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
Mike Pezone *mapz@pge.com* *(415) 973-6093*	*Pacific Gas and Electric Company*	*3/29/2019*

Please provide your organization's general comments on the following issues and answers to specific requests.

PG&E believes that the priorities for this initiative should be:

- Developing and potentially limiting ESDER4 scope based upon current implementation needs and constraints of previous ESDER initiatives
- Creating an appropriate and fair bid mitigation paradigm for NGR resources
- Ensuring market rules do not create opportunities for strategic behavior
- Better reflecting the operational characteristics of demand response

1. **Non-Generator Resource (NGR) model**
   a. SOC management

   The CAISO's most recent proposal, as sketched out in its presentation, would be to allow NGR resources to include state of charge in some format as an hourly bid parameter, potentially in both the day ahead and real time markets. In order to properly evaluate both the capabilities such parameters would provide to an NGR, and the potential effects on the markets as a whole, PG&E would need to see the following questions answered and issues resolved:

(i) Would an hourly target be a single value, or an hourly minimum-maximum storage range? Note that a daily minimum-maximum range can currently be specified in the day ahead bidding.

(ii) The effect of setting a storage target is similar to, but not identical to, self-scheduling of an NGR resource because it forces the market algorithm to attempt to satisfy the target by charging or discharging in hours that may not be economic, and in ways that may not be consistent with economic bids. Any interval which is impacted by a SOC bid parameter should be excluded from receiving BCR, similar to how self-schedules impact the BCR of other generators.

(iii) The CAISO's outage management system currently enables an NGR resource to define a "maximum energy limit." From PG&E's experience this limit is used to drive NGR schedules when the market processes sees SOC exceeding this maximum energy limit, effectively forcing SOC to a given level or below at a particular time or period. How would this existing parameter interact with the proposed hourly targets?

(iv) If hourly targets are allowed to vary between day ahead and real time, or within real time, it might be possible for NGR to bid strategically to arbitrage without visibility in the energy bids. Should the setting of targets be fixed in any way so that they cannot be changed arbitrarily during the real time market processes? Is it possible to easily identify strategic behavior based on such changes?

PG&E recommends that the DMM analyze strategic behavior. Additionally, the CAISO should consider making target SOC parameters part of the public bid data so that all market participants may analyze strategic behavior.

(v) The interaction between state of charge management and the provision of ancillary services and flexible ramping should be clarified. The CAISO has alluded to constraints on ancillary services based on estimated state of charge in one section of its Day Ahead Market Enhancements Phase 1 proposal. That section should probably be incorporated into ESDER4 and enhanced. PG&E does not know how the CAISO currently incorporates the significant energy component of regulation up and down into its estimation of NGR SOC in the markets and would like clarification in the form of business rules. For example, the CAISO could restrict bidding of ancillary services in hours preceding a target SOC to ensure that energy scheduling could take the NGR resource to its bid-in SOC no matter what the estimated/telemetered SOC might be initially in the RTUC/RTD processes.

b. Multi-interval optimization

PG&E agrees as a general principle of market design that market participants should not receive BCR due to changes in non-binding intervals of multi-interval optimizations. In response to PG&E comments during its ESDER4 stakeholder presentation, the CAISO provided two sources of information about non-binding

schedules and prices in its real-time multi-interval optimizations: non-binding ADS operations profiles, and non-binding market results in CMRI. PG&E has not yet determined the reliability, consistency or usefulness of these market sources, but would appreciate learning more about how these sources could be used to properly assess the effects of non-binding schedules on the eventual binding schedules, so that it can properly evaluate the risks and opportunity costs created by the CAISO real-time market processes.

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

PG&E appreciates the CAISO's raising of issues around market power as it pertains to batteries, given that much of the development of batteries in California has been based on deferral of local need (implying local market power prima facie). In its ESDER4 stakeholder presentation, the CAISO floated a market participant proposal to use a forecast of future revenues in defining mitigated bids for battery discharge. PG&E is interested in understanding the complexity of requiring the CAISO to forecast future value within its market processes and how the CAISO would publish that information to the market participant. PG&E would further like the CAISO to explore the impacts of mitigation on the forecasts themselves. In general, PG&E believes a simpler approach would be mitigation mechanisms based on either reported charging costs or past market results (e.g., LMPs or LMPs escalated based on average daily energy arbitrage).

