VCE Community Advisory Committee Meeting – August 22, 2024

Item 6 - Introduction and update on Internship on Virtual Power Plants (VPP)

Public Comments

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Item 6 – Virtual Power Plants: Meet your Intern: Catherine Rowen

From Santa Cruz, California

RIT Rochester Institute of Technology

Masters in Sustainable Systems ‘22

UC DAVIS UNIVERSITY OF CALIFORNIA

Masters in Community Development ‘25

Post grad plan: work in programs at a CCA!

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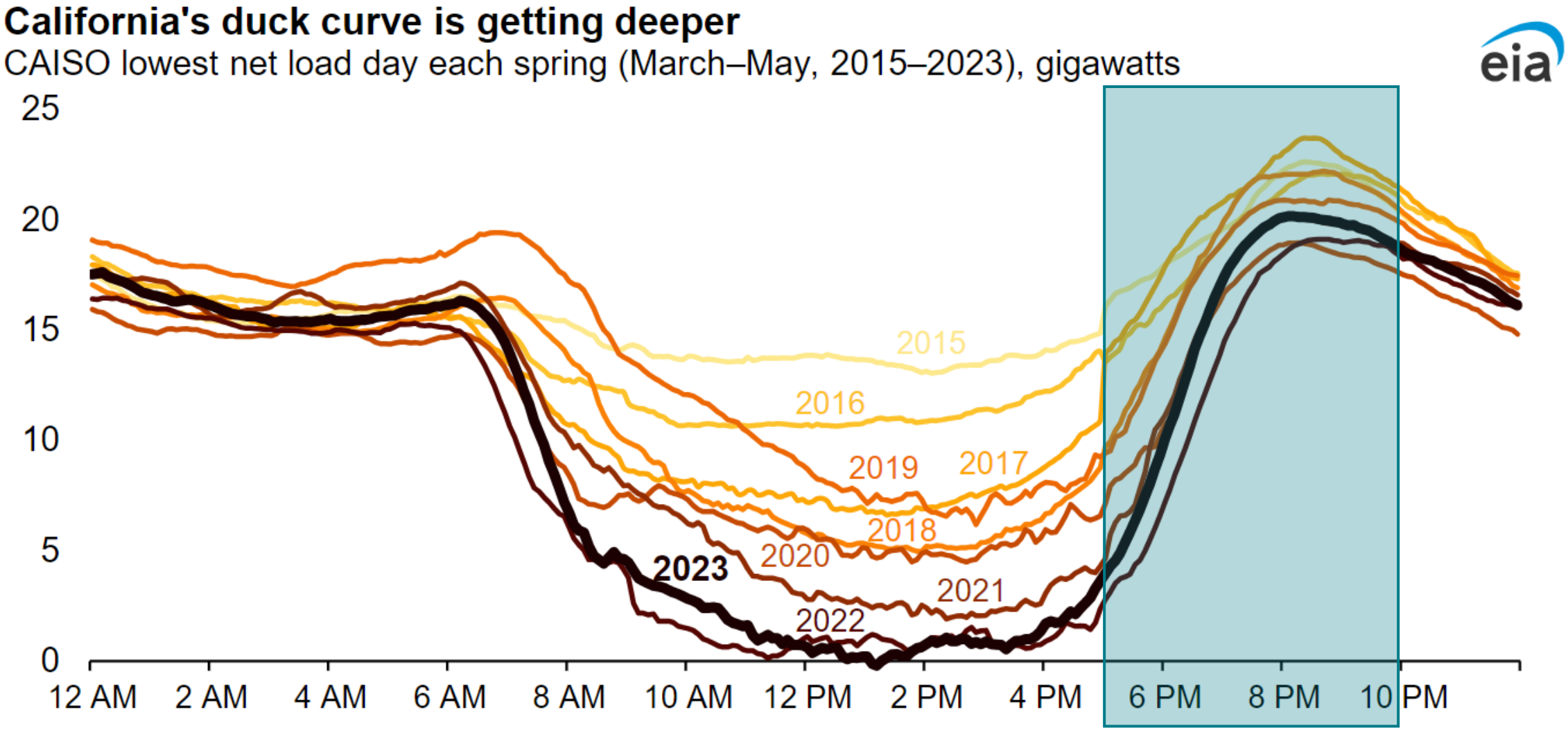
Item 6 – Virtual Power Plants: California needs to “Flatten the Curve”



Source: EIA 2023

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Item 6 – Virtual Power Plants: Increasing DER Adoption in California

1,500 MW of distributed battery systems in California [1]

1.5 million light-duty BEVs and PHEVs on the road [2]

1 GW of utility-scale battery services [4]

Smart home tech adoption rising in North America [3]

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[1] California Energy Commission 2024 [2] California Energy Commission 2023 [3] Fortune Business Insights 2024
[4] Coignard *et al* 2018

