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
Wei Zhou (wei.zhou@sce.com)	*SCE*	*January 27, 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.

UCAP Requirement

In the CAISO Third Revised Straw Proposal (the CAISO Proposal), the CAISO proposes to set the UCAP requirement at 110% of forecasted peak, with 6% reflecting reserve needs and 4% load forecast error. It appears that the 6% for reserve needs is from current operational practice and the 4% for load forecast error from 2018 California Energy Commission (CEC) forecast data.

It is clear from the discussion at Jan 7-8, 2020 workshop that the existing 115% Planning Reserve Margin (PRM) was rigorously studied prior to its establishment.[1] However, in proposing the 110% UCAP requirement, the CAISO has not provided a rigorous study comparable to the previous studies setting the 115% PRM. For instance, no evaluation of loss-of-load expectation was presented and no simulation of existing and projected generation and load profiles was performed. More fundamentally, the CAISO has not identified what level of reliability the CAISO Proposal is intended to achieve and why such level is appropriate. Without being rigorously studied, the proposed UCAP requirement is trying to solve a problem that is not well defined, and consequently, may result in an incorrect procurement amount being set. Further, if the intended outcome of the proposed UCAP requirement is to bring new

[1] For example, in the California Public Utilities Commission's (CPUC) Resource Adequacy (RA) proceedings, R.04-04-003 and R.08-04-012.

resources to the grid, then SCE believes that the RA proceeding is not the right path. The CPUC's Integrated Resource Planning (IRP) proceeding is more suitable for that purpose. In addition, as discussed during the workshop, it is likely that there is an overlap between the proposed 6% reserve factor and 4% load forecast factor.

SCE requests that the CAISO provide relevant data and rigorous analysis to demonstrate the reliability level the proposal is trying to achieve, why the proposed level of UCAP requirement is appropriate to achieve this level of reliability, and how the proposed UCAP requirement level compares to the existing 115% PRM. The CAISO should also evaluate whether load forecast error is better addressed in the load forecast standard (e.g., 1-in-2 or 1-in-5) rather than by raising the PRM.

UCAP Calculation under 100 Hours

The CAISO proposes to calculate a resource's forced outage rate (i.e., seasonal average availability factor or SAAF) based on historical data during the 100 tightest system supply cushion hours for each season. There are several issues associated this approach, as discussed below. SCE believes that the CAISO should provide relevant data, based on historical resource forced outages, to verify the likelihood of the occurrence of these issues in order to address them.

The first issue can be described as the "luck factor," i.e., a resource outage will affect its UCAP if the outage falls within the 100 hours (e.g., at the 100th hour) and will not affect its UCAP if the outage falls outside the 100 hours (e.g., at the 101st hour). In addition to the issue of small sampling (i.e., 200 hours vs. 8760 hours for a year), this "luck factor" may not provide correct incentives. For instance, resources outages occurring outside the 100 hours (say 101st – 200th hour) would not face any consequence even if those outages were to have an impact on grid reliability. The proposed rule of relying on the first 100 hours would artificially exclude those outages. To address this issue, the CAISO should identify whether the 100th hour represents the natural "breaking point" on the curve of historical system supply cushion, and whether there is any pattern in the distribution of historical outages along those hours on the curve.

The second issue relates to the underlying drivers of tight system supply cushion in the CAISO Proposal. Since the proposed metric of system supply cushion is a relative term (i.e., the available RA supply compared to load conditions), there is a potential that some unimportant hours, such as 2am on a Sunday in December,[2] could be included in the 100 hours, for example, due to unexpected load/weather condition. Depending on when in the day those hours occur, those hours may or may not reasonably represent hours during which tight system supply cushion should be assessed. The CAISO should assess, based on historical data, what additional measures should be taken to address the issue.

The third issue is whether the selection of only 100 hours, and relying on those hours solely, to assess resources' availability for the entire RA year (or three years for local RA) is appropriate. Even if the proposed approach looks five years back, so there will be 500 historical hours being evaluated for each season, there will likely be a lot of overlap in those 500 hours, and as a result, the number of distinct hours can be much lower than 500 hours. Additionally, at the unit-level, the metric of using 100 hours can bring a lot of volatility in evaluating the resource's forced outage rate and can fail to accurately represent the true

[2] System RA are monthly requirements, different from local RA, which is an annual requirement.

forced outage rate of the resource. Finally, when evaluation of forced outage is done after the fact, generators cannot reasonably anticipate those hours and maintain their resources in a manner that is most consistent with being available for expected system needs. If the 200 hours total are consistent year-over-year, this is much less of an issue. But if there are significant variations, it will likely become more difficult to maintain resources in a manner that meets system needs.

