California ISO

Stakeholder Comments Template

Resource Adequacy Enhancements

This template has been created for submission of stakeholder comments on the Resource Adequacy Enhancements third revised straw proposal that was published on December 20, 2019. The proposal, stakeholder meeting presentation, and other information related to this initiative may be found on the initiative webpage at: http://www.caiso.com/StakeholderProcesses/Resource-Adequacy-Enhancements

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on **January 27, 2020**.

Submitted by	Organization	Date Submitted
Sandeep Arora	*LS Power*	*1/28/2020*

Please provide your organization's comments on the following issues and questions.

1. System Resource Adequacy

Please provide your organization's feedback on the System Resource Adequacy topic as described in section 5.1. Please explain your rationale and include examples if applicable.

California is undergoing a fundamental change in the make-up and operation of the electric infrastructure serving California consumers. CAISO's proposed "enhancement" of its Resource Adequacy program is a plan to update RA requirements to reflect the substantial changes that have occurred since RA was implemented in 2005. While RA was implemented in response to the 2000-2001 energy crisis to assure that sufficient generation capacity is available to meet load requirements during system peak hours, electric system reliability needs have evolved to require focus on net loads and steep ramping requirements triggered by the substantially increasing reliance on variable wind and solar resources. The RA modifications proposed by the CAISO can be an effective response to the evolving grid, particularly if improved in certain areas.

LS Power supports removing the impact of resource forced outages from the general Planning Reserve Margin used to determine overall RA requirements and making it a separate component of the RA requirement. CAISO proposes to use NQC and introduce a new measure, unforced capacity (UCAP) for measuring availability of RA

resources. The bottoms up approach for UCAP proposed and preferred by the CAISO should generally incentivize resources to take actions to reduce the potential for forced outages and de-rates and at the same time assure that sufficient capacity is available to reliably serve customer load. However, there are important details of the UCAP proposal that warrant modification.

***Using the 100 "tightest system supply hours" to determine each resource's seasonal UCAP**.*

We are concerned that those 100 hours may not represent a reasonable standard. If there is not a consistent pattern to the timing of the tightest hours, they may not represent a meaningful or useful standard. If they do not effectively represent future system need, the tightest supply hours would only serve to punish those resources that had the misfortune of having their outages coincide with the standard and would not provide a meaningful predictor of future tight conditions. If there is a consistency to the tightest hours, it would be more appropriate to designate all such hours as the UCAP benchmark, a standard much like the current Availability Assessment Hours. The resulting larger sample size would be more likely to predict future needs. Thus, LS Power recommends that the CAISO determine the tightest system supply hours over the last five years and, assuming there is some reasonable pattern to their occurrence, specify the specific hours that will be used for assessing UCAP going forward. Like the current AAH, the pattern could be adjusted going forward annually. A larger set of potential critical hours would produce more stability and provide a benchmark for resource operators to focus on.

Incorporating the UCAP/NQC in RA designations for partial resources.

CAISO should clarify its proposal for establishing UCAP for Partial Capacity Resource Adequacy Resources. For instance, if a 100 MW resource which has Partial Resource Adequacy of 50 MW (NQC is 50 MW) experienced a forced outage of 20 MW then this forced outage should not impact UCAP calculations. In this scenario, since the resource is still available at 80 MW which is more than 100% availability for its Resource Adequacy portion, this 20 MW de-rate should not be factored in. This may not be an issue for traditional gas fired generators as their forced outages are usually lumpy, but battery storage resources are typically made up of multiple parallel battery/inverter subsystems that are independently available to operate. Should one subsystem be forced out then the resource experiences a small derate, the net remaining output could still be large enough to meet the Resource Adequacy obligations and this fact should be recognized for UCAP calculations.

Determining UCAP for new resources

UCAP for newer technology resources, such as Battery storage, should not be based on historical forced outage rates for same technology resources. The limited amount of battery storage capacity that is currently in service is not a large sample to establish UCAP for new battery storage resources, and still includes a relatively large number of early "pilot" projects or others that are the first to use their particular battery and/or inverter makes and models. Using this sample will not accurately reflect the improving

performance of new installations, and UCAP for new resources could be unnecessarily penalized due to the performance of the existing resources if this methodology was used. LS Power proposes that for the first few years of operation of new resources, such as battery storage, the UCAPs be set equal to 100% of resource's NQC. After sufficient data is collected for these resources over a few years of operation, UCAPs for these resources can then gradually transition over to the new methodology which would calculate UCAPs based on unit specific forced outage rates.

