
**Item 3: Authorize the Chief Executive Officer to
Execute Two Power Purchase Agreements with
SunZia Wind South LLC and SunZia Wind North
LLC**

SVCE Board Meeting
May 14, 2025

Authorize the Chief Executive Officer to execute two agreements with SunZia Wind South LLC and SunZia Wind North LLC for the procurement of renewable wind energy in substantial form and any necessary ancillary agreements and documents as follows:

1. SunZia Wind South LLC

- a. 17.25 MW or approximately 55,000 MWh per year
- b. 10-Year term PPA with expected commercial operation dates (COD) and term from June 1, 2026, through May 31, 2036.
- c. Total amount not-to-exceed \$58,000,000.

2. SunZia Wind North LLC

- a. 7.75 MW or approximately 25,000 MWh per year
- b. 10-Year term PPA with expected COD and term from June 1, 2026, through May 31, 2036.
- c. Total amount not-to-exceed \$26,000,000.



Executed Long-Term PPAs

SVCE has 9 of its 22 PPAs online

- 9 PPAs Online
- 625.3 MW of nameplate capacity online
- 1,627.93 MW of nameplate capacity executed
- 75% RPS expected in 2030

	Seller	Project Name	Technology	Generation MW	Storage MW	Storage MWh	% of Annual Load in 2030	Term (years)	SVCE Board Approval	Status
1	MN8	Slate	Solar + Storage	93	46.5	186	6.2%	17	Oct-18	Online
2	Ormat	Casa Diablo	Geothermal	7			1.4%	10	Feb-20	Online
3	Atlantica	Coso	Geothermal	43.8			6.1%	15	Mar-20	Online
4	Leeward	Rabbitbrush	Solar + Storage	40	8	20	2.9%	15	Apr-20	Online
5	NextEra	Yellow Pine	Solar + Storage	50	26	104	3.8%	20	May-20	Online
6	AES	Mountain View	Wind	33.3			3.1%	20	Apr-21	Online
7	Clearway	Victory Pass	Solar + Storage	100	25	100	7.6%	15	May-21	Online
8	Terra-Gen	Cameron Crest	Wind	77.7			4.6%	15	May-21	Online
9	AES	Baldy Mesa (RA-only)	Storage	0	75	300		10	Sep-22	Online
10	Avantus	Aratina	Solar + Storage	80	50	200	6.3%	20	Jun-20	Pre-construction
11	174 Power Global	Atlas	Solar	50			3.6%	10	Jan-21	Pre-construction
12	SB Energy	Angela	Solar + Storage	20	10	40	1.4%	15	Mar-21	Pre-construction
13	Origis	San Luis West	Solar + Storage	62.5	15.625	62.5	3.9%	15	Apr-21	Pre-construction
14	Rev Renewables	Tumbleed	Long Duration Storage		15.9375	127.5		15	Feb-22	Construction
15	Onward	Goal Line	Long Duration Storage		14.2	113.6		15	Mar-22	Pre-construction
16	Ormat	Geothermal Portfolio	Geothermal	16.75			4.2%	20	Jun-22	Pre-construction
17	OME	Fish Lake	Geothermal	1.82			0.4%	20	Jun-22	Pre-construction
18	Middle River Power	Hanford	Thermal + BESS	99.4	131.4	131.4		12	Apr-23	Construction
19	NextEra	Grace	Solar	120			8.3%	15	Aug-23	Pre-construction
20	NextEra	Yellow Pine III	Storage	0	115	460		15	Aug-23	Pre-construction
21	Pattern	SunZia	Wind	100			7.6%	15	Nov-23	Construction
22	VCI Energy	Glossy Garlic	Solar + Storage	50	50	200	4.0%	10	Oct-24	Pre-construction



Summer 2024 Procurement Efforts

SVCE Procurement Goals:

- Renewable Portfolio Standard (RPS)
- Integrated Resource Plan (IRP) GHG Reductions
- Mid-term Reliability (MTR) Procurement Order
- Portfolio Diversity
 - Technology
 - Geography
- Resource Adequacy
- Carbon Free Energy & Standalone Storage Projects
- Term: minimum 10 years

June 2024

- Issued RFO – seeking diverse RPS & MTR Resources

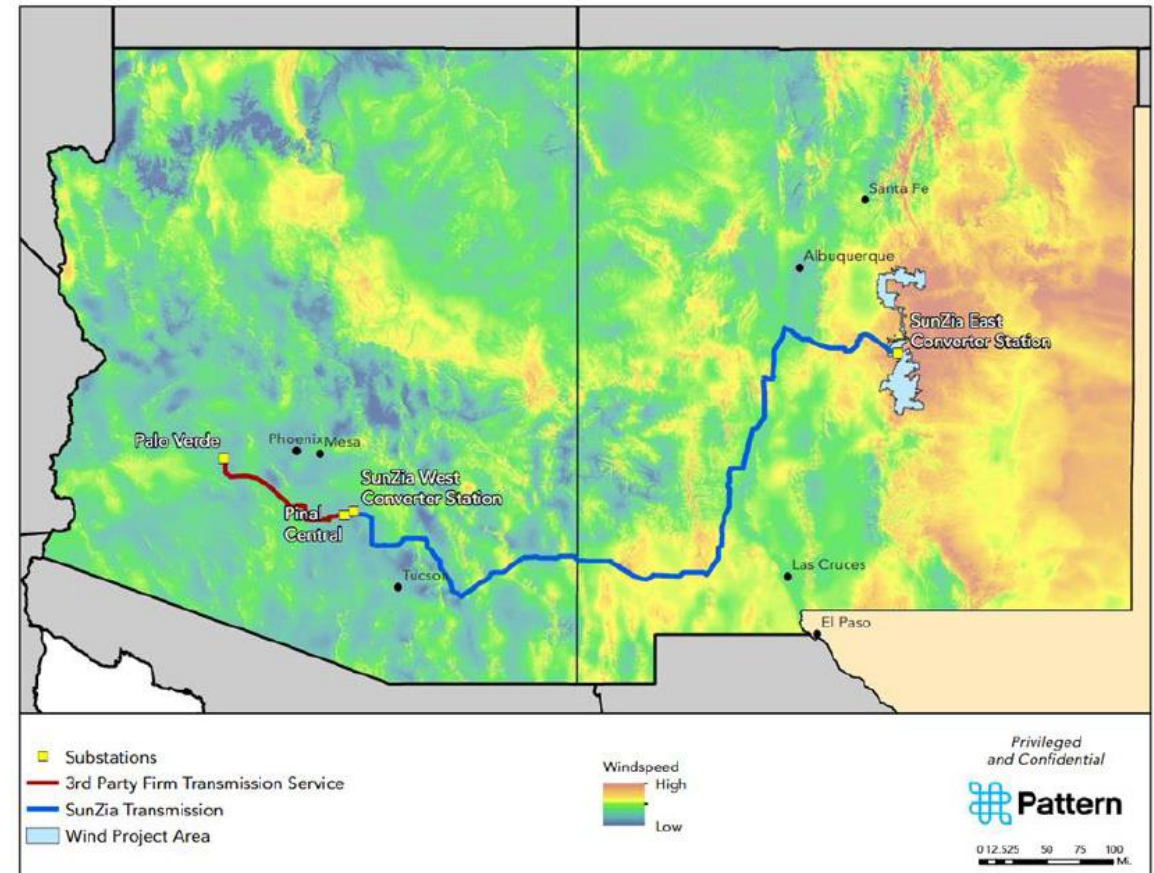
Shortlisted

- Incremental SunZia offering Shortlisted



3,515 MW Wind park in New Mexico

- Connects to the Pinal Central Substation using the SunZia Transmission line
- From Pinal the resource will connect with CAISO at Palo Verde
- Several off-takers, including SVCE's existing 100 MW contracted share
- SVCE's proposed incremental share is 25 MW across two contracts





SunZia Wind South LLC and SunZia Wind North LLC

- **Together would meet 2% of SVCE's retail sales**
- IRP GHG reduction target
- 75% RPS by 2030
- SB100 Clean Energy target of 100% by 2045
- Meets long-term RPS requirements
- Supports GreenStart and GreenPrime
- Provides 8.75 MW of MTR capacity
- Provides Resource Adequacy

Developer / Parent Company

- Pattern Energy, Inc.

