

Climate Sustainability – Sustainability Trust Public Works Projects: \$3,000,000 (On-going)

In September 2020, the Contra Costa County Board of Supervisors adopted a resolution declaring a climate emergency in Contra Costa County. Included in the resolution was the requirement to implement action items to address the climate crisis and calls on local and regional partners to join together to address climate change. The resolution also called for the establishment of an interdepartmental Climate Action Task Force (“Task Force”) to focus on “urgently implementing the County’s *Climate Action Plan*.”

As a result of subsequent Climate Action Task Force meetings, the proposal for a Sustainability Fund was identified. An annual allocation of \$3 million would be used for sustainability efforts throughout the County. The Sustainability Committee and the Board of Supervisors are supportive of establishing the Sustainability Fund. Staff asks that Measure X funds be considered to fund the proposed Sustainability Fund on an annual basis. Staff also recommends that the Sustainability Fund be included as part of the annual County budget, working with the County Administrator’s Office (CAO) prioritizing projects each year. The focus of this funding would remain on improvements to County facilities infrastructure and operations to reduce Greenhouse Gas (GHG) emissions and meet the County’s *Climate Action Plan* goals and initiatives.

Human activity, including activities associated with County operations, is a contributor to GHG emissions that leads to climate change. Impacts of climate change—such as increased death, disease and injury from heat waves, floods, storms, and fires; decreased food quality and security; and increased morbidity and mortality—associated with air pollution, are predicted to impact public health, and disproportionately affect those who are socially and economically disadvantaged.

The *Contra Costa County Climate Action Plan* identifies how the County will achieve the AB32 GHG emissions reduction targets in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County’s *General Plan* and other policy documents. The proposed Sustainability Fund is crucial to fund the necessary improvements to our County facilities.

Public Works would administer the fund in close coordination with the CAO and input from the Climate Action Task Force. In addition, these funds will be leveraged with other funding sources such as grants to further extend the funds available for sustainability efforts countywide.

Staff recommends that the initial focus of the Sustainability Fund would be to implement electric vehicle (EV) charging stations as identified in the report presented to the Board of Supervisors on October 19, 2021 (see Attachment A – Initial Project List – EV Chargers and Energy Reduction Projects). This initial EV Charger Project list is estimated at \$3 million and would be implemented over the next 18-24 months.

Subsequent year’s projects are identified in the *Distributed Energy Resource Plan* adopted by the Board of Supervisors (see Attachment B – Distributed Energy Resource Plan June 10, 2018 BOS). Projects would focus on County buildings and operations that would include renewable energy (solar), energy storage systems, energy reduction projects, additional electric vehicle chargers, and converting the County’s fleet vehicles and equipment to electric.

Staff has identified several possible projects to be completed after the EV Charger Project (see Attachment A page 2 - Energy Reduction Projects) and would prioritize those projects working with the CAO, should

annual recurring funds be available for the Sustainability Fund. In addition to the projects listed in Attachment A & B, staff has been working to identify solar/energy storage resiliency opportunities, such as at County libraries or other County buildings that have public access.

Recommendation:

The County Administrator's recommendation is that the program be funded with an on-going annual allocation of \$2,500,000. In order to fund the Climate Equity and Resilience Investment in Conservation and Development at \$500,000, the Public Works projects will need to be scaled within \$2,500,000 per year.

Proposed EV Charger Locations

ATTACHMENT A

Address	City	Department(s)	Approx. # of County Fleet/Pool Light Vehicles	Proposed New EV Chargers	Cost Estimate	Potential MCE Rebate	Potential Net Cost	Existing Conduit In Place - Parking area to electrical room	Type of Solar System - Roof, Carport, or Both	Cumulative Total
50 Douglas Dr	Martinez	Health, Probation, Child Support	34	10	150,000	(30,000)	120,000	Yes	Both	\$150,000
30 Muir Rd	Martinez	DCD	12	8	120,000	(24,000)	96,000	No	Both	270,000
255 Glacier	Martinez	Public Works	11	4	60,000	(12,000)	48,000	Yes	Carport	330,000
4549 Delta Fair	Antioch	Child Support, Probation	10	8	156,600	(24,000)	132,600	No	Roof	486,600
4545 Delta Fair	Antioch	EHSD	10	8	120,000	(24,000)	96,000	Yes	Carport	606,600
595/597 Center	Martinez	Health	6	13	130,000	(39,000)	91,000	Yes	Both	736,600
2530 Arnold	Martinez	Assessor, Health, Sheriff, Tax, Risk	6	6	90,000	(18,000)	72,000	No	Ground	826,600
2475 Waterbird Way	Martinez	Public Works	4	2	120,000	(6,000)	114,000	No	Roof	946,600
1960 Muir	Martinez	Sheriff	4	6	120,000	(18,000)	102,000	Yes	Carport	1,066,600
202 Glacier Dr	Martinez	Probation	4	4	100,000	(12,000)	88,000	Yes	Carport	1,166,600
151 Linus Pauling	Hercules	Sup. Glover, EHSD	3	4	60,000	(12,000)	48,000	Yes	Carport	1,226,600
5555 Giant Hwy	Richmond	Sheriff	3	2	130,000	(6,000)	124,000	No	Both	1,356,600
4491 Bixler Rd	Byron	Probation	3	4	75,000	(12,000)	63,000	No	Both	1,431,600
1305 MacDonald Ave	Richmond	EHSD	2	8	120,000	(24,000)	96,000	No	Roof	1,551,600
12000 Marsh Creek Rd	Clayton	Sheriff	2	2	70,000	(6,000)	64,000	No	Roof	1,621,600
4800 Imhoff Place	Martinez	Animal Services	1	2	120,000	(6,000)	114,000	No	Roof	1,741,600
1650 Cavallo Rd	Antioch	EHSD		2	120,000	(6,000)	114,000	No	Roof	1,861,600
			Proposed Totals	93	\$1,861,600	(\$279,000)	1,582,600			
				Engineering	\$395,000					
					\$2,256,600					

No solar PV system

Will be deleted - Closing building

NOTE: This cost estimate does not include costs for permits, ADA, or electrical infrastructure such trenching, conduits, wiring, or electrical panel upgrades.