Item 6 – Virtual Power Plants: Demand Response in California

2022

Estimated enrollment: 3,100–3,600 MW in demand response programs

2030

Statewide goal:

7,000 MW of flexible load shifting capacity

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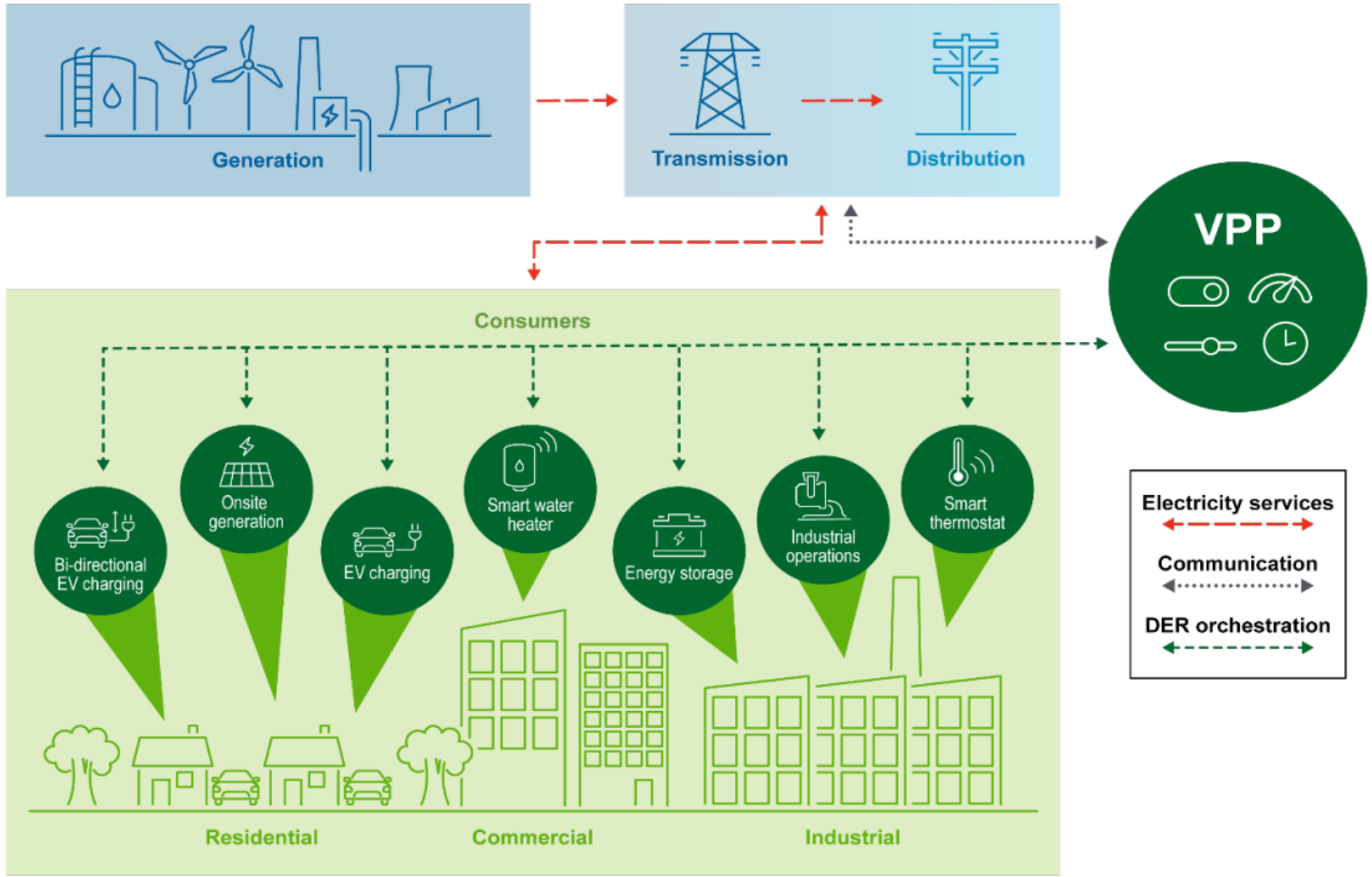
Source: CEC 2023 SB 846 Load Shift Goal Commission Report

Item 6 – Virtual Power Plants: Harness DERs for the Grid

VPPs are aggregations of grid-connected Distributed Energy Resources (DER) that can be dispatched as one resource to balance loads and provide grid services

(Adapted from DOE and Mackenzie Wood definitions)



