

EDAM Go-Live Enhancement: Expanded Battery Participation in Residual Unit Commitment (RUC)

Frequent Asked Questions (FAQs)

What Does This Enhancement Mean for Battery Resources?

CAISO is implementing an enhancement to the RUC process that allows battery resources to provide reliability capacity more effectively by making greater use of their charging and discharging capabilities. This change enables a larger portion of a battery's capability to be considered when meeting reliability needs, allowing batteries to provide Reliability Capacity Up (RCU) and Reliability Capacity Down (RCD) more flexibly across market intervals.

As a result:

- Batteries may participate more frequently in RUC
- RUC awards may change
- More battery capacity may be used to support reliability needs

Why is this change being implemented?

This change is being implemented to allow RUC to better reflect the full capacity of battery resources. Early assessment of Day-Ahead Market Enhancement (DAME) functionality identified this area for further enhancements. The functionality was enabled during EDAM parallel operations and participants operated with the feature throughout testing. This has provided the opportunity to assess its performance to maintain the functionality in production to provide continuity between parallel operations and go-live operations.

Who is impacted?

This enhancement may affect:

- Scheduling Coordinators managing battery resources
- Battery energy storage resource operators
- Day-Ahead Market participants

When will this functionality be implemented in Production?

This functionality is scheduled to be implemented in Production on October 1, 2026. Following implementation, battery operators and SCs should monitor market outcomes and resource performance to understand the impacts of the enhancement on RUC participation, dispatch patterns, and SOC management.

What operational risks should customers monitor?

Customers should monitor:

- Changes in patterns of RUC awards
- Day-Ahead versus Real-Time state of charge
- Charging and discharging patterns
- Settlement impacts
- Battery availability to satisfy both reliability and energy awards

Can RUC change my Day-Ahead battery schedule?

Yes. The enhancement allows RUC to reposition battery awards across trading intervals to meet reliability requirements.

Example

A battery has:

- No Day-Ahead dispatch in HE20
- A 10 MW discharge award in HE21

With the enhancement enabled:

- RUC may assign a 10 MW RCU award in HE20
- RUC may assign a 10 MW RCD award in HE21

This changes the battery's reliability commitments even though the original Day-Ahead schedule remains part of the market solution.

Will I need to change my bidding strategy?

Customers should review their bidding strategies and determine whether current bids accurately reflect battery operating capabilities, state-of-charge limitations, and reliability obligations. Several participants expressed concern that batteries could receive significantly more RUC awards than they do today, potentially changing market outcomes and settlement results.

Could reliability capacity prices change?

Potentially. If more capacity is now available to meet Reliability Coordinator (RC) needs this could potentially lead to the condition of additional supply available leading to lower prices. By enabling additional battery capability to participate in RUC, the enhancement may increase the supply of available reliability capacity. This could influence reliability capacity prices, although the actual impact will depend on market conditions, resource availability, and participant bidding behavior.

Could battery participation in RUC increase?

Yes. This enhancement enables a larger portion of battery capability to be considered in RUC, which may result in increased battery participation and additional RCU and RCD awards compared to current market outcomes.

Note: The RCU procured later in the day may become unavailable in the Real-Time Market if earlier RCD awards are not dispatched as expected.

Is any customer action required?

CAISO recommends battery operators and Scheduling Coordinators:

- Review battery bidding strategies.
- Evaluate state-of-charge management processes.
- Review reliability capacity obligations.
- Train trading and operations staff on expected changes.
- Monitor market outcomes after go-live.
- Adjust operational procedures as needed based on observed results.

What is the most important takeaway for battery operators?

Battery resources may be used more significantly by RUC than they are today. As a result, operators should be prepared for increased reliability capacity awards, changes in battery dispatch patterns, differences between Day-Ahead and Real-Time state of charge positions, and potential impacts to existing bidding strategies.

What happens if my battery does not have the expected state of charge in real-time?

There is currently no no-pay mechanism based on battery SOC. Resources are expected to submit bids that cover the capacity cleared in RUC and support their reliability obligations. The RT market will continue to optimize battery dispatch based on submitted bids and system conditions.

How could this change affect battery market awards?

Battery resources may receive more RCU and RCD awards because a larger portion of battery capability can be considered in RUC to meet reliability needs. As a result, batteries may participate more frequently in reliability commitments, which could lead to changes in market awards, dispatch patterns, and overall market outcomes.

Will battery resources receive more RUC awards?

Potentially. This enhancement increases the ability of batteries to provide reliability capacity, which may result in increased RCU and RCD awards.

Will my Day-Ahead (DA) schedule change?

The enhancement does not change how Integrated Forward Market (IFM) creates initial awards, but RUC may reposition battery schedules to satisfy reliability requirements across different hours.

Should I review my bidding strategy?

Yes. Market participants are encouraged to review existing bidding strategies and evaluate whether they appropriately represent operational capabilities under increased reliability capacity activity.

Could state-of-charge management become more challenging?

Some participants have identified potential challenges associated with maintaining sufficient state of charge to satisfy both reliability capacity and energy awards in Real-Time operations.

Could this affect reliability capacity prices?

Yes, it could. If batteries receive more reliability awards and participate more frequently in RUC, the market may have access to additional capacity to meet reliability needs. This could influence reliability capacity prices by changing the amount and type of capacity available to satisfy reliability requirements. However, the actual price impact is difficult to predict because it will depend on several factors, including:

- The volume of additional battery capacity was made available through RUC.
- Overall system reliability needs and market conditions.
- How battery operators adjust their bidding strategies.
- The availability and bidding behavior of other resource types.

What are some helpful recommendations to consider?

There are no mandatory actions required before implementation. However, battery operators and SCs are encouraged to:

- Review current battery bidding strategies and assess how increased RUC participation may influence market outcomes.
- Evaluate processes for managing DA and RT SOC positions to support reliable and efficient operations.
- Review reliability capacity obligations and ensure bid strategies accurately reflect resource capabilities and operating constraints.
- Prepare trading, operations, and market support teams for the expected changes and potential impacts.
- Monitor market outcomes after implementation and adjust bidding or operational practices, as appropriate.

Where can I view the revised mathematical formulas?

The revised mathematical formulations for the state of charge (SOC) envelop constraints for Residual Unit Commitment (RUC) and the Integrated Forward Market (IFM) can be found in the [Market Operations Business Practice Manual](#) in section 6.6.2.3.1 and 6.8.2.7.4. These changes were detailed in [PRR 1678](#).