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R.25-10-003 Resource Adequacy Track 1 Issues

Ex Parte Meeting

CESA
CALIFORNIA ENERGY STORAGE ALLIANCE

Agenda

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Charging Sufficiency for Energy-Only Resources

Why EO resources must be recognized in the RA program

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Long-Duration Energy Storage (LDES) Accreditation

Getting the charging sufficiency methodology right for 8+ hour storage

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Protecting Commission jurisdiction and accurate QC values

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01

Charging Sufficiency for Energy-Only Resources

Why EO resources must be recognized in the RA program

- By deciding not to allow all EO resources to be used for charging sufficiency in the RA program, the Commission significantly undervalues storage relative to its real reliability value, ultimately impacting ratepayer costs.

The Commission Adopted and Transmitted to the CAISO for Transmission Planning a portfolio with Massive EO Deployment. RA Ignores It.

Base and Sensitivity Portfolios by Resource Type*

Resource Type	2035 Base Portfolio			2040 Base Portfolio			2035 Sensitivity Portfolio		
	FCDS (MW)	EO (MW)	Total (MW)	FCDS (MW)	EO (MW)	Total (MW)	FCDS (MW)	EO (MW)	Total (MW)
Solar	5,928	13,690	19,618	14,289	30,270	44,559	5,696	11,860	17,556
Wind – In State	6,739	1,156	7,895	6,739	1,156	7,895	5,969	954	6,923
Wind – Out-of-State	9,000	0	9,000	10,707	0	10,707	7,000	0	7,000
Wind - Offshore	4,531	0	4,531	4,531	0	4,531	7,555	0	7,555
Li Battery – 4 hr	27,398	0	27,398	23,984	0	23,984	27,511	0	27,511
Li Battery – 8 hr	2,543	0	2,543	11,112	0	11,112	1,011	0	1,011
Long Duration Energy Storage (LDES)	1,297	0	1,297	1,297	0	1,297	2,718	0	2,718
Geothermal	1,649	0	1,649	1,659	0	1,659	2,149	0	2,149
Biomass/Biogas	168	0	168	168	0	168	168	0	168
Distributed Solar	0	294	294	0	294	294	0	280	280
Net Dependable Gas Capacity not Retained	0	0	0	0	0	0	0	0	0
Total	59,250	15,140	74,390	74,486	31,720	106,206	59,777	13,094	72,871

* The numbers in the table include the portfolio adjustments presented in the following slides

The Current RA Framework Undervalues Energy-Only Resources

EO resources valued at zero for charging

The current rules assign zero charging sufficiency value to standalone Energy Only resources, despite CAISO studies showing ~12,000 MW of EO resources are off-peak deliverable.