Source: DOE Pathways to Commercial Liftoff

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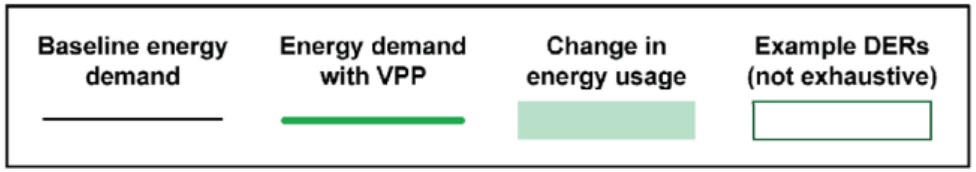
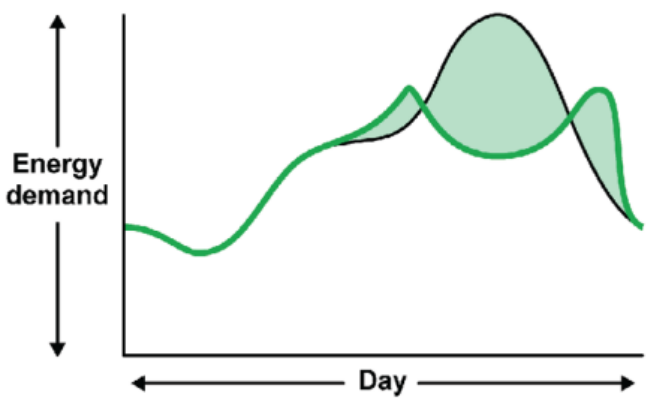
Item 6 – Virtual Power Plants: Aggregated DERs can Modify Load on a Large Scale

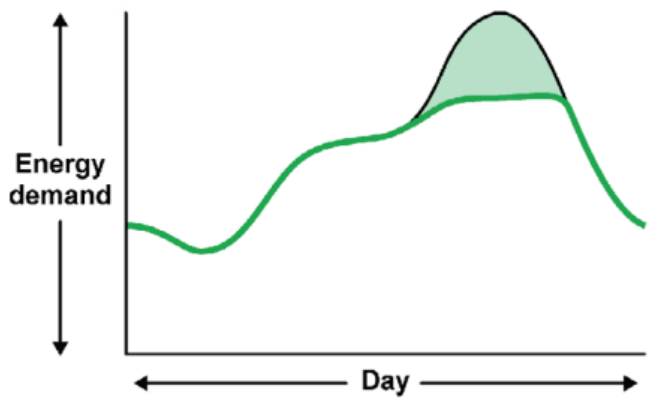


Moving energy use to lower-demand hours



SHIFT

- EV chargers
- Smart thermostats
- Smart water heaters
- Storage
- Pool pumps

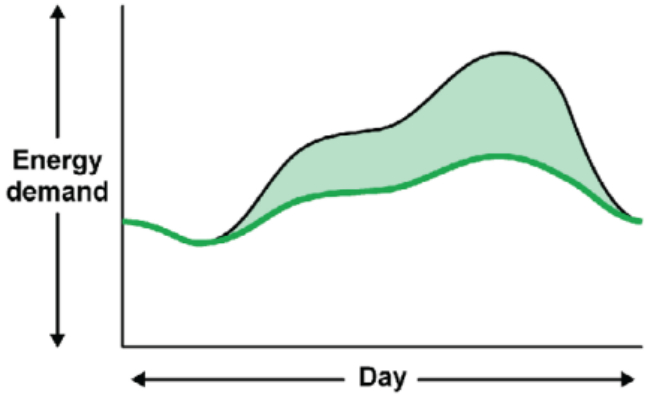


SHED*

- C&I loads
- Lighting

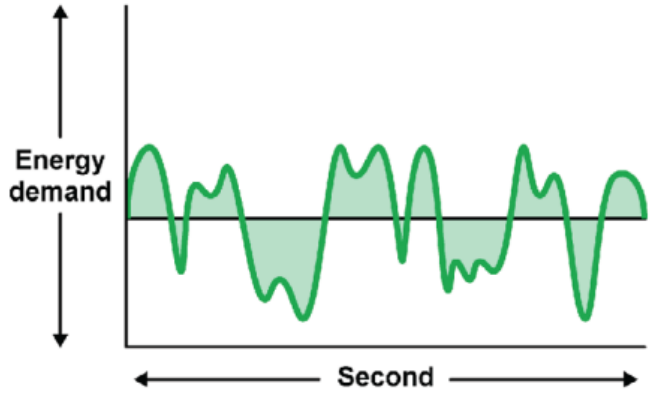
Reducing overall peak demand

Reducing overall demand across the day



SHAPE

- Solar with storage**
- Efficiency (e.g. heat pumps replacing resistive heat technology)



