

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.