California ISO

Stakeholder Comments Template

Resource Adequacy Enhancements

This template has been created for submission of stakeholder comments on the Resource Adequacy Enhancements fifth revised straw proposal that was published on July 7, 2020. 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 **August 7, 2020**.

Submitted by	Organization	Date Submitted
Sandeep Arora & Cody Hill	*LS Power*	*8/7/2020*

Please provide your organization's overall position on the RA Enhancements fifth revised straw proposal:

☐ Support
☐ Support w/ caveats
☐ Oppose
☒ Oppose w/ caveats
☐ No position

In its current state, LS Power does not support some elements of this proposal as it has detrimental impacts on energy storage projects as noted in our comments below.

Process wise, this fifth straw proposal has unfortunately pushed forward proposals that were widely opposed by the stakeholder community without addressing the valid criticism against them, particularly the Minimum Charge Requirements which were discussed in ESDER4 and opposed by every single stakeholder who spoke at that meeting. Such drastic changes should not be added to the 5th iteration of a straw proposal, they should be moved to a separate initiative focused on the issue from the beginning and worked out in detail there.

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 4.1. Please explain your rationale and include examples if applicable.

a. Please provide your organization's feedback on the Determining System RA Requirements topic as described in section 4.1.1. Please explain your rationale and include examples if applicable.
b. Please provide your organization's feedback on the Unforced Capacity Evaluations topic as described in section 4.1.2. Please explain your rationale and include examples if applicable.

i. Please provide your organization's feedback on whether the ISO should establish a dead band around a resource's UCAP value given the associated benefits and burdens, as described in section 4.1.2. Please explain your rationale and include examples if applicable.

Yes, LS Power supports providing a small deadband.

ii. Please provide your organization's feedback on Option 1 and Option 2 for calculating UCAP for new resources without three full years of operating history, as described in section 4.1.2. Please explain your rationale and include examples if applicable.

LS Power does <u>not</u> support Option 1 for calculating UCAP for new resources especially for newer technology resources, such as Battery storage. As we previpusly commented, Option 1 proposed to calculate UCAP based on historical class average forced outage rates for same technology resources. A major limitation in this approach is that the limited amount of battery storage capacity that is currently operational, is not a sufficiently large sample to establish UCAP for this technology. Many of the early battery storage installations were "pilot/test" projects deployed to prove the technology. A few of these may not even be actively participating in CAISO markets. Using this limited 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 unrepresentative existing resources if this methodology is used. Further by artificially reducing UCAP for new installations based on class average, CAISO may be inadvertently requiring LSEs to procure more RA capacity than it needs which will lead to increased cost to be borne by ratepayers. In addition, Developers of these resources may unnecessarily

get a haircut in their Resource Adequacy payments without the resource even having an opportunity to demonstrate its availability.

LS Power supports Option 2. For first full year of its operation, UCAP for new technology projects such as battery storage should be set equal to the resource's NQC. Subsequent years should factor in that unit's actual forced outage rates, but not those of unrelated projects, to develop UCAP as proposed by Option 1.

iii. Please provide your organization's feedback on the ISO's approach to use the historical availability during the RAAIM hours for years prior to 2019 and the historical availability during the 20% tightest supply cushion hours in years 2019 and beyond for hydro resources, as described in section 4.1.2. Please explain whether this approach is necessary or preferred to the standard UCAP calculation to reflect hydro availability.

LS Power has no comments at this time.

iv. Please provide your organization's feedback on the modifications for UCAP counting rules for storage resources as described in section 4.1.2. Please explain your rationale and include examples if applicable.

The following comments were submitted in response to the 4th Straw Proposal. To our knowledge, CAISO has not addressed any of these. The 5th Straw Proposal appears to have retained all elements of CAISO's prior proposal. We retirerate our comments below and invite CAISO for a discussion if that helps resolve this issue.

