

2027 Resource Adequacy (RA) Implementation Workshop

Energy Division

August 13, 2026



California Public
Utilities Commission

Agenda

- 1. 2027 Hourly Load Forecast Overview (Lynn Marshall, CEC)**
- 2. Review of Policy and Implementation Updates from D.26-07-008 Track 1 Decision**
 - a. Long Duration Energy Storage (LDES) Resources
 - b. Energy-Only Resources
 - c. Charging Sufficiency Penalty Implementation
 - d. Central Procurement Entity (CPE) Framework Updates
 - e. Demand Response Qualifying Capacity Values
 - f. Other Track 1 Updates Relevant for 2027 Compliance Year
- 3. Review of LSE Showing Template Updates**
- 4. Questions and Discussion**

Logistics

- All attendees have been muted.
- To ask questions, please "raise your hand"  and a moderator/presenter will unmute you so you can ask your question.
- If you would rather type, use the Q + A function and send to "all panelists". Q + A questions will be read aloud by moderators/presenters; attendees may be unmuted to respond to the answer verbally.

*Reminder: Please press mute when done speaking



- Please silence and remove all AI-generated conversations and notifications to avoid cluttering the chat and Q & A forums
- Use chat only for webinar logistics questions and not substantive comments or questions.

Mute/ Unmute

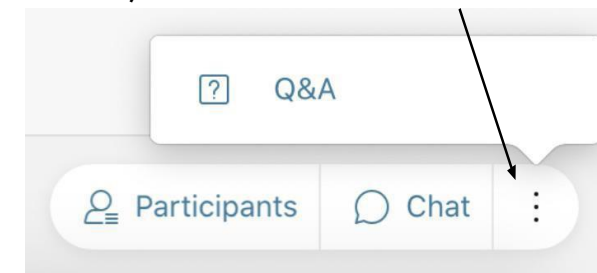
Participant List

Chat

Audio Options



Q + A: on the bottom right of screen, click "3 dots"



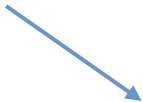
CEC 2027 RA Slice of Day Load Forecast

SOD Implementation Updates

Long Duration Energy Storage (LDES) Resources

- For compliance year 2027 batteries with a discharge duration of **8 hours** or greater will receive a multiplier (called the forward charging period, or FCP), that recognizes the charging flexibility LDES resources have.
- Examples:
 - A 10 MW, 13-hour battery can discharge 130 MWh. If its round-trip efficiency (RTE) were 70%, its charging need would be 185.71 MWh. This resource has a 3x FCP, meaning that it needs 185.71 divided by 3, or 61.9 MWh.
 - A 10 MW, 50-hour battery can discharge a maximum of 24 hours in a day, which would be 240 MWh. If its RTE were 50%, the energy requirement would be 480 MWh. This resource has a 7x multiplier, meaning that its RA charging requirement is 480 divided by 7, or 62.57 MWh.

Lookup Table from SOD
Compliance Tool Rev38



Long Duration Energy Storage Charging Requirement		
Minimum Duration	Maximum Duration	Multiplier
0	8	1
8	12	2
12	16	3
16	20	4
20	24	5
24	48	6
48	72	7
72	999	8

Storage QC and the MRD

1. Battery storage QC is calculated as the difference between the `MAX_CONT_ENERGY_LIMIT` and the `MIN_CONT_ENERGY_LIMIT` in the *Master File*. The result is **Energy per Cycle** (formerly Max Continuous Energy).
 - This value is divided by 4, with **QC** as the result (if the resource exceeds four hours in duration, the Pmax will be the QC).
2. Additional column designating the *discharge duration* of batteries. This value is **Hours Continuous Duration** and is equal to Energy per Cycle divided by Pmax/NDC.
3. The energy used in RA Compliance should *not* include foldback. CAISO has requested that storage operators adjust the `MAX_CONT_ENERGY_LIMIT` and the `MIN_CONT_ENERGY_LIMIT` so that they do not include the foldback range. We will continue to use these values for calculation until CAISO updates its Master File parameters to explicitly identify foldback.

MRD (several columns hidden for clarity)

M	P	U	AA
Pmax/NDC	Energy per Cycle (MWh)	Hours Continuous Duration	JAN
20			0.1
20			0.1
290			0.0
123			0.1
82	328	4	82.0
674.7			674.7
100.45	400	3.98	100.0
17			3.0
50			0.1
0.52			0.4
50	190	3.8	47.5
125			0.1
100			0.1
100			0.1
132			0.1
25			23.4
20	80	4	20.0
40			0.1
20			0.1
2.68			0.0
250			0.1

Energy Only (EO) Resources

- D.26-07-008 modified the charging sufficiency value that co-located EO resource provide.
 - EO that is co-located with deliverable storage resource may count for portfolio charging sufficiency, subject to point of interconnection (POI) limit.
 - Charging sufficiency refers to energy required, beyond RA obligations, to cover the charging needs of storage MWh in LSE showings.
 - Changes implemented via 2027 SOD Showing Template in *Check Capacity* worksheet, *Energy-Only Charging Capacity to Grid (MWh)* column.
 - EO charging sufficiency value remains bundled with the shown storage resource.

