



California ISO

Energy Storage Enhancements Second Revised Straw Proposal

July 28, 2022

Gabe Murtaugh, Storage Sector Manager

Agenda

Time	Item	Speaker
9:00-9:10	Introductions and Stakeholder Process	Brenda Corona
9:10-9:15	Changes from the RSP	Gabe Murtaugh
9:15-9:35	Reliability – AS, Operational Experience	Ali Miremadi
9:35-9:55	Reliability – Ancillary Service	Gabe Murtaugh
9:55-10:10	Reliability – Local Areas	Gabe Murtaugh
10:10-10:30	Reliability – Exceptional Dispatch	Gabe Murtaugh
10:30-11:00	Co-Located Model	Gabe Murtaugh
11:10-12:00	Next Steps	Brenda Corona

ISO Policy Initiative Stakeholder Process

PROPOSAL DEVELOPMENT

Issue paper and working groups

↳ Straw proposal

Draft final proposal

Draft business requirement specification

Draft tariff and business practice manual revisions

Final proposal

DECISION

ISO Board

EIM Governing Body

Tariff filing

FERC

IMPLEMENTATION

Business practice manual

Training

Market simulation

Go Live



Stakeholder input

We are here

The ISO received requests to discuss the addendum to the second revised straw proposal

- This stakeholder meeting will allow for discussion of the addendum to the proposal
 - Discussion will only focus on addendum, not other topics
 - Will not include other aspects of the proposal

Discussion in this meeting will include:

- Refresher on the default energy bid
- Proposed change to the day-ahead default energy bid
- Comments will be due August 4th, one week from today
 - The ISO expanded the comments template to include an area for responses to the addendum

Energy Storage Enhancements Timeline

Thur 6/30:	Post Second Revised Straw Proposal
Thur 7/7:	Stakeholder Meeting (RSP2)
<i>Mon 7/18:</i>	<i>Post Addendum</i>
<i>Thur 7/28:</i>	<i>Stakeholder Meeting (Addendum)</i>
<i>Thur 8/4:</i>	<i>Comments Due</i>
Mid/Late Aug:	Draft Final Proposal/Meeting
Sept:	Post Final Proposal
Q4 2022:	Board of Governors Meeting

DAY-AHEAD DEFAULT ENERGY BID FOR STORAGE

The ISO developed a default energy bid that follows three fundamental principles

- The default energy bid should capture costs storage resources pay to buy energy
 - This aspect is unique to storage resources
 - Costs include round trip efficiencies
- The default energy bid should capture marginal costs, including wear and tear of storage resources
 - Charging and discharging (cycling) results in cell degradation
 - Degradation results in non-performant cells which require replacement
- The default energy bid includes opportunity costs
 - This captures that storage resources can generate for a limited time prior to needing to recharge
 - Prevents storage from being discharged before best prices

The ISO is proposed the default energy bid for storage resources in the ESDER stakeholder process

$$DA \text{ Storage DEB} = (\text{MAX}(En_{\delta/\eta}, 0) + \rho) * 1.1$$

$$RT \text{ Storage DEB} = \text{MAX}[(\text{MAX}(En_{\delta/\eta}, 0) + \rho), OC_{\delta}] * 1.1$$

Where:

En: Estimated cost for resource to buy energy

δ : Energy duration

η : Round-trip efficiency

ρ : Variable cost

OC: Opportunity Cost

Market participants observed scenarios where the first principle is not observed in the day-ahead market

- The day-ahead default energy bid is set up so that resources bidding at that price all day, would be discharged during the highest priced hours of the day
 - Result of the 24 hour optimization
 - Scheduling coordinators will not have perfect information about the day-ahead default energy bid
- Market participants observed that default energy bids could potentially mitigate resources during certain hours, and result in inefficient dispatch
 - Could happen when bids are significantly higher than default values
 - Could be prevented if the day-ahead term includes the opportunity cost
 - This was an early formulation discussed in the policy

The ISO proposes to align the day-ahead and real-time default energy bids to ensure efficient dispatch

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NEXT STEPS

Next Steps

- All related information for the Energy Storage Enhancements initiative is available at:
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Energy-storage-enhancements>
- Please submit stakeholder written comments on today's discussion and the storage enhancements issue paper by August 4, 2022, through the ISO's commenting tool
 - The commenting tool is located on the Stakeholder Initiatives landing page (click on the “commenting tool” icon):
<https://stakeholdercenter.caiso.com/StakeholderInitiatives>



- The ISO is pleased to be hosting the Stakeholder Symposium in-person at the Safe Credit Union Convention Center in downtown Sacramento on Nov. 9 – 10, 2022
- Registration now on the Stakeholder Symposium page at: <https://californiaiso.swoogo.com/2022StakeholderSymposium>
- Please direct questions to symposiumreg@caiso.com