"Engineering" budget item is intended to evaluate and develop cost estimates for above items at each proposed building site.

Existing EV Charger Locations	Existing County Only EV Chargers	Existing Public EV Chargers
255 Glacier	Martinez	Public Works
2467 Waterbird Way	Martinez	Public Works
2366B Stanwell Circle	Concord	Public Works
1126 Escobar (651 Pine)	Martinez	CAO, Human Resources
1025 Escobar Street	Martinez	BOS
2425 Bisso Lane	Concord	Health
501 Gateway Avenue	San Pablo	Health
13601 San Pablo Avenue	San Pablo	Health
1850 Muir Road	Martinez	Sheriff
	Total	35
		14

Energy Reduction Project List

Square Feet	Facility	Retrofit \$	Cumulative \$	EUI*
115,091	2530 Arnold	\$538,614		9.30
92,024	50 Douglas	\$430,663	\$969,276	10.70
42,736	595 Center	\$200,000	\$1,169,276	38.50
51,630	597 Center	\$241,623	\$1,410,899	12.60
47,440	1305 McDonald	\$222,014	\$1,632,914	9.90
52,800	4545 Delta Fair	\$247,098	\$1,880,012	14.30
92,394	4549 Delta Fair	\$432,396	\$2,312,409	11.20
41,295	151 Linus Pauling	\$193,256	\$2,505,665	3.4**
24,534	1650 Cavallo	\$114,817	\$2,620,481	21.30
34,554	40 Douglas	\$161,709	\$2,782,191	19.10
35,305	10 Douglas	\$165,224	\$2,947,414	9.30
629,803	TOTAL	\$2,947,414	TOTAL	

* Electricity Utilization Index - kWh/square feet/year

** low EUI reflects large carport solar



Contra
Costa
County

To: Board of Supervisors
From: Brian M. Balbas, Public Works Director/Chief Engineer
Date: July 10, 2018

Subject: APPROVE the Distributed Energy Resource Plan for County facilities

RECOMMENDATION(S):

APPROVE the Distributed Energy Resource (DER) Plan prepared by Public Works, dated July 10, 2018, and DIRECT the Public Works Director, or designee, to proceed with solicitation of Request for Qualifications (RFQ) for the implementation of components of the DER Plan, Countywide.

FISCAL IMPACT:

DER program development costs including minor construction management and incidental construction costs are funded by California Solar Initiative (CSI) rebate funds which accrued to the County through the R-REP solar projects completed three years ago.

APPROVE

OTHER

RECOMMENDATION OF CNTY
ADMINISTRATOR

RECOMMENDATION OF BOARD
COMMITTEE

Action of Board On: **07/10/2018** APPROVED AS RECOMMENDED OTHER

Clerks Notes:

VOTE OF SUPERVISORS

- AYE: John Gioia, District I Supervisor
Candace Andersen, District II Supervisor
Diane Burgis, District III Supervisor
Karen Mitchoff, District IV Supervisor
Federal D. Glover, District V Supervisor

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

ATTESTED: July 10, 2018

David Twa, County Administrator and Clerk of the Board of Supervisors

By: June McHuen, Deputy

Contact: Ramesh Kanzaria
925-957-2480

cc:

BACKGROUND:

Implementation of Distributed Energy Resources in County facilities is the most expedient, efficient and effective way to meet the statutory renewable energy goals and the carbon reduction requirements of SB350 (Clean Energy & Pollution Reduction Act) and the objectives of the County's Climate Action.

The California Energy Commission (CEC) defines DER as grid-connected distributed renewable energy systems, energy efficiency (EE), energy storage (ES), electric vehicles (EV), and demand response (DR) supported by a wide-ranging suite of policies adopted by the California Public Utilities Commission (CPUC).

Public Works staff in coordination with the Conservation and Development Department developed a draft DER plan which was presented to the Ad Hoc Committee on Sustainability and the Sustainability Commission. Input from the Committee and Commission resulted in the final DER Plan.

Public Works has initiated a significant amount of the ground work necessary to develop projects in the three primary DER categories as follows:

PV Systems – At its meeting on December 19, 2017, The Board of Supervisors authorized Public Works to enter into Interconnection Applications with PG&E for eleven County-owned facilities. These applications resulted from a CPUC decision specifically benefiting schools and municipalities through solar friendly rate conditions from PG&E for a ten-year period. Upon Board approval of the DER Plan, Public Works intends to issue an RFQ and select a solar developer(s) to finance and install these systems with a target completion date of FY18/19.

Energy Efficiency - PG&E offers a zero interest loan program where the loan payment is equal to or lessor than the savings resulting from the energy efficiency improvements. Known as on-bill financing (OBF), this program has evolved over the years to assure that the savings estimates are accurate and that savings persist through out the payment period. Several County-owned facilities have been identified that will benefit greatly from upgrades to the HVAC, controls and lighting systems. Upon Board approval of the DER Plan, Public Works intends to issue an RFQ and select a preferred Energy Service Company or companies to work with as partners on this project.

