CleanEnergy States Alliance

DSGS: California's Award-Winning Virtual Power Plant (VPP) Program

October 28, 2026

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Clean Energy States Alliance

The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy.

CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

CleanEnergy States Alliance

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State Leadership in Clean Energy AWARDS | 2026 | CleanEnergy States Alliance

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California Energy Commission
Demand Side Grid Support (DSGS) Program

Connecticut Green Bank
Solar Marketplace Assistance Program Plus (Solar MAP+)

Illinois Power Agency
Illinois Shines Mentorship Program
& Solar Consumer Protection Initiatives

Massachusetts Clean Energy Center
Equity Workforce Training Program

Massachusetts Dept. of Energy Resources
Grid Modernization Advisory Council (GMAC)

NYSERDA
Clean Heat for All: Room Heat Pump Program

CALIFORNIA ENERGY COMMISSION | CONNECTICUT GREEN BANK | IPA ILLINOIS POWER AGENCY | MASS CLEAN ENERGY CENTER | MASSACHUSETTS DEPARTMENT OF ENERGY RESOURCES | NEW YORK STATE NYSERDA

VPP Acceleration Initiative

Helps states, local governments, communities, and financial institutions deploy and scale virtual power plants (VPPs)—advancing affordability, strengthening grid reliability, and supporting decarbonization.

Our goal: Enable gigawatt-scale VPP deployment nationwide by 2028.

CleanEnergy States Alliance

WORLD RESOURCES INSTITUTE

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DSGS: California's Award-Winning Virtual Power Plant (VPP) Program



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Demand Side Grid Support (DSGS) Program

