California ISO

Stakeholder Comments Template

Energy Storage and Distributed Energy Resources Phase 4

Please provide your organization's general comments on the following issues and answers to specific requests.

1. **Demand Response (DR) ELCC Study Preliminary Results**

Submitted by	Organization	Date Submitted
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While SCE appreciates the CAISO's moving forward with the ELCC methodology study for variable output DR, refinements are needed before further consideration. For example, it is not clear that the ELCC methodology accounts for the seasonal and intra-seasonal variation in resource output that is necessary for accurately capturing a Variable Output DR resource's output.

In E3's presentation, the ELCC results were reported based on bids from either 2017 or 2018. One year of bid information is not sufficient to understand the variability of the resource over different weather scenarios. Consequently, the results would not appropriately value the inherent high correlation between high DR availability and high load (high need) conditions

In addition, it is not clear that the ELCC methodology the CAISO and E3 employed does an effective job at estimating the load of DR events. E3 relied on limited available data to estimate the daily and hourly DR shapes. The Load Impact Protocols are robust processes, employing independent third-party statistical analysis, that have shown to be quite effective at estimating on ex-post and ex-ante basis.

SCE understands the CAISO and California are moving toward displacing gas-fired resources with cleaner resources like DR and that the CAISO is attempting to understand the impact that DR has on the reliability of the grid. However, SCE wishes to point out that DR as a program was designed for peak conditions. With this study, CAISO is attempting to understand DR's contribution during peak as well as non-peak periods and is attempting to model DR's value based on a methodology for which it was not designed. DR will need

to evolve and SCE questions whether DR should evolve first and be in line with ELCC expectations before applying a methodology that may significantly discount its RA value. SCE believes that track 3 of the CPUC RA OIR will need to play a critical role in defining the RA structure and resource needs to meet that structure. The value of DR and the appropriate counting methodologies will ultimately need to align with that structure. Given this, SCE believes it is premature to make potentially significant changes in the measurement of RA for DR without first considering the structural changes being contemplated at the CPUC.

2. **Operational Processes and Must Offer Obligations for Variable-Output DR**

SCE appreciates that the CAISO acknowledges that variable-output DR resources should not be subject to RAAIM. It is still unclear to SCE, however, that the ELCC methodology is the appropriate mechanism for DR resources, for reasons stated above. Ultimately, SCE agrees that a realistic estimation of DR resources' reliability value is needed, and then have a must offer obligation that recognizes their design, availability and contributions.

3. **End-of-Day State of Charge**

SCE understands the reliability concerns that the CAISO has shared with stakeholders in relation to the CAISO's recommended end of day SOC range of 0 -10 %. SCE prefers that the CAISO does not impose state of charge requirements on energy storage resources as they support the reliability needs of the grid while accommodating flexible operation of these resources. Scheduling coordinators should be allowed to set end-of-day SOC values for their resources consistent with the resource's charge rate and expected SOC level on any operating day.

[1]**End-of-Hour State of Charge**

SCE supports the CAISO policy recommendation to maintain the resource's EOH SOC at least at the level that supports the ancillary services award when the energy storage resource is awarded an energy and ancillary service schedule in the day-ahead market. Further, in the case of energy only awards, SCE supports the policy that market participants bear the cost of uneconomic resource dispatch to achieve the desired EOH SOC value or range of values provided by the market participant for the resource for which scheduling coordinator responsibilities exist. Therefore, SCE also supports the CAISO's policy to ignore EOH SOC values outside the allowable upper and lower charge limits for energy storage resources.

SCE remains supportive of a specified SOC value and a SOC range. SCE is reluctant to support a target SOC value if that value will not be treated as a hard constraint during optimization and dispatch of the resource.

SCE requests additional clarification from the CAISO on the decision to extend the relevant disqualification period by an additional hour in relation to bid cost recovery.

The CAISO should explain whether and how the initial SOC and EOD SOC are optimized within its market optimization software.

4. **Default Energy Bid for Storage Resources**

The current proposed approach to calculation of the default energy bid trades-off accuracy for simplicity by reducing the implementation burden. Unfortunately, a daily DEB calculation fails to distinguish between off-peak and peak operating hours of the resource. While this inaccuracy is observed, SCE notes that market participants have access to the negotiated option should the calculated DEB understate the resource's operating costs to charge or discharge depending on its operating mode at time of application of market power mitigation.

SCE does not object to the proposed zero value for the cost of discharge when the resource is charging since the resource's mode of operation is binary, charge or discharge.

Use of the day-ahead bilateral hub price for the current and previous day as an input to the energy cost component of the DEB calculation while reasonable, SCE questions the timeliness with which those prices will be available to facilitate the DEB calculation in time for the day-ahead market clearing and to facilitate publication of the day ahead schedules for resources.

In addition, the CAISO claims that the use of price spreads creates strange situations when charging at higher prices is followed by discharging at lower prices on the same or successive day. This outcome can be managed by increasing the resource's SOC if the resource is not fully charged. If fully charged, the resource may still be willing to discharge a portion of its energy supply to manage its parasitic losses experienced while being idle or not dispatched. Also, the market participant may manage the resource's cell depth cost, depending on the willingness to discharge the resource to a depth that positions the resource for higher price rewards in later operating periods. In other words, SOC management is key when there is a reversal in the sign of the price spread.

There are and will be energy storage resources in receipt of investment tax credits for which charging from the grid results in lost revenue. Both co-located and hybrid resources are exposed to this potential revenue loss. SCE encourages the CAISO to consider such adjustments in calculating the default energy bid for these resources though the negotiated default energy bid option remains available to market participants.

5. **Minimum Charge Requirement**

The proposed minimum charge requirement appears to be an administrative intervention for resource management when the market should be capable of providing incentives to scheduling coordinators for the efficient management and operation of their resources.

Imposing a minimum SOC requirement on energy storage resources to ensure their availability for later hours during real-time operation requires accounting for the opportunity costs associated with such a policy decision. While this decision may support reliability compliance it trades-off market efficiency. The CAISO's statements on p.11 of its Second Revised Proposal establishes the likelihood of this outcome. SCE believes that the

stakeholder process should examine other methods to address this concern to handle such reliability uncertainty within the real-time market. While SCE recognizes that the CAISO needs to effectively charge and dispatch energy storage resources to ensure reliability, it is not clear that the minimum charge requirement is the best solution.

6. **Additional comments**

SCE wishes to encourage the CAISO to shift from its use of implicit price spreads to explicit price spreads. Implicit price spreads based on the difference between the discharge and charge prices within the trading our for an energy storage resource only works when a single discharge and a single charge price exists for the resource throughout the operating day. When the charge and discharge prices vary throughout the day, implicit spreads fail to track transparently the appropriate market price changes relative to the price spreads calculated for the energy storage resource. For example, an unexpected downturn in the market clearing price will not be captured by the implicit price spread during significant market price downturns that bear no relationship to the charge and discharge prices submitted.

SCE remains interested in the possibility for a longer look ahead period for energy storage resources within the real-time market to support their efficient operation and dispatch in the market. SCE encourages the CAISO to make incremental improvements in the look ahead period for RT optimization as technological improvement allows.

SCE is very appreciative of the CAISO's inclusion of the maximum daily run time parameter in this initiative (in relation to DR) and looks forward to its implementation.