Electric Vehicle Charging - In response to increasing demand from County employees and to reach the goals and objectives of the Climate Action Plan (CAP), the County is pursuing the continued addition of Electric Vehicle Supply Equipment (EVSE) at selected facilities. County staff has determined that the most cost effective means of getting chargers installed in County-owned facilities is by participating in PG&E's Electric Vehicle Charge Network (EVCN) program. Under the EVCN program, PG&E pays for, maintains and coordinates all "make ready" infrastructure from their transformer to the each of 10 parking spaces at a County facility. PG&E also pays for a portion of the charge port equipment (which is purchased and installed by the County) through a rebate in an amount not to exceed the cost of the charge port and associated mounting hardware. Marin Clean Energy will contribute additional rebates, again with the limitation of not to exceed 100% of the cost of the EV charger. The County will incur only the cost of installing the EV charger and a small fraction of the cost of the EV

charger (typical full cost is \$4,000 per charge head).

These key DER programs involve a minimal amount of upfront funding by the County and provide years of sustained energy and cost savings, significant emissions reductions, increased comfort and safety for County employees and the public and result in significant capital improvements to County-owned buildings.

CONSEQUENCE OF NEGATIVE ACTION:

Failure to approve the DER plan will result in a lost opportunity to meet the requirements of the County's Climate Action Plan.

ATTACHMENTS

DER Plan July 10, 2018

DER Program Plan

Financing Options for Solar PV Projects

CCC PW DER Plan

July 10, 2018

Contra Costa County Distributed Energy Resources Plan

Background

At the Board of Supervisors Ad Hoc Committee on Sustainability meeting of January 22, 2018, Public Works was directed to provide additional information on the proposed Contra Costa County Distributed Energy Resources (DER) Plan. In response, this brief report provides a definition of DER and presents Public Works proposed goals and implementation strategies. Implementation of distributed energy resources in County facilities is a primary objective of the County's Climate Action Plan.

Distributed Energy Resources

The U.S. Department of Energy (DOE) has envisioned a resilient, secure, resource efficient and environmentally sustainable "Smart" electric utility grid. The Smart Grid relies on the internet of things (IoT)¹ and supports the integration of Distributed Energy Resources, defined by the California Energy Commission (CEC) as grid connected distributed renewable energy systems, energy efficiency (EE), energy storage (ES), electric vehicles (EV) and demand response (DR).

Prime examples of DER technologies include parking lot canopy solar PV systems, LED lighting and advanced building controls, battery storage systems, electric vehicle supply equipment (EVSE) to charge vehicles such as the Chevy Bolt and Nissan Leaf, and demand response systems that reduce building electrical load by relaxing cooling system set points, dimming lights and turning off unessential equipment at times when the utility grid is constrained.

Distributed Energy Resource Opportunities in Contra Costa County

Contra Costa County leaders have come to realize that implementing DER in County facilities is the best way to meet the energy-related objectives of the County's Climate Action Plan.

This DER Plan was prepared by Public Works with input from Capital Projects and Facilities staff.

Solar Photovoltaics (PV)

At its meeting on December 19, 2017, The Board of Supervisors authorized Public Works to enter into Interconnection Applications with PG&E for eleven County-owned facilities (see Figure 1 below). These applications are a result of a CPUC decision specifically targeting schools and municipalities by allowing new solar PV systems to reap the benefits of solar friendly PG&E rates for a ten-year period. Upon Board approval of the DER Plan, Public Works intends to issue an RFQ and select a solar developer(s) to finance and install these systems with a target completion date of FY18/19.

¹ The IoT is the interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.

Site	Energy Consumption (kWh/yr)	Annual Energy Cost (\$)	Est. PV Capacity (kWac)	Est. Annual PV Production (kWh)	Est. 1st Year PV Savings (\$)	Solar % of Load
1000 WARD ST	2,526,524	\$ 417,536	1,313	1,900,000	\$ 323,000	75%
30 DOUGLAS DR	2,034,165	\$ 309,944	842	1,200,000	\$ 192,000	59%
50 DOUGLAS DR	985,486	\$ 216,344	370	540,000	\$ 118,800	55%
30 MUIR RD	320,993	\$ 65,815	149	218,000	\$ 45,780	68%
1305 MACDONALD AVE	468,109	\$ 50,244	241	350,000	\$ 56,000	75%
4800 IMHOFF PL	315,606	\$ 48,325	184	265,000	\$ 42,400	84%
2935 PINOLE VALLEY RD	106,516	\$ 30,404	66	96,000	\$ 21,120	90%
597 Center	651,674	\$ 143,631	196	285,000	\$ 62,700	44%
2530 Arnold	1,067,935	\$ 210,914	462	676,000	\$ 135,200	63%
4545 Delta Fair	753,365	\$ 129,798	396	579,000	\$ 104,220	77%
4549 Delta Fair	429,169	\$ 92,394	198	290,000	\$ 62,350	68%
TOTALS	9,659,542	\$ 1,715,349	4,417	6,399,000	1,163,570	66%

Figure 1: Facilities with grandfathered Interconnection Agreements (IAs)

Energy Efficiency (EE)

PG&E offers a zero interest loan program where the monthly loan payment is equal to or lessor than the monthly savings resulting from the energy efficiency improvements. Known as on-bill financing (OBF), this program has evolved over the years to assure that savings estimates are accurate and that the savings will persist through the repayment period. Several County-owned facilities have been identified that will benefit greatly from upgrades to the HVAC, controls and lighting systems. Upon Board approval of the DER Plan, Public Works intends to issue an RFQ and select a preferred Energy Service Company or companies to work with as partners on this project.

Electric Vehicles (EV)

A recent survey (February, 2018) of County employees with 1221 respondents provided the following information:

1. 126 County employees currently own electric vehicles
2. 473 indicated that they are interested in purchasing a plug-in electric or hybrid vehicle
3. 880 (75 % of respondents) support the installation of EV chargers at the facility where they work
4. 763 (66 % of respondents) stated that they would be more likely to purchase an electric vehicle if there were EV chargers at the workplace

It appears that the most economical and timely method of installing EV chargers is PG&E’s *EV Charge Network Program* whereby PG&E designs and installs EV Charging infrastructure (minimum of ten chargers) at no cost to the building owner. PG&E also provides a 25% rebate for the EV charger units and MCE has a new program in place to pay for half of the remaining cost of the chargers via a rebate. The PG&E program requires the County to enter into both a ten year easement and a contractual agreement.

