

CONTRA COSTA | MARIN | NAPA | SOLANO

MCE's Virtual Power Plant

Building a Resilient and Equitable Grid for the Future





- Refinery built before city incorporated in 1905
- WWII temporary housing still in use today
- 99th percentile for asthma

Virtual Power Plants

- May 2022, MCE joined \$5M CEC EPIC grant for an Advanced Energy Community (AEC)
- Includes a Virtual Power Plant (VPP) pilot
- VPP: Suite of customer-owned distributed energy resources (DERs)
 - rooftop solar, heat pump water heaters, smart thermostats, smart plugs, electric vehicles, batteries
- Enables MCE to remotely control and operate DERS together for demand response



Benefits of a VPP

Innovation & Data

 Directly receives device level data, bypassing bottlenecks

Better air quality

Reduced need for gas
peaker plants

Energy equity

 Wealth creation in disadvantaged community







heaters

#1 (50	#2 (20	#3 (10	#4 (5 homes)	# 5	#6 ZNCR (10)
nomes)	nomes)	nomes)	(5 nomes)	(5 nomes)	HAN & NILMs
					Smart Plugs
				han & Nilms	Smart Stat
				Smart Stat	Solar PV
		HAN	HAN & NILMs	Smart Plugs	BESS
	HAN	Smart	Smart Plugs	Solar PV	Critical Load
	Smart	Plugs	Solar PV	BESS	Panel
HAN	Plugs	HPHW	BESS	Critical Load	EV Charging
Smart Pluas	Smart Stat	Panel	Critical Load Panel	Panel EV Charaina	Smart/HP Appliances
	0.0	9,0,0,0			ripplicitees

Residential





Residential

10 First-Time Home Buyers upgraded to Zero-Net Carbon Ready

- Social impact bond to acquire sites for rehabilitation
- Homes sold below market value with no resale restrictions

90 Existing Home Owners

- GRID installed solar + EV charging on ~50 income-qualified households
- All are eligible to receive no- to low-cost DERs for participation, made possible through various funding sources

Commercial

1 SMB (3)	2 SMB (3)	3 SMB (5)	4 Large Comm (5)	5 Large Comm (7)	6 Industrial (2)
HAN & NILMs Gateway	han & NilmS	han & Nilms	han & NilmS	han & NilmS	HAN & NILMS
Smart T-Stats	Gateway Smart Stats	Battery Storage	Universal Controller	Universal Controller	Battery Other (TBD)
	Lighting	EV Charging	Smart Stats	Smart Stats Lighting	
				Battery	

Richmond Advanced Energy Community

Help for your business to

avoid the highest energy costs, modernize your facilities,

and make Richmond's energy cleaner and more reliable for everyone.



Load profile of our target demographic – commercial site, overproducing solar, high demand ratio on time of use (TOU) rates with a load that shifts between 75MWh to 850MWh. In other words, who could reduce carbon and benefit financially.



Thank You

Alexandra McGee Manager of Strategic Initiatives <u>amcgee@mcecleanenergy.org</u>



WHO: Team



Working Groups

- 1. Outreach and Engagement
- 2. Data and Technical Integrations
- 3. DER Installation and Commissioning
- 4. DER Fleet Monitoring and Dispatch
- 5. Measurement and Verification
- 6. AEC Replicability/Climate Toolkit
- 7. CEC Reporting and Match Tracking
- 8. Executive Team



Tariff

Building from the 2016 Pilot Battery Storage Tariff and the 2020 Energy Storage Tariff, VPPT provides participants with monthly bill credits in exchange for remote control and dispatch capability, with exceptions made for outage events:

Residential: Credits vary on number and type of DERs installed (\$2-20/device/month), capped at either \$40 or \$50 monthly.

Commercial and Industrial (C&I): Monthly credits capped at \$300 for commercial and \$750 for industrial customers, with a true-up of their actual value to MCE reconciled and paid annually.

Costs can be offset, in whole or in part, by reduced cost of procured energy by MCE.



Goals and Timeline

Q3 2022: Program Planning

Q4 2022:

VPP Participation Guide Development

Q2 2023: VTN to VEN (DER) Integration

Q4 2023:

All DERs Connected and Operational 12+ months of performance data Measurement and Verification Reports Final Reports and Deliverables

<u>1.5 MW Flex Load + 1 MW PV + 2 MWh of</u> Energy Storage

- Develop customer agreements and tariffs for long-term value-sharing arrangements for customer-owned DER participation
- Leverage MCE Customer Programs' incentives and rebates to maximize penetration
- Use OpenADR DERMs to monitor, dispatch, integrate & optimize diverse aggregations of DERs to firm local renewables & maximize customer value without any proprietary protocols and sets us up for IRA grants.
- Evaluate costs, benefits & risks relating to VPP use cases.