



Stakeholder Comments Template

Energy Storage and Distributed Energy Resources (ESDER) Phase 4

This template has been created for submission of stakeholder comments on the 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 **May 17, 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. Non-Generator Resource (NGR) model SOC parameter

NextEra Energy Resources, LLC ("NextEra") appreciates the opportunity to submit comments in response to the CAISO's Straw Proposal in Phase 4 of the Energy Storage and Distributed Energy Resources initiative ("ESDER Phase 4"). NextEra's comments focus on our concern that ESDER Phase 4's multi-interval optimization proposal likely exacerbates the financial risk confronting hybrid solar and storage resources in the CAISO markets that have taken, or intend to take, advantage of the federal investment tax credit ("ITC").

Hybrid Resources call for new modeling functionality.

Storage devices are entitled to a 30% ITC if they are charged using renewable sources. This requires those storage resources to charge directly from co-located renewable projects during their first five years of operation. After that, the storage facilities are not subject to ITC claw back. Further, storage facilities may use non-renewable sources for a portion of their charging needs, but if they fall below 75%, the ITC goes to 0%. And up to that point, the storage resource loses the ITC on a proportional basis, i.e., 80% charged from renewable resources equals 24% ITC (80% of 30%). California is lucky that storage economics largely favor shifting solar generation, but this is system dynamic not absolute and certainly not sufficient assurance to investors. Bloomberg New Energy Finance recently estimated that "young" co-located batteries (systems less than 5 years old) will charge almost exclusively from on-site solar. Nighttime charging would need to improve

revenues by roughly \$82/MWh to represent an improvement over daytime charging” with ITC. (When Should US Solar-Plus-Storage Systems Charge at Night (Aug. 30, 2018)) Thus, assuming the ITC is not renewed, this is potentially an issue for all hybrid facilities built through 2023, especially those from developers that can realize the full ITC through deployment of safe-harbor equipment.

The NGR framework is inadequate because it was designed to maximize revenue of a standalone storage system in all hours. By doing so, the framework has the potential to negatively impact the economics of solar + storage resources operating under two resource IDs with the solar registered as a PIR and storage as a NGR. By means of example: The framework is intended to charge a battery if it sees a future arbitrage opportunity that is greater than the resources implicit “requirement” for an arbitrage spread. If a resource has a bid of \$10/MWh to buy energy and \$40/MWh to sell energy, the current price is \$20/MWh, and the ISO predicts that in the future interval the price will be \$90/MWh, it will override the resource bid and charge the battery at the cost of \$20/MWh. Later, if the \$90/MWh price turns out to only be \$40/MWh, the storage will discharge and receive \$40/MWh and CAISO will rebate the resource \$10/MWh in the form of Bid Cost Recovery.

On its face, this mechanism has made the storage resource whole. However, it ignores the solar production that the storage facility with which the storage is paired, and by overriding the scheduling coordinator’s bids, could, and would likely, lead to the storage charging at times when there is no, or insufficient, solar production. If forcing the storage unit to charge during a time of low or no solar production, the storage unit loses much more than just the cost recovery envisioned in bid cost recovery. It potentially loses a portion of a 30% tax credit that applies to the entire system and has invariably been assumed in the underlying commercial arrangement.

While the CAISO’s proposed SOC optionality may provide some additional control over the resource, , it is unclear whether it will be sufficient for hybrid resources, especially given the SOC is end of hour and therefore allows dispatch intra-hour, the possibility of unintended charging may remain.

If the NGR model is unable to allow scheduling coordinators to adequately determine their dispatch, the storage system could potentially lose the entire value of the ITC. Even if it is limited, it will adversely affect the economics of the hybrid system due to the loss of some ITC and the uncertainty created in the total value of the ITC. This uncertainty is likely to preclude or make arranging tax equity much more difficult and expensive.

We therefore ask the CAISO to provide additional examples and further explanation on how a scheduling coordinator could control its storage resource such that it does not lose its ITC value or otherwise put it at an unacceptable risk.

2. Bidding requirements for energy storage resources

No comments at this time.

3. DR operational characteristics

- a. Please provide comments on the CAISO's three options.

No comments at this time.

4. Variable output DR

- a. CAISO requests additional detail and reasoning from stakeholders who believe a more appropriate method exists for determining QC than applying an ELCC methodology.
- b. CAISO requests stakeholder feedback on controls needed to ensure that forecasts accurately reflect a resource's capability.

No comments at this time.

5. Non-24x7 settlement of behind the meter NGR

- a. As a behind the meter resource under the non-generator resource model, any wholesale market activity will affect the load forecast. How will load serving entities account for changes to their load forecast and scheduling due to real time market participation of behind the meter resources?
- b. How would a utility distribution company prevent settling a resource at the retail rate when the behind-the-meter device is participating in the wholesale market?
- c. If a behind-the-meter resource is settled only for wholesale market activity, what would prevent a resource from charging at a wholesale rate and discharging to provide retail or non-wholesale services? How would this accounting work?

No comments at this time.

6. Additional comments

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

Thank you for the consideration of our comments.