Initial facilities where there is sufficient demand and that can gain the greatest benefit from PG&E’s program include but are not limited to:

- 30 Muir
- 595/597 Center
- 4549 Delta Fair
- 50 Douglas

Public Works has also identified the California Environmental Protection Agency Air Resources Board (CARB) Low Carbon Fuel Standard (LCFS) incentive program as a source of ongoing revenue to offset the cost of ongoing EV charging network costs and to avail a lower price for electricity consumed by EV drivers that use County facilities.

Upon Board approval of the DER Plan, Public Works plans on seeking Board consent to submit applications and to enter into contracts with PG&E under the Electric Vehicle Charge Network Program and to participate in the CARB LCFS incentive program.

Energy Storage (ES)

Energy Storage is fast becoming an economic alternative used to firm intermittent renewable resources, increase the resiliency of critical buildings and to offer a means of reducing onerous demand charges embedded in electric utility rates. Public Works anticipates that one or more of the facilities with PV interconnection applications (see Figure 1) will be prime candidate sites for cost-effective energy storage system that can be financed under a power purchase or lease agreement in conjunction with PV.

Automated Demand Response (ADR)

The County is working with PG&E's third-party contractor to identify facilities that will benefit in reduced utility costs by participating in PG&E's ADR program. In addition to rate relief, PG&E's ADR program also provides rebates for hardware and no-cost technical support.

Public Work is still analyzing the value of ADR, focusing on the benefits versus the potential inconvenience and discomfort of County staff and visitors. Upon completion of this research, if the program has merit, Public Works will work with the appropriate Board sub-committees to gain input and direction.



Figure 2: Contra Costa County has established itself as a leader in DER as illustrated by this Google image showing a high penetration of PV parking lot canopy systems at an important municipal complex on the corner of Muir and Glacier in Martinez.

Public Works Department Distributed Energy Resources (DER) Plan July 10, 2018

Frank Di Massa
Energy Manager
Public Works
Capital Project Management
Division

Distributed Energy Resources (DER) Plan

- ❖ What is DER?
- ❖ Why DER Now?
- ❖ Distributed Energy Resources (DER) Plan
 - ❖ Solar PV
 - ❖ Energy Efficiency (EE)
 - ❖ Electric Vehicle Charging Equipment (EV)
 - ❖ Energy Storage (ES)
 - ❖ Automated Demand Response
- ❖ Board Recommendations



What is DER

❖ Distributed Energy Resources

The California Energy Commission (CEC) defines DER as grid-connected distributed renewable energy systems, energy efficiency (EE), energy storage (ES), electric vehicles (EV), and demand response (DR) supported by a wide-ranging suite of policies adopted by the California Public Utilities Commission (CPUC).

Why DER Now

Cost Effective – Great Incentives

- Solar PV is so affordable that “do-nothing” results in lost opportunity.
- Why pay PG&E when we can produce renewable energy on-site for significantly less?
- PG&E Zero interest on-bill financing for EE - \$4,000,000
 - PG&E/MCE support for EV infrastructure – pays for lion’s share of the cost

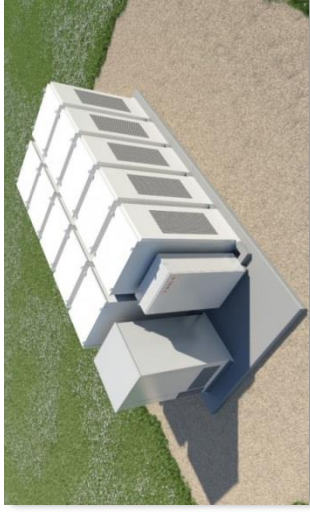
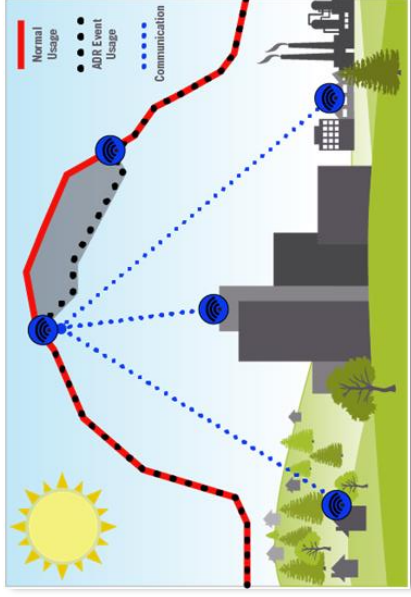
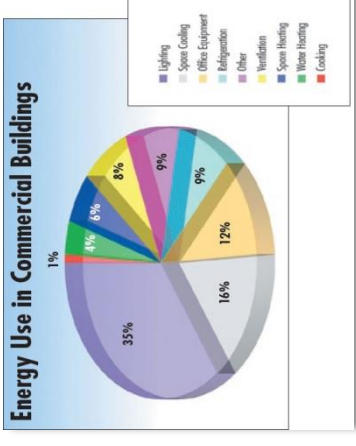
Benefits

- Electrification of transportation is going to require GW of new renewable energy
- On-site renewable energy production eliminates line losses associated with utility transmission and distribution
- Our DER program supports the development of the Smart Grid
- CCC becomes a leader and model for local government