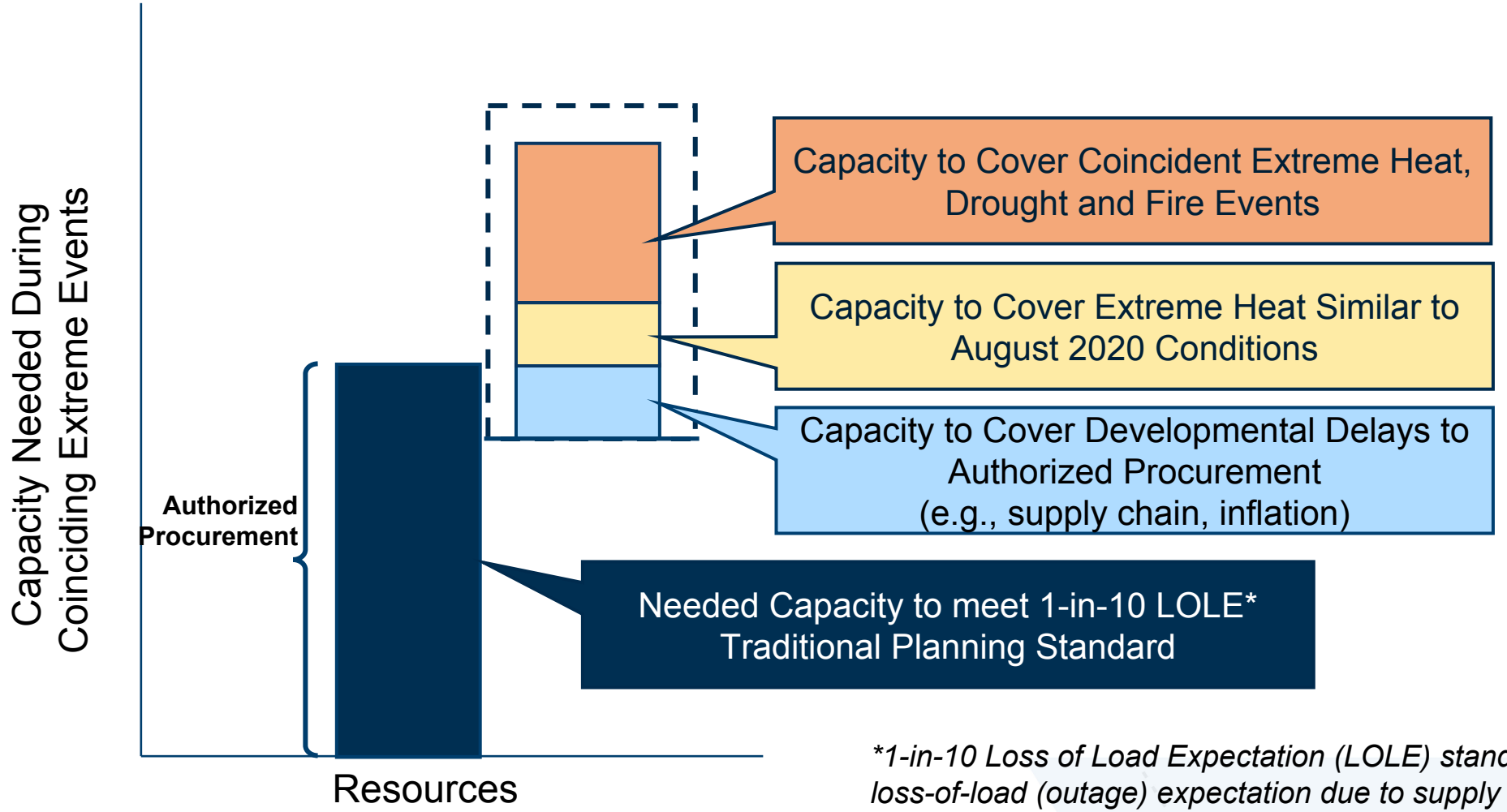
October 28, 2026

Agenda

Demand Side Grid Support (DSGS) Program

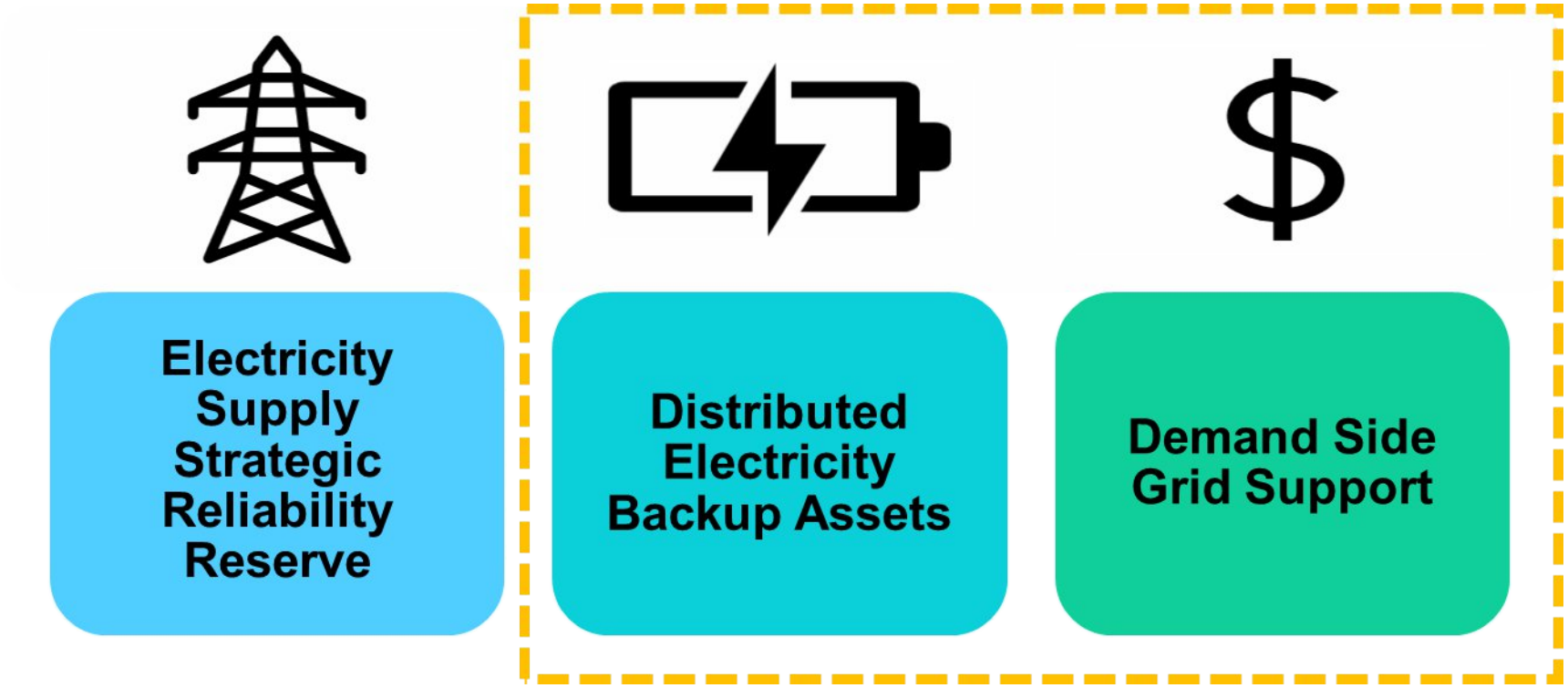
- Background on California's Strategic Reliability Reserve
- Structure of the DSGS Program
- Overview of DSGS Program Participation Options
- Spotlight on DSGS Virtual Power Plant Pilots:
  - Market-Aware Storage Virtual Power Plant Pilot
  - Emergency Load Flexibility Virtual Power Plant Pilot