SHIMMY

- Storage (batteries)
- Water heaters

Smoothing out short term flux

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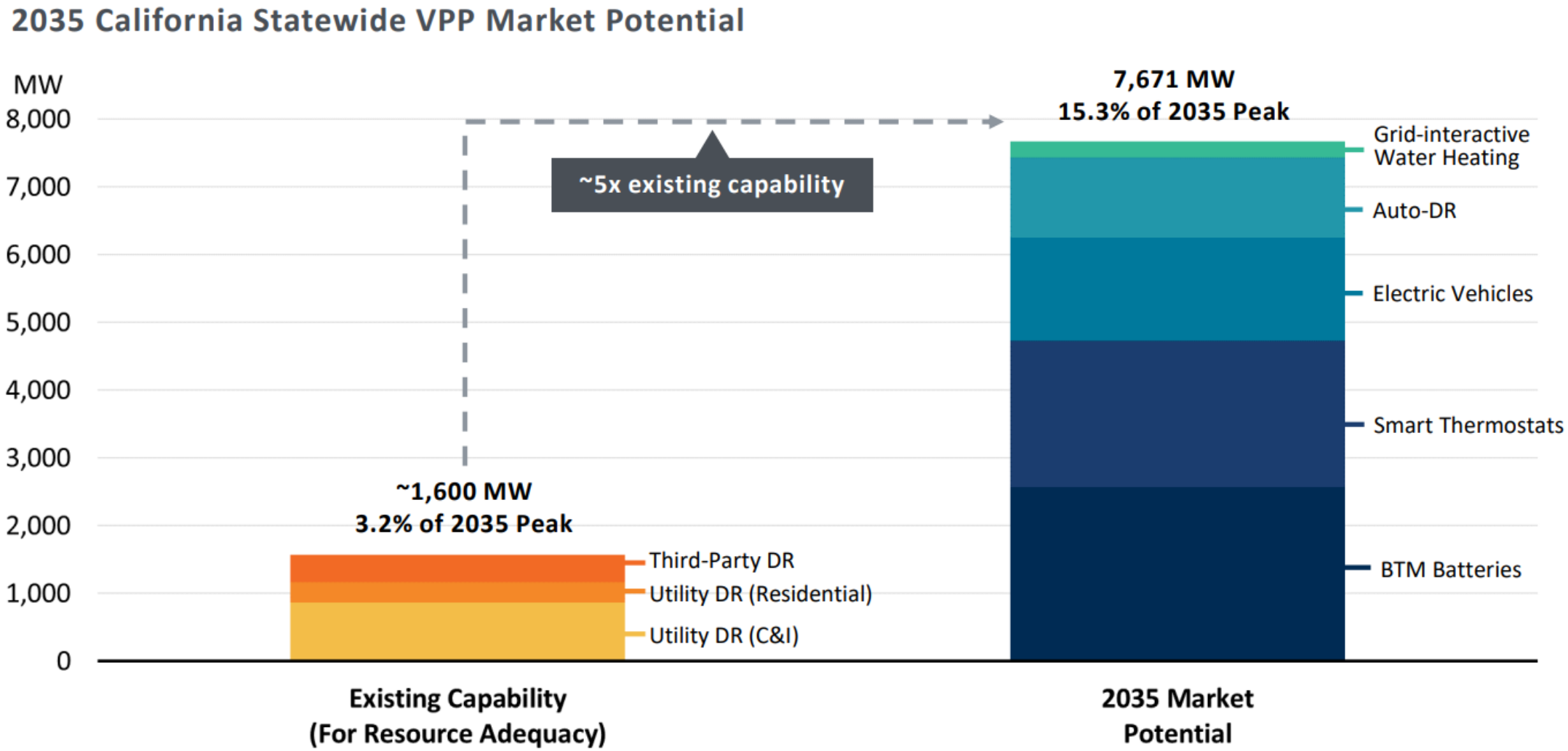
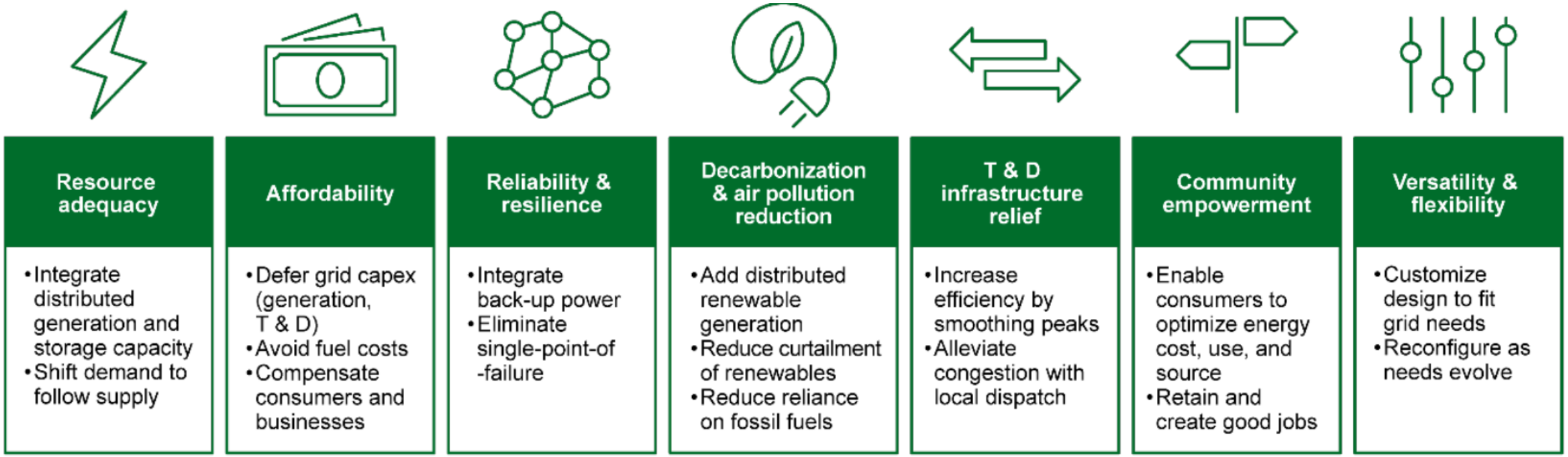
Source: DOE Pathways to Commercial Liftoff