Distributed Energy Resource Plan

❖ The DER Five Easy Pieces

1. Solar PV
2. Energy Efficiency
3. Electric Vehicle Infrastructure
4. Energy Storage
5. Automated Demand Response



Solar PV

- ❖ Public Works submitted 11 solar Photovoltaic interconnection applications to PG&E with grandfathered advantageous rate time periods
- ❖ RFQ for Statement of Qualifications ready for circulation upon Board of Supervisors direction
- ❖ Seeking financial arrangement with positive cash flow
- ❖ Solar developer will evaluate EV Chargers and Energy Storage

Energy Efficiency

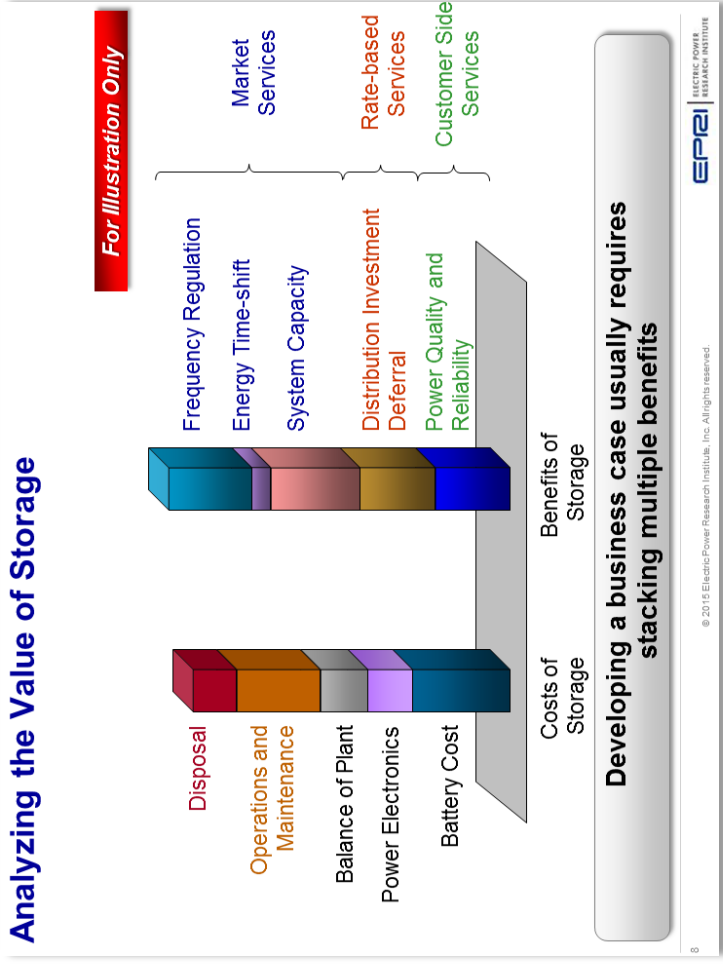
- ❖ PG&E On-Bill Financing (\$4,000,000)
 - ❖ Zero interest
 - ❖ Monthly payment amount equal or less than monthly savings
 - ❖ Payback period cannot exceed 10 years
- ❖ Allows for high value energy efficiency improvements/reduced maintenance
- ❖ Installed by Energy Service Companies (ESCOs)
 - ❖ ESCO provides performance guarantee
- ❖ RFQ for Statement of Qualifications ready for circulation upon Board of Supervisors direction

Electric Vehicle Charging

- ❖ **County-wide employee EV survey issued on 2/14/18**
 - ❖ Amazing results! Tremendous demand for EV Chargers throughout County
 - ❖ 76% (823 employees) would like chargers installed at their employee parking lot
 - ❖ 64% (711 employees) indicated that having a charger at work would increase the probability of purchasing an electric or plug-in hybrid electric vehicle
 - ❖ Currently have sixteen (16) Level-2 chargers
- ❖ **PG&E EV Charge Network Program**
 - ❖ PG&E pays for “make ready infrastructure”
 - ❖ PG&E provides 25% rebate on charger
 - ❖ MCE contributes 50% rebate on charger (MCE has allocated \$55k specifically for CCC)
 - ❖ County pays 25% of charger plus install, plus ongoing vendor fees
- ❖ **CARB LCFS program – 10 cents/kWh or more for every kWh sent to EV chargers!**

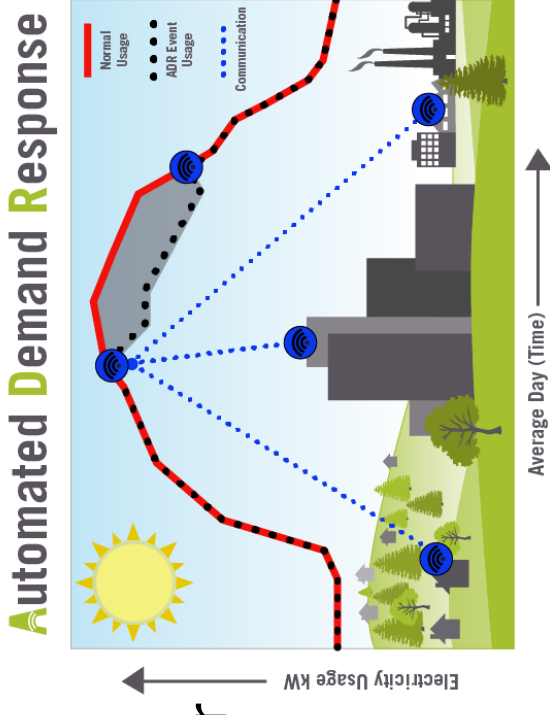
Energy Storage

- ❖ Significant incentives through SGIP program
- ❖ Strong legislative backing, cost declining
- ❖ Stacking Benefits
 - ❖ Demand reduction – peak shaving
 - ❖ TOU load shifting
 - ❖ Potential for grid edge benefits when aggregated
- ❖ Eventual replacement for back-up generators?