Why a Strategic Reliability Reserve?



**1-in-10 Loss of Load Expectation (LOLE) standard is a loss-of-load (outage) expectation due to supply shortfall maximum of once in ten years.*

Strategic Reliability Reserve Portfolio



- *Grow clean Strategic Reliability Reserves that are incremental to Resource Adequacy (RA), without interfering with RA market*
- *Pilot new initiatives to help scale demand flexibility*

Demand Side Grid Support (DSGS) Program

Program months: May 1 – October 31

Program Administrator: Olivine, Inc.

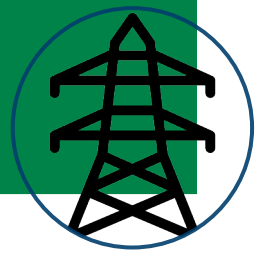
Enrollment

- Providers (retail suppliers and aggregators) enroll with CEC
- Customers enroll with a provider (or CEC in limited circumstances)
- Providers report participation to CEC



Participation

- 4 participation options
- Olivine (program administrator) issues event notifications to providers & direct participants
- Event reports sent to CEC & California ISO



Payment

- Providers pay incentives to their participants
- CEC pays providers eligible incentives and administrative costs post season

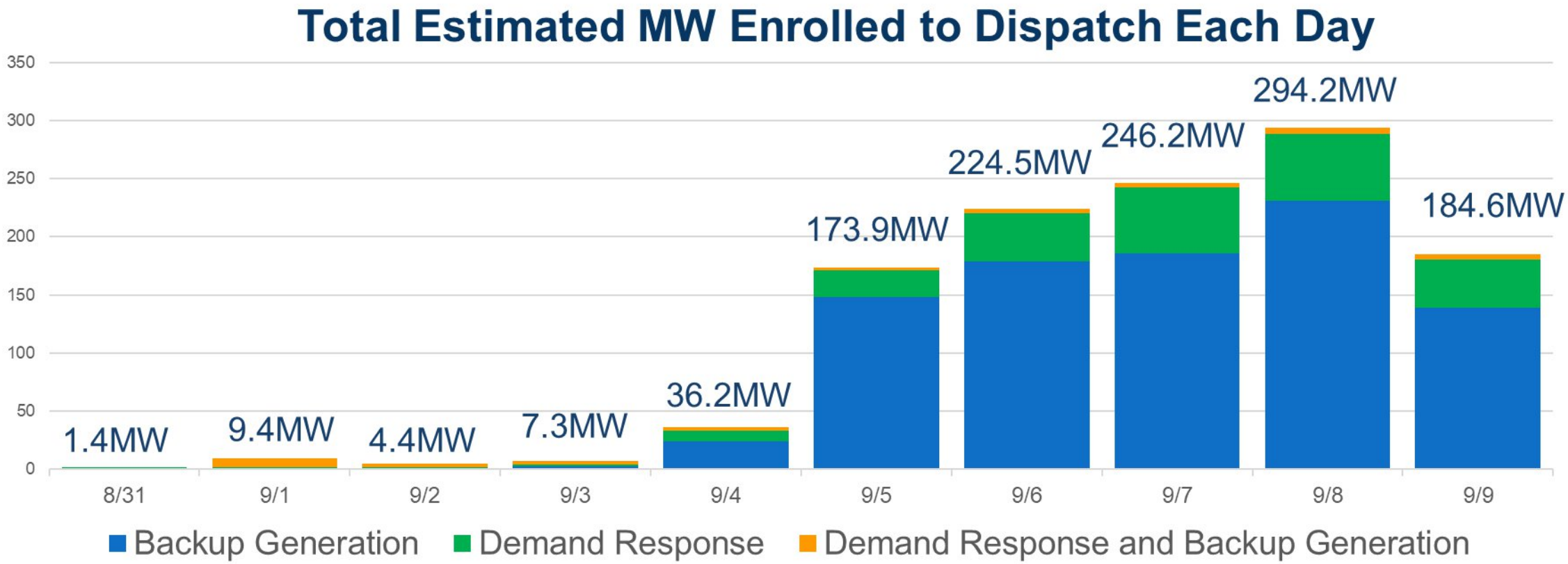


DSGS Participation Options

	Option 1 – Emergency Dispatch	Option 2 – Market Integrated Demand Response (DR) Pilot	Option 3 – Market Aware Storage Virtual Power Plant (VPP) Pilot	Option 4 – Emergency Load Flexibility Virtual Power Plant (VPP) Pilot
Eligible Resources	Any load reduction resource	Market-integrated demand response	Storage (batteries + V2X)	Smart thermostats, electric water heaters, EVSE, batteries, and residential smart electrical panels
Event Trigger	Energy Emergency Alert (EEA)	CAISO market bidding & scheduling	CAISO day-ahead energy market locational marginal price threshold and EEA	Energy Emergency Alert (EEA)
Incentive Structure	• Energy and standby payment	• Capacity payment based on DR resource's demonstrated capacity incremental to Resource Adequacy commitments • Incentive rate varies by month, nominated duration	• Capacity payment based on VPP's demonstrated capacity • Incentive rate varies by month, nominated duration • Energy payment for day-of EEA	• Capacity payment based on VPP's demonstrated capacity • Performance-adjusted incentive payment • Incentive rate varies by month
Launched	Summer 2022	August 2023	August 2023	May 2025