Applying new methodology to existing contracts & contracts to be executed in the near future to meet CPUC procurement targets in the near term

There was a concern raised at the stakeholder meeting that applying the UCAP structure to existing long-term RA contracts, which are based on NQC, would reduce the RA value of those contracts and require procurement of additional capacity to meet the reduced RA value of the existing contracts. The question of who should shoulder those potential costs was raised. Some form of grandfathering of existing contracts was proposed. The possibility of contract renegotiation or redefining NQC to incorporate the new requirements was also raised. Those actions would unfairly allocate any incremental cost to the supplier without providing any offsetting benefits, which is not an equitable solution. Since the changing requirements are being implemented in response to the changing nature of grid operations, it is reasonable that these costs, like all other just and reasonable costs, be borne by the end user. This would be relatively unnoticeable in that its only impact would be a small increase in the amount of RA capacity that LSEs would need to acquire to make up the difference.

In addition, CPUC's recent near term capacity procurement mandate for LSEs will lead to new Resource Adequacy contracts to be signed between Suppliers and LSEs. CAISO's proposed change to incorporate UCAP as a measurement tool, in addition to NQC, will likely lead to RA capacity shortfall that will be procured to meet this mandate. CAISO & CPUC should discuss the application of UCAP methodology (within this stakeholder activity and/or CPUC's RA proceeding) and attempt to address the question with respect to this foreseeable deficiency such that undesirable outcomes, such as further postpone of OTC retirements, can be minimized.

Non-Resource-Specific Import RA

The viability of non-resource-specific import resources to provide RA capacity is becoming a concern as the available reserve margin throughout the WECC is declining, due primarily to the retirement of large amounts of coal-fueled generation throughout the region. The CAISO and CPUC are considering various alternatives to assure that all RA capacity represents actual resources that will be available when needed. The current CAISO proposal is to require all NRS-RA to specify their source Balancing Area and for sellers to provide some sort of attestation at the time of the showing that the RA import is supported by physical capacity, with reserves and firm transmission. LS Power supports this proposal as a minimum requirement. Import RA resources should have requirements similar to those of resources located within

the CAISO. This means that identification of specific resources to provide RA capacity is not an outrageous requirement. In addition, firm transmission to deliver the product to CAISO Boundary should be required. As EIM and EDAM processes continue to evolve, tying RA capacity to resource-specific imports is a reasonable goal of the process. The proposal to establish UCAP for NRS-RA on a scheduling coordinator basis is a reasonable step to help assure accountability.

Storage Minimum Charge Requirement

LS Power disagrees with the proposed minimum charge requirement for energy storage resources. This proposal is discriminatory against energy storage as an asset class, preventing it from participating fully in the Day Ahead and Real Time markets in a way that no other type of resource is subject to. Requiring storage resources to maintain a Minimum Charge Requirement could lead to uneconomic outcomes not only for the storage resource but also for CAISO load, as some of the fastest and most responsive resources in the market would be barred from fully participating in the Real Time market during key periods such as during the "neck of the duck" when solar resources turn off and net load ramps up in the evenings. The proposal is effectively removing storage from the market in order to provide an un-paid reliability service, something that is not asked of any other type of resource.

The scenario that CAISO has identified that prompted this proposal is one to be taken seriously and approached thoughtfully, however, this proposal must be modified significantly if it is to be considered. In its current form it should be rejected and CAISO should collaborate with stakeholders to start from scratch. Reasonable market-based approaches could be developed such that either storage gets paid for providing this reliability service or CAISO market process are changed such that the outcome CAISO is trying to achieve through Minimum Charge can be achieved through the markets. Indeed the problem itself appears to be more a problem of inadequate reserve margins than one of energy storage system performance, particularly if energy storage resources are exposed to appropriate price signals, which they are. The scenario described by CAISO is already overwhelmingly unlikely because a storage resource that fails to manage its real time bidding parameters and its state of charge prior to a Day Ahead schedule is already taking a risk that it will be forced to pay imbalance penalties at the $1000-2000/MWh price caps, a mistake that would be very difficult for a resource to bear. There are multiple reasons why the proposed Minimum Charge Requirement could lead to unintended and uneconomic consequences:

(1) The CAISO market uses high prices in the Real Time market to dispatch much needed resources to serve load in challenging intervals, such as times when a unit or line has tripped off somewhere, or when there was a major error in a load or weather forecast. These price spikes frequently occur prior to the peak net load hours, during the morning and evening ramp periods. If a storage resource has a Day Ahead schedule during the evening peak hours (when Day Ahead prices are inevitably highest), this proposal would remove that storage resource from participating in the Real Time market for many hours prior to the Day Ahead schedule, effectively removing some of the most responsive, dispatchable resources available from the bid stack, which goes counter to everything CAISO

has been trying to achieve for years through FRACMOO and other Flexible Ramping and Flexible RA related stakeholder processes.

(2) The current proposal potentially reduces a storage resource's Real Time market participation all day long if there is a Day Ahead award coming later, even if there is plenty of time for a resource to charge back up in the market between the time of the Real Time award and the scheduled dispatch.