Automated Demand Response

- ❖ PG&E has incentives for ADR
 - ❖ We are currently working with PG&E 3rd party contractor
- ❖ Significant potential for demand reduction and savings
- ❖ Good experience pertaining to utility interactive programs





Contra Costa County
Public Works
Department

Requested Action by the Board of Supervisors

- Approval of DER Plan
- DIRECT the Public Work to proceed with solicitation of RFQs for the implementation of components of the DER Plan.
 - Solicitation to select solar PV developer
 - Solicitation to select Energy Service Company (ESCO)



Contra Costa County
Public Works
Department

THANK YOU

Distributed Energy Resource (DER) Program Details

Program Elements

- 1 Parking Lot Canopy, Ground Mount and Rooftop PV
- 2 Energy Efficiency
- 3 Electric Vehicle Charging Equipment
- 4 Energy Storage
- 5 Automated Demand Response

PV Systems	Energy Efficiency	EV Charging Infrastructure	Energy Storage	Automated Demand Response
<p>Objective : With approval from the Board, the Department of Public Works anticipates that approximately 5 MW of solar capacity will be installed in FY18/19 generating 6,000,000 to 7,000,000 kWh of clean renewable energy per year with an associated annual GHG reduction of well over 1,440 metric tons CO₂.</p> <p>Background: The Board of Supervisors authorized Public Works to enter into Interconnection Applications with PG&E for eleven County-owned facilities. Upon BOS approval of the DER Plan, Public Works will use the RFQ process to select a solar developer(s).</p> <p>Funding: The selected solar developer(s) will prepare proposals for the development of all or a subset of the 11 projects at no cost to the County. The proposals will be detailed and outline the cashflows and pros and cons of the financing options covered below.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. After the pro-forma engineering and cost proposals are submitted by the solar developer and reviewed by Public Works, Finance, Real Estate and the CAOs office, the preferred proposal will be forwarded to the Board for approval and subsequently for approval for the design/build project. Throughout the process, Public Works will work with the appropriate subcommittees to seek guidance and keep the Board apprised at progress and issues of importance.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that a zero interest loan of approximately \$4,000,000 from PG&E, repayed through "on bill" guaranteed savings, will fund the installation of energy efficiency improvements operational in FY18/19. The improvements will be primarily lighting and HVAC systems and controls.</p> <p>Background: PG&E offers a zero interest loan program where the loan payment is equal to or lessor than the savings resulting from the energy efficiency improvements. Called on-bill financing (OBF), this program has evolved over the years to assure that the savings estimates are accurate and that savings persist throughout the payment period. Upon approval of the DER plan by the BOS, Public Works will use the RFQ process to select an Energy Service Company (ESCO).</p> <p>Funding: The selected ESCOs will prepare investment grade energy audits of selected County facilities. These proposals are full engineering specifications with precise costs and guaranteed savings specified. The PG&E zero interest OBF loan funds the complete process.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. Then the Board will be asked for permission to contract with the selected ESCO, this will include several steps beginning with signing a Memorandum of Understanding pertaining to development of the investment grade audit (engineering design, specifications and cost and savings estimates). Then with Board approval, the County will enter into a design/build contract with the ESCO and the loan agreement with PG&E for the on-bill financing.</p> <p>Funding Options: Zero interest OBF is currently the best approach for energy efficiency projects. The California Energy Commission has a 1% loan for municipalities but the funds are limited and the queue is long. The selected ESCO will also be exploring the availability of other grant opportunities.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that the County will install 50 to 75 Level 2 EV chargers in FY18/19. Many of these chargers will be public facing and therefore usable by both the public and County employees.</p> <p>Background: A recent survey (February, 2018) of County employees with 1221 respondents provided the following information:</p> <ol style="list-style-type: none"> 1) 126 of the participating County employees currently own electric vehicles 2) 473 indicated that they are interested in purchasing a plug-in electric or hybrid vehicle 3) 880 (75 % of respondents) support the installation of EV chargers at the facility where they work 4) 763 (66 % of respondents) stated that they would be more likely to purchase an electric vehicle if there were EV chargers at the workplace <p>Funding: PG&E's EV Charge Network Program whereby PG&E designs and installs EV Charging infrastructure (minimum of ten chargers) at no cost to the building owner. PG&E also provides a 25% rebate for the EV charger units. The PG&E program requires the County to enter into both a ten year easement and a contractual agreement. MCE will provide an additional \$1,134/charger head reducing the County's cost to 1/4 of the hardware plus the installation of the unit.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. The Board's consent will be requested to allow Public Works to sign an easement and a contractual agreement (Terms and Conditions Contract) for each of the participating County locations. The Board will also be asked to authorize funding for hardware (minus the utility rebates), installation and the ongoing annual cost of EV charger network and billing services.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that one or more of the facilities with PV interconnection applications will be a candidate site for a cost-effective energy storage system that can be financed under a power purchase or lease agreement in conjunction with PV. In addition, Public Works has initiated a study to determine technical and economic feasibility of developing the County's first microgrid at the Douglas Complex.</p> <p>Background: Energy Storage is fast becoming an economic alternative for "firming" intermittent renewable resources, increasing the resiliency of critical buildings, and offering a means of reducing onerous demand charges embedded in electric utility rates.</p> <p>Funding: See PV Systems funding.</p>	<p>Objective: With approval from the Board, utilize PG&E's ADR incentive program to the extent possible. It is projected that the County could receive \$270,000 in rebates for hardware that will allow sixty-four (64) County facilities to participate in PG&E ADR programs.</p> <p>Background: In an effort to shed load during periods of capacity constraint PG&E has developed an ADR program. Rebates pay for controls hardware and system integration that allows load to be reduced in a County facility on demand.</p> <p>Funding: PG&E covers up to 100% of the cost of equipment and installation.</p> <p>Board of Supervisor input and action required: Public Work is still analyzing the value of ADR, focussing on the benefits versus the potential inconvenience and discomfort of County staff and visitors. Upon completion of the study, if the ADR program has merit, Public Works will present to the appropriate sub-committee(s).</p>