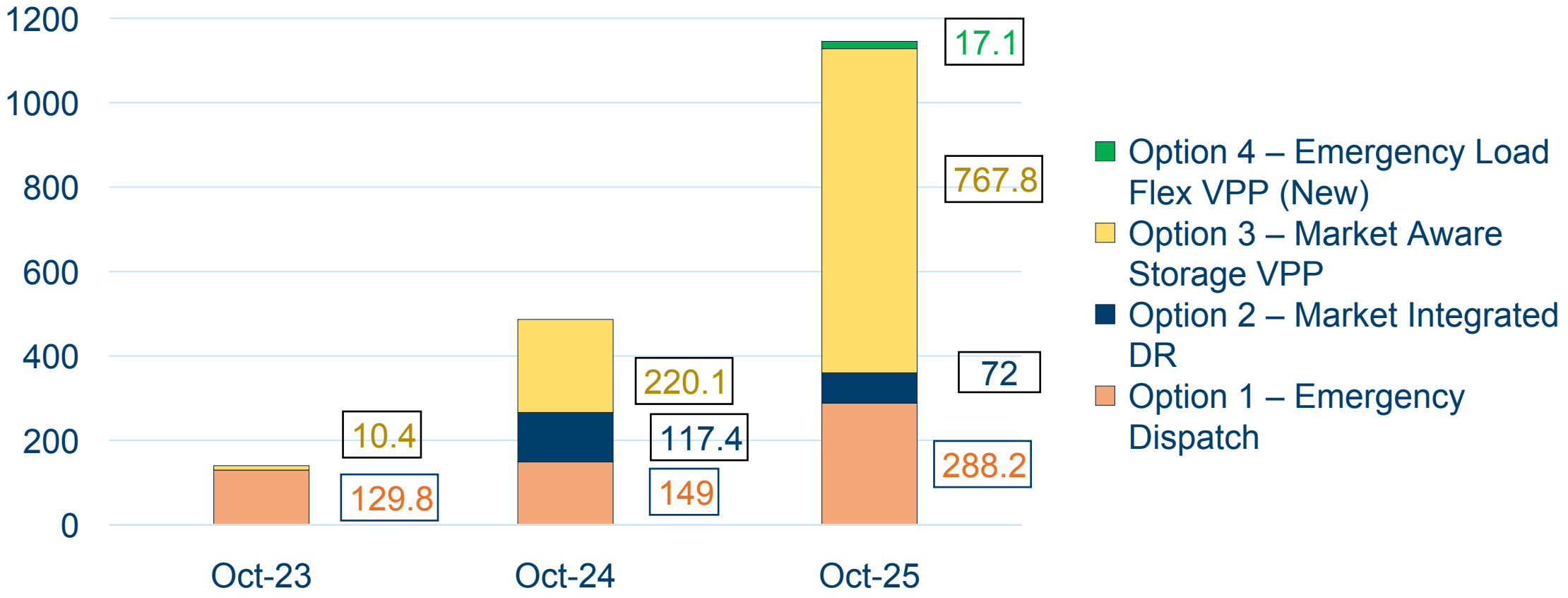
Summer 2022 Impact

- **Over 44** Individual Entities Participated
- **Over 315 MW** Enrolled
- **Over 3,189 MWh** Dispatch Compensated



Growth of DSGS Over Three Program Season

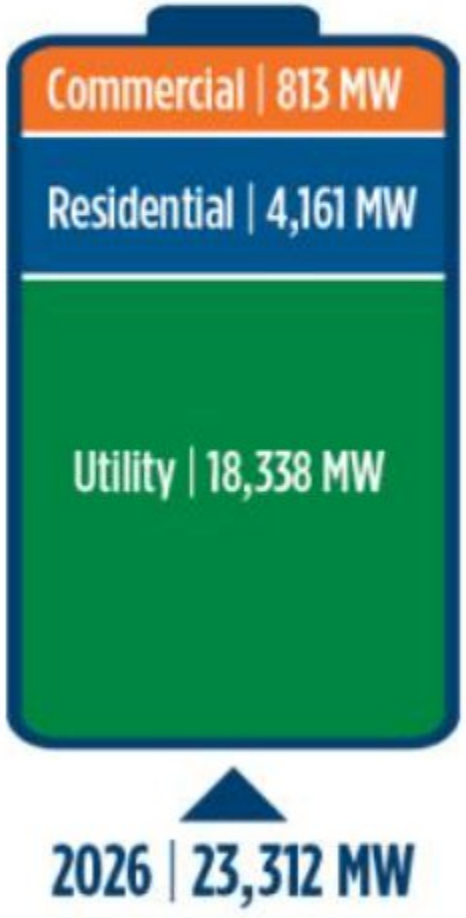
*Estimated Capacity Enrolled (MW)**



*Based on provider-reported estimates (ex-post performance data provided later in this presentation)

DSGS Virtual Power Plant Pilots

Energy Storage Deployment in California



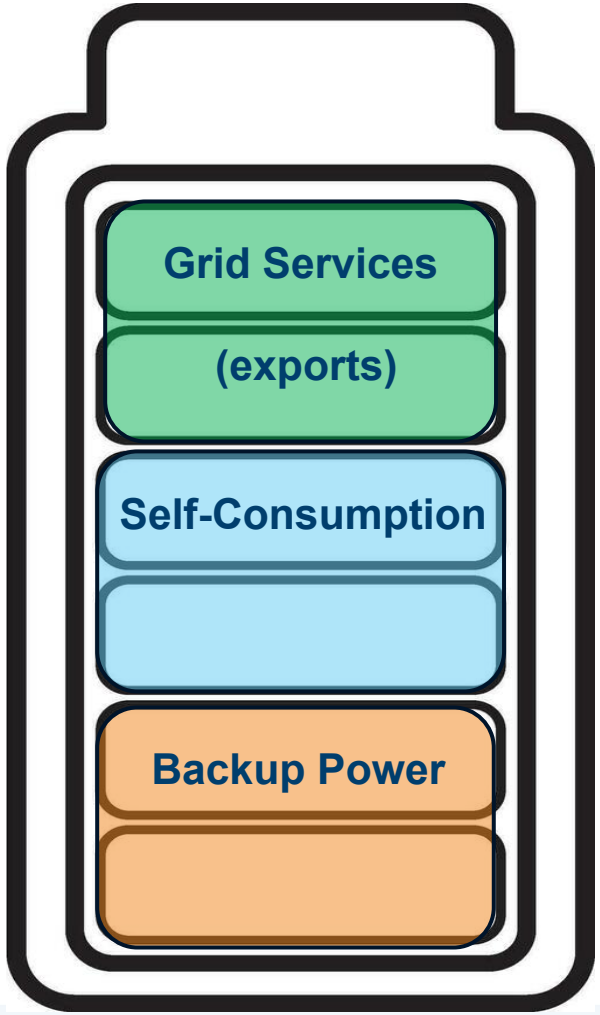
- Over 23 GW of energy storage installed in CA
- Over 20% of available market is enrolled in DSGS Option 3 - Storage VPP

