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 Working Group Meeting for ESDER Phase 4 that was held on March 18, 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 **April 1, 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**
    a. SOC management
    b. Multi-interval optimization

2. **Bidding requirements for energy storage resources**

3. **Demand Response resources**
    a. DR operational characteristics – Please provide comments on the ISO's proposal for DR resources to reflect a non-zero Pmin.

    Olivine appreciates the effort CAISO has made to explain participation options to make DR participation more accurately reflective of actual operational capabilities. As we understand the proposal, the resource would have the following characteristics:

    - PMin 10 kW below PMax (ie essentially a constrained output generator)
    - Bid segment between 0 and PMin would be governed by Minimum Load Cost

- Small segment between PMin and PMax would be governed by energy bid

This would result in most of the costs of DR being reflected in the "Minimum Load Cost" rather than in the energy bid. Presumably, CAISO would put in a constraint to ensure that the average minimum load cost per MWh minimum load would be no lower than the NBT. This would result in a significantly reduced probability of DR resources committed in the day-ahead market in order to get a real-time award. It would also reduce the chances of resources getting dispatched on and off between 0 and PMin, essentially violating the maximum number of events a resource can have in a day.

Olivine is generally supportive of more flexibility in bidding options, but there are some difficulties that need to be addressed:

- RA quantity can change from month-to-month. CAISO will need to accommodate frequent PMax changes (including changes to PMax below the NQC) and accompanying PMin changes in order for it to be a feasible solution.
- This problem persists with the current model today, but the proposed participation model may be even less accommodating to potential partial capacity derates. Even if partial derates are allowed in the future, the PMin RDT changes may not go into effect quickly enough to be recognized in market bidding.
- Relatedly, variable capacity resources, especially weather-sensitive resources, may still be only able to be turned on and off, but the capacity available for curtailment may vary day-to-day and hour-to-hour. A high PMin cannot easily be changed to take this into account.

In addition, our understanding is that resource owners will not be able to adjust minimum load bids hourly with the implementation of CCEDEBE Phase 1 in 2019. This functionality is not scheduled to be released until Fall 2020. In the meantime, minimum load costs are constant throughout the day and can only be changed with an RDT parameter.

Finally, especially with the ability to submit minimum load bids for resources with 0 PMin as part of CCEDEBE, it may make more sense to keep PMin at 0 and use minimum load bids rather than energy bids to signal economic availability. A $200 minimum load bid and $0 energy bid for a 1 MW resource with 0 PMin is similar in outcome to a $199 minimum load bid for 0 to a PMin of 0.99 MW and $1 for 0.99 to 1 MW. It also gives more flexibility for variable capacity resources to bid their available quantity each hour without a need for constant resource characteristics changes and/or partial derates. In order to support this bidding strategy, CAISO may need to revise its validation ensuring resources are bidding above the NBT and include commitment costs in this calculation. For example, validation check could ensure for all hours bid in the day-ahead market:

$$\frac{Startup\ Cost}{Hours\ bid\ on\ trade\ date} + Minload\ Bid + Energy\ Bid > NBT\ Price$$

This may be more difficult to implement in the real-time market for resources that have not been started, but conservatively, an acceptable validation would be $Startup\ Cost + Minload\ Bid + Energy\ Bid > NBT\ Price$, with the startup cost component removed from validation once the resource has been committed.

With regards to discussion PDR bid mitigation, we are strongly against a specific bid mitigation rules without further studies. We are willing to work with CAISO and/or DMM on reasonable commitment cost parameters, but if minimum load costs are used as largely a replacement for energy bids, there should be no CAISO-initiated PDR bid mitigation. LRAs can implement bidding requirements as precondition for RA credit in consultation with CAISO, but DR should not be mitigated in an equivalent manner to conventional generation.

b. Weather sensitive – Seeking feedback on potential forecasting methodologies and approaches for validating SC-submitted forecasts.

Olivine is looking forward to advancement of weather-sensitive resources to better reflect hourly and seasonal capabilities. However, we caution that weather-sensitivity is only one driver of variable capacity. Underlying load is also governed by process schedules, occupancy schedules, sunlight, and other factors. In addition, there may be significant seasonal and temporal differences in weather sensitivity, especially for a resource/aggregation that utilizes different load reduction strategies in different seasons.

This effort should also be used to clarify the hourly bidding expectation for all DR resources, which is not entirely clear today, at least for third-party DR participating in the CPUC's RA program. Our understanding is that CAISO may potentially significantly expand assessment hours for RA resources as part of the RA Enhancements initiative. Given that few DR technologies will be available for full capacity reduction 16 hours a day, we suggest that all DR (not just weather-sensitive DR) should either be subject to a different requirement or exempt from these bidding rules.

4. **Discussion on BTM Resources**

   a. Potentially removing 24x7 settlement requirement for non-resource adequacy resources utilizing the DERA/NGR participation model.

   b. Providing a forum for industry stakeholders to discuss potential QC methodologies for multi-tech type DERs for LRA consideration.

5. **Additional comments**

Olivine suggests further refinements in the Load Shift Product and in the MGO model in general to make these products technology-neutral. Given the delay in implementation for the Load Shift Product and EVSE sub-metering for ESDER 3, it is worthwhile to revisit both in order to create a more robust participation model. These revisions would be consistent with the goal of a technology-agnostic DR participation program rather than one focused on battery storage resources. This is consistent with suggestions in the CPUC's Load Shift Working Group Final Report[1].

Revisions of the EVSE sub-meter model can be worked out together with an improved Load Shift Resource product given that LSR is dependent on sub-metering as envisioned. PG&E's Excess Supply Pilot already utilizes alternative storage technology, compensating load increase for chilled-water cooling systems that can shift load from nighttime to the middle of the day with sufficient incentive.[2] Other non-battery storage technologies can both be effectively sub-metered and dispatched in a load-shift product, including EV chargers and multiple different types of thermal storage technologies.

Understanding complexities that may arise with non-battery storage technologies, a technical workshop could help shed light on the feasibility for market participation. This could touch on the cost and complexity of sub-metering, the accuracy of currently-envisioned MGO baselines, and whether baselines would still give accurate estimates for load and/or generation profiles made of several different technology types.

[1] https://gridworks.org/wp-content/uploads/2019/02/LoadShiftWorkingGroup_report.pdf

[2] Page 32 https://www.pge.com/pge_global/common/pdfs/save-energy-money/energy-management-programs/demand-response-programs/case-studies/Excess-Supply-Report.pdf