<p>Objective : With approval from the Board, the Department of Public Works anticipates that approximately 5 MW of solar capacity will be installed in FY18/19 generating 6,000,000 to 7,000,000 kWh of clean renewable energy per year with an associated annual GHG reduction of well over 1,440 metric tons CO₂.</p> <p>Background: The Board of Supervisors authorized Public Works to enter into Interconnection Applications with PG&E for eleven County-owned facilities. Upon BOS approval of the DER Plan, Public Works will use the RFQ process to select a solar developer(s).</p> <p>Funding: The selected solar developer(s) will prepare proposals for the development of all or a subset of the 11 projects at no cost to the County. The proposals will be detailed and outline the cashflows and pros and cons of the financing options covered below.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. After the pro-forma engineering and cost proposals are submitted by the solar developer and reviewed by Public Works, Finance, Real Estate and the CAOs office, the preferred proposal will be forwarded to the Board for approval and subsequently for approval for the design/build project. Throughout the process, Public Works will work with the appropriate subcommittees to seek guidance and keep the Board apprised at progress and issues of importance.</p> <p>Funding Options: Municipalities typically use one of three options and/or a combination of options to fund the solar PV projects as follows:</p> <p>A Power Purchase Agreement (PPA) requires no cash up-front, 20-25 year commitment and lease agreement, results in net reduction of costs of PG&E electricity plus solar electricity is significantly less than PG&E electricity alone</p> <p>A Tax Exempt Lease: Also called a TEML (tax exempt municipal lease), TELP (tax exempt lease purchase) and Muni Lease: a capital lease using the equipment or real property as collateral. The leases typically have a 3.5-4.0% all-in effective interest rate, and come with up to 20-year terms. Tax exempt leases are relatively easy to arrange, compared to bonds and COPs.</p> <p>Cash funding is allocated from the County's general fund, typically from reserves. Since cash reserves are built up from taxpayer funding or sale of assets, cash purchasing financial performance is identical to cash grants or GO bond funding.</p> <p>* A more detailed report on PV project financing is attached.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that a zero interest loan of approximately \$4,000,000 from PG&E, repayed through "on bill" guaranteed savings, will fund the installation of energy efficiency improvements operational in FY18/19. The improvements will be primarily lighting and HVAC systems and controls.</p> <p>Background: PG&E offers a zero interest loan program where the loan payment is equal to or lessor than the savings resulting from the energy efficiency improvements. Called on-bill financing (OBF), this program has evolved over the years to assure that the savings estimates are accurate and that savings persist throughout the payment period. Upon approval of the DER plan by the BOS, Public Works will use the RFQ process to select an Energy Service Company (ESCO).</p> <p>Funding: The selected ESCOs will prepare investment grade energy audits of selected County facilities. These proposals are full engineering specifications with precise costs and guaranteed savings specified. The PG&E zero interest OBF loan funds the complete process.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. Then the Board will be asked for permission to contract with the selected ESCO, this will include several steps beginning with signing a Memorandum of Understanding pertaining to development of the investment grade audit (engineering design, specifications and cost and savings estimates). Then with Board approval, the County will enter into a design/build contract with the ESCO and the loan agreement with PG&E for the on-bill financing.</p> <p>Funding Options: Zero interest OBF is currently the best approach for energy efficiency projects. The California Energy Commission has a 1% loan for municipalities but the funds are limited and the queue is long. The selected ESCO will also be exploring the availability of other grant opportunities.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that the County will install 50 to 75 Level 2 EV chargers in FY18/19. Many of these chargers will be public facing and therefore usable by both the public and County employees.</p> <p>Background: A recent survey (February, 2018) of County employees with 1221 respondents provided the following information:</p> <ol style="list-style-type: none"> 1) 126 of the participating County employees currently own electric vehicles 2) 473 indicated that they are interested in purchasing a plug-in electric or hybrid vehicle 3) 880 (75 % of respondents) support the installation of EV chargers at the facility where they work 4) 763 (66 % of respondents) stated that they would be more likely to purchase an electric vehicle if there were EV chargers at the workplace <p>Funding: PG&E's EV Charge Network Program whereby PG&E designs and installs EV Charging infrastructure (minimum of ten chargers) at no cost to the building owner. PG&E also provides a 25% rebate for the EV charger units. The PG&E program requires the County to enter into both a ten year easement and a contractual agreement. MCE will provide an additional \$1,134/charger head reducing the County's cost to 1/4 of the hardware plus the installation of the unit.</p> <p>Board of Supervisor input and action required: The Board will initially be asked for guidance and approval of the DER Plan. The Board's consent will be requested to allow Public Works to sign an easement and a contractual agreement (Terms and Conditions Contract) for each of the participating County locations. The Board will also be asked to authorize funding for hardware (minus the utility rebates), installation and the ongoing annual cost of EV charger network and billing services.</p>	<p>Objective: With approval from the Board, the Department of Public Works anticipates that one or more of the facilities with PV interconnection applications will be a candidate site for a cost-effective energy storage system that can be financed under a power purchase or lease agreement in conjunction with PV. In addition, Public Works has initiated a study to determine technical and economic feasibility of developing the County's first microgrid at the Douglas Complex.</p> <p>Background: Energy Storage is fast becoming an economic alternative for "firming" intermittent renewable resources, increasing the resiliency of critical buildings, and offering a means of reducing onerous demand charges embedded in electric utility rates.</p> <p>Funding: See PV Systems funding.</p>	<p>Objective: With approval from the Board, utilize PG&E's ADR incentive program to the extent possible. It is projected that the County could receive \$270,000 in rebates for hardware that will allow sixty-four (64) County facilities to participate in PG&E ADR programs.</p> <p>Background: In an effort to shed load during periods of capacity constraint PG&E has developed an ADR program. Rebates pay for controls hardware and system integration that allows load to be reduced in a County facility on demand.</p> <p>Funding: PG&E covers up to 100% of the cost of equipment and installation.</p> <p>Board of Supervisor input and action required: Public Work is still analyzing the value of ADR, focussing on the benefits versus the potential inconvenience and discomfort of County staff and visitors. Upon completion of the study, if the ADR program has merit, Public Works will present to the appropriate sub-committee(s).</p>