(3) CAISO may not need the energy in the Day Ahead scheduled discharge intervals in Real Time, as grid conditions change in Real Time. This would mean forcing a Minimum Charge will certainly not be an economic option and CAISO ratepayers may have paid for the additional cost of this sub-optimal solution when grid reliability wasn't an issue. As resource operators, we have seen numerous days in the recent years where project LMPs cleared at high prices in the Day Ahead, and those same 15 and 5 minute periods cleared at a fraction of that price, and the dispatch was appropriately reduced.

(4) This type of grid reliability service is understandable for Storage resources that eventually develop under the Storage as a Transmission Asset framework, under which storage resources would receive cost recovery partly from CAISO TAC and hence reduction in market revenues from Minimum Charge requirements should not be an issue. For resources mostly relying on revenues from CAISO energy market, any restriction in their participation will be detrimental for this asset class and will send wrong signals to the developer community.

(5) This proposal is akin to CAISO's use of Exceptional Dispatch (ED). ED is typically used by CAISO when dispatching a resource out of market is the only feasible solution to address an impending reliability issue. However, ED's use is expected to be minimal and to be indiscriminately applied to all available effective resources. CAISO's Minimum Charge proposal is similar to ED but with two major distinctions, it only applies to a select asset class of resources, i.e. energy storage, and as described it would actively be used on a daily basis.

(6) Reducing the ability of an asset to participate and earn revenue in the Real Time market in the way this proposal does would provide a disincentive for investment in the very type of flexible, dispatchable resources CAISO needs most in the coming years.

We also point out that the description of the CAISO market as looking at a resource's bid curve and determining the "spread" between charge and discharge that the unit needs is not appropriately documented in the Tariff or Business Practice Manuals, which we have previously brought up in ESDER stakeholder process. The claim does not make sense in the context of a 10-segment monotonically increasing bid curve. It only makes sense if a unit submits a 3 segment curve (charge, off, discharge), which is not the reality. This concern is peripheral to Resource Adequacy though, and is something that should be taken up in the appropriate storage focused stakeholder process going forward.

Minimum Charge constraint proposal introduces an unreasonably discriminatory and preferential framework into the CAISO energy market that will potentially undermine

the objective behind the proposal. We recommend that CAISO NOT implement this and instead work with stakeholders in implementing enhancements to its market structure such that the desired dispatch is provided as a market (economic) solution. If CAISO needs a special reliability service from energy storage systems, and that service requires them not to participate fully in the wholesale energy markets, then that situation is not unlike providing Ancillary Services today, and perhaps what is really needed is a modification to an existing ancillary service, or a new one altogether. If CAISO is concerned that energy storage resources will not behave as desired in response to price signals in the market, it should reconsider how its price signals are determined. Price signals work today, and failure to hit a resource's schedule comes with appropriate very high costs, and CAISO would make a great mistake to undermine the market participation of (and ultimately investment in building) its fastest, most flexible, dispatchable resources.

2. Flexible Resource Adequacy

Please provide your organization's feedback on the Flexible Resource Adequacy topic as described in section 5.2. Please explain your rationale and include examples if applicable.

Please provide your organization's position on the Flexible Resource Adequacy topic as described in section 5.2. (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

Flexible Capacity Must Offer Obligation

CAISO's Flexible Capacity MOO proposal requires that all Flexible resources submit economic bids in the Day ahead and Real time markets. We recommend CAISO change or clarify this proposal to require either Economic Bids or Self Schedules in the Day Ahead, which is consistent with the existing requirements. Allowing self-scheduling in the DAM and then requiring economic bids into the RTM will still provide the desired flexibility to CAISO in RTM. Some resources may have counterparty obligations to self schedule for a few hours in the Day Ahead, just to ensure that their product is committed through the Day Ahead and requiring Economic bids would potentially jeopardize this. Such Day Ahead self schedules ultimately settle with the resource being a price taker in the Day Ahead market during the scheduled hours, so there is a strong financial incentive to align the schedules with CAISO's price signal.

3. Local Resource Adequacy

Please provide your organization's feedback on the Local Resource Adequacy topic as described in section 5.3. Please explain your rationale and include examples if applicable.

Please provide your organization's position on the Local Resource Adequacy topic as described in section 5.3. (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

4. Backstop Capacity Procurement Provisions

Please provide your organization's feedback on the Backstop Capacity Procurement Provisions topic as described in section 5.4. Please explain your rationale and include examples if applicable.

Please provide your organization's position on the Backstop Capacity Procurement Provisions topic as described in section 5.4. (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

Additional comments

Please offer any other feedback your organization would like to provide on the Resource Adequacy Enhancements third revised straw proposal.