Item 6 – Virtual Power Plants: California could have 7600 MW of Aggregated DERs by 2035



Source: Brattle Group 2024

Item 6 – Virtual Power Plants: Benefits to the Grid and to Society



Resource adequacy	Affordability	Reliability & resilience	Decarbonization & air pollution reduction	T & D infrastructure relief	Community empowerment	Versatility & flexibility
• Integrate distributed generation and storage capacity • Shift demand to follow supply	• Defer grid capex (generation, T & D) • Avoid fuel costs • Compensate consumers and businesses	• Integrate back-up power • Eliminate single-point-of-failure	• Add distributed renewable generation • Reduce curtailment of renewables • Reduce reliance on fossil fuels	• Increase efficiency by smoothing peaks • Alleviate congestion with local dispatch	• Enable consumers to optimize energy cost, use, and source • Retain and create good jobs	• Customize design to fit grid needs • Reconfigure as needs evolve

Source: DOE Pathways to Commercial Liftoff

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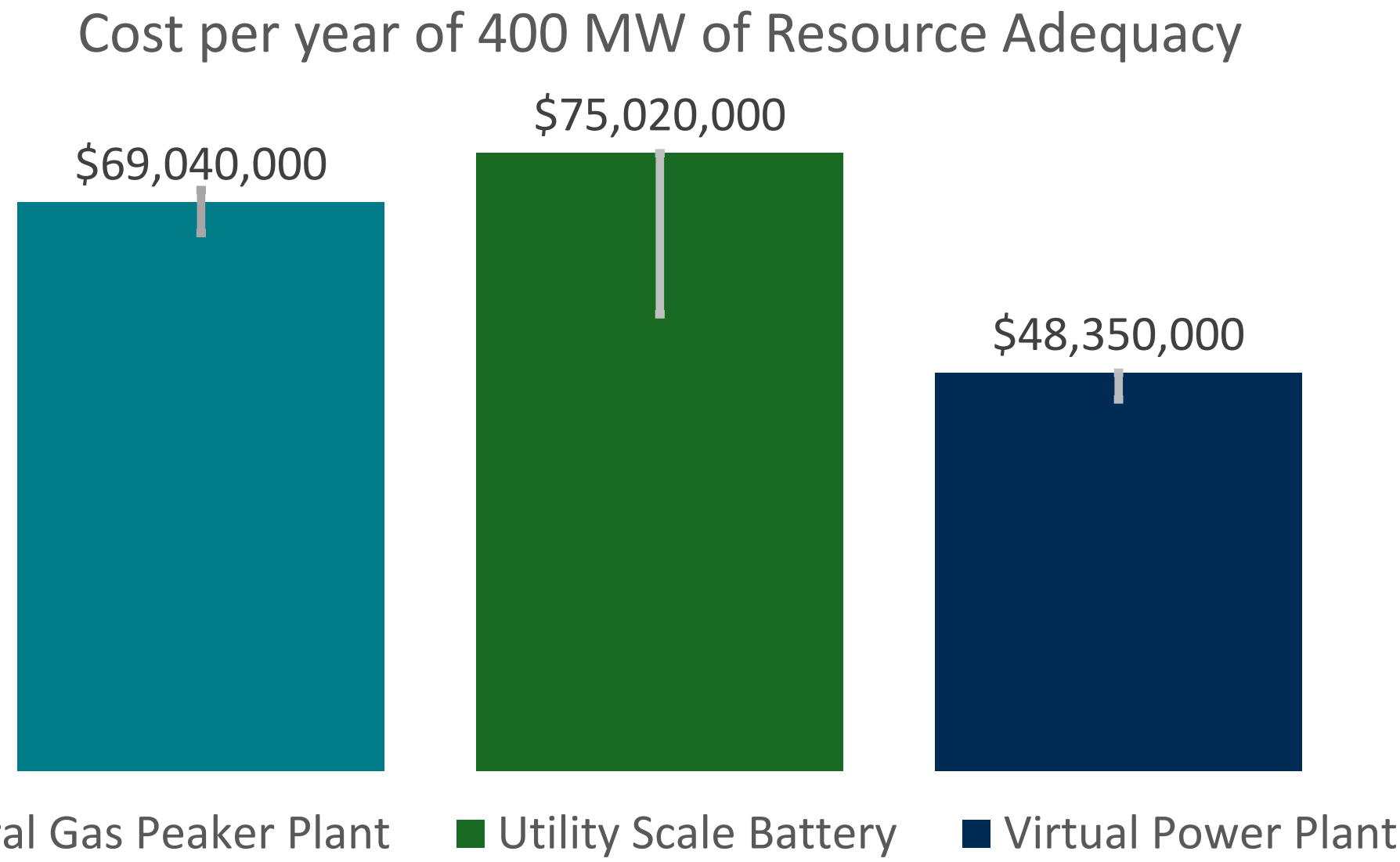
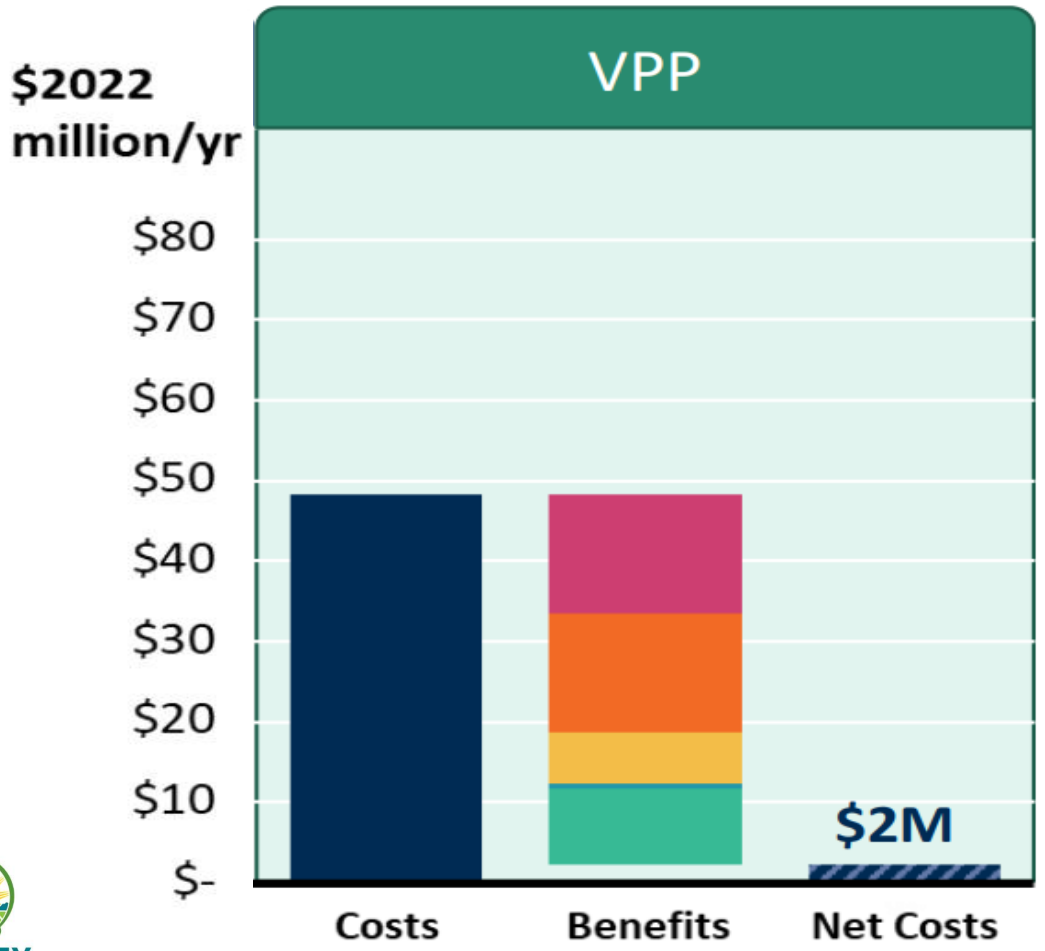
Item 6 – Virtual Power Plants: VPPs cheaper than NG and Utility scale Batteries?



Source: Brattle Group 2023

Item 6 – Virtual Power Plants: Aggregating DERs could have huge system-wide benefits, but what value streams are *actually* available to VCE?

