifamily.org) for more information

## **New Virtual Trainings to Expand Knowledge**

During the COVID-19 crisis and beyond, Codes & Standards and Green Labeling Program trainings will be available virtually to enable contractors and real estate professionals to continue to expand their knowledge and skills.

BayREN's Green Labeling Program builds market recognition of the value of a green home through training real estate professionals in green building and sustainable business practices and by providing incentives for homeowners to get a Home Energy Score.

BayREN's Codes & Standards Program supports Bay Area cities and counties in complying with the California Energy Code, provides zero net energy engineering analysis for municipal buildings and supports the adoption of policies that expand building electrification and decarbonization efforts region wide.

For a list of scheduled virtual trainings and forums please visit:

[www.bayrencodes.org/events/](http://www.bayrencodes.org/events/)

Real estate professionals:

<http://tiny.cc/63weoz>