SCE asks that the CAISO provide historical data to show how the 100 hours per season have varied in the past so that the efficacy of this method can be more accurately evaluated.

UCAP for Hydro Resources

Unique resource characteristics must be carefully considered in developing a UCAP proposal for hydro resources. Under the UCAP framework (i.e., UCAP = forced outage rate X monthly NQC), outages that are due to mechanical issues and outages that are due to fuel/water availability issues must be distinguished appropriately to avoid double discounting. Whether modifications to this framework are required for the hydro resources should be evaluated, as discussed below.

A unique characteristic for hydro resources is that their capacity values can vary by year and by month, depending on fuel availability. As noted above, the UCAP framework might be suitable for thermal units because the capacity values of thermal units are relatively stable such that, once a forced outage rate (i.e., SAAF) is determined, the derated value in its capacity due to forced outages would be mostly dependent on the forced outage rates caused strictly by mechanical issues and not due to fuel availability. This is not the case for hydro resources because the capacity value for a hydro resource can vary. For example, suppose the capacity of a hydro resource is at 200MW during a dry year and 1000MW during a wet year. A 20% forced outage rate would impact the resource by 200MW during wet year conditions, which is five times the impact for the dry year (at 40MW). Assuming that mechanical issues have the same impact regardless water year (i.e., available capacity = NQC X mechanic forced outage rate), the UCAP of the hydro resource could be derived under the same framework, i.e., UCAP = NQC X mechanic forced outage rate. However, if any forced outage due to water availability is embedded into the calculation of the forced outage rate, then there is a double counting on the UCAP value when it moves from a dry year to a wet year, at which point, the UCAP framework would need to be modified to appropriately reflect the true reliability contribution of the resource.

To address the issues described above, if the CAISO's proposal is to apply the same UCAP framework to hydro resources, then the CAISO should include only forced outages due to mechanical failures in calculating the resource's forced rate. The CAISO should clarify this in the next iteration of the proposal. The CAISO and stakeholder should also consider other options/issues related to hydro resources when deriving a UCAP value. One other particular option is that, when the available capacity for a hydro resource is determined based on historical output, then this historical output would already reflect its forced outage rate, regardless mechanical or fuel-related, and the forced outage rate should be zero. This approach is particularly relevant as the ongoing work under Commitment Cost Enhancements Tariff Clarifications contemplates the use of historical output to set available capacity for certain hydro resources. In addition, the questions of how UCAP values for use-limited resources should be determined, and whether hydro resources should be treated as use-limited resources accordingly, should be further explored.

The CAISO should clarify that, a hydro resource cannot be on forced outage twice at a single point in time. For example, when all the water/fuel of the hydro resource has been fully depleted, for which its capacity value should account such that the RA value will be lower than its Pmax, if there is mechanical work on the plant during this time, then the mechanical work should not be counted as forced outage because doing so would double penalize the resource. This issue is similar to a maintenance work during nighttime for a solar resource. The NQC (i.e., the effective load carrying capability (ELCC)) of the solar resource already accounts for the fuel unavailability of the solar resource so that there is no need to include any maintenance work during nighttime into its forced outage calculation. This issue is being addressed for solar resources under the CAISO Proposal because the UCAP of solar resources would be their ELCC values. SCE requests the CAISO address this issue for hydro resources in its next iteration of the proposal.

Import RA Requirements

1) Source specification requirement

There was extensive discussion at the workshop regarding the proposed requirement of specifying source Balancing Authority Area (BAA) for unspecified RA imports and the idea of requiring all RA imports to be unit-specific. As discussed below, a unit-specific contingent requirement for all RA imports is not necessary to address the double counting issue described by the CAISO. Such a requirement is irrelevant to, and would not address, the perceived issue of "phantom resources."

A unit-specific requirement for all RA imports is not necessary to address the double counting as long as, for each Balancing Authority (BA), imports and exports are counted in its power balancing activities, as is the case today. Similarly, under the Extended Day-Ahead Market (EDAM), the sufficiency test, as is done today for the Energy Imbalance Market BAs, would ensure at each BA, its imports and generation would meet its exports and load. As long as the test is maintained at each BA level, there is no need to require all RA imports to be unit specific. Further, the unit-specific requirement is not necessary for RA showings because once a resource is sold as RA, the current rules ensure it must be available to the CAISO. RA resources (including import RA) must offer to the CAISO markets. The CAISO has the authority to dispatch RA resources (including import RA) through Residual Unit Commitment. The CAISO has not demonstrated that there is an issue with this authority.