One option for mitigation is to use a price based on the highest 10% of LMPs at the resource's Pnode or a price based on the highest 10% of heat rates. Additionally, an NGR should have the same options as other generators as described in CCDEBE - the ability to have ex ante review of bids higher than $1000/ MWh and ex-post review of bids higher than $2000/ MWh.

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.

PG&E appreciates CAISO's willingness to address one of the fundamental problems with PDR in the CAISO markets - the inability of the CAISO to satisfy the maximum period of allowed PDR dispatch and the "dispatch" of PDR at zero within the PDR minimum dispatch period. PG&E is cognizant of the algorithmic issues that make this a very difficult issue to resolve in the CAISO markets: the small size of PDR resources makes the integer constraints on commitment of PDR very difficult to optimize on the margin in the markets in a way consistent with these resources' pricing and perceived value to system and local reliability. Enabling a non-zero Pmin tied to a PDR's Pmax (as defined in

the master file, outage management system, and/or submitted bids) offers a reasonable way to address both issues, with the addition of an energy limit similar to that on hydro resources which has an interpretation almost identical to maximum run time in the market algorithms. PG&E would like to see evidence that this approach will work operationally in the current setting of hundreds of PDR resources requiring such constraints without impacting market solution time; and in addition, PG&E would like to see appropriate changes in either SIBR or OMS that would enable the submitted Pmin to vary by hour.

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

PG&E supports the CAISO's proposal for a DR bidding option similar to VERs to allow SCs to submit a weather sensitive DR weather forecast or use a CAISO developed weather sensitive DR forecast. Today, a weather-sensitive DR resource may perform at a higher or lower level than its currently established QC within a given time period. Depending on weather, such a resource may provide more or less than the expected RA NQC MW amount submitted on the RA supply plan. A challenge is that the resource has no capability to bid lower than the RA amount without incurring RAAIM availability charges.

To solve the weather sensitive DR issue, PG&E recommends that the mechanics of forecasting and bidding weather sensitive DR remain in ESDER, but that other issues reside within the Resource Adequacy (RA) Enhancements initiative. Specifically, the RA Enhancements initiative should discuss i.) the development of the resource's capacity value when it comes to how to refine weather sensitive DR as it relates to developing the QC at the LRA (see comment 4b) and how that will translate to the NQC developed by the CAISO ii.) the validation and approval of these forecasts iii.) the obligations for weather sensitive resources.

4. **Discussion on BTM Resources**

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

PG&E requests additional information on the specifics of this proposal either from the CAISO or from third parties. For example:

- When would this resource be available to the market?
- How would the CAISO manage the SOC?
- How would non-participation hours be backed out of settlements?

PG&E looks forward to learning more about the suggested specifics of the proposal.

PG&E would also like to clarify that applicability of this rule to behind-the-meter resources that are a part of a DERA. Any behind the meter resources in a DERA that are Rule 21 interconnected would be non-export. Under this use case PG&E recommends the resource participate as demand response, which does not require 24 x 7 participation.

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

PG&E supports the CAISO's recommendation to have a planning forum to discuss potential QC methodologies for multi-tech type DERs for LRA consideration and recommends the discussion be moved to the RA Enhancements Initiative as it relates to developing the reliability and performance requirements of the resource.

5. Additional comments

- **Given the recent de-scoping and re-scoping of ESDER3 implementation, the CAISO should limit the scope of ESDER 4 until work has been resolved on previous ESDER initiatives.** While PG&E understands that priorities can change, the CAISO should understand that decisions to descope implementation efforts or "pause" a stakeholder initiative, while potentially the right decision at a point in time, represents a suboptimal outcome that impacts stakeholders.

- **For resources under 1MW, the CAISO should coordinate with the CPUC in developing reliability requirements.**
  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. Moving forward, as the number of DERs under 1 MW grow and provide reliability services, PG&E recommends the CAISO coordinate with the CPUC in developing reliability performance requirements.

- **The CAISO should update its tariff to reflect a minimum bidding size requirement of 100kW for PDR.**
  PG&E urges the CAISO to update its tariff to reflect a minimum bidding size for PDR of 100kW. The 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 the CAISO's minimum size requirement is interpreted by the 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.