Source: California Energy Commission

Option 3: Market-Aware Storage VPP Pilot

Key Features

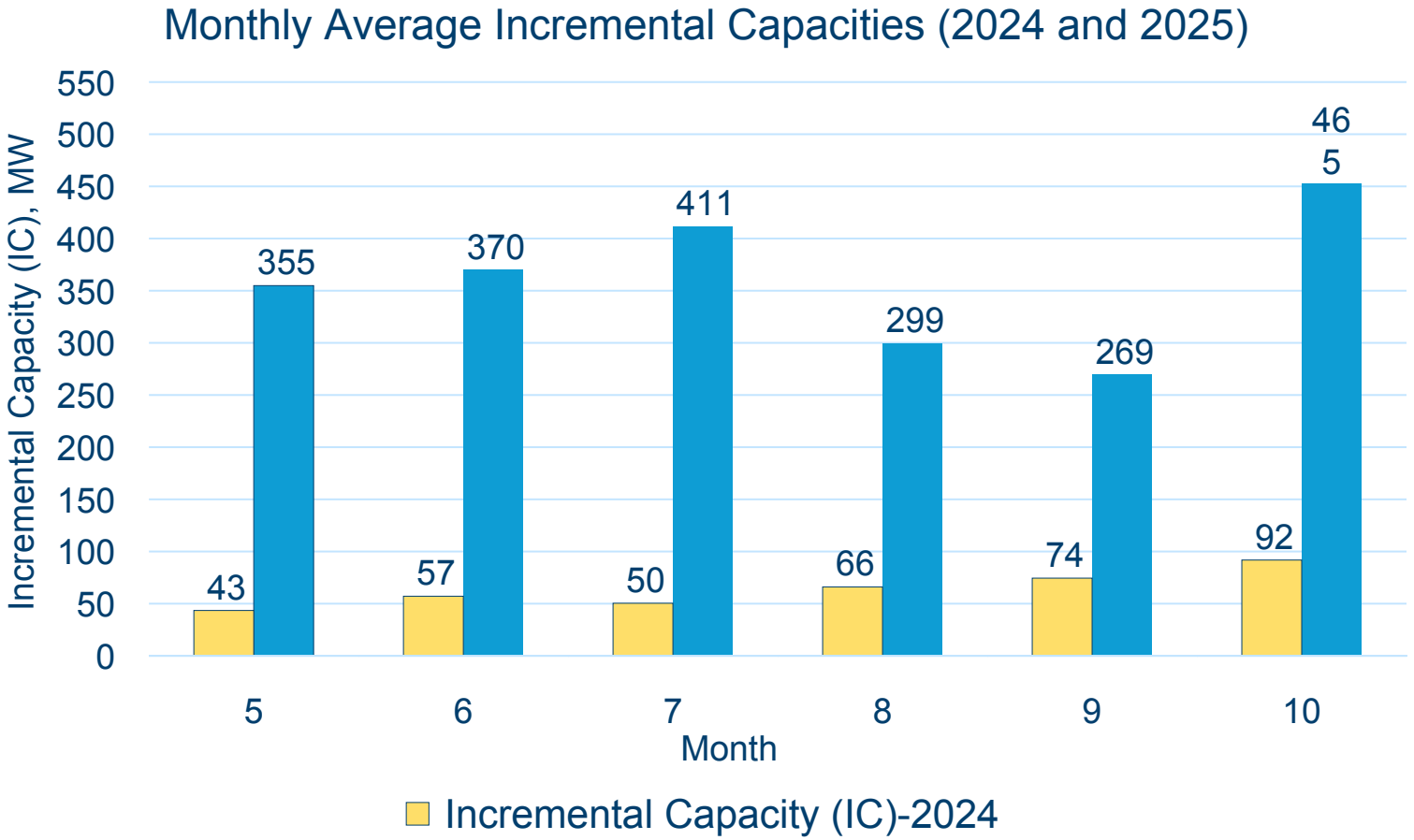
- Compensates only for the demonstrated discharge capacity delivered to the grid when dispatched (green slice)
- Performance-based capacity payments for 2- to 4-hour resources
  - Higher incentives for longer-duration resources
- Event triggers mimic economic dispatch intended to avoid emergencies



