



Stakeholder Comments Template

Energy Storage and Distributed Energy Resources (ESDER) Phase 4

This template has been created for submission of stakeholder comments on the Revised Straw Proposal for ESDER Phase 4. 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 **November 12, 2019**.

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. End-of hour state-of-charge proposal

CESA supports the CAISO's revisions in its end-of-hour state-of-charge (SOC) proposal as it provides important clarifications related to how ancillary service awards will serve as the more "binding" parameter and as it affords greater flexibility in the end-of-hour SOC parameters through a range approach. Particularly, by representing the SOC parameter as a minimum and maximum, storage resource operators will have greater flexibility to potentially minimize uneconomic charging to achieve a target SOC, which can be subject to some uncertainty from the perspective of the resource operator. With the ability to set the minimum and maximum SOC parameters equal to each other at the end of the hour, storage resource operators who wish to target a specific SOC level will still have the ability to do so as well.

2. Discussion of end-of-day state-of-charge

CESA has no comment at this time.

3. Market power mitigation for storage resources charge

CESA appreciates the many improvements made to the default energy bid proposal for energy storage resources. As expressed in previous comments, CESA has favored customizable pathways, which the Revised Straw Proposal

appears to achieve to a reasonable degree by allowing for storage resource operators to customize the various inputs, such as roundtrip efficiency (RTE) and the ρ constant values.

However, CESA also recommends that the CAISO further vet the DEB proposals as there still are many questions as well as areas needing further clarification and refinement. Further technical working groups are needed. Overall, while supportive of the CAISO's efforts to develop ideas and proposals around market mitigation measures for energy storage resources, CESA has concerns that the dynamic DEB proposals considered in this initiative are new concepts and approaches that have not been applied to other resources to date. As we understand it, the CAISO does not dynamically update DEBs throughout the day, making this DEB proposal a new paradigm that requires further vetting and testing to guard against unintended outcomes. DEBs for energy storage resources likely necessitate a dynamic approach considering the complex nature of their variable marginal costs, which depend on SOC and depth of discharge. As such, CESA recommends that the CAISO not rush to implement DEBs for energy storage without substantial vetting with stakeholders. A simplified, interim approach may be sufficient in the near term.

Notwithstanding our comments above, CESA appreciates the thoughtfulness of the CAISO's DEB proposal in the Revised Straw Proposal. Understandably, capturing cycling costs are challenging and may require tradeoffs between accuracy and implementability. The CAISO explains these challenges in discussing the tradeoffs between the two proposed formulas for modeling cycling costs, with one prioritizing SOC as the main driver for cost of dispatch (Option 1) and the other prioritizing depth of dispatch (DOD) as the main driver for cost of dispatch (Option 2). Of course, CESA would prefer a perfect methodology that accounts for both since they are both important factors, but we recognize that this may be computationally challenging at this time. In the long run, if possible, both factors should be incorporated.

In the interim, among the two proposals, CESA favors Option 2 because it places a priority on DOD and would drive more "efficient" usage of the resource. Even as the Option 2 methodology does not account for changing marginal costs based on SOC, storage resource operators should be able to reasonably manage their SOC in the interim through bidding parameters in place as well as those being developed. CESA has some concerns with Option 1 in that it could lead to relatively lesser utilization of the storage resource. At the same time, CESA does not wish to foreclose Option 1 given the early stage of the storage market today.

Finally, CESA offers a few additional areas of comment around the other DEB components for storage that require further consideration:

- **Opportunity cost:** CESA supports the CAISO's addition of this opportunity cost adder based on the highest price(s) corresponding to storage duration. This is an important cost category that was missing in previous proposals but is important to understanding marginal costs of storage discharge. However, CESA believes that this opportunity cost adder must be modified

to factor in the opportunity costs for not just higher-priced energy intervals but also the opportunity cost for the provision of Flexible Ramping Product and ancillary services – CAISO market products that energy storage resources are positioned to be utilized for, which could impact their marginal costs to dispatch in any given interval in a day. At the same time, CESA also adds that there are additional categories of marginal costs that include out-of-market activity, such as behind-the-meter (BTM) services or transmission and distribution deferral services. Within the MUA Framework jointly developed by the CAISO and CPUC and adopted through CPUC Decision D.18-01-003, reliability services such as transmission and distribution deferral services need to be prioritized (see Rule 6). As such, the opportunity costs of ensuring these reliability services are prioritized and not dispatched in the market will be important to consider. Since these opportunity costs do not have price formation as other CAISO market products, there will be a challenge in quantifying these costs, but it warrants significant consideration in this initiative. Importantly, the Storage As Transmission Asset (SATA) Initiative was delayed for resolution of various issues, such as this one, in this initiative.

- **Roundtrip efficiency:** CESA supports the CAISO’s proposal to include RTE in the DEB calculation, though nothing specific was proposed. To accurately capture marginal costs, however, CESA notes that distinctions need to be made for spec-sheet RTE versus field RTE, as well as RTE based on SOC, which are levels that can vary given different conditions and operating states. The CAISO should clarify the specific characteristics of the RTE data input that will go into the master file.
- **Parasitic losses:** CESA supports the CAISO’s proposal to not include parasitic losses in the DEB calculation at this time since these costs are relatively minimal compared to the other cost drivers and represent a smaller fraction of the costs in newer battery storage technologies, as the CAISO has noted.

Finally, CESA adds that these DEB calculations should recognize the diversity of storage technologies, not just lithium-ion battery storage technologies. While lithium-ion batteries are the majority of current and near-term future deployments, a wider range of storage technologies need to be considered in long-term solutions for DEB calculations, where marginal costs may not necessarily vary or be related to SOC or DOD, or may vary to differing degrees.

4. Variable output demand response

CESA has no comment at this time.

5. Parameters to reflect demand response operational characteristics

CESA has no comment at this time.

6. Removing consideration of non-24x7 settlement of behind the meter resources under DER aggregation model

CESA is disappointed that the CAISO Revised Straw Proposal does not sufficiently address the various issues and questions related to multiple-use applications (MUAs), instead deferring it to the local regulatory authority (LRA) due to the lack of jurisdictional authority. Specifically, the non-24x7 settlement issue for non-generator resources (NGRs) has been a recurring issue that has not been sufficiently addressed in different phases of this initiative.

At the same time, CESA recognizes that the CAISO must work closely with the CPUC to ensure that the CAISO and CPUC have consistent rules for metering and settlements of storage resources and to ensure that utility distribution companies implement retail billing practices that enable MUAs of BTM resources. Similar to what was accomplished in the Energy Storage proceeding (R.15-03-011) for station power, CESA encourages the CAISO to engage the CPUC to jointly address the metering, settlement, jurisdictional, and other issues, perhaps in a new CPUC proceeding, since the CAISO is unable to address these matters in a standalone CAISO initiative.

7. Additional comments

Please offer any other feedback your organization would like to provide from the topics discussed during the working group meeting.

CESA has no additional comment at this time.