Product & Attributes

- 25 MW New Wind
- 80 GWh, PCC1 Renewable Energy
- MTR and RA countable

Project Name & Location

- SunZia Wind PowerCo LLC
- Torrance, Lincoln and San Miguel Counties in New Mexico

Expected Delivery Term Start

- 10-year, Mid 2026

Contract Price Structure

- Fixed price (\$/MWh) for Metered Energy. No Escalator.

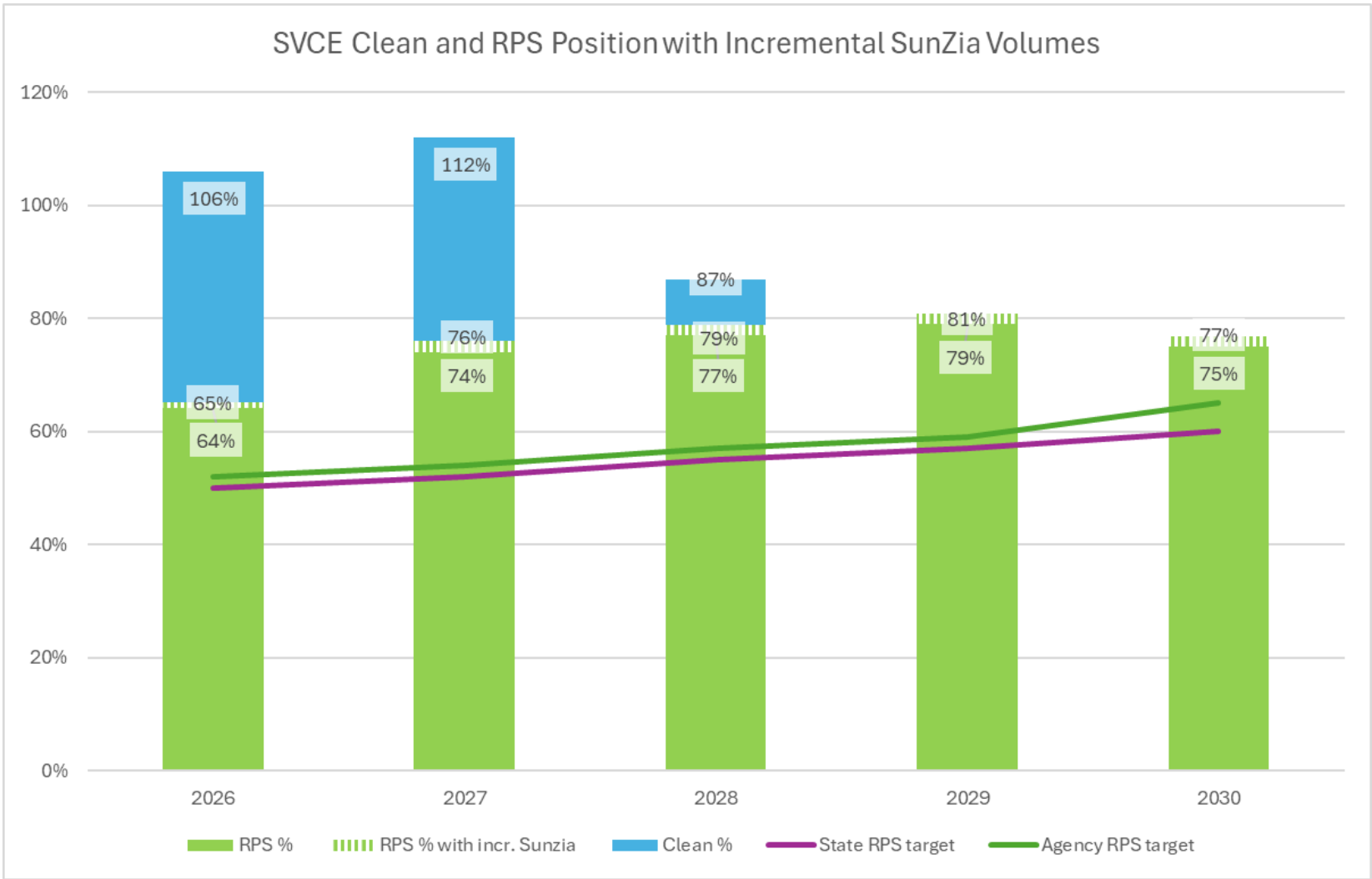


Annual RPS Progress

Incremental SunZia Wind will help SVCE meet ongoing SB100 RPS requirements as well as SVCE's Agency RPS target that climbs to 75% in 2030

SB100 Carbon Neutral targets per SB 1020

- 60% by 2030
- 90% by 2035
- 95% by 2040
- 100% by 2045





Compliance with Long-Term RPS Procurement Mandate

- SB350 requires 65% of RPS to come from long-term (≥ 10 years) contracts
- Incremental SunZia Wind adds to Compliance Periods 5 and 6 obligations

	CP #5 2025-2027	CP #6 2028-2030
1. State Mandated RPS per Compliance Period - % of Retail Sales	50%	57%
2. State Mandated % of Mandated RPS (Row #1) to be Contracted Under RPS Long-term Contracts	65%	65%
3. State Mandated % of Retail Sales with RPS Long-Term Contracts (Row 2 * Row 1)	33%	37%
4. SVCE: Current Compliance with Row #3: Existing RPS Achieved with Long-term Contracts	58.05%	71.81%
5. SVCE: RPS Achieved with incremental SunZia agreements	59.04%	73.68%
Open Position relative to State Mandate (Row #3) +Above / (-) Short	26.04%	36.68%



Energy and Reliability Portfolio

SunZia Wind will increase clean energy and capacity

SunZia Wind increases Clean Energy from Wind by 2%

SunZia Wind increases Clean RA Capacity by 2%

Sunzia Wind provides 8.75 MW of MTR eligible capacity in 2026

Estimated for 2028	Annual Energy (GWh)	Energy Source as a Percent of Total Retail Sales	Capacity Source as a Percent of Total RA Requirement
Biomass	0	0%	0%
Geothermal	378	9%	22%
Solar	1,835	44%	11%
Wind with SunZia	713	17%	10%
Large Hydroelectric	1,130	27%	0%
Battery Storage	0	0%	9%
Natural Gas RA-only	0	0%	33%
Hanford - Natural Gas	70	2%	15%
Total	4,126	100%	100%



Summary

SunZia Wind South LLC and SunZia Wind North LLC diversify SVCE's portfolio while meeting clean objectives

- Contribute an additional 2% of RPS-eligible energy on an annual basis
- Help meet clean energy goals, SB 100, SB 350 and SB 1020
- Reduce GHG emissions
- Can provide Resource Adequacy capacity
- Can provide MTR attributes for 2026 and beyond
- Provides geographic and technology-based diversity to SVCE's Portfolio
- Provides net positive portfolio value

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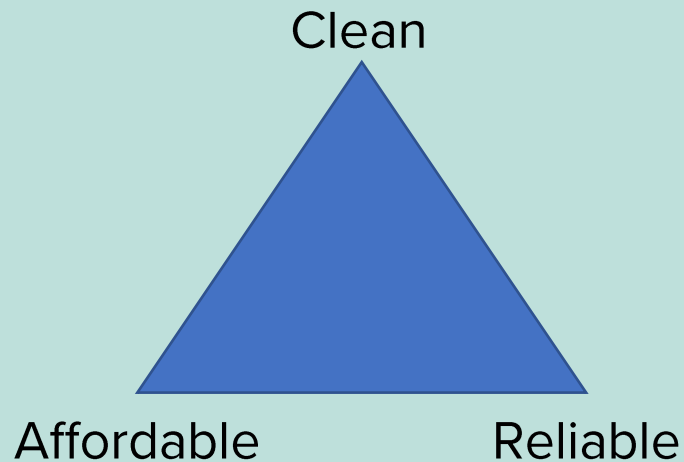
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Customer Demand Flexibility Services Main Services Agreement with Lunar Energy

SVCE Board of Directors Meeting
May 14, 2025



Improving ‘Demand Flexibility’ enables better alignment of demand with supply – and supports SVCE’s mission.



