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 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**

LS Power supports CAISO's proposed change and believes this will allow Resource Owners to better participate in CAISO markets. We also support CAISO's proposal that this functionality should be optional. LS Power also generally agrees with CAISO's proposal for how the hierarchy for dispatch will be decided but we recommend further discussion on this including more discussion on how self-schedules will interact with this functionality. With respect to CAISO's proposal on publishing SOC & bid information on OASIS, LS Power would like to better understand what CAISO is proposing and reserves the right to provide additional comments on this in the next iteration for this initiative.

LS Power also proposes that CAISO consider allowing an NGR's scheduling coordinator to elect "greater or less than or equal to" for a scheduled state-of-charge parameter. For example, while we can imagine no scenario where a NGR owner would need to specify an *exact* SOC at some future point for a storage resource, but it is easy to envision a scenario where Resource Owner will need *at least* X MWh "in the tank" to meet a contractual requirement later in the day. For example, a Resource Owner may likely never need a battery to be exactly at 75% full at 4pm, such that it would be important to charge if below or discharge if above that value at uneconomic prices, but it seems likely that the Owner might need to be at least 75% full at some time to meet an evening contractual requirement. The

difference in the examples is that the latter would not lead to a discharge that is uneconomic if at 3pm the resource is 90% full.

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

Multi-Interval Optimization - CAISO's proposal to not allow NGR resources to opt-out of the multi-interval optimization should be reconsidered. CAISO asserts that its bid cost recovery mechanism makes NGR resources whole relative to their bids in instances where the multi segment optimization yields in an uneconomic dispatch, but has not backed up this claim with a realistic example. LS Power is seeking further clarification from CAISO on this. In particular does "make whole" in this context mean that the resource is made whole if it ends up taking a financial loss over the entire operational day or does this mean the resource is made whole with respect to lost opportunity cost from uneconomic dispatch? Note that most of the "cost" of operating a limited energy resource is often in the form of lost opportunity cost that comes from being empty at an inopportune time, and this is a major risk given that the multi-interval optimization algorithm may elect to discharge a resource at a low price (which it could at any time if it expects a lower price later). We would request further discussion on this topic.

Specifically, we request clarification on how CAISO determines the necessary spread between charging and discharging cost from a multi-segment bid such as those actually used by resources (10 segments, monotonically increasing).

Market Power Mitigation / Default Energy Bids - CAISO should further refine its proposal for calculating Default Energy Bid for NGR resources. As currently proposed the Default Energy Bid for these resources is not high enough to incentivize participation from these resources. These resources provide an extremely valuable fast ramping product that can flip from charge to discharge or vice versa within matter of seconds. CAISO's DEB proposal is based on assumption for 2 charge and 2 discharge cycles for a NGR resource every day. In doing so, CAISO is averaging out LMPs for the hour for the 4 instances. Within these hours these resources may have several opportunities to charge and discharge. Use of average hourly LMP data significantly reduces the opportunity cost for these resources. Further, a 10 segment bid curve mitigated downward far enough might move a resource from charge to discharge at a given price, which may have serious unintended consequences and should be avoided. We recommend further discussion on this topic.

Although it was originally discussed in ESDER 4 in the context of Multi-Interval Optimization, LS Power feels that it is important to be able to communicate to CAISO a regularly updated estimate the variable operations costs (VOM) of charging and discharging a MWh of energy. These costs include efficiency losses and increased plant auxiliary power needs, but the largest component for many NGRs is the costs related to replacing worn out batteries, or adding/augmenting

the batteries with additional cells to make up for capacity fade, which is a function of how the battery is used. Whatever final form the Default Energy Bid takes, there should always be a spread between mitigated charge and discharge prices that is at least as wide as this VOM cost. There is currently no way for an NGR to transmit its VOM or necessary spread to CAISO that we are aware of, and it is an addition that should be prioritized.

Finally, we are also concerned about the specific case of whether the proposed Default Energy Bids may not allow an NGR to submit unusually high prices both to charge and discharge (discharge prices being considerably higher than charge, always) in an attempt to stay more full and be available during grid events and sustained high pricing, such as occurs when there are gas shortages or extreme weather. This is a behavior that should not be discouraged from storage resources, as it leads to more stored energy available at the time of highest demands and worst weather conditions, benefitting the whole CAISO system from a reliability perspective. For example, if a Default Energy Bid for a large storage resource caused it to discharge during a higher-than-average priced afternoon period, leaving it fully empty before the evening ramp during a heat wave, it would be a very poor outcome for both the generator, who lost the potential revenue from the highest price periods because it was empty, and the CAISO, who lost the capacity for the hours it needed it most. As CAISO refines its proposals for this calculation, we encourage staff to consider this scenario at each iteration as a corner case that is likely to be encountered in the real world someday.

3. **DR operational characteristics**

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

    LS Power has no comments on this topic.

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.

    LS Power has no comments on this topic.

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?

LS Power shares all the concerns raised by CAISO with respect to allowing behind the meter NGR resources to participate in CAISO wholesale markets on a Non-24X7 basis. This proposal should be carefully considered before implementation. The proponents of this proposal would like to enable BTM resources to essentially "toggle" between retail markets and wholesale markets in the day-ahead and/or real-time. Doing so would not only be challenging for CAISO to manage on both Planning and Operations fronts but will also be at odds with how 24X7 participation requirements are currently applied for In Front of the Meter (IFOM) NGR Resources. IFOM NGR resources have Must Offer Obligation (MOO) requirements under which they are required to be available for Day Ahead & Real Time markets. In return they are able to sell Resource Adequacy product to Load Serving Entities. If BTM resources can do so as well without same 24X7 MOO requirements this will be unequal treatment, may materially impact IFOM resources, and may also allow less reliable resources to sell resource adequacy and ancillary services for which they really can't be counted on, diluting the counting methodologies for these products. Proponents of this approach need to address these concerns up front before anything is implemented.

IFOM resources have to go through a lengthy 3+ year interconnection process vs BTM resources especially the ones built for retail usage go through a much quicker and less expensive Rule 21 interconnection process. This process doesn't typically trigger large interconnection upgrades. Participation of these resources in CAISO markets without required transmission or upgrades that may have otherwise been required, if these were IFOM, will lead to incremental congestion. This will potentially have material impacts on IFOM resources as these eventually may not be able to fully deliver their product despite having funded transmission upgrades in their interconnection process.

This proposal also poses potentially double counting and double compensation issues. BTM resources can potentially get double counted towards supply side and also demand side, raising the question of whether these resources could get

double compensation. First from providing service to its native load and then from wholesale market for the same MW delivery or consumption. Furthermore, how a non 24x7 resource could guarantee that it is not serving any retail load with the energy procured during wholesale operation must be addressed.

All these concerns raise potential “nondiscriminatory” issues. LS Power does not support this proposal and encourages CAISO to carefully consider all issues if it does decide to implement this proposal.

6. **Additional comments**

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

Nothing more at this time, thank you for considering our comments.