The proposed treatment remains both discriminatory against storage and renders useless the very tools that CAISO is developing in other stakeholder processes to improve the integration of storage in its markets.

<u>The proposed formula undermines the intent of the EOH SOC tool and is discriminatory against storage. The UCAP calculation for an hour should only consider that single hour with respect to EOH SOC, and should not consider Charging capability</u>

The proposed formula is overly broad, to the point that it is discriminatory against energy storage resources. Furthermore, the specific math proposed does not make sense. Specific issues with the approach include:

- *Every hour is using a 4 hour calculation, which is discriminatory against storage, as no other resource is having its UCAP reduced in a given hour based on what might happen several hours later.*
    - *For example, if a resource is expected to be largely discharged after the evening peak in the overnight hours, what sense does it make to*

insist that it be full enough for a 4-hour discharge at that time, and to count that against the unit's performance in providing RA?

- *The math effectively requires storage to bid into Real Time with absolutely no SOC restrictions 24/7 to avoid a UCAP penalty, which is a far higher bar for Resource Adequacy than for any other resource type. For instance, a gas CCGT that does not receive awards and is not committed in the Day Ahead market has no requirements to offer its full Pmin to Pmax range into every RT period, as that would be physically impossible, but this is effectively being asked of storage here in order to receive the same payment for Resource Adequacy as the CCGT. Storage should already be incentivized by the market to provide RT bids 24/7, it is unnecessary to penalize its value as a RA resource relative to other resources, especially when it may still be providing more useful operating range to CAISO operators than other resource types with similar NQCs getting no such reduction in value.*
- *No other type of resource is required to be able to provide the equivalent of "charging" as an option to the market (the capability to decrease output is best addressed by the market through procuring Regulation Down). As such the example in Hour 5 is clearly discriminatory. This resource is providing far more flexibility to market operators than a gas unit with Pmin = 5 and Pmax = 25, and yet will receive a lower UCAP for the same hour because it can't charge at -1*Pmax?*

Only the unit's capability in a given hour should affect its UCAP in that hour. Take for instance the CAISO's example "Hour 3" for a 25 MW storage resource w/ 100 MWh of storage capacity

<u>Hour 3:The resource is not on outage (+/- 25 MW) in the real-time market, and they are imposing a minimum end of hour SOC of 25 MWh</u>

Here, if a resource has a SOC anywhere from 50-100 MWh going into Hour 3, it could clearly provide its entire usable capacity to CAISO for the entire hour. Discharging at 25 MW for the whole hour if RT dispatch dictates would still leave energy in the tank and the EOH SOC parameter would be a non-binding constraint, and it makes no sense to penalize resource's UCAP. Clearly the full capability of the resource is available for the hour, and there should be no impact on UCAP in this hour.

As discussed above, the whole reason a 100 MWh resource might have an EOH SOC of 25 MWh in a given hour is so that the SC can be confident that it can physically deliver on a Day Ahead schedule in an upcoming hour (perhaps the "Hour 3" of this example is really HE 15, and the resource has a Day Ahead schedule to begin discharging in HE 17). The current UCAP proposal thus undermines the ability of the SC to ensure that this Day Ahead schedule is met.

In the scenario where a NGR has a Day Ahead schedule in Hour 3, and the EOH SOC parameter is such that this schedule cannot be met, then there should

rightfully be a reduction in availability in the UCAP calculation, but this is a far more specific scenario than what is proposed.

c. Please provide your organization's feedback on the System RA Showing and Sufficiency Testing topic as described in section 4.1.3. Please explain your rationale and include examples if applicable.

d. Please provide your organization's feedback on the Must Offer Obligation and Bid Insertion Modifications topic as described in section 4.1.4. Please explain your rationale and include examples if applicable.