Purpose of today’s presentation:

- Review needs, opportunities, and goals for expanding Demand Flexibility in SVCE’s service area
- In support of SVCE’s Demand Flexibility goals, authorize CEO to negotiate and execute an agreement with Lunar Energy, for:
 - Distributed Energy Resource Management (DERMS) software platform, and related services



Value of Demand Flexibility: "Energy Duck Curve"

Opportunity Statement

Devices in SVCE Service territory can shift usage to cleaner, lower-cost (sunny) hours within the day.

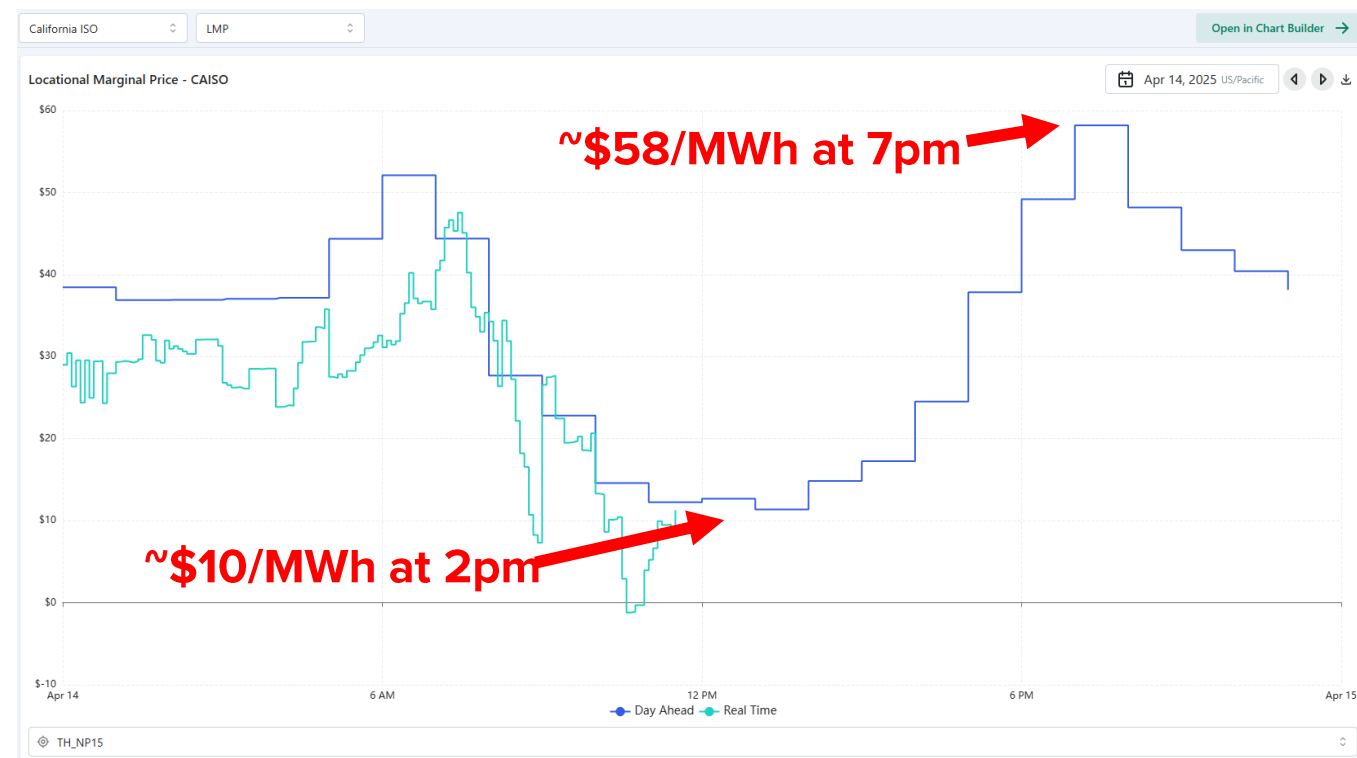
"Demand Shift" Benefits:

- Savings opportunities for participating customers
- Savings on energy and capacity costs for SVCE

Grid Energy Costs:

- Daily: Prices are lowest during the sunny hours, and highest in the evening
- Seasonal: negative prices common during spring solar hours, \$1000+/MWh is possible during hot summer heat events

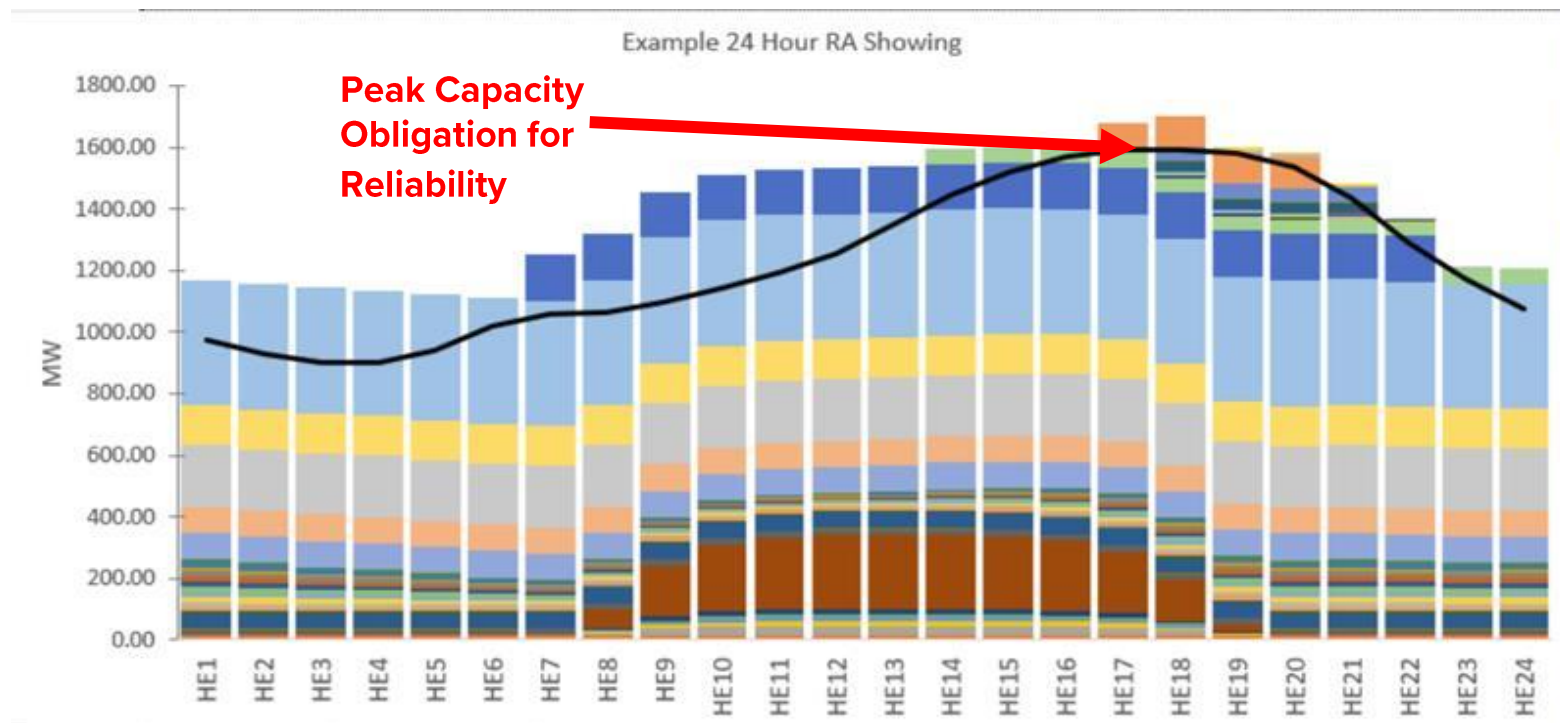
CAISO Wholesale Energy Prices – 4/14/2025





Value of Demand Flexibility: Reliability

Capacity Obligations (Example)



Capacity Prices

Year	CPUC Capacity Market Price Benchmarks (\$/kW-month)
2019	\$2.77
2020	\$5.20
2021	\$7.33
2022	\$8.11
2023	\$14.37
2024	\$26.26
2025 (Forecast)	\$40.31

Grid capacity obligations:

- Reliability obligation is highest in evening hours, Jul–Sept
- Reliability obligation is lower during sunny hours, and overnight
- Shifting obligations out of the evening peak hours can create savings on Capacity procurement costs



As the clean energy transition progresses, needs and opportunities for Demand Flexibility are expanding.

