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 Issue Paper for ESDER Phase 4 that was published on Feb 6, 2019. 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 **Feb 27, 2019.**

Submitted by	Organization	Date Submitted
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Please provide your organization's comments on the following issues and questions.

PG&E appreciates the CAISO's launch of ESDER 4 to continue its review and implementation of new policies that will enhance the ability of storage and distributed energy resources (DERs) to participate in CAISO markets. Comments are included below for the primary topics that the CAISO has raised in its Issue Paper (released on February 6, 2019).

1. **Non-Generator Resource (NGR) model**

   PG&E supports with caveats possible enhancements to the NGR model. PG&E requests that with any modifications that the CAISO evaluate the costs and benefits of proposed changes and prioritize creating processes that are not overly complex or administratively burdensome.

   PG&E also reiterates its recommendation that behind-the-meter (BTM) DERs use the PDR & RDRR models under the Demand Response Provider Agreement (DRP-A) rather than the NGR model under the Distribution Energy Resource Provider Agreement (DERP-A) to participate in CAISO markets. Using DRP-A optimizes the investments customers have already made over the past nine years with the implementation of CPUC's rules, processes and systems. Avoiding unnecessary duplicative customers' investments to support DERP-A for BTM storage and other BTM DERs is important for affordability.

Real-Time SOC Management

PG&E supports exploration of NGR enhancements and additional State of Charge (SOC) parameters. A key challenge for NGR resources, especially MUA resources, is the need to be at a certain SOC at a certain time. For example, in any hour, a resource could have the ability to specify that its SOC must be between certain levels. Besides exploring additional SOC parameters, the CAISO should also explore the idea of using Outage Cards, such as the non-ambient NOW card, to manage real-time SOC throughout the day.

If a resource chooses to avail of CAISO SOC parameters (via OMS or other method), the resource should be responsible for not meeting any applicable market obligations (e.g. RAAIM) and should be considered as self-scheduled (in the applicable market iteration) for the purposes of Bid Cost Recovery (BCR) eligibility in intervals where the SOC parameter management applies. For example, if a resource requires charging to be at 100% at HE 16, it should not be eligible to receive BCR for any revenue deficiencies during the applicable intervals. Likewise, any revenues or costs realized during these intervals would then not affect the resource's BCR eligibility, or adequacy position, during the non-SOC intervals of the trading day.

Multi-Interval Optimization

The CAISO states that it is open to discussing BCR provisions for NGR. To frame the conversation, the CAISO and stakeholders should create a list of scenarios to enable discussion of BCR rules and the situations where a resource could be uneconomically dispatched, leading to the need for BCR. For example, PG&E requests the CAISO to provide potential scenarios where BCR might be appropriate.

For resources that are fully market participating, BCR calculations must account for both charging and discharging costs. However, as stated above, resources specifying SOC management or self-scheduling should not be eligible for BCR for the applicable interval.

2. Bidding requirements for energy storage resources

PG&E supports with caveats. Default energy bids (DEBs) for NGR resources are complicated, and many factors need to be considered, including the foregone opportunity cost of future generation. A similar discussion has been occurring in the LMPM initiative. In the LMPM initiative CAISO found that its existing methodologies for calculating default energy bids can inaccurately reflect the actual costs for hydro resources with storage. In that initiative the CAISO proposes an additional default energy bid option for hydro resources with storage to better reflect opportunity costs. The CAISO similarly here should identify and consider procedures to assure that use-limited resources (such as energy storage resources) are not dispatched inefficiently through the use of DEBs.

One factor to consider for DEBs for NGR resources are charging costs. Ideas to address this include using actual resource and time specific charging costs or dynamic proxy charging costs. Such costs must address efficiency losses. Furthermore, NGR bids may need to have VOMs and a greater headroom multiplier in their DEBs to account for variability in charging

costs and lost opportunity costs. Another possible DEB option could be a type of proxy DEB equal to the highest 10% of LMPs, or some other reasonable percentage depending on the resource duration.