The issue of "phantom resources" should be further evaluated. In particular, the issue seems to originate from observations that some import RA resources could bid at or close to the bid cap to not clear the market. However, the requirement of unit-specific import RA would not address this bidding issue. Suppose two Scheduling Coordinators (SCs) (SC1 and SC2) bring same amount of MWs to serve the CAISO load and each has a resource to support the import MW. Assume the two resources are identical. SC1 submits an unit-specific import. SC2 submits an unspecified import. Under this example, both SCs can submit bids at or close to the bid cap in an effort to not clear the market. Requiring SC2 to specify its import contingent on its resource does not solve the bidding issue, or the perceived "phantom resource" issue.

Similarly, internal resources can also bid at or close to the bid cap to not clear the market. Therefore, it seems the concern is that RA resources may engage in bidding behavior to effectively escape their obligation to serve the CAISO load under conditions when their obligations are really needed. Even if the concern is mainly addressed for RA resources in a *local* area, since the bids of these resources would be mitigated when there is a uncompetitive constraint in the local area, this is not the case for internal RA resources that provide system

needs (either because they are not in those local areas or because they are on the other side of a uncompetitive constraint during specific market intervals). To address the concern, the CAISO should consider more comprehensive market power provisions. In particular, if an RA resource is bidding high to escape its real obligation to serve the CAISO load when needed, then the CAISO should consider processes to mitigate the bid to a more appropriate level (such as the default energy bid that includes opportunity costs). Requiring unit-specific RA imports does not address the concern.

2) Recallability under emergency conditions

System resources can be more reliable than a unit-contingent resource under certain circumstances, given that system resources are energy transfers between BAAs, not contingent on any specific unit. System resources are not subject to forced outages.

During the workshop, there was discussion regarding whether there should be a requirement to ensure import RA is not recallable by the host BA. It was also raised that a unit-contingent requirement without non-recallability could increase costs without added reliability benefits. While the discussion is informative, there is not any data or evidence that recallability is a material issue that requires significant change in the existing policy. Even if this is an issue, it would require a solution that applies beyond the CAISO, potentially the entire west. Should the current recallability requirement be modified, it should also be evaluated whether the CAISO tariff (40.6.11[3]) relating to the CAISO's discretion to curtail exports would need to be modified, in which case it will require a tariff change.

In addition, the CAISO and stakeholders should be mindful that any proposed requirement more stringent than those existing today will likely add additional costs to customers. Disqualifying unspecified RA imports could significantly increase the costs to customers without adding reliability benefits.

3) Incorporating documentation requirement

SCE is not opposed to the proposal to include the CPUC's existing requirements, i.e., unspecified RA import supported with operating reserves and cannot be curtailed for economic reasons. However, the language around operating reserves should be removed as it is unnecessary.[4]

4) Clarification on the proposed bidding requirement

The CAISO proposes that "system RA resources may not submit block bids or self-schedules greater than one hour"[5]. This language can be confusing. SCE requests the CAISO to clarify that 1) under the proposal, system RA resources are allowed to submit bids or self-schedules for multiple individual hours, including consecutive hours, i.e., in the same way that's allowed for internal resources, and 2) the CAISO is only proposing that system RA

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[3] Section 40.6.11 reads "[a]t its sole discretion, the CAISO may curtail exports from Resource Adequacy Capacity to prevent or alleviate a System Emergency. An Export Bid or a Self-Schedule to provide exports included in a binding Schedule accepted in the IFM or RTM will not be distinguished from a Demand Bid or Self-Schedule to serve Load within the CAISO Balancing Authority Area included in a binding Schedule accepted in the IFM or RTM for purposes of curtailment under this Section, except as consistent with Good Utility Practice".

[4] Please see detailed discussion in SCE's prior comments, available at http://www.caiso.com/InitiativeDocuments/SCEComments-ResourceAdequacyEnhancements-SecondRevisedStrawProposal.pdf, 7-9.

[5] Third Revised Straw Proposal, at 39, available at http://www.caiso.com/InitiativeDocuments/ThirdRevisedStrawProposal-ResourceAdequacyEnhancements.pdf

resources are not allowed to submit a single bid or a single self-schedule bid spanning multiple hours, i.e., not allowing block bids or block self-schedules greater than one hour.