Past . . .

Now and Future . . .

Supply

- Fossil-based
- Predictable capacity
- Seasonal price volatility



- Renewable
- Variable capacity
- Daily price volatility

Demand

- Mixed fuel
- Flat/declining load
- Dumb on/off appliances



- All-electric
- 70%+ load growth
- Connected/flexible loads

Demand/Supply Matching

- Manual load reduction during extreme peak events

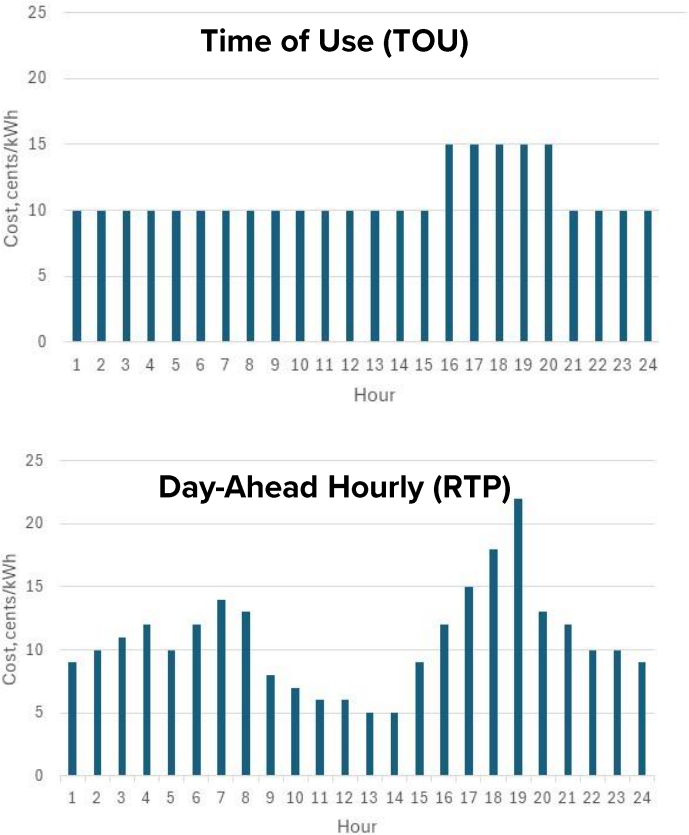


- Dynamic rates
- Automated control & optimization



How can customers be encouraged to 'flex' their demand from higher to lower-cost hours?

Time-Variant Electric Rates



Daily Load Modification Incentive Programs



Event-Based Load Reduction Incentive Programs





Connecting smart devices with clear market signals is essential for maximizing demand flexibility.

Demand Flex Approach	Example Application	SVCE Experience
Rates: Time of Use (TOU)	EV charging set to begin when customer's TOU rate is lowest, e.g., 11 pm	• 90+% of customers on TOU • E-ELEC pilots
Day-Ahead Hourly (RTP)	Irrigation pump controllers receive day-ahead RTP rates, run in hours when electricity is lowest-cost	• GridShift EV Charging Pilot • 'Hourly Flex Pricing' pilots
Daily Load Modification Programs (LM)	Customers receive payments for automated discharge of batteries during scheduled peak hours each day	• SunRun solar + storage pilot offsets SVCE RA obligation
Event-Based Demand Response Programs (DR)	Residential customers paid for automated 2-3 degree set point increase during grid emergencies	• Purchased RA from DR 'market aggregators'



There is significant potential to expand demand flexibility in SVCE's service area.

Current and Projected Deployed Devices, and Projected Demand Flexibility Potential in SVCE Service Area*

Device/Technology	2025		2030	
	Estimated Number of Devices	Low /High Estimate Deployed Demand Flex Potential (demand/ MW)	Projected Number of Devices	Low/High Projection Deployed Demand Flex Potential (demand/ MW)
Electric Vehicles (managed charging)	60,000	22 - 42	160,000	60 - 112
Battery Storage (residential)	7,000	10 - 35	10,000	15 - 50
HPWH (residential)	10,000	2 - 4	30,000	6 - 12
SCTs/HVAC (residential)	60,000	10 - 20	80,000	13 - 26
Bldg Mgt Systems (Non-res Load Mgt)	300	5 - 10	500	8 - 17
Totals (rounded)		50 - 110 MW		100 - 220 MW

*2030 device projections are speculative, reflective of current device adoption trends; industrial loads and back-up generation not included in this table.

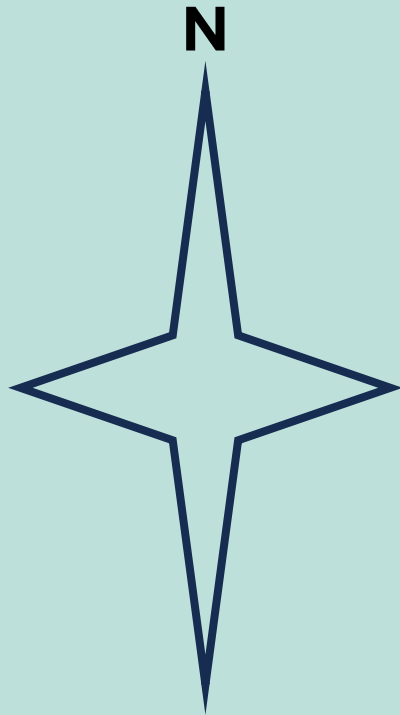


California aims to double load-shift by 2030, especially through expanded ‘load modifying’ approaches.

- In 2022, the CEC estimated ~3,000 MW of customer load shift capacity on the California grid, or 5-6% of peak
- The CEC has set a goal to increase customer load shift capacity to ~7,000 MW by 2030
 - majority of increased capacity targeted to come from daily load modification, from new demand flexibility programs utilizing dynamic pricing/market signals
- As context, SVCE’s ‘pro-rata’ load weighted share of the CEC’s 2030 load shift capacity goal would be approximately 70-80 MW
 - in line with SVCE’s projections for demand flexibility potential



SVCE's Demand Flexibility Goal, and Near-term Plans



- **Goal:**

- Enable SVCE to provide all customers with the ability to earn savings by easily, automatically and comfortably flexing their electricity use daily – contributing to a reliable and clean grid, and generating operational value for SVCE

- **2025/2026 Plans:**

- Contract for Distributed Energy Resource System (DERMS) software platform to support delivery of new SVCE demand flexibility programs
- Contract with key providers for capacity in SVCE's service area, provided from existing battery and thermostat/behavioral demand response installations
- Implement SVCE Demand Flex 'On Ramp' program(s) for equipment funded by current and past SVCE decarb programs
- Implement new Demand Flex programs incentivizing participation from energy storage, thermostat, and commercial/industrial customers



What is a 'DERMS', and why does SVCE need one?