Finally, given the limited duration of NGR resources, any mitigation should be applied to the shortest interval possible instead of the full hour. A resource should not face mitigation and then be forced to discharge to 0% SOC, foregoing later opportunities, when it no longer has power.

Other modifications to consider are *1)* the cost/benefit of allowing multi-segment A/S bid structures and *2)* treatment of solar + storage asset operating under a single resource ID.

3. Demand Response resources

PG&E supports the CAISO's current enhancements for demand response and encourages the CAISO to also include the following DR enhancements for 2019, with the understanding that these would not be implemented until 2020.

- **CAISO should develop a technology neutral load shift product in ESDER 4.** Load shift is one tool for CAISO to use to manage over supply rather than curtailing renewables or exporting excess energy out of state. While CPUC rate design helps create a better alignment of supply and demand—the grid's quickly changing conditions warrant the development of products that can respond more quickly for remaining hours of grid needs and misalignment between supply and demand.

  To address this challenge, throughout 2018, stakeholders met as a part of a CPUC working group to develop market-integrated and technology-neutral load shift products. The results of these efforts are summarized in the CPUC Load Shift Working Group report, which was served on January 31, 2019. The only product that was ultimately market integrated was Load Shift Resource 2.0 (*see page 7*), which leveraged the CAISO's ESDER 3 approved Proxy Demand Response – Load Shift Resource (PDR-LSR) as the basis. PDR-LSR is only available to directly metered storage resources and PG&E believes the following changes should be considered in scope for ESDER 4:
  - Is available to all load (whole premise meter), not just storage
  - Enables the resource to participate in the day ahead market, real time market or both, and
  - Allows for positive bids.

  PG&E appreciated CAISO's participation and insight into enabling such a product when discussed at the CPUC, and recommends this leadership continue by including a load shift product in ESDER 4 that is available to use by all load, not just batteries and settled at the premise level.

- **CAISO should educate stakeholders on minimum size requirement for PDR and update its tariff to reflect a minimum bidding size requirement of 100kW.** CAISO's tariff, Section 4.13.5.2.1 (pg. 102), states, "The minimum Load curtailment of a Proxy Demand Resource shall be no smaller than 0.1 MW. Loads may be aggregated together to achieve the 0.1 MW threshold. There is no upper limit on the maximum Load

curtailment of a Proxy Demand Resource." PG&E has interpreted this to mean all resources must bid at least 100kW. However, PG&E recently learned that CAISO's minimum size requirement is interpreted by CAISO's legal department as the capacity size requirement not a bidding requirement. This policy is leading to resources that are at minimum 10kW being bid and dispatched into the market.

PG&E recommends that CAISO utilize the ESDER 4 stakeholder initiative to educate all market participants of the legal interpretation of the 100kW minimum size requirement and then update its tariff to reflect a minimum bidding size for PDR of 100kW.

- **CAISO should apply additional reliability requirements for resources under 1 MW.** Currently the only enforcement mechanism for the Demand Response Auction Mechanism (DRAM) to ensure that a resource is meeting its must offer obligation (MOO) is that a resource is subject to RAAIM. However, this does not apply to resources under 1 MW. Most distributed energy resources (DERs) participating in the wholesale market are under 1 MW. As the number of DERs under 1 MW grow and provide reliability services, they should have equivalent reliability performance requirements.

4. Multiple-Use Applications (MUA)

PG&E supports with caveats.

- **Unresolved issues from the CPUC's MUA working group compliance report are still being addressed, making enhancements premature.**
On August 9th, 2018 the three IOUs on behalf of the MUA Working Group submitted a compliance report. In this report, the MUA working group identified unresolved issues which are still being addressed. Until the CPUC renders a decision on these MUA issues, enhancements by the CAISO may be premature.

5. Additional comments

- **CAISO should provide specific detail on the underlying issues and questions that are in scope for this initiative.**
As we look across these and other topics that are relevant to ESDER 4, PG&E requests that CAISO provide specific detail on the underlying issues and questions that are in scope for this initiative, given the interplay that ESDER 4 has with other key policy initiatives, including unresolved questions brought over from CAISO's storage-as-a-transmission-asset (SATA) initiative.