The proposal in Section 4.1.4 is generally very reasonable, except for the significant error in its treatment of NGR-REM resources discussed below. In regards to the three principles outlined:

- MOOs must align with NQC (and by extension UCAP) – we agree with all points
- RA resources will have a day-ahead must offer obligation – we agree that RA resources should submit DA bids, and then RT bids for any capacity that clears DA while also being available for exceptional dispatch.
    - We point out the inconsistency here with the reasonable approach above, and the treatment of energy storage regarding UCAP calculation that requires a Pmin to Pmax real time bid in all hours (slides 44 – 47) or face a sharp reduction in value. The principles in this proposal section 4.1.4 should be universally applied across resource types, and UCAP should similarly not discriminate on these same principles.
    - We do agree that a 24x7 MOO is appropriate for most resource types. And many requests for something less stringent are from resource types that are seeking to be paid the same while providing a less consistent and less valuable service to the grid under the same name of "resource adequacy".
- Resources will receive bid insertion, unless exempt – we agree with most points, but disagree strongly with the proposal to disallow NGR-REM units from providing standard RA, and offer a few other points below on this section:
    - NGR-REM units are 100% under control of CAISO for dispatch 24/7/365, and if there is an issue with NGR-REM performance CAISO should look into how they might want to modify their dispatch

rather than simply ban them from the market, which is an arbitrary and discriminatory change. LS Power speaks from experience as we currently operate two NGRs in CAISO markets. These resources are designed to either offer Energy & AS under the NGR model or Regulation only under the NGR-REM model. When operated in REM, the resource follows the AGC signal 24x7. If CAISO sent that resource charge and discharge commands that correspond to a 4 hour discharge and are in line with our master file, the resource would have no trouble following that signal. The statement that "REM management resources are neither required, nor capable, of providing energy needed to meet the energy needs of system" (page 48) is incorrect. CAISO should strike this section and fix dispatching protocols for REM instead if there is an issue here.

- To be clear on other topics, DA Bid Insertion should only be used for RA projects who have left their bids blank, or are subject to market power mitigation (as discussed in the ESDER 4 context around NGR bid insertion). Units without market power should be given flexibility in representing their willingness to charge and discharge at various prices via their bids, provided that the full capacity is made available to the Day Ahead market according to the principles above.
- It is reasonable in the Day Ahead market to request that NGRs bid in both Charge and Discharge capability for optimization purposes.
- It is <u>not</u> reasonable to insist on the same in the Real Time market for all periods, as no other resource has similar requirements, and NGRs are effectively providing 2x the range of MW for the same payment as a traditional generator with the same NQC.

i. Please provide your organization's feedback on generally defining variations to the must offer obligations and bid insertion into the day-ahead market based on resources type, as described in Table 12 in section 4.1.4. Please explain your rationale and include examples if applicable.

e. Please provide your organization's feedback on the Planned Outage Process Enhancements topic as described in section 4.1.5. Please explain your rationale and include examples if applicable.

f. Please provide your organization's feedback on the RA Import Requirements topic as described in section 4.1.6. Please explain your rationale and include examples if applicable.

i. Please provide your organization's feedback on the issue of whether firm transmission service on the last line of interest to the CAISO BAA will ensure reliability and is feasible, or whether the CAISO should require point-to-point, source to sink firm transmission service as originally proposed, as described in section 4.1.6 page 68. Please explain your rationale and include examples if applicable.

We strongly support CAISO requiring firm transmission service point to point from source to sink. Just requiring firm transmission service for the last line to CAISO BAA will not ensure CAISO is able to meet its objective of counting on RA capacity when it needs it.

ii. Please provide your organization's feedback on other BAA's systems bordering the CAISO and whether such a "last line of interest" proposal is feasible and would effectively support RA import capacity dependability and deliverability, as described in section 4.1.6 page 68. Please explain your rationale and include examples if applicable.