Evolution of Storage VPP Pilot

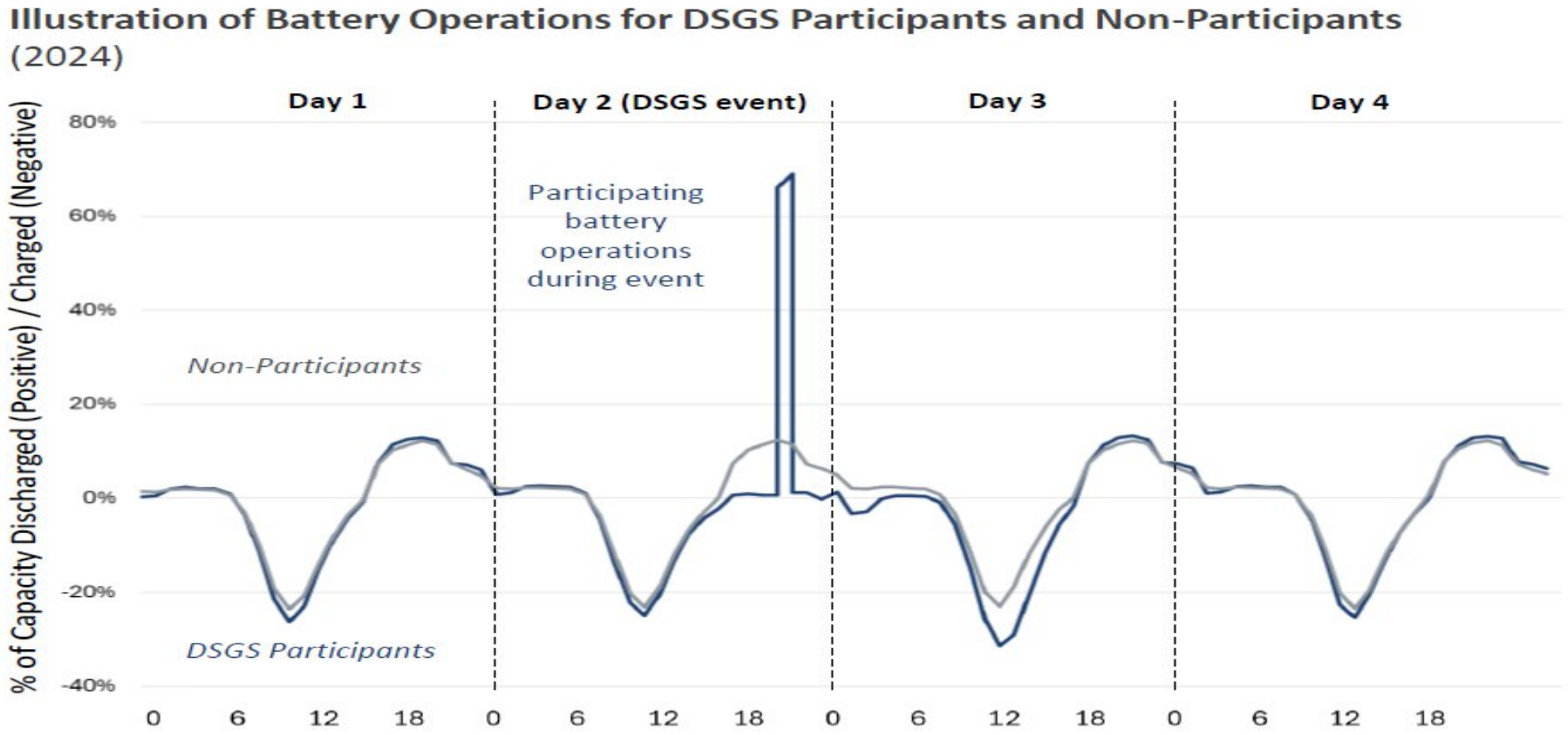
- Added bidirectional EVSE (2024)
- Added EEA triggers (2025)
- 3-consecutive day test in August (2026)

Monthly 2-hour residential VPP incremental capacity increased from 92 MW (Oct 2024) to 465 MW (Oct 2025)



Source: California Energy Commission

Independent Analysis of Incremental Performance



Notes: Telemetry data shown for June 26, 2024 through June 29, 2024 for Tesla Energy fleet. 7-9 pm on June 27, 2024 was a DSGS event. Figure has been updated since the initial report release (August 2025) due to updated processing of Tesla non-participant data.

