California ISO

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**
   8minute appreciates the thought the ISO has put into providing an end of hour SoC parameter that would allow resources to get to a desired SOC level and start each hour with an appropriate amount of stored energy to participate in the markets effectively.
2. **Discussion of end-of-day state-of-charge**

   No comments.
3. **Market power mitigation for storage resources**

   8minute notes that significant portions of the technical reasoning that is used to construct the various components are based on a research paper published in 2017. Furthermore, the arguments made with respect to the cycling costs in that paper are stated in a single paragraph with a minimal amount of references and with only a single Li-Ion chemistry type. The specific points being made by ISO based on the research paper are:

   1) It is significantly more expensive in terms of degradation to run a battery from 100% to 0% then cycling a battery from 90% to 80% ten times even though the discharged energy stays the same.
   2) It is significantly more expensive in terms of degradation to discharge a battery from 30% to 20% then from 90% to 80%.

Li-Ion based battery chemistries are rapidly evolving and most manufacturers regard degradation data as trade secrets and can only reveal this data under an NDA. 8minute as a significant procurer of energy storage capacity has access to many Tier 1 manufacturers and does not believe either of the assumptions (1) and (2) to be an accurate representation of actual degradation behavior or current generation of NMC or LFP batteries. Therefore, the cycling cost model being proposed by the ISO may in fact tilt the storage operators to artificially hold their SOCs at a lower level to guarantee a maximum DEB price for cycling energy.

Since the energy storage market is still maturing and the technology is going constant development, we would like the ISO to consider these two factors instead of the ones proposed in the report:

1) Number of Cycles in a Year. Procurement contracts for energy storage commonly have a limit of number of cycles in a year. As the battery reaches this limit, the cycling cost will increase and going over the contractual limit may significantly increase the cycling cost.
2) Average SOC over a day/month/year. Similar to the number of cycles per year, the procurement contracts may have a limit on the average SOC level of the battery over a year. The higher the average SOC, the higher the degradation on the battery. Therefore, 8minute recommends to the ISO to consider average SOC over a fixed period (day/month/year) as an adder to the cycling cost.

We would like to formally request a technical working group meeting to bring our battery storage experts (with other companies participating) to further discuss these points.

4. **Variable output demand response**

   No comments

5. **Parameters to reflect demand response operational characteristics**

   No comments

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

   No comments

7. **Additional comments**

   We would like to formally request a technical working group meeting on the topic of battery cycling costs to bring our battery storage experts (with other companies participating) to further discuss these points.