Distributed Energy Resource Management System

A software platform designed to communicate with and optimize the operation of various distributed energy resources (DERs) located across SVCE's service area, such as:

- batteries
- commercial building management systems
- heat pump water heaters
- thermostats
- electric vehicles / charging

SVCE will rely on a DERMS to manage DERs enrolled in new SVCE demand flexibility programs, helping customers save money while reducing grid strain and associated GHGs.





How does a DERMS work?

(Individual) battery example . . .

1. Customer enrolls their battery in an SVCE demand flexibility program – and receives financial incentives
2. The DERMS gets data from the battery/home via internet connection
3. Combining battery data with other data, such as the customer's rate plan, grid conditions, weather, etc., the DERMS determines how to manage the battery accordingly . . .
 - charge from solar or from the grid
 - discharge into the home, or back onto the grid
4. The DERMS then sends instructions to the battery controller on what to do, and when
5. The DERMS receives data back from the battery confirming that the action has been taken





In late 2024, SVCE issued an RFP to identify partner(s) for SVCE's Demand Flexibility efforts.

- RFP had two parts:
 - Part 1: implementation of DERMS 'software as a service' platform, and enrollment of ~5MW of demand flex capacity from existing resources in SVCE's service area in 2026
 - Part 2: programs for enrollment and management of ~25MW of new demand flex capacity by 2030, from batteries, commercial buildings, thermostats and HPWH
- Teamed with Peninsula Clean Energy; 17 proposals received
- Currently negotiating a contract with Lunar Energy, for the following four scopes:
 - 1) Gridshare DERMS platform installation and support
 - 2) 'On-ramp' support for selected DERs installed via existing SVCE incentive/rebate programs
 - 3) Enabling agreement for 'Load Modification' capacity from existing batteries in SVCE's service area
 - 4) Design and implementation support for a new SVCE battery program
- Second contract under development with another vendor, for a complementary scope



Why Lunar Energy?

- Global company, with U.S. Headquarters and R&D facility in Mountain View
- Lunar Energy's 'Gridshare' DERMS platform is being actively used to manage the largest 3rd-party residential battery fleet in the world
- SVCE staff recommends Lunar Energy, because:
 - Lunar's approach aligned best with SVCE's needs as described in the RFP, including robust DERMS platform, battery fleet management and program support services
 - Deeply experienced with behind-the-meter DER management with a wide range of customers, including some of the world's largest utilities
 - Lunar's Gridshare platform currently supports SVCE's battery program with SunRun
 - Recently contracted with Ava; also selected by PCE in our joint RFP



Recommendation . . .

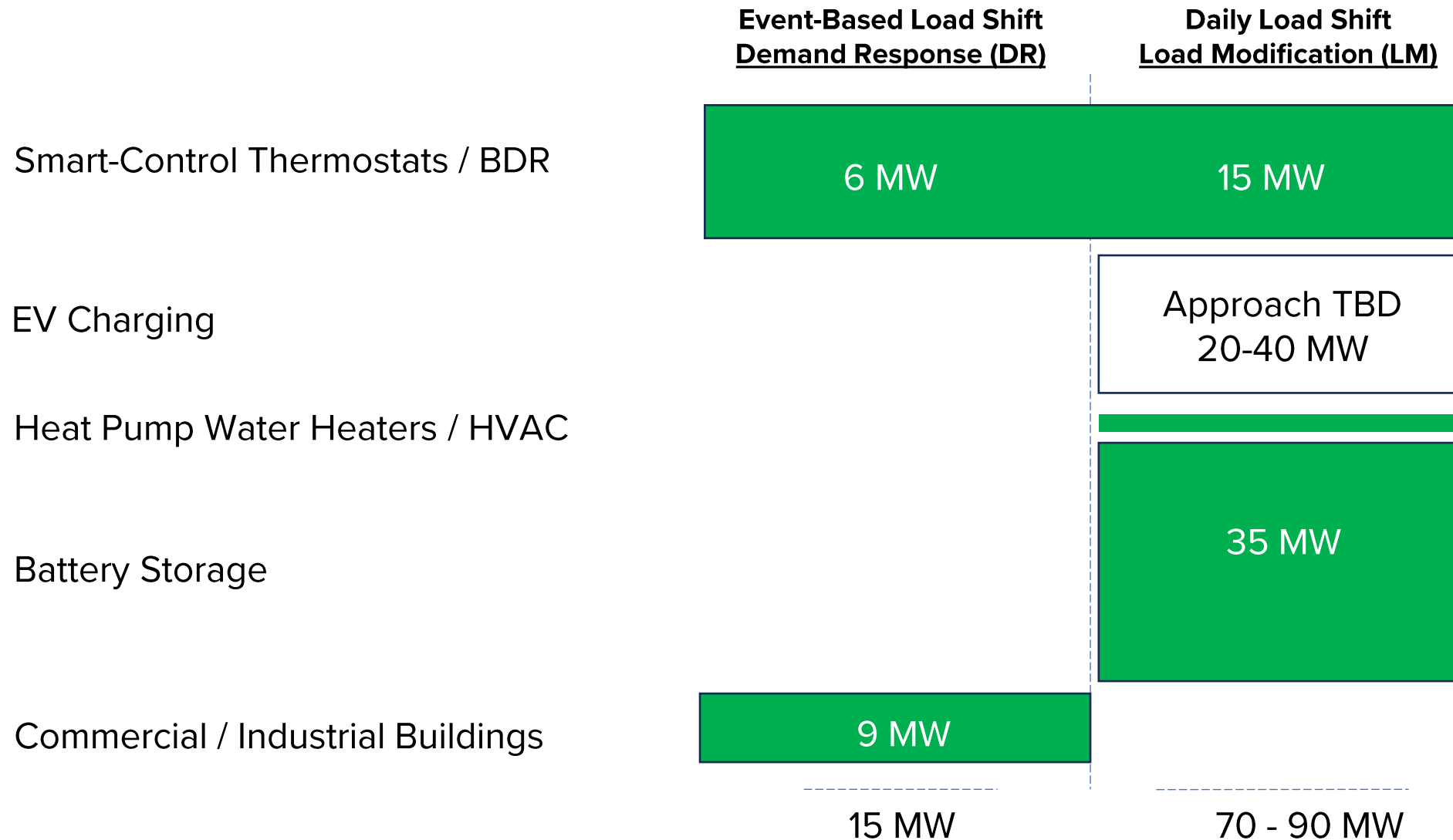
Staff recommends the Silicon Valley Clean Energy (SVCE) Board of Directors (Board) adopt Resolution 2025-11 authorizing the Chief Executive Officer (CEO) to negotiate and execute a five-year Main Services Agreement with Lunar Energy for a Distributed Energy Resources Management System (DERMS) and related program operation and load modification services, to support SVCE's customer demand flexibility goals in an amount not-to-exceed \$971,238, including all scopes of work need to implement the agreement.

