



Stakeholder Comments Template

Resource Adequacy Revised Straw Proposal

This template has been created for submission of stakeholder comments on the *Resource Adequacy Revised Straw Proposal* that was published on July 1, 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/informed/Pages/StakeholderProcesses/ResourceAdequacyEnhancements.aspx>

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on July 24.

| Submitted by | Organization | Date Submitted |
|-------------------------------|------------------|----------------|
| Brian Theaker 530-259-3305 | NRG Energy, Inc. | July 24, 2019 |

Please provide your organization’s comments on the following issues and questions. Please explain your rationale and include examples if applicable.

In these comments, NRG will use the initialism “RSP” to mean the Resource Adequacy Enhancement Revised Straw Proposal.

1. System Resource Adequacy

- Please provide your organization’s feedback on the *Determining System RA Requirements* as described in *Section 5.1.1*.

NRG supports the CAISO’s proposal to add a Unforced Capacity (UCAP) requirement to the RA program, if adding and enforcing that UCAP requirement is accompanied by the CAISO’s proposal to eliminate both the Resource Adequacy Availability incentive Mechanism (“RAAIM”) and the obligation to provide substitute capacity for a resource that is on forced outage.

In the RSP (page 10), the CAISO offers that the UCAP requirement would be “about 109%”, if the CAISO had perfect foresight, which the CAISO acknowledged that it did not have. While NRG understands and appreciates that it is relatively early on in this stakeholder process, NRG respectfully requests the CAISO detail a

more precise calculation as to what percentage the UCAP requirement should be. Like practically every aspect of market redesign, the specifics matter, and what goes into the specifics, matter. In a proposed calculation of the UCAP requirement, the CAISO could also offer a specific proposal as to how the CAISO could or will account for potential load forecast error. Given the expectation that weather is going to become more volatile and extreme due to climate change, basing system reliability requirements off a peak load forecast that has equal probabilities of being exceeded or not being exceeded would not ensure a dependable level of reliability, especially in an interconnection whose surplus supply is being eroded by retirements.

Finally, NRG agrees wholeheartedly with the need for the CAISO to closely coordinate the implementation of a UCAP requirement with the CPUC (RSP at pages 11 and 20).

- Please provide your organization's feedback on the *Forced Outage Rates and RA Capacity Counting* as described in *Section 5.1.2*.

NRG:

- Supports eliminating the requirement to substitute for capacity on a forced outage with a UCAP requirement in place;
- Agrees with the CAISO's observation that a diversity benefit determined from an assumed fleet is only valid if that particular fleet is the fleet that supports operations;
- Questions whether weighting the forced outage rate towards recent years produces the most reliable results. For example, if the most recent year was the year in which or just before major maintenance was performed, the unit's forced outage performance in that year up to when the maintenance was performed might reflect the need for the major maintenance and not be indicative of the unit's post-maintenance performance.
- Agrees that outages beyond the resource owner's control should not be factored into the equivalent forced outage rate calculation. Table 2 indicates that "Ambient Not Due To Temperature" outages would not affect a resource's UCAP, while "Ambient Due to Fuel Insufficiency" would affect UCAP. It's NRG's understanding that if a generating unit was not available due to an inability to secure fuel because of a pipeline outage on the gas delivery system, the generating unit's scheduling coordinator would enter a "Ambient Not Due to Temperature" OMS card. While this has the desired effect of excusing the generator from forced outages beyond their control, it does not align with the plan meaning of the nature of work categories. NRG fully agrees that unavailability due to the generating unit scheduling coordinator's failure to secure fuel should count against its UCAP and that unavailability due to fuel

insufficiencies beyond the generating unit's scheduling coordinator's control should not. Perhaps the CAISO should create nature of work categories to the effect of "Ambient Due to Fuel Insufficiency – Scheduling Coordinator" (which would count against UCAP) and "Ambient Due to Fuel Insufficiency – Gas Delivery System". NRG is not wedded to these terms, but believes that the nature of work categories should intuitively align with the reason for the outage.

With regards to the CAISO's proposal to use a 16-hour availability assessment period (5 AM to 9 PM), NRG agrees that the longer proposed assessment period better aligns with operational need than the current net load peak-focused five-hour strip of availability assessment hours. Given that not all RA resources (e.g., RA imports) will be compelled to offer across this 16-hour period, to ensure comparability, the assessment should penalize to a greater extent unavailability from a resource that has a shorter MOO than unavailability from a resource that has a longer MOO; perhaps the availability assessment period should tie to the MOO period.

- Please provide your organization's feedback on the *System RA Showings and Sufficiency Testing* as described in *Section 5.1.3*.

NRG agrees with the CAISO's proposal to implement a UCAP sufficiency test. Given the purpose of UCAP, the CAISO **must** backstop for any system-wide UCAP deficiencies; in other words, the associated tariff language must compel the CAISO to cure any UCAP deficiencies, not simply authorize it to.

The CAISO has proposed that it will use a net load deterministic model that integrates the CAISO's integrated optimal outage coordination (IOOC) tool to conduct the UCAP sufficiency test. While the CAISO has not described the IOOC tool in any detail, NRG understands that this proposal has the benefit of running in the shortest amount of time. Not understanding the IOOC tool's capabilities, NRG's concern with a deterministic model is that the viability of the results will depend on the generation profiles assigned to intermittent resources such as wind and solar, or use-limited resources such as hydro. If these profiles are conservative, then the deterministic model's result may be reliably valid. However, NRG notes that ELCC-based capacity values are computationally valid across a period of time, and may not capture actual resource performance in a snapshot deterministic assessment.

- Please provide your organization's feedback on the *Must Offer Obligation and Bid Insertion Modifications* as described in *Section 5.1.4*.