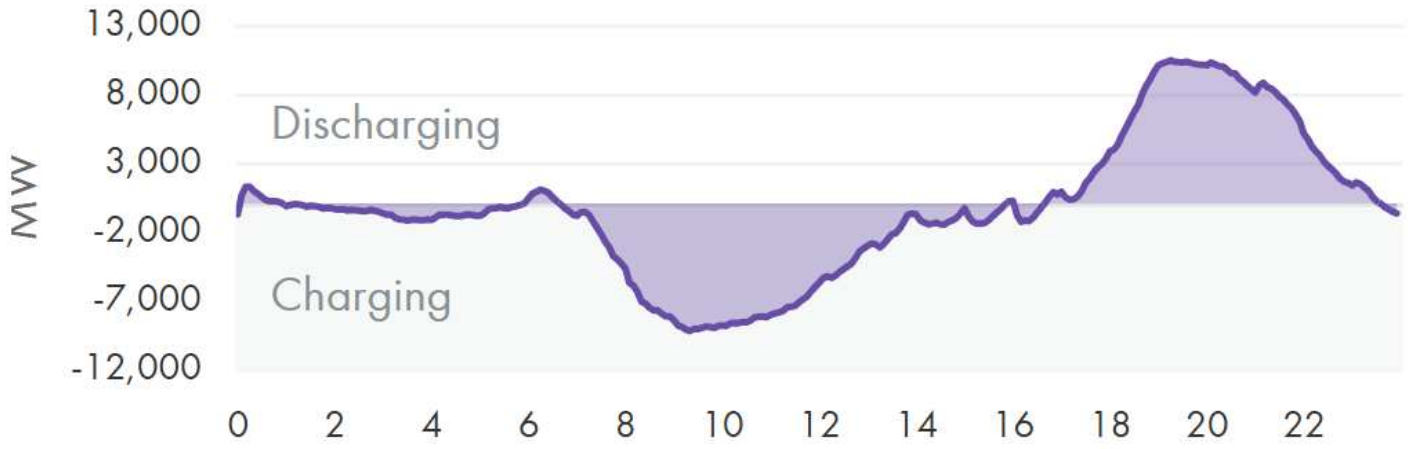
Storage charges off-peak, not at peak

Storage resources typically charge mid-day when solar is abundant, not during peak hours. Yet RA deliverability requirements focus on peak-hour delivery.

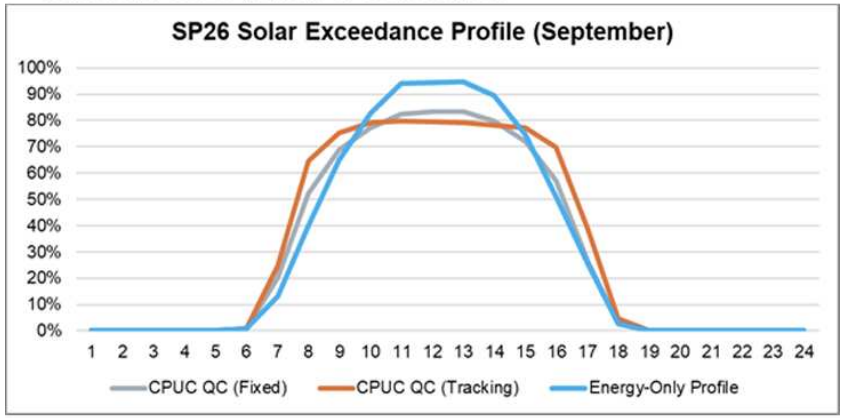
Forces costly over-procurement

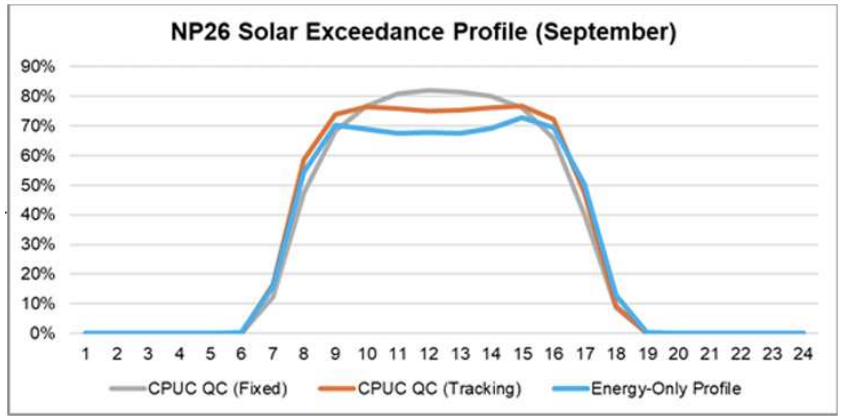
If LSEs are forced to contract only with more expensive fully-deliverable resources for charging, rates will increase.

Energy storage resources charge from all available energy, and “Energy Only” resources produce a lot of energy



** Based on PG&E's portfolio of EO resources*





EO Resources Can Reliably Charge Storage

- **CAISO's Deliverability Studies and underlying study methodology are completely un-aligned with the Slice of Day Framework**
  - CAISO's results are meaningless from a charging sufficiency standpoint
- **CAISO has not shared requisite details on a new study methodology, inputs, & assumptions to ensure such a study would be aligned with the SOD Framework's charging sufficiency test**

Charging sufficiency ≠ a deliverability question

EO Resources Can Reliably Charge Storage — The Evidence

~12 GW	EO resources granted off-peak deliverability (OPD) status by CAISO
93%	of SOD hours are off-peak, when transmission is lightly loaded and congestion is minimal
PG&E data	shows EO solar produces in all hours, matching FCDS resource profiles — with comparable curtailment rates
IRP assumed	EO resources charge storage without significant constraints — this must be reflected in RA rules too

CESA's Proposal: Allow EO Resources to Meet Charging Sufficiency

PROPOSED FRAMEWORK

✓ EO resources within the same pricing zone (NP-15, ZP-26, SP-15) may count toward charging sufficiency

