California ISO

Stakeholder Comments Template

Energy Storage and Distributed Energy Resources Phase 4

This template has been created for submission of stakeholder comments on the Draft Final Proposal and associated May 27 meeting discussions, for the Energy Storage and Distributed Energy Resources (ESDER) Phase 4 initiative. The paper, stakeholder meeting presentation, and all information related to this initiative is located on the initiative webpage.

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business **June 10, 2020.**

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

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

   Please provide your organization's feedback on the default energy bid proposal for storage resources, as described within the draft final proposal and discussed during the May 27 stakeholder meeting.

   The CPUC staff continues to support the consideration of a dynamic Default Energy Bid (DEB) for energy storage given the significant issues with charging an energy storage system more than once a day. Please see prior ESDER Phase 4 comments for more details on this recommendation submitted on March 20, 2020. A dynamic DEB would also be a more precise tool to compensate energy storage systems for their costs to cycle. While the current CAISO DEB policies for generating resources do not allow for more than one DEB for a given day, different provisions are needed to address energy storage systems' unique operating requirements in the DEB formation design for energy storage.

2. **End-of-Hour Charge Parameter(s)**

   Please provide your organization's feedback on the end-of-hour charge parameter(s) proposal, as described within the draft final proposal and discussed during the May 27 stakeholder meeting.

CPUC staff appreciate the CAISO's work on refining Bid Cost Recovery (BCR) treatment for resources that take advantage of the proposed End of Hour state of charge (SOC) parameter. However, we continue to feel that the solution falls short. The BCR treatment in the proposal may be overly broad and may lead to storage resources receiving reduced BCR and subsequently reduced revenue and profit. The result arises from the fact that the CAISO plans to apply its proposed rules to a period of time instead of a quantity of energy, and the fact that the plan does not recognize the unique economics of energy storage. A more appropriate plan would explicitly count the energy used to charge the resource for the end of hour SOC requirement.

Energy storage resources are unique in that earning profit requires two transactions. Part of that market interaction means that the market software will schedule sets of transactions that are profitable on net. CAISO's plan will exclude costs from the BCR calculations that appear to be uneconomic during the period leading up to the End of Hour SOC need. Uneconomic charging to the specified SOC value will be excluded from the calculations that way. Charging that appears uneconomic by itself, but is part of a two-way profitable transaction optimally scheduled by the market software, will also be excluded. By excluding costs from optimal market schedules, this system of BCR counting will potentially short storage resources of their proper revenue levels.

3. **Variable-Output DR**

   Please provide your organization's feedback on variable-output DR, as described within the draft final proposal and in the ELCC study discussed during the May 27 stakeholder meeting. Please explain your rationale and include examples if applicable.

   At this time, CPUC staff does not have comments on this issue, but may comment on this issue at a later date.

4. **Additional comments**

   Please offer any other feedback your organization would like to provide from the straw proposal and topics discussed during the web meeting.

Spread Bidding

LS Power,[1] Southern California Edison,[2] CPUC staff and other ESDER stakeholders have requested that the CAISO allow energy storage operators to bid into the

[1] *LS Powers comments on the Energy Storage and Distributed Energy Resources (ESDER) Issue Paper and Working Group Meeting held on March 18, 2019*, April 1, 2019, pp.2-3 "One possible change to multi-interval optimization that would put our fears to rest would be if it were possible for the scheduling coordinator to directly provide CAISO with a minimum spread between charge and discharge prices that will be enforced in the multi-interval optimization, similar to the way in which many generator types input a VOM value in $/MWh into their master file."

[2] *Customized Energy Solutions, CAISO Energy Storage and Distributed Energy Resources Working Group Meeting*, June 27, 2019, p. 4. "SCE suggested that the CAISO may want to consider letting storage resources bid a price spread."

CAISO market with a spread bid that represents the costs of charging and discharging a battery. Currently, all resources participating in the CAISO market must submit bids for the price at which they are willing to buy energy, and/or for the price at which they are willing to sell energy. Energy storage's operation costs are recovered through the difference between the prices at which a resource buys energy and the prices at which it sells energy. To bid into the market, energy storage operators must predict future prices and then set bids to buy and sell energy according to their predictions to cover their costs. The aforementioned stakeholders and the CPUC argue that allowing energy storage resources to submit spread bids would enable greater energy storage resource participation in the CAISO markets because it would address issues with forecasting prices in the real-time market and the risks associated with market participation that does not cover an energy storage resource's cycling costs. CPUC staff recommends that energy storage resources be able to reflect their willingness to participate in the CAISO markets as the difference or desired spread between their buy and sell prices. This request has not been addressed in the current ESDER Phase 4 proposal.