Questions





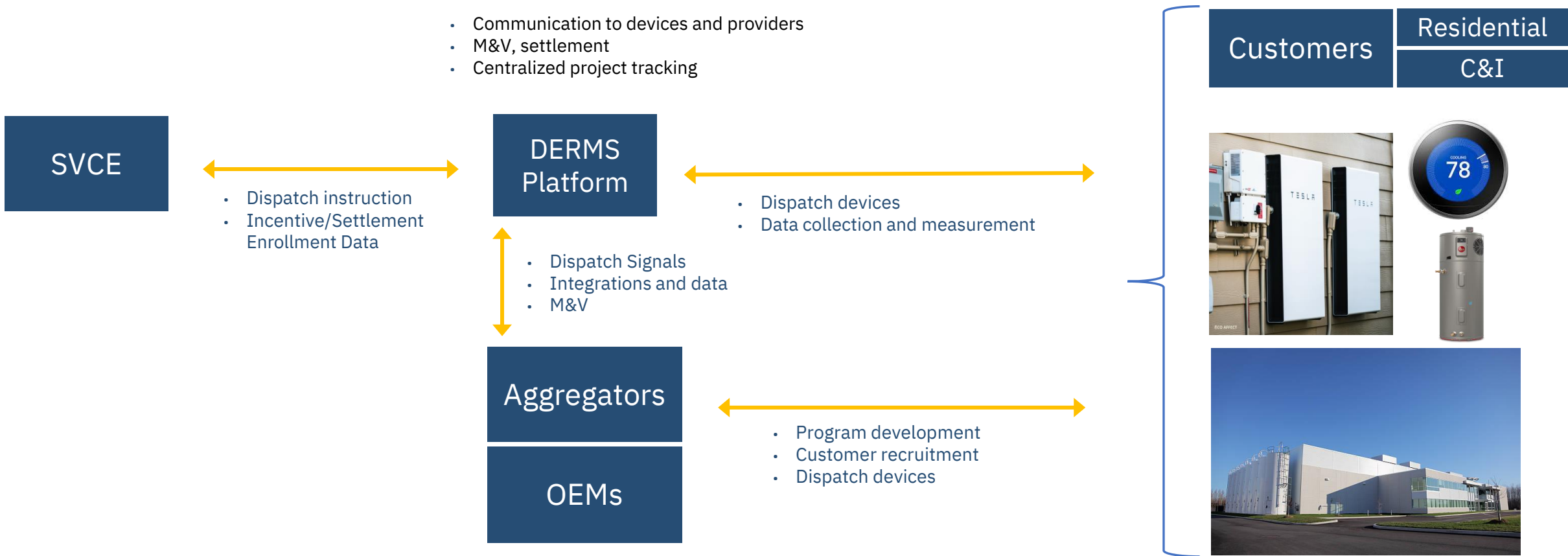
Recommendation . . .





What is a 'DERMS', and why does SVCE need one?

Role of a Distributed Energy Resource Management System (DERMS)



Electrification Rate Pilot Programs

Peter Mustacich, Technical Manager of Decarb Planning & Strategy
Michaela Pippin, Communications Manager
5/14/2025





Recommended Action

End

Board approve ending the current E-ELEC 1.0 Rate Pilot Program and associated rate schedule effective July 1, 2025.

+

Adopt

Board adopt the E-ELEC 2.0 Rate Pilot Program and associated rate schedule with a budget of \$3.5M.



Time-of-Use (TOU) plays an important role in leveraging load shift potential

SVCE Effort	Question We're Answering
RTP Pilot	How can SVCE integrate with PG&E's billing system?
VPP / DERs	How can automated response to dynamic price signals impact customer bills?
E-ELEC 2.0	How can price signals influence customer behavior? Can we improve TOU rates?

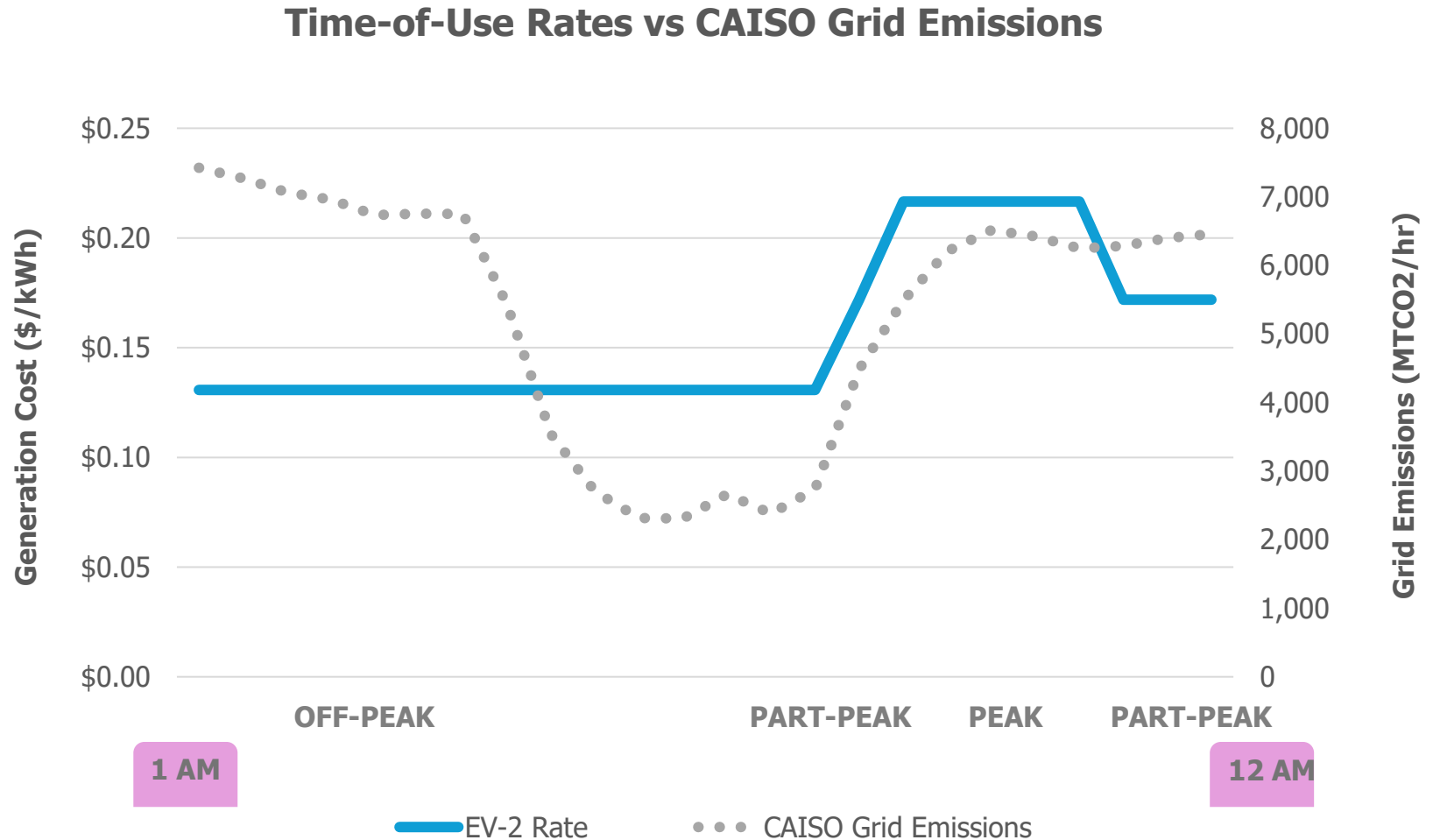




Background

Grid emissions are lowest during daytime hours, and higher in the evening and overnight.

Current Time-of-Use (TOU) electricity rates don't reflect this.