Financing Options for Solar PV Projects in the County

Background

At its meeting on December 19, 2017, the Board of Supervisors authorized Public Works to submit Interconnection Applications (IAs) to PG&E for eleven County-owned facilities with the intent of grandfathering advantageous time-of-use time periods for ten years (ending on December 31, 2027). The County successfully submitted eleven IAs, and the solar potential of these projects is shown in Figure 1.

Site	Energy Consumption (kWh/yr)	Annual Energy Cost (\$)	Est. PV Capacity (kWac)	Est. Annual PV Production (kWh)	Est. 1st Year PV Savings (\$)	Solar % of Load
1000 WARD ST	2,526,524	\$ 417,536	1,313	1,900,000	\$ 323,000	75%
30 DOUGLAS DR	2,034,165	\$ 309,944	842	1,200,000	\$ 192,000	59%
50 DOUGLAS DR	985,486	\$ 216,344	370	540,000	\$ 118,800	55%
30 MUIR RD	320,993	\$ 65,815	149	218,000	\$ 45,780	68%
1305 MACDONALD AVE	468,109	\$ 50,244	241	350,000	\$ 56,000	75%
4800 IMHOFF PL	315,606	\$ 48,325	184	265,000	\$ 42,400	84%
2935 PINOLE VALLEY RD	106,516	\$ 30,404	66	96,000	\$ 21,120	90%
597 Center	651,674	\$ 143,631	196	285,000	\$ 62,700	44%
2530 Arnold	1,067,935	\$ 210,914	462	676,000	\$ 135,200	63%
4545 Delta Fair	753,365	\$ 129,798	396	579,000	\$ 104,220	77%
4549 Delta Fair	429,169	\$ 92,394	198	290,000	\$ 62,350	68%
TOTALS	9,659,542	\$ 1,715,349	4,417	6,399,000	1,163,570	66%

Figure 1: Facilities with grandfathered Interconnection Agreements (IAs)

Financing Options

The three most common and successful financing options for PV projects such as those listed in Figure one are Cash, Power Purchase Agreement (PPA) and Tax Exempt Lease Purchase (TELP).

Cash

The simplest path to financing a solar project is to purchase the system directly. The problem is that the County is tax exempt and cannot directly benefit from any available federal tax incentives which when taken in total can offset up to 50% of the project cost. Never-the-less the benefits of a cash purchase include:

- Faster and more streamlined processing reduces the total time required for a solar installation, allowing you to begin benefiting from clean, solar electricity as quickly as possible
- Greater potential savings since you avoid third party expenses and interest rates
- Protection against rising utility rates
- Access to 100% of available non-tax related solar incentives.

In a cash purchase the responsibility of system operation and maintenance and performance monitoring is an additional contractual burden.

Power Purchase Agreement

A Power Purchase Agreement (PPA) is a financing arrangement that allows the County to purchase solar electricity with no upfront capital cost. To achieve this, the County provides unused rooftop, land, or parking lot space as a location for a solar installation. A third party PPA provider pays for the cost of the solar installation and assumes all responsibility for ownership, operation, and maintenance once the solar project is complete. As the host organization, the County enters into an agreement to purchase the electricity produced by the system owned by the PPA provider at a predetermined rate per kilowatt-hour, the same unit of measurement on your standard utility bill. A well-structured PPA allows you to reduce electricity costs immediately and realize increased savings over time as grid electricity prices rise. Once the PPA contract period expires (typically 15 - 20 years), you can purchase the system at a reduced price, initiate another PPA, or have the solar installation removed.

The benefits of the PPA include:

- No initial capital investment since you only pay for the solar electricity that is produced
- Fixed energy rates (a PPA provides a powerful hedge against volatile electricity prices)
- No responsibility for system operation or maintenance
- Benefit from solar tax credits and depreciation, even if your organization has no tax liability to offset. The PPA financier is able to monetize available tax incentives and pass these savings on to you in the form of a lower PPA rate

PPAs provide access to solar electricity without the burden of owning or operating solar equipment by transferring the initial project cost to a PPA provider. Entering into a PPA requires a detailed contract and thorough credit review. As a result, choosing a PPA will typically extend a project's timeline relative to other financing options.

Tax Exempt Lease Purchase (Ownership Model)

When properly structured, this type of financing makes it possible for public sector agencies to draw on dollars to be saved in future utility bills to pay for new, energy-efficient equipment and related services today.

In a tax-exempt lease-purchase agreement the public sector organization owns the assets. Interest rates are appreciably lower than those on a taxable commercial lease-purchase agreement because the interest paid is exempt from federal income tax for public sector organizations (current interest rate at around 3.75%). The financing terms for lease-purchase agreements may extend as long as 15 to 20 years and are limited by the useful life of the equipment. The lending agency also has the ability to "lock" a rate for up to six months, typically the length of time needed to finalize the project specifications.

The loan is secured by the solar PV equipment.

Many believe that this is the most economical and expeditious financing approach even though the Federal Investment Tax credit and accelerated depreciation are not utilized.