✓ Eligible during off-peak SOD hours only — when storage typically charges

✓ Light-touch validation: LSE attestation that resource is contracted and will bid into CAISO markets

✓ Expand to NP26 / SP26 zones where needed to reflect renewable geography

✓ CAISO's proposed Nov 2026 study can fine-tune but must NOT delay implementation

WHY ACT NOW

! IRP orders 9 GW/yr of new wind & solar — most will be Energy Only

! Storage deployment decisions are being made NOW without clear charging rules

! Cluster 16 developers need clarity by Oct 2026 or EO resources won't be developed at scale

! Delay forces LSEs to contract more expensive FCDS resources, raising ratepayer costs

! EO resources already funded by ratepayers — delay denies them the value they paid for

The risk of EO curtailment in off-peak hours is minimal — far outweighed by the reliability and affordability impacts of NOT counting EO resources.

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02

Long-Duration Energy Storage (LDES) Accreditation

Getting the charging sufficiency methodology right for 8+ hour storage

- 24-hour charge/discharge requirement is incompatible with multi-day storage (LDES)
- Excluding LDES from RA accreditation will drive higher long-term procurement costs

LDES Is Designed to Shift Energy Across Multiple Days — Not Cycle Daily

Days 1–8 Before Worst Day → **Approaching Worst Day** → **Worst Day (SOD Period)**

Grid has lower load & surplus renewables. LDES charges from abundant, cheap energy.

LDES maintains high state of charge, ready for the reliability event.

LDES dispatches stored energy to serve peak loads. This is its primary purpose.

We're here with SOD

How do we get here?