E-ELEC 1.0 LEARNINGS

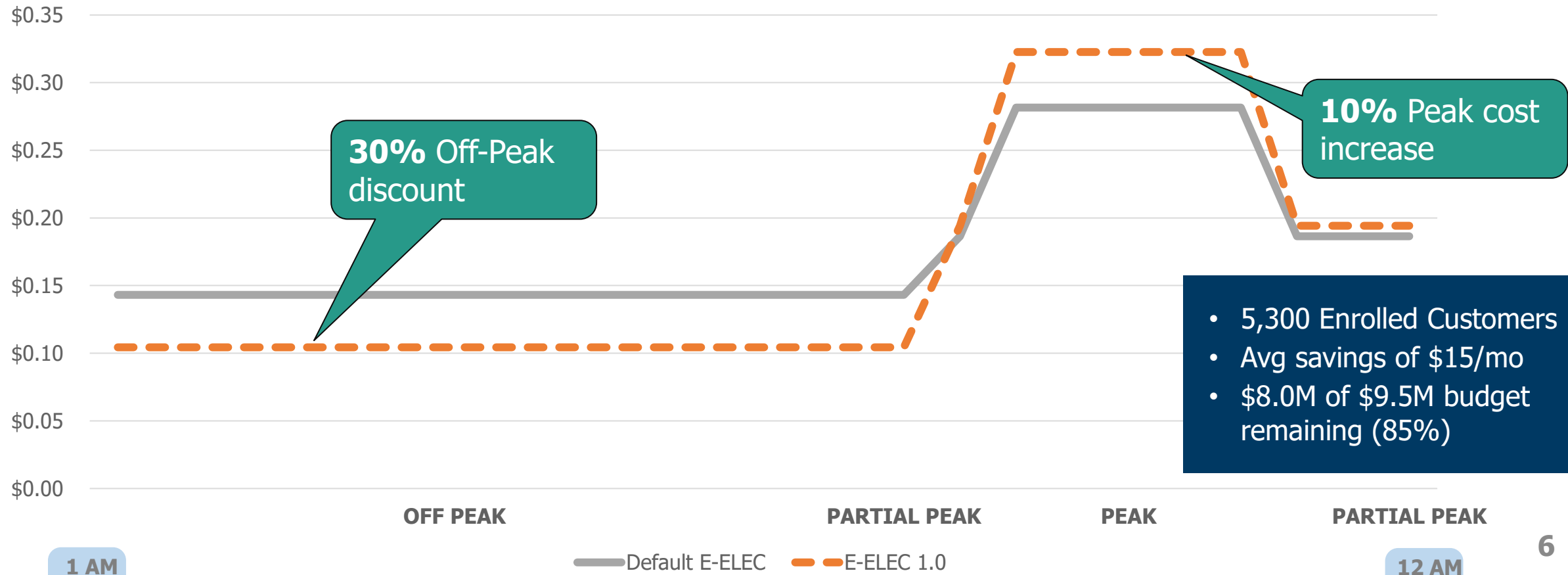




What is the SVCE E-ELEC 1.0 Rate Pilot?

SVCE launched the rate pilot in Jan 2023 with two goals: 1.) lowering bills from home electrification, and 2.) testing rate-driven load-shifting.

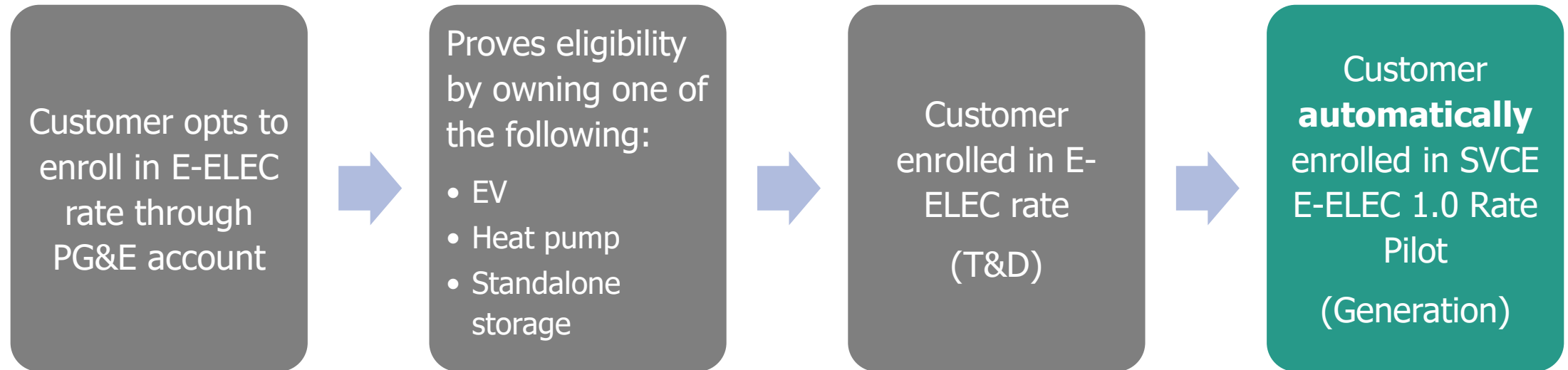
SVCE Summer Generation Rates (\$/kWh)





Currently we don't control enrollment

Customers are automatically enrolled in our pilot when they opt to enroll in the E-ELEC rate through PG&E



Who controls the process?

PG&E

SVCE



Lessons learned from E-ELEC 1.0 Rate Pilot

GOALS

Reduce customer bill impacts for **home electrification**

Incentivize **load shifting**

LEARNINGS

Customers saved money!



Primary enrollment device is **EVs**



Improved TOU price signals



Hard to correlate behavior change



Auto-enrollment means awareness and engagement are lower



THE FUTURE: E-ELEC 2.0





We are adapting and changing course



E-ELEC 2.0 DESIGN CHANGES

Require heat pump space **and** water heating to qualify

Introduce a new Time-of-Use (TOU) period that **better aligns with grid emissions**, helping reduce system-wide costs for all customers

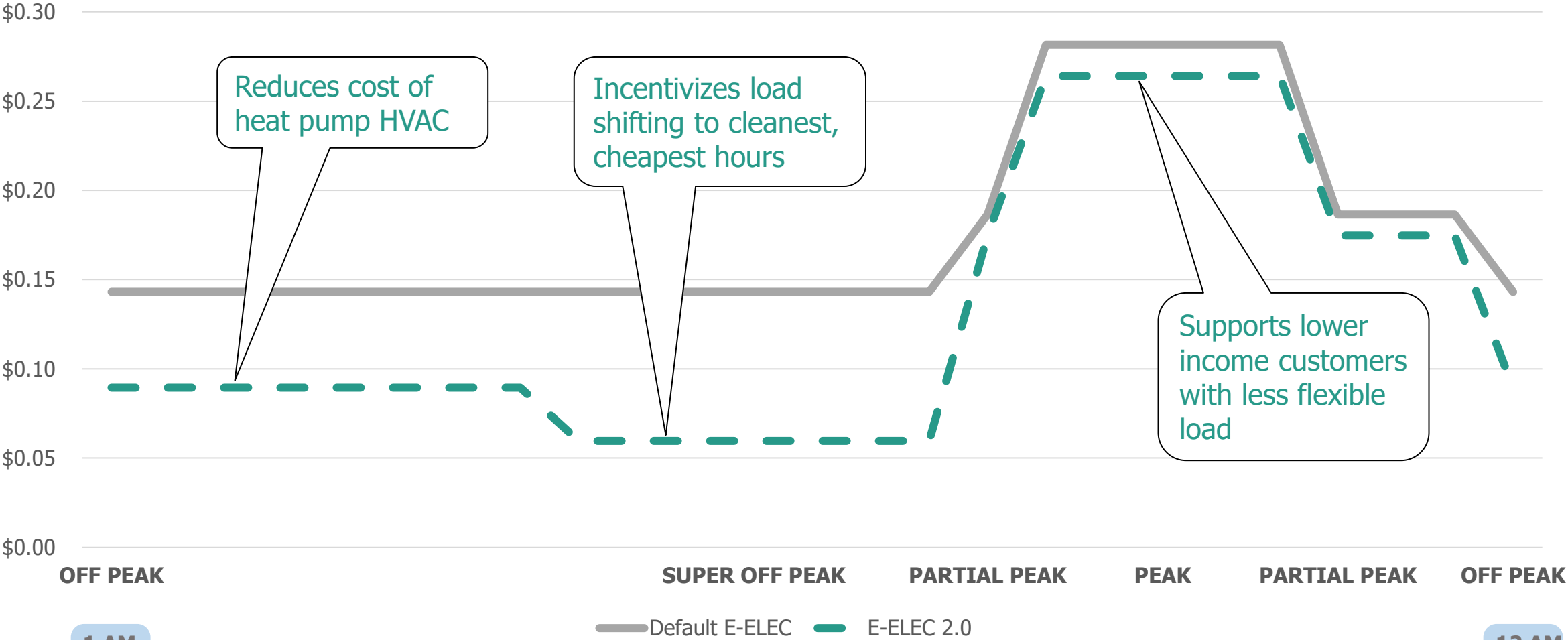
SVCE to control rate enrollment, creating a dialogue with customers from day one

Include **ongoing M&V** to capture learnings and steer towards a scalable version of this rate



Guaranteed savings which can be increased

Summer SVCE Generation Rates (\$/kWh)