Charging Sufficiency Penalty Implementation

- D.26-07-008 incorporates charging sufficiency deficiencies into the RA penalty structure, effective for the 2027 RA compliance year.
- The daily MWh charging sufficiency shortfall is converted to a 24-hour flat-profile MW equivalent, which is applied evenly across all 24 hourly system positions across an LSE's compliance showing. The hour with the largest resulting MW deficiency remains the basis for the penalty assessment, consistent with the existing penalty structure.

$$24 \text{ Hour Flat Profile Equivalent Charging Deficiency (MW)} = \frac{\text{Charging Sufficiency Deficiency (MWh)}}{24}$$

Central Procurement Entity (CPE)

CPE-IOUs are directed to:

- Assess local sufficiency at the Local Capacity Area (LCA) and sub-LCA levels before conducting procurements (OP 23)
- Demonstrate in their Annual Compliance Reports (ACR) how contracted capacity meets sub-LCA needs + how total capacity informed procurement determinations (OP 23)
- Account for storage charging limits when conducting procurements (OP 23)

Energy Division will post in CPUC RA website the local RA data gathered from annual data request to LSEs + CPEs in aggregated, anonymized format. (OP 22)

Demand Response

For Demand Response Providers (DRPs) and LSEs showing DR:

- Energy Division will send CAISO three monthly values:
 - (a) maximum showing value;
 - (b) peak showing value;
 - (c) avg. hourly MW over the Availability Assessment hours the resources is available. (OP 12)
 - If resource available >4 hours, Energy Division will establish on a per-DRP basis which four-hour period to use for CAISO NQC list
- The availability basis will apply to the average; count only AAH hours the resource is available (min. four consecutive hrs., per D.23-06-029)

Other Track 1 Updates Relevant for 2027 Compliance Year

Under Construction Flexible Resources in YA Showings

- Beginning with CY 2027, under-construction Flexible resources may be counted toward YA requirements. Energy Division will verify that under-construction resources are flex-eligible based on the Master Resource Database (MRD). Any resource that is not included in the year-ahead MRD will not count towards YA Flexible RA compliance.

Off-peak Imports in Q3

- The Q3 off-peak import counting rule adopted in D.25-06-048 is extended to future Q3 months

D.26-07-008 adopted several policy and implementation changes that will apply beginning in Compliance Year 2028. We will not cover those in this presentation, but any questions can be directed to Energy Division or brought to the RA Proceeding.

Year-Ahead RA Filing Templates

2027 YA Filings: SOD System, Local, and Flexible

Similar to 2026 YA Showings, two separate filing templates are required for 2027 Year-Ahead Compliance:

System YA Showing

- Use the **SOD Showing Tool**
 - All LSEs are required to make a System YA Showing using the SOD Showing Tool for May - September

Local and Flexible YA Showing; CPE Data Collection

- Use the **Local, Flexible RA and CPE Data Reporting Template**
 - All LSEs are required to demonstrate compliance with Flexible RAR for all 12 months of 2027
 - LSEs in SDG&E's TAC are required to meet Local RAR for all 12 months of 2027, 2028, and 2029
 - LSEs in the PG&E and SCE TAC complete the CPE Data Collection worksheet. All LSEs use CPE Data Collection tab to list RA resources not shown on supply plan.

2027 SOD Showing Template Updates

- LDES Forward Charging Period (FCP) multiplier incorporated into *Check Capacity* worksheet, *Grid Charging Requirement* column.

$$\text{Grid Charging Requirement} = \sum \left(\frac{\left(\frac{\text{MWh Shown Storage}}{\text{RTE}} \right)}{\text{FCP}} - \text{Onsite Undeliverable Energy} \right)$$

- Co-located energy-only charging sufficiency calculation utilizes *Paired Resources* worksheet and shows results in *Check Capacity* worksheet.
 - *Paired Resources* lists all co-located generation resources in the resource group (include FC, PD, ID, and EO). Shows hourly generation profiles without POI limits applied and provides total Undeliverable Capacity (MWh) value.
 - *Check Capacity* shows co-located EO charging sufficiency value, (any) on-site undeliverable energy, and total charging requirement for storage resources.