The issue with allowing non firm transmission on a few paths but only firm for the last line of interest is what if the non firm paths get curtailed due to local issues in outside BAA (non firm transmission gets curtailed before firm), then CAISO stands a reliability risk if the resource it counted on doesn't remain available. CAISO really needs assurance that firm transmission is available in the month ahead showings before it can count on an Import RA resource.

iii. Please provide your organization's feedback on whether a non-compliance penalty or other enforcement actions are necessary if delivery is not made under firm transmission service, as described in section 4.1.6 page 69. Please explain your rationale and include examples if applicable.

N/A. We recommend firm point to point transmission from resources point of generation to CAISO BAA boundary.

iv. Please provide your organization's feedback on how to convey the last line of interest, as described in section 4.1.6 page 69. Please explain your rationale and include examples if applicable.

v. Please provide your organization's feedback on the options proposed in section 4.1.6 and any other potential mechanisms that would best ensure RA imports are dependable and deliverable if the CAISO were to adopt, as an alternative, a "last line of interest" firm transmission service

requirement. Please explain your rationale and include examples if applicable.

As stated above we do not believe the alternative approach should be implemented. Not only CAISO puts itself at a reliability risk by adopting this approach but it unintentionally creates a non level playing field between in state and out of state resources providing RA. In state resources go through a very lengthy interconnection process and fund network upgrades in order to make sure they are deliverable and can be counted for RA purposes. Out of state resources do not go through this process, therefore in order to ensure whether the product these resources offer is deliverable or not, CAISO must ensure it is requiring point to point firm transmission.

g. Please provide your organization's feedback on the Operationalizing Storage Resources topic as described in section 4.1.7. Please explain your rationale and include examples if applicable.

CAISO's proposal on Minimum Charge Requirements (MCR) is not workable. This proposal is discriminatory against one asset class (energy storage), will disincentivize storage's participation in Resource Adequacy & Real Time market participation thereby not providing the flexible supply it provides to CAISO. This proposal has not been updated meaningfully since it was in ESDER4 earlier this year (where it was also inappropriately added to a late stage draft stakeholder proposal rather than being teed up and discussed from the beginning of that effort). Most entities involved in this discussion have been opposed to this proposal, including the CPUC, DMM, SCE, IPPs, CESA, etc. The entire MCR proposal is based on a false premise, that there is a problem with the 65 minute look ahead period over which CAISO attempts to optimize awards. Rather than put handcuffs on energy storage and reduce their ability to participate in the wholesale markets through this MCR concept, CAISO should take a holistic view at what changes should be made with respect to energy storage works in the realtime market, which is a topic worthy of a separate stakeholder process with potentially including CAISO Operations into the discussion. Any potential reliability concerns should be addressed by making global change to market structure rather than targeting an asset class.

The MCR proposal removes storage from the Real Time market if it has a Day Ahead award, in direct conflict with the goals of such long running CAISO efforts as FRACMOO as well as with the UCAP proposal in this same stakeholder process (which rightly attempt to maximize storage bidding into the RT market).

As currently proposed, CAISO will enforce a MCR on storage such that for the most part it is removed from the Real Time market in order to hold a minimum state of charge the entire operating day leading up to the hour(s) where it has discharge awards from Day Ahead. CAISO acknowledges that this will potentially lead to storage missing out on opportunities to discharge if there were price spikes

before the hour of discharge, thus depriving CAISO operators of their most flexible resources in the fleet at exactly the time they may be the most valuable (i.e. the neck of the duck when solar is ramping down). Flexible supply such as storage does rely on these short term spikes as their business case for a portion of project revenues. Typically these projects are able to discharge during those short duration 5-min spikes and charge right back so they are able to meet the DA discharge requirements. Holding these resources at a specific SOC and not allowing them to flexibly operate goes against the core fundamentals of the market. If these resources are not able to flexibly discharge during these spikes, CAISO is unintentionally offering the opportunity to other asset classes to produce power during those intervals, hence being discrimantory. In addition, requiring storage to maintain a particular SOC may lead to charging storage during high price times which could further deteriorate economics for storage. CAISO should rely on market prices and signals and let storage charge/discharge flexibly and only intervene through exceptional dispatch if they see reliability issues. What if the discharge event CAISO was holding SOC for storage never materializes in Real Time? Wouldn't holding SOC for storage make this an overall uneconomic outcome for the entire market, thereby increasing wholesale power prices?