\$\$

Meet Sue

- Sue installs heat pump space and water heaters
- Signs up for default E-ELEC
- With her busy lifestyle, she *does not* change energy use behaviors



Sue saves
\$250/yr

\$\$\$\$

Meet Liz

- Liz installs heat pump space and water heaters
- Signs up for the E-ELEC 2.0 pilot program
- Liz makes *minor* changes to her household's energy use behaviors



Liz saves
\$450/yr

\$\$\$\$\$\$

Item 5
PRESENTATION

Meet Jo

- Jo installs heat pump space and water heaters
- Signs up for the E-ELEC 2.0 pilot program
- Jo *maximizes* savings by shifting usage to daytime hours and leveraging smart tech

Jo saves up to
\$650/yr





Incorporating Customer Feedback – The “Power User” Dinner

Item 5
PRESENTATION

We invited 900+ E-ELEC 1.0 Rate Pilot customers to dinner to learn from their experiences

Key Takeaways

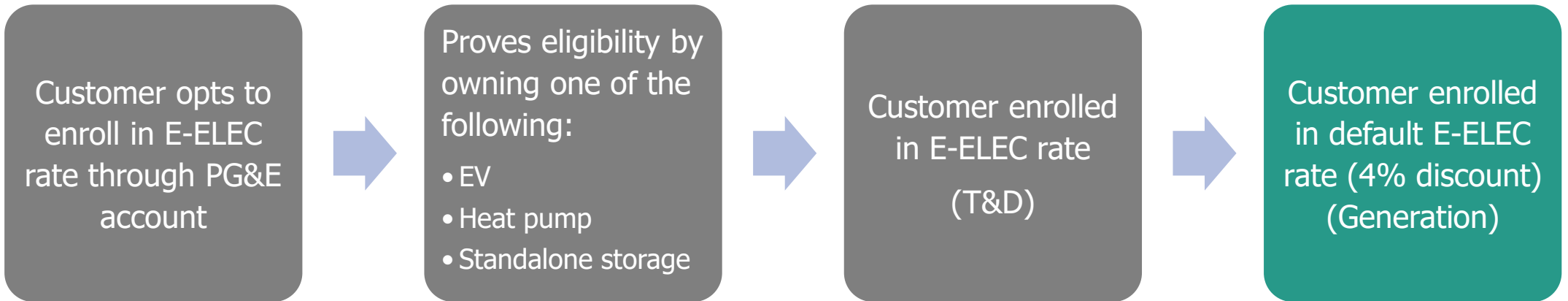
- Customers were **motivated** to “do the right thing.”
- Customers want **more communications** and resources.
- **Confusion** around how much energy each appliance uses and what savings would look like if shifted.
- In E-ELEC 2.0 we will focus extensively on **communicating customer performance, bill savings, and education.**



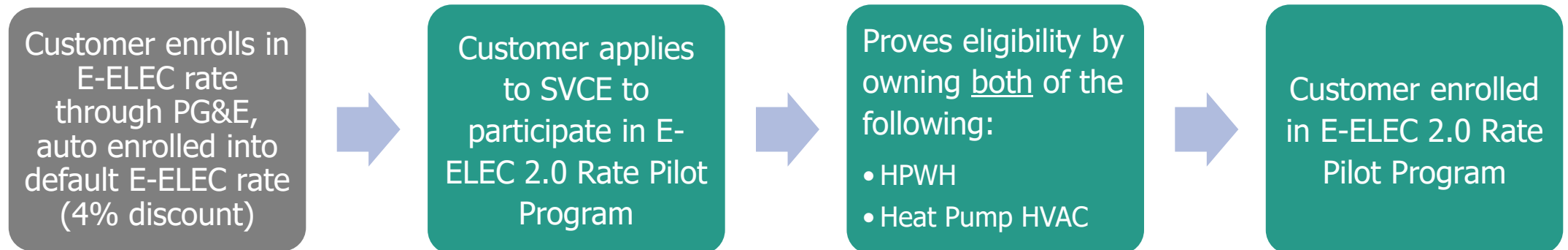


We will control rate pilot enrollment

E-ELEC Rate Enrollment



E-ELEC 2.0 Rate Pilot Enrollment



Who controls the process?

PG&E

SVCE



E-ELEC 2.0 pilot program budget: \$3.5M

Budget will provide:

- Customer Discounts
- Administration
- Billing Setup & Support
- Contingency
- Measurement & Verification
- Marketing, Communication & Education

Release remaining \$4.5M to support other decarb efforts

Benefits:

- Enroll up to **5,000 customers** over 5 years (through 2031)
- **\$2.5M** in direct **customer bill savings**
- Integrate into existing SVCE electrification programs
- Inform future SVCE rate design



Timeline

May 2025	Seek Board approval to end E-ELEC 1.0 and adopt E-ELEC 2.0
Jun – Jul 2025	Inform enrolled customers that E-ELEC 1.0 pilot is ending and they will automatically be switched to default E-ELEC gen rate
Jun – Dec 2025	E-ELEC 2.0 setup: billing system, data management, performance tracking, enrollment process, marketing and communications
Jan 2026	Open E-ELEC 2.0 Pilot Rate Program for enrollment



Recommended Action

Adopt Resolution 2025-12 Approving ending the current E-ELEC 1.0 Rate Pilot Program and associated rate schedule effective July 1, 2025, and establish the E-ELEC 2.0 Rate Pilot Program with a budget of \$3.5M.

APPENDIX



Proposal: replace current E-ELEC rate pilot with a default rate and updated pilot design

			E-ELEC 1.0 (Current)	E-ELEC (default)	E-ELEC 2.0 Rate Pilot
Winter	Super-Off-Peak	9a-3p	-30%	-4%	-60%
	Off-Peak	12-9a	-30%	-4%	-30%
	Partial-Peak	3-4p & 9p-12a	0%	-4%	-10%
	Peak	4-9p	+10%	-4%	-10%
Summer	Super-Off-Peak	9a-3p	-30%	-4%	-60%
	Off-Peak	12-9a	-30%	-4%	-30%
	Partial-Peak	3-4p & 9p-12a	0%	-4%	-10%
	Peak	4-9p	+10%	-4%	-10%

Note: Negative means “cheaper than PG&E”, positive means “more expensive”.



Comparison of generation rates (including PCIA & FFS)

			E-ELEC 1.0 (Current)	E-ELEC (default)	E-ELEC 2.0 Rate Pilot
Winter	Super-Off-Peak	9a-3p	\$0.06851	\$0.09396	\$0.03915
	Off-Peak	12-9a	\$0.06851	\$0.09396	\$0.06851
	Partial-Peak	3-4p & 9p-12a	\$0.11122	\$0.10677	\$0.10010
	Peak	4-9p	\$0.14431	\$0.12594	\$0.11807
Summer	Super-Off-Peak	9a-3p	\$0.10438	\$0.14315	\$0.05964
	Off-Peak	12-9a	\$0.10438	\$0.14315	\$0.10438
	Partial-Peak	3-4p & 9p-12a	\$0.19421	\$0.18644	\$0.17479
	Peak	4-9p	\$0.32265	\$0.28159	\$0.26399



Comparing total bundled rates (\$/kWh) puts these designs into perspective

			E-ELEC 1.0 (Current)	E-ELEC (default)	E-ELEC 2.0 Rate Pilot
Winter	Super-Off-Peak	9a-3p	\$0.31	\$0.34	\$0.28
	Off-Peak	12-9a	\$0.31	\$0.34	\$0.31
	Partial-Peak	3-4p & 9p-12a	\$0.35	\$0.35	\$0.34
	Peak	4-9p	\$0.39	\$0.37	\$0.36
Summer	Super-Off-Peak	9a-3p	\$0.34	\$0.38	\$0.30
	Off-Peak	12-9a	\$0.34	\$0.38	\$0.34
	Partial-Peak	3-4p & 9p-12a	\$0.45	\$0.44	\$0.43
	Peak	4-9p	\$0.64	\$0.60	\$0.58