Source: Brattle

Option 4: Emergency Load Flexibility VPP Pilot

Eligible Resource Types:

- Smart Thermostats & Electric Water Heaters

Program design:

- Up-front monthly capacity commitment
- Performance and compensation assessed monthly

M&V Approach:

- AC load: estimated connected load x runtime
- Water heater load: device-specific metered data

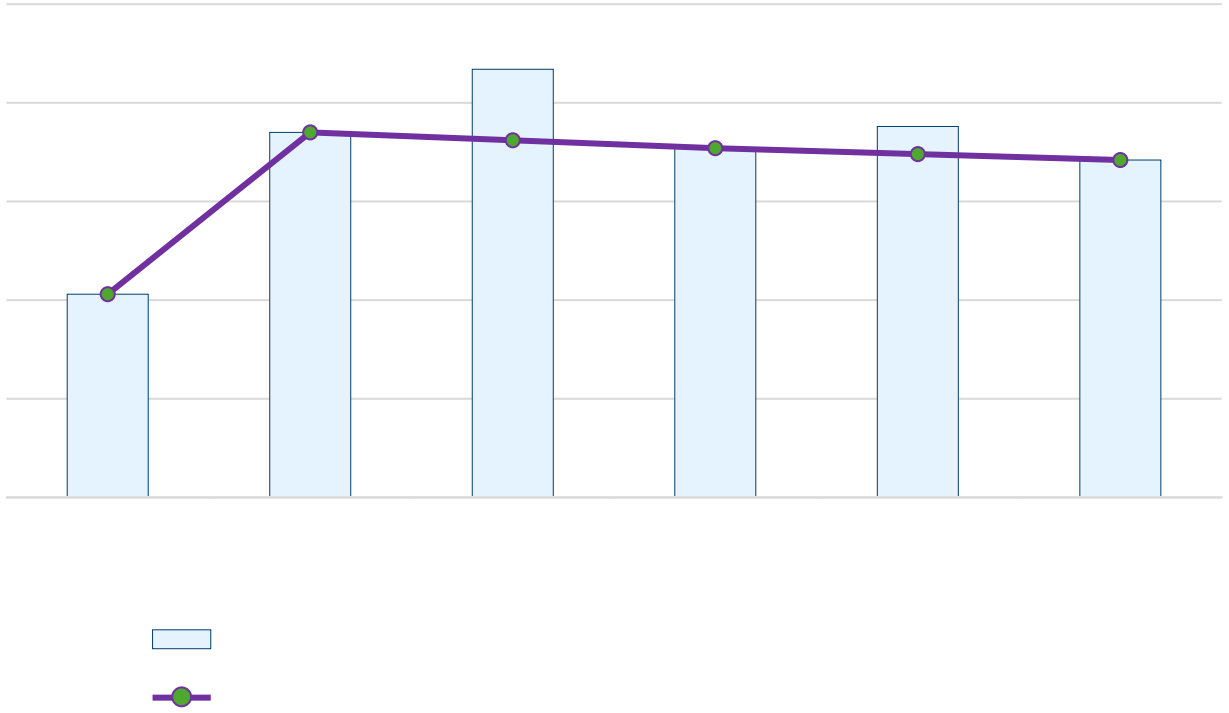
Events:

- Trigger: EEA Watch+
- Limit: 60 hours
- Minimum events: 2 events per season (test events called by CEC in absence of EEA events)



Option 4: 2025 Performance Analysis

- No EEAs issued in 2025
- CEC called test events in July and September
- July Demonstrated Capacity: 21.7 MW
- September Demonstrated Capacity: 18.8 MW



Source: California Energy Commission

Thank You!

Demand Side Grid Support Program

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- **DSGS Program website:** https://www.energy.ca.gov/programs-and-topics/programs/demand-side-grid-support-program