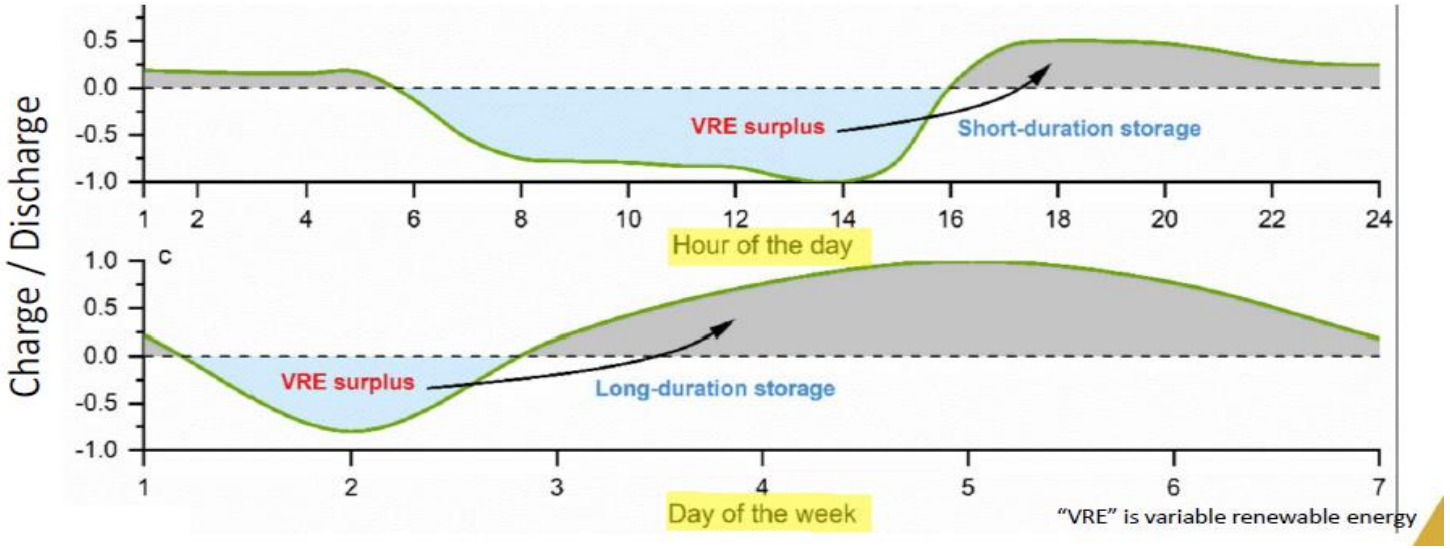


**Image from Cal Advocates' November 4, 2025 workshop presentation*

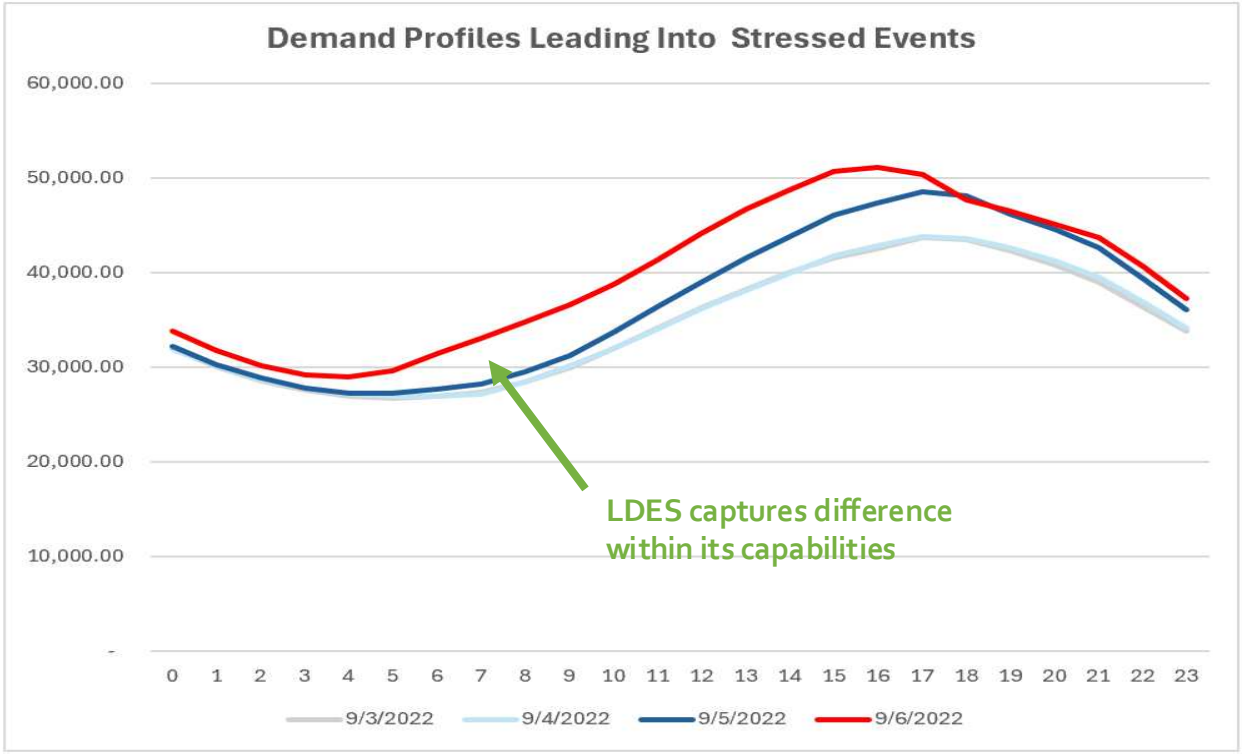
Single-day focus of Slice-of-Day puts LDES at a competitive disadvantage

- **LSEs currently value LDES the same as cheaper shorter duration storage resources**
  - LSEs procure the cheaper storage solution, which does not provide equivalent value
- **Single-day program is missing:**
  - Ability to carry-over excess energy from prior days
  - Ability to provide reliability over multiple days
- **Unrealistic assumptions and constrained program design will lead to higher costs**

Load Differences Leading into "Worst Days" Allow Large Amounts Of Excess Energy

Available Excess Energy From Load Differences	
Prior 3-days Excess Energy (MWh)	313,040
Prior 2-days Excess Energy (MWh)	189,063
Prior 1-day Excess Energy (MWh)	68,658

Prior 3-day Excess Energy From Load Differences Supports	
100-Hour Duration (MW)	1,878.24
24-Hour Duration (MW)	9,130.33
8-Hour Duration (MW)	31,303.99
4-Hour Duration (MW)	70,433.98



Key Takeaway: The solution must reflect load profile differences between worst and non-worst days

Data Confirms: Massive Surplus Energy Exists in Days Before Grid Stress

222 GWh

Average additional surplus energy in 3 days before worst day (CAISO system, 2030)

559 GWh

Average additional surplus energy in 8 days before worst day (CAISO system, 2030)

10–25+ GW

Estimated LDES capacity that could be charged from this surplus energy

PG&E Service Area Alone

3-day surplus avg: 93 GWh | 8-day surplus avg: 237 GWh

Sept 2022 heatwave data (Joint CCAs): The 4-day and 8-day periods before the peak had 13% and 10% lower average demand respectively — confirming surplus even during real crisis events.