Co-located EO Examples

Table 1: Charging value from co-located EO is credited towards portfolio's overall charging requirement

Resource ID	Colocated ID	Resource Type	Deliverability	Pmax	NQC Under Contract	POI	Undeliverable Energy (MWh)	Energy-Only Charging Capacity to Grid (MWh)	Grid Charging Requirement (MWh) **	Storage Excess Capacity
BELLEF_2_BSFBX3	BELLEF_2_BSFSX3	Paired_BattStorage	FC	500	100			932.88	500	Pass
BELLEF_2_BSFSX3 *	BELLEF_2_BSFBX3	Paired_Solar_1Axis	EO	500			932.83			
DYLAN_2_BMTBT1		Battery_Storage	FC	100	85				400	Pass

* EO resource doesn't need to be entered in LSE Showing but shown here for illustrative purposes.

** Bellef RTE 80%, Dylan RTE 85%.

For above example, assume May showing and refer to:

Pair Resources worksheet for fields in **YELLOW**

Check Check worksheet for fields in **PURPLE**

Validation Overview for fields in **GREEN**

Co-located EO Examples – Multiple IDs

Table 2: Demonstration of EO Charging Sufficiency calculation with adherence to POI limits

Row #	Source Sheet		Status	Deliverability	POI	HE 1	HE 6	HE 7	HE 8	HE 9	HE 10	HE 11	HE 12	HE 13	HE 14	HE 15	HE 16	HE 17	HE 18	HE 19	HE 20	HE 24	Undeliverable Capacity (MWh)	Total Energy (MWh)	Charging Requirement (80% RTE)
1	Paired Resources	MSTANG_2_SOLAR	EO		100	-	3.30	15.57	21.95	22.96	22.99	22.78	23.26	23.26	23.80	23.79	23.27	21.93	13.57	2.11	-	-	264.53		
2	Paired Resources	MSTANG_2_SOLAR3	PD	100%	100	-	4.40	20.76	29.27	30.61	30.65	30.37	31.02	31.01	31.73	31.72	31.02	29.24	18.09	2.81	-	-	-		
3	Paired Resources	MSTANG_2_SOLAR4	PD	100%	100	-	3.30	15.57	21.95	22.96	22.99	22.78	23.26	23.26	23.80	23.79	23.27	21.93	13.57	2.11	-	-	-		
4	Check Capacity	MSTANG_2_MTGBT1	FC		100	-	-	-	-	-	-	-	-	-	-	-	-	75.00	75.00	75.00	75.00	-	-	300.00	375.00
5		Hourly Delivered Energy [MIN(2+3+4,POI)]				-	7.70	36.33	51.23	53.56	53.63	53.15	54.28	54.27	55.52	55.51	54.29	100.00	100.00	79.92	75.00	-			
6		EO Charging Value to Grid [MIN(POI minus 5, 1)]				-	3.30	15.57	21.95	22.96	22.99	22.78	23.26	23.26	23.80	23.79	23.27	-	-	2.11	-	-		229.03	
7		EO Undeliverable Energy [1 minus 6]				-	-	-	-	-	-	-	-	-	-	-	-	21.93	13.57	-	-	-		35.50	

* Mustang BESS with custom profile in HE 17-20 for month of May. For ease of example, SOLAR3 updated to 100% deliverability.

Table 3: SOD Check Capacity worksheet, May showing

Shown Resource ID	Energy-Only Charging Capacity to Grid (MWh)	Onsite Undeliverable Capacity (MWh)	Grid Charging Requirement (MWh)
MSTANG_2_MTGBT1	229.03	35.50	339.50

Values in Table 3 are replicated in Table 2, where Grid Charging Requirement equals 375 minus 35.5 MW, and EO charging sufficiency value to the grid is 229 MW.

Upcoming 2027 RA Compliance Dates

Aug 10, 2026	Final date to file revised load forecasts for 2027
Aug 18, 2026	Informal comments on 2027 MRD due to CPUC
Aug 19, 2026	Comments and requests for modifications on 2027 NQC List due to CAISO
Aug 19, 2026	CPEs make local showing for 2027, 2028, and 2029 for PG&E and SCE Local Areas.
Aug 20, 2026	Informal Comments on Draft 2027 RA Compliance Materials Due
Aug 26, 2026	LSEs receive updated CPE CAM allocations
Sept 18, 2026	CPE Annual Compliance Report filed by PG&E-CPE + SCE-CPE
Sept 18, 2026	LSEs receive revised 2027 RA Requirements and Allocations
Nov 2, 2026	2027 YA Filings Due. LSEs in the SDG&E TAC make system, flexible, and three-year local RA showing; LSEs in PG&E and SCE TACs make year-ahead system and flexible showings

Additional Comments or Questions?





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