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.

PG&E appreciates the opportunity to engage the CAISO and provide comments on the ESDER Phase 4 Initiative. PG&E's comments can be summarized as follows:

- CAISO's state-of-charge (SOC) proposal should consider implications across the entire Short Term Unit Commitment (STUC) horizon rather than only the binding FMM and RTD intervals.
- Regulation energy awards create difficulties with the implementation of real-time SOC limits. They will affect CAISO scheduling to meet bid SOC limit constraints, as well as real-time Bid Cost Recovery (BCR). SOC bid parameters should be appropriately restricted in case of regulation awards.
- Static calculations of Default Energy Bids (DEBs) for any given day should be developed and tested as an alternative to a dynamic DEB calculation. If cycling costs and/or depth of discharge costs are shown to be significant in appropriate DEB calculation, CAISO may want to pursue revisions to the non-generator resource (NGR) model allowing SOC or cycling depth to be considered in bid construction.
- PG&E supports the collection of additional information from battery market participants on SOC-related costs prior to a final market power mitigation proposal.

- The policy determination of what Demand Response (DR) is used for must first be addressed at the CPUC, prior to updating the valuation method.
- PG&E supports CAISO's development of a max time run parameter that accommodates programs that are day-ahead only in order to better capture the operational attributes of demand response in CAISO's market.
- PG&E strongly supports CAISO's removal of the non-24x7 settlement of behind the meter resources under the DER aggregation model.

1. **End-of hour state-of charge proposal**

   PG&E appreciates CAISO's providing a straw proposal for how the end-of-hour SOC bid parameter would affect BCR. However, in an effort to disincentivize the strategic use of the parameter, CAISO may want to consider the straw proposal alongside or in conjunction with measures taken across the STUC timeframe. These potential measures would (a) provide stability to bidding/dispatch instructions and (b) help clarify restrictions on BCR:

   <u>Stability measures</u>

   1. Allow no changes to an SOC parameter once it appears in STUC (~4 hours before), even if the parameter is set for a non-binding interval. This would prevent market participants from creating the desired effect of the SOC parameter (e.g. receiving a dispatch to charge) then removing the parameter before the SOC target hour includes a binding interval.

   2. Similar to #1, require that SOC parameters be set at least five hours in the future; this would require that the SOC parameter be fixed after that point (which is reminiscent of the rules on changing startup costs for gas-fired resources). This would prevent market participants from pulling parameters in and out (of non-binding intervals) and changing target values within the STUC horizon.

   <u>Restrictions on BCR</u>

   1. Not allow BCR for all four or five hours of the real-time unit commitment horizon when a SOC bid parameter appears in STUC. This is a conservative approach.

   2. Allow BCR for periods within the real-time unit commitment horizon of the SOC parameter only if the parameter is non-binding (Note: this will not happen when

the target is a single value but may occur when the min SOC and max SOC are relatively far apart).

An additional aspect of SOC targets to be considered with respect to BCR is that regulation energy cannot be controlled by CAISO to achieve SOC targets, nor predicted by market participants with certainty. PG&E believes that regulation energy should be excluded from real-time BCR calculations, but in particular that the presence of an SOC target combined with regulation awards should remove all regulation hours from real-time BCR, because the telemetered initial state of charge of the battery in the real time market processes will be directly affected by regulation energy. It may even be that the SOC target should not be allowed to be bid in periods with day ahead regulation awards. This is not just a question of maintaining sufficient SOC to support awards, but of the interaction between a target based only on energy awards and more or less certain effects of regulation on SOC.

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

PG&E continues to believe that an end-of-day SOC target in the day-ahead bid set would be useful and would better enable the use of batteries for spread arbitrages without resulting in unintended charging or discharging due to absolute bid levels. However, there is a legitimate concern with how DEBs would be calculated in such cases. PG&E suggests that instead of mitigation of the discharge bid alone, mitigation be performed based on the spread between the discharge and charge bids (if no charge bid is present, a default value of zero might be imputed for charging).