Source: IEPR 2025 forecasts; CESA/Joint LDES Parties analysis; Joint CCAs September 2022 data

The Right Solution: CESA's Multi-Day Charging Sufficiency Proposal

🔋 Full Physical Duration Credit

LSEs may show LDES resources for their full physical duration (up to 24-hour SOD limit), provided charging energy can be demonstrated.

📅 Multi-Day Pre-Charging Period

Charging energy is drawn from 2–8 days before the worst day, scaled to physical resource duration. Reflects how LDES actually operates.

⚡ 50% Initial State of Charge

LDES resources are assumed to be 50% charged at the start of the pre-charging window — a conservative but realistic mid-point. Not 0%.

📊 IEPR-Based Monthly Slack Values

Monthly surplus 'slack' values from IEPR forecasts quantify available charging energy — simple, auditable, no bespoke data from each LSE.

🔄 Updatable Over Time

Initial assumptions to be refined as real operational data from the growing LDES fleet becomes available.

⚖️ Technology-Neutral & Non-Discriminatory

Applies consistently to all 8+ hour storage resources. No multi-day dispatch mandate not applied to gas or shorter-duration storage.

Cal Advocates' MDESR Proposal Has Critical Flaws

X

Flaw 1: Assumes worst-day conditions on ALL prior days

Cal Advocates' MDESR assumes the supply & load on the days before the worst day are identical to the worst day itself. By definition, prior days have lower load and more surplus energy. IEPR data proves this.

X

Flaw 2: Assumes LDES starts at 0% state of charge

LDES is specifically designed to carry charge across multiple days. A 0% starting assumption treats these resources like daily-cycling batteries — ignoring their core purpose and penalizing their value unfairly.

X

Flaw 3: Forces ratepayers to pay twice for the same reliability

By requiring LSEs to find charging energy during the most expensive hours (the worst day), MDESR forces procurement of redundant peak-day capacity.

X

Flaw 4: Discriminatory one-size-fits-all multiplier

MDESR applies a uniform 4-day charging period and multiplier to all multi-day resources, regardless of physical duration. A 100-hour storage system has fundamentally different characteristics than a 10-hour one.

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03

UCAP & Forced Outage Definition

Protecting Commission jurisdiction and accurate Qualifying Capacity values

- Forced outage definition drives capacity credit → capacity credit drives RA revenue
- Ambiguous definitions not controlled by the Commission create revenue uncertainty, raising financing costs and slowing storage deployment

The Commission Must Define 'Forced Outage' — Or Cede Jurisdiction

⚠ THE RISK

- If the Commission's forced outage definition relies on CAISO BPM language, CAISO can effectively change QC methodology through BPM updates — without a Commission decision
- CAISO modified outage definitions TWICE in 2025 through unexpected BPM updates
- Each change can alter what counts as a 'forced outage' and shift QC values for resources — covertly and without Commission oversight
- SCE highlights the contractual importance of a stable, clear definition — ambiguity creates risk for all parties

✓ CESA'S PRINCIPLES

✓ Comparable across resource classes — technology-neutral

✓ Reflects equipment failures or imminent equipment failures causing loss of capability

✓ Excludes outages used to accurately dispatch a resource within design specifications (e.g. foldback)

✓ Excludes events outside management control (fuel supply interruptions, CAISO directives, etc.)

✓ No reliance on CAISO tariff or BPM definitions — Commission retains full control

01

Charging Sufficiency for Energy-Only Resources

Charging sufficiency is not a deliverability question. Existing data already shows EO resources reliably deliver energy during off-peak charging hours. Waiting for CAISO's study delays action the existing record already supports.

02

Long-Duration Energy Storage (LDES) Accreditation

LDES is designed to move cheap, abundant energy into grid stress events, not cycle daily. Ignoring the days before the worst day doesn't just undervalue LDES; it sends the wrong procurement signal and drives up long-run system costs.

03

UCAP & Forced Outage Definition

Capacity credit drives RA revenue, and an unstable definition causes revenue and market uncertainty

Thank You!