UCAP Calculation for Unspecified Imports

During the workshop, the CAISO discussed a potential UCAP treatment for unspecified imports, i.e., using a class average approach, likely at the SC level. SCE requests clarification from the CAISO given that unspecified imports are energy transfer between BAAs, not contingent on any specific unit. Put differently, unspecified imports do not have forced outages associated with them and thus the concept of forced outage does not seem to apply. Alternatively, the forced outage rate for unspecified imports should be calculated as zero. If a UCAP treatment for unspecified imports is intended to cover other situations such as during emergency situations or non-performance, then it should be evaluated whether the non-performance issue is already addressed under existing settlements provisions. The UCAP methodology should not result in a double penalty to those resources when the issue is already addressed in other forms.

The Contract Issue under UCAP

As commented previously,[6] the proposed UCAP can present significant cost impact to RA contracts. Given the significant impact, the issue should be further explored, and the stakeholder process should consider necessary mitigation measures, when the change to the UCAP paradigm could cause cost shifts from sellers to buyers under these long-term contracts.

SCE is open to methods to address this issue and notes that historically, changes in market design have sometimes been accompanied by a phase in/grandfathering process to minimize market design shocks and provide time for contracts to either be re-negotiated or expire. Given the rather significant change in design contemplated under the CAISO Proposal, coupled with obligations to procure long-term (e.g., new multi-year forward RA requirements, IRP capacity procurement requirement, storage mandates, etc.), consideration of the impact of this market design change on those efforts must be addressed.

UCAP for Demand Response (DR)

As commented above on UCAP implication to hydro resources, a UCAP design should avoid double counting resource's unavailability. When a resource's capacity value already reflects its fuel unavailability, then any unavailability due to fuel should not be derated again in its UCAP. For DR resources subject to CPUC Load Impact Protocols (LIP), the capacity value already reflects a forecast 1-in-2 weather (fuel-related) availability. For weather-sensitive DR, the main availability driver is the weather, and not any mechanical-type of forced outage. In fact, where programs are comprised of many customers (e.g., thousands if not hundreds of thousands), any random mechanical outages are reflected in the historical data used for calculating the load impacts. In this sense, the forced outage rate should be zero for DR resources where the Qualifying Capacity was determined through LIPs. For DR resources

[6] Please see detailed discussion in SCE's prior comments, available at http://www.caiso.com/InitiativeDocuments/SCEComments-ResourceAdequacyEnhancements-SecondRevisedStrawProposal.pdf, at 10-11.

where LIPs are not used, the approach of setting zero forced outage rate may not apply and would likely require a different approach.

In any event, as commented above on the UCAP Calculation for Unspecified Imports, if there is any non-performance issue related to DR, then it should be evaluated whether the non-performance issue is already addressed under existing rules such as settlements provisions.

In summary, the CAISO should clarify what a forced outage rate means for DR resources, especially for resources with only a few dispatches per year, and the CAISO should ensure its proposal does not result in double penalty to a resource in assessing the resource's availability for RA.

Planned Outage Process Enhancements

The proposed option 2 (i.e., substitution capacity is always required for a planned outage) could have detrimental effects on the CAISO RA program that incentivize capacity withholding, and directly violates the principle that the "RA program should incentivize showing all RA resources."[7] The disincentive of showing excess RA capacity has been one main issue this initiative is seeking to address and the proposed option 2 would jeopardize achieving this objective. Requiring all planned outages to provide substitution capacity is not economic and may not add any reliability benefits; for instance, when those outages could be scheduled during periods when the load is low, and the CAISO has enough cushion to serve the load. In addition, when an LSE shows beyond its RA requirement, requiring substitution capacity for all its planned outages would enforce the LSE *always* maintain a portfolio above its RA requirement. For example, if the LSE shows its RA portfolio at 125% of its requirement (i.e., showing 25% in excess), whenever it schedules a planned outage, it would have to find another resource to bring its RA portfolio back to 125%, which is an irrational outcome.

SCE requests that the CAISO continue to explore and refine option 1 (as well other viable options). If option 1 requires more staff to implement, the cost of hiring additional staff should be estimated and compared to potential benefits that can be achieved by an improved planned outage management process. SCE believes those benefits would significantly outweigh the costs of hiring additional personnel to implement this option (or another viable option).