Cost per year of 400 MW of Resource Adequacy



- Emissions
- Resilience
- Distribution
- Transmission
- Ancillary Services
- Energy
- Resource Adequacy

Value for VCE

Source: Brattle Group 2023

Item 6 – Virtual Power Plants: Supply-side v Load Modifying VPPs

Supply Side VPP

Able to sell energy, resource adequacy and/or ancillary services to LSEs or CAISO wholesale markets

Con: Significant fixed costs to market participation

Con: Limit on resource adequacy from demand response

Load Modifying VPP

Using VPP to reduce local load without monetizing services

Short term value: saving money on energy purchases

Long term value: reducing load profile used by CEC to set resource adequacy obligation after 2-4 years

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Item 6 – Virtual Power Plants: Organizational Models for Load Modifying VPPs

Model	# CCA Pro-grams	Description	Benefits	Costs	CCA Program Example
In-house operation	2	Running VPP through an in-house Distributed Energy Resource Management System (DERMS)	• Direct access to data • Less revenue-sharing	• Large personnel investment	MCE's Richmond VPP Pilot
Partnership with 3rd party aggregator	8+	Contracting with the private aggregator or original equipment manufacturer (OEM) to run VPP	• Access to established DERMS, VPP expertise	• Payment to aggregator or OEM	Clean Power Alliance and AutoGrid's Power Response Program
Flexibility Market	3+	Contracting with a flexibility market interface to run an open market for locally-acting aggregators and OEMs to bid into	• Adaptable • Including wide range of DERs • Little personnel investment	• Payment to market interface • Payment to aggregators	MCE's Peak Flex Market with Recurve

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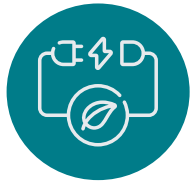
Item 6 – Virtual Power Plants: CEC Support for Aggregated DER

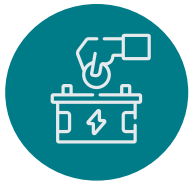


Demand Side Grid Support Program

Program: State run VPP for POU customers: $2/kWh for aggregators responding to emergency alerts

Pilot: incentives for market-integrated DR above RA obligation

Pilot: payment for BTM battery VPP with market-aware trigger



Virtual Power Plant Approaches for Demand Flexibility Grant

$21,000,000 for community-based automated VPPs

VCE has applied with UC Davis and PG&E

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Item 6 – Virtual Power Plants: Ongoing Research: the value of a VPP for VCE

	Goal	Activities
1	Determine potential program designs for CCA VPPs	• Background research • Interview on CCA VPPs • Survey of CCA VPP programs
2	Determine VPP potential in Yolo County	• Analyze rate enrollment data • Survey VCE customers on DER installation, VPP interest
3	Report on strategic VPP pathways for VCE	• Present value and tradeoffs of lowest cost VPP designs

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Item 6 – Virtual Power Plants: References

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- NREL. “Modeling Distributed Generation in California.” California Energy Commission, 2024. https://www.energy.ca.gov/sites/default/files/2024-07/CEC-200-2024-011.pdf.

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Thank you!

Questions?

Catherine Rowen

Catherine.Rowen@valleycleanenergy.org

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VCE Community Advisory Committee Meeting – August 22, 2024

Item 7 – VCE's 2024-2026 Outreach & Marketing Plan Outline

Public Comments

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Item 7 – VCE 2024-2026 Outreach & Marketing Plan Outline

Background & Purpose

- First Outreach and Marketing Plan 2021
  - Following 2020 Strategic Plan
  - Link between Strategic Plan and Outreach and Marketing priorities, implementation, and day-to-day staff workflow
  - Complementary to Programs Plan (2021)

Photo: YvonneHunterPhotography.com

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Item 7 – VCE 2024-2026 Outreach & Marketing Plan Outline

New for 2024-2026

- Progress Since 2021
- Industry Peer Analyses
- Enhanced Analytics & Metrics
  - Brand voice, comms and brand strategy, hashtag strategy
- SWOT Analysis

Photo: YvonneHunterPhotography.com

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Item 7 – VCE 2024-2026 Outreach & Marketing Plan Outline

Progress Since 2021 Plan

- 93% Completion or In-Progress (vast majority having been completed)
- Some items became obsolete or were modified due to changing market conditions
- Many items are planned to continue or move on to next phase of existing goals/tactics, etc.