Minimum Charge Requirement

The CAISO's proposed Minimum Charge Requirement (MCR), which was introduced at the March 3, 2020 ESDER Phase 4 stakeholder meeting, would enforce an MCR on energy storage resources in the real-time market to ensure energy storage capacity is available to meet day-ahead market awards. The California Energy Storage Alliance,[3] Department of Market Monitoring,[4] and the Western Power Trading Forum[5] all expressed that this proposal would make energy storage resources less flexible in the real-time market and as a result would

[3] *California Energy Storage Alliance (CESA)* comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal, March 16, 2020, p. 6. "the MCR could significantly strand the capabilities of storage assets by forcing them to sit idle; thus, foregoing revenues from markets aside the energy market. This policy …could in fact hinder the financing available for future projects, increase procurement costs as revenues may decline, and ultimately hurt ratepayers due to suboptimal utilization of assets."

[4] The *Department of Market Monitoring (DMM)* comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal, March 27, 2020, p. 8. "The ISO's proposal would likely result in storage resources becoming much less flexible in real-time. For example if a resource's minimum SOC must be set high after its last charging interval earlier in the day in order to maintain day-ahead discharge schedules starting hour 19, the minimum SOC constraint could prevent the resource from discharging and recharging in order to capture additional real-time revenue opportunities before hour 19. Additionally, if conditions in real-time are such that the storage resource's day-ahead energy awards starting hour 19 are no longer needed or would otherwise be uneconomic, it would be unnecessary to maintain a minimum SOC on the resource to meet day-ahead schedules."

[5] *The Western Power Trading Forum (WPTF) comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal*, March 16, 2020, p. 4. "WPTF does not support the minimum charge requirement element of this proposal as it will lead to inefficient market outcomes"

likely reduce the market value of energy storage resources. The aforementioned stakeholders also argued that the MCR proposal treats energy storage resources differently than other resources participating in the CAISO markets.[6,7] As an alternative, both the WPTF and CPUC staff recommend improvements to the CAISO's real-time market optimization such as extending the real-time market lookout horizon to 10 hours.[8] CPUC staff continues to support this recommendation instead of the proposed MCR.

Proposal Evaluation

Given the number of concerns raised with the ESDER Phase 4 proposals from a broad spectrum of stakeholders, CPUC staff suggests monitoring and evaluating the impact of the proposals during the implementation period to determine if the concerns raised in fact materialize. There are still issues to be resolved with the existing energy storage resources interconnected to the CAISO grid today to allow them to operate at full capacity.[9] The ESDER proposals collectively may represent another barrier to full participation of energy storage resources in the CAISO markets and specifically to energy storage serving the evening peak hours. There are also likely issues with energy storage operations that have not been identified that could impact the proposal outcomes.

[6] California Energy Storage Alliance (CESA) comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal, March 16, 2020, p. 6. "CESA sees the MCR as a market barrier to storage assets, a barrier that has not been placed for conventional thermal generators or any other technology within the CAISO footprint."

[7] *The Western Power Trading Forum (WPTF) comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal*, March 16, 2020, p. 4. "traditional generators that receive day-ahead schedules can rebid in the real-time market. The real-time market will then re-optimize the resources based on updated bids to meet real-time demand…Storage resources should be treated in the same manner such that based on updated real-time bids the market can re-optimize the use of storage resources and allow the market to determine when to charge and discharge the resource."

[8] The *Western Power Trading Forum (WPTF)* comments on the Energy Storage and Distributed Energy Resources Phase 4 Second Revised Straw Proposal, March 16, 2020, p. 5. "WPTF asks that the CAISO evaluate what extended horizons could be feasible. It may be the case that extending the horizon to, for example 10 hours, may be long enough to address most of the issues raised herein as well as during other previous stakeholder initiatives."

[9] G&E removed its energy storage projects from CAISO markets in 2019 to address maintenance, communication, and IT issues. PG&E also plans to upgrade its bidding platform for its energy storage projects to provide greater visibility of prices. PG&E expects to return its energy storage projects to the CAISO market in the second quarter of 2020. Energy storage interconnected on the distribution grid must also limit its activity to the capacity and load demands on the distribution grid.