Planned to Forced Outage Issue

The CAISO Proposal, as related to planned outage substitution, should make it clear that no "false information" would be deemed in cases when a requested planned outage becomes a forced outage. This clarification is needed to make the process more transparent. The UCAP methodology will incentivize better outage scheduling. The CAISO should recognize that there are outages that a resource must take so the resource can be properly maintained and reliably depended on by the CAISO. Deeming any outage being converted from planned outage to forced outage as "false information" would not resolve the underlying issue.

[7] The workshop presentation, at 8, available at http://www.caiso.com/InitiativeDocuments/Day1Presentation-ResourceAdequacyEnhancements-ThirdRevisedStrawProposal.pdf.

SCE also agrees with the point made by Six Cities in their comments:[8]

> The CAISO's automatic classification of any outage requested seven or fewer days prior to the proposed start of the outage without regard to the cause of the outage is inconsistent with the definition of Forced Outage applied by NERC. NERC defines a "Forced Outage" as:
>
> > 1. The removal from service availability of a generating unit, transmission line, or other facility for emergency reasons. 2. The condition in which the equipment is unavailable due to unanticipated failure.

The inconsistency between the NERC definition and the CAISO proposed definition will make the issue even more problematic. The issue must be addressed appropriately under the CAISO Proposal.

Please provide your organization's position on the System Resource Adequacy topic as described in section 5.1. (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

SCE generally supports the CAISO Proposal with caveats. SCE believes there are significant details that must be addressed, and SCE's support depends on those detailed issues being appropriately addressed.

SCE appreciates the CAISO's effort in evaluating the existing RA program and proposing solutions to various issues. As noted above, additional key information is required to assess many important aspects of the CAISO Proposal and SCE requests the CAISO provide the additional information. It is also important that the CAISO coordinate with the CPUC as the proposal includes many potentially significant changes to the RA program.

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.

In assessing the proposal of a new flexible RA product, SCE requests that the CAISO provide information on how the proposal may affect the sufficiency of the existing RA fleet in meeting the flexible RA requirement under the new product. In particular, the RA program is mainly designed to procure capacity in a relatively short time window as compared to other programs that may be designed for the purpose of building and installing new resources. Such information is key to understand potential impacts of the proposal and should include the following at a monthly granularity:

- What is the MW amount of the flexible RA requirement under the new product; and
- What is the MW amount of existing eligible resources providing the flexible RA.

The proposal to disallow a Conditionally Available Resource (CAR) to be eligible for providing flexible RA is problematic. Resources that count as both CARs and Use Limited

[8] Six Cities' Comments on RA Enhancements Second Revised Straw Proposal, at 3, available at http://www.caiso.com/InitiativeDocuments/SixCitiesComments-ResourceAdequacyEnhancements-SecondRevisedStrawProposal.pdf.

Resources are currently allowed to provide flexible RA. If under the CAISO Proposal those resources are no longer eligible to provide flexible RA, it would impact a significant portion of flexible RA capacity that is currently provided by those resources, which include hydro resources and new peakers that are flexible in nature and comprise a significant portion of the CAISO fleet. Blanket exclusion of all CARs from being eligible to provide flexible RA is inappropriate. The CAISO should allow resources such as hydro and peakers that are flexible in nature to provide flexible RA. SCE has raised this issue before and continues to request the issue be addressed.[9]

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.

The proposed conversion process may introduce a leaning issue discussed during the workshop. The CAISO should provide further information, such as a historical review of showings and resource forced outage rates, to assess the impact of this issue.

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.

SCE believes that the examples in the paper can be improved to provide additional clarity on the proposed UCAP Deficiency Tool. In particular, the example shown in Figure 18 (page 87) suggests that an LSE (LSE3), even if it is long by 5 MW, would receive all the payment that is collected from the deficient LSEs at the full deficient MW amount, which is 25MW in the example. This aspect of the proposal may lead to over-compensation to the LSE with a long position. The over-compensation seems unnecessary given that 1) there is no CPM by the CAISO in this example, and 2) when the amount of the excess capacity from the LSE(s) who are long is significantly lower than the deficient amount, that excess capacity may not truly reflect the reliability contribution that is otherwise indicated by the compensation. SCE understands that the CAISO may continue to refine these examples, and therefore suggests the CAISO address the issue as described.

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.

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[9] Please see detailed discussion in SCE's prior comments, available at http://www.caiso.com/InitiativeDocuments/SCEComments-ResourceAdequacyEnhancements-SecondRevisedStrawProposal.pdf, 9.