3. **Market power mitigation for storage resources**

PG&E suggests that static calculations of DEBs for any given day should be developed and tested prior to moving towards a dynamic DEB calculation. With the information provided by CAISO thus far, it is difficult to determine the magnitude of cycling costs (or cell degradation costs) in relation to other costs (i.e. opportunity costs).

If cycling costs are indeed determined to be a significant component of battery bids and therefore require mitigation, PG&E suggests that CAISO build off of the excellent work it has done to date and consider revising the NGR model. If bids were allowed in which a price is associated with a pair of SOC and MW quantities, the mitigation would not be dynamic, but multi-dimensional, which we believe is the real purpose of the research and CAISO design to date. In the meantime, PG&E supports CAISO in gathering data from participating batteries in two known areas of SOC-related cost:

a) Regions of the SOC range in which operations are affected and could potentially be captured by an SOC-dependent ramp rate or an SOC-dependent efficiency (either round trip or specific to charge or discharge) rather than a change in bid costs. It's possible that a fairly minor model change to incorporate SOC-dependent ramp rates or SOC-dependent efficiency could remove the need to model and mitigate SOC-dependent bid costs while preserving the CAISO's ability to mitigate based on calculated charging costs and discharge opportunity costs.

b) Documentation of mid-term wear and tear opportunity costs of incremental discharge (throughput) comparable to those on hydro and thermal resources, which could be recalculated on a monthly or ad hoc basis based on existing opportunity cost methodologies used by CAISO and market participants.

4. **Variable output demand response**

The policy determination of what DR is used for must first be addressed at the CPUC, prior to updating the valuation method.

As the CAISO's methodology fundamentally changes the value and purpose of demand response (DR), PG&E requests the policy determination of what DR is used for first be addressed at the CPUC, prior to proposing a methodology. As mentioned in previous PG&E comments, the CAISO's method (Effective Load Carrying Capability) values DR's contribution to being always available whereas the current CPUC method (Load Impact Protocols) values DR's contribution during the RA measurement hours (4-9 pm) on the monthly system peak day.[1] These valuation methods are critical as they translate into DR program design and incentives. To change the valuation as the CAISO has suggested, could undervalue programs prematurely without giving them a chance to align to this new policy objective that is core to the evaluation criteria.

PG&E is also concerned that if CAISO moves forward with their current proposal and tariff updates, there is a risk of two separate RA values for DR between the CPUC and the CAISO (i.e., CAISO's NQC would differ from the CPUC's QC value). Accordingly, PG&E request that the RA proceeding make a policy determination that outlines the purpose of DR as either a resource to meet peak load or to meet 8760 conditions.

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

[1] PG&E's ESDER 4 Comments. CAISO's Straw Proposal Working Group Meeting. August 21, 2019 http://www.caiso.com/Documents/PG_EComments-EnergyStorage-DistributedEnergyResources-Phase4-Aug21WorkingGroup.pdf

PG&E supports CAISO's development of a max time run parameter that accommodates programs that are day-ahead only in order to better capture the operational attributes of demand response in CAISO's market.

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

   PG&E strongly supports CAISO's removal of the non-24x7 settlement of behind the meter resources under the DER aggregation model. PG&E agrees with the CAISO that, "because these resources are physically located in the distribution system, it is imperative that the local regulatory authority first provide jurisdictional clarity on retail versus wholesale activities, and also vet and resolve energy accounting and settlement issues, metering and visibility requirements, distribution system impacts and planning, and operational and forecasting concerns."[2]

7. **Additional comments**

[2] Energy Storage and Distributed Energy Resources Phase 4. Revised Straw Proposal. October 21, 2019. pg. 40. http://www.caiso.com/Documents/RevisedStrawProposal-EnergyStorage-DistributedEnergyResourcesPhase4.pdf