We recommend that CAISO study what the real needs for storage are in the coming years, and how they are acting in the market once there is a meaningful quantity online. Tools such as the End of Hour State of Charge (if not ruined by their treatment in UCAP) along with appropriate price signals can achieve everything CAISO is attempting to accomplish here, without permanently reducing the value of storage and depriving CAISO operators of access to storage projects in the Real Time market.

While we do not agree with this CAISO proposal but we do empathize with CAISO's policy team and want to work constructively to address their concerns. The issue deserves a fresh start and CAISO should seek proposals from stakeholders to address the identified concerns. This will result in far more attractive options than continuing to push this proposal which is unworkable.

2. Flexible Resource Adequacy

Please provide your organization's feedback on the Flexible Resource Adequacy topic as described in section 4.2. Please explain your rationale and include examples if applicable.

3. Local Resource Adequacy

Please provide your organization's feedback on the Local Resource Adequacy topic as described in section 4.3. Please explain your rationale and include examples if applicable.

a. Please provide your organization's feedback on the UCAP in Local RA Studies topic as described in section 4.3.1. Please explain your rationale and include examples if applicable.

4. Backstop Capacity Procurement Provisions

Please provide your organization's feedback on the Backstop Capacity Procurement Provisions topic as described in section 4.4. Please explain your rationale and include examples if applicable.

a. Please provide your organization's feedback on the Capacity Procurement Mechanism Modifications topic as described in section 4.4.2. Please explain your rationale and include examples if applicable.

b. Please provide your organization's feedback on the Making UCAP Designations topic as described in section 4.4.3. Please explain your rationale and include examples if applicable.

c. Please provide your organization's feedback on the Reliability Must-Run Modifications topic as described in section 4.4.4. Please explain your rationale and include examples if applicable.

    i. Please provide your organization's feedback on an appropriate availability incentive design to apply to RMR resources after the removal of the RAAIM tool, as described in section 4.4.4. Please explain your rationale and include examples if applicable.

d. Please provide your organization's feedback on the UCAP Deficiency Tool topic as described in section 4.4.5. Please explain your rationale and include examples if applicable.

5. Please provide your organization's feedback on the implementation plan, including the proposed phases, the order these policies must roll out, and the feasibility of the proposed implementation schedule, as described in section 5. Please explain your rationale and include examples if applicable.

6. Please provide your organization's feedback on the proposed decisional classification for this initiative as described in section 6. Please explain your rationale and include examples if applicable.

Additional comments

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

LS Power has serious concerns with some elements of the current proposal. In its current state we opposed CAISO proposal but here are our recommendations on how to make these elements workable:

(1) Minimum Charge Constraint for storage needs should be removed from this proposal so a robust stakeholder dialogue can take place on this topic. CAISO should not implement its proposal on this as this discrimantory against one asset class. We understand CAISO's view point on this issue but continue to believe issues CAISO has raised here should be addressed either through the markets, or through exceptional dispatch procedures & not by disallowing one set of asset class (energy storage) fully participate in CAISO/CPUC RA program and CAISO Energy Markets, and effectively unintentionally rendering this asset class "inflexible", the exact opposite of what CAISO desires for renewable integration.

(2) REM only resources should not be disallowed from providing Resource Adequacy

(3) UCAP calculations for new technology such as energy storage should start at NQC for the first year

(4) UCAP calculations for energy storage should correctly apply SOC or else unintended consequences will lead to CAISO picking winners and losers.

LS Power team has experience in operating large battery storage projects in CAISO markets. We stand committed to working with CAISO team in addressing these issues.