2021 Outreach and Marketing Plan

Goal 1: Increase customer satisfaction and retention

Name	Subitems	Strategic Plan Objective	Status	Goal details
Better understand the needs/wants of customers and member communities	Improve customer analytics and data, Customer personas, Develop customer and marketing dashboards, Analyze data from different jurisdictions	Objective 3.1: Develop engagement strategies to increase awareness of, and participation in, local control of VCE's energy supply and programs with a particular focus on engaging disadvantaged and historically marginalized communities.	Done	VCE has made significant progress on this goal. We developed several engagement strategies, including for ERRO program, AgFIT Program and EV Rebate Program. We have advertised openings on the CAC to encourage local control, as well as advertising Board meetings and CAC meetings. VCE crafted an Environmental Justice Statement.
Subitems	**Name**		**Status**	**Notes & Examples**
	Improve customer analytics and data		Done	
	Customer personas		Not Done	VCE has not yet developed customer personas but may do so as part of the outreach for focus groups and surveys 2024-2026.
	Develop customer and marketing dashboards		Done	
	Analyze data from different jurisdictions		Done	
Increase awareness of VCE's brand	Advertising, Word-of-mouth campaigns, Swag, Co-marketing/branding with trusted		Done	VCE invested in bus ads in English and Spanish and has translated most customer-facing material into Spanish. VCE developed special swag for the 5-year anniversary and shared it with customers and
Subitems	**Name**		**Status**	**Notes & Examples**
	Advertising		Done	Staff engaged in successful advertising, and will look into advertising campaigns for 2024-2026, which may include bus ads and billboards, as well as podcasts.
	Word-of-mouth campaigns		Done	This goal was mostly achieved, and staff will continue to work on it. Lawn signs were deployed, and the AgFIT program was marketed successfully by word-of-mouth.
	Swag		Done	VCE developed special swag for the 5-year anniversary celebrations, including branded Bluetooth speakers, socks, and cell phone chargers. Staff also maintained current stocks of popular swag, including tote

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Item 7 – VCE 2024-2026 Outreach & Marketing Plan Outline

Photo: YvonneHunterPhotography.com

Proposed Goals:

1. Increase customer satisfaction and retention

2. Continue to Enhance VCE's Role as a Trusted Community Resource

3. Spotlight VCE's Role in Decarbonization and Grid Innovation

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VCE Community Advisory Committee Meeting – August 22, 2024

Item 8 – Update on VCE's Programs & Grants

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Item 8 – Update on VCE's Programs & Grants

Name	Active/Planned	Granting Agency	Notes
Electrify Yolo	Active	SACOG	VCE helping to install public EV chargers in partnership with member jurisdictions
Rural Electrification and Charging Technology (REACT)	Active	CEC (REDWDs)	Provides incentives for charging of electric tractors (some of which can bidirectionally charge). VCE role is implementing dynamic rates and working to include other CCAs. Partners: Gridtractor, Monarch Tractor
Agricultural Flexible Irrigation Technology (AgFIT)	Active	CPUC	Farmers receive $200/kw in incentives to install irrigation automation equipment and are placed on dynamic rates. Annually they receive a check for any pilot savings (relative to OAT bill). Partners: Polaris, TeMix, PG&E
AgFIT Expanded Pilots	Planned, approved	CPUC	Similar to AgFIT, but less $ available in incentives. Not ag-specific. Working with ASPs for incentives. Slightly different program design
Electrification Retrofit Rebate Outreach (ERRO)	Active	ARP funds through Yolo County	Connecting low-income customers with existing rebates for EE and electrification. Launching Energy Advisor service with SMUD as a complement

Item 8 – Update on VCE's Programs & Grants

Name	Active/Planned	Granting Agency	Notes
GFO-23-306 - Grid-Supportive Transportation Electrification	Planned, not yet approved	CEC	VCE would work as a subgrantee under UC Davis and the project will demonstrate SPIN, a grid-supportive residential control system for electric vehicles, onsite generation, onsite battery energy storage and electric appliances. VCE would add a dynamic rate component. Other partners include Panasonic and PG&E.
GFO-23-302 - Power Electronics for Zero-Emission Residential Resilience (PEZERR)	Planned, not yet approved	CEC	Grid resilience technology that would support EVs, electrified homes, and add in dynamic rates. Residential-focused. SPIN tech acts as the energy center for the entire home (i.e. microgrid in a box). SPIN controls power flow to optimize energy through its automatic backup power capability without the need for utility service upgrades.
EV Rebate Program Phase 2	Planned, not yet approved	VCE Programs Fund	VCE outlined phase 2 parameters in 2023, including more incentives for charging, panel upgrades, etc. Less individual amounts for EVs. Low-income incentives remain higher than standard.
Gibson PV+S Microgrid	Planned, not yet submitted	EPA – Community Change Grants Program	Exploring funding sources to enable the Gibson PV+S project to operate as a microgrid supporting the Capay Valley. VCE was not successful with the CDFA grant or the SGC grant, the SGC forwarded the project to this new EPA program

Item 8 – Update on VCE's Programs & Grants

Other Key Updates

- VPP Analysis Ongoing
- Sacramento Rainbow Chamber of Commerce – submitted letter of support for SMUD Shine grant
  - Workshops to businesses on EE, electrification, etc.
- Electric Advisor service launching Fall 2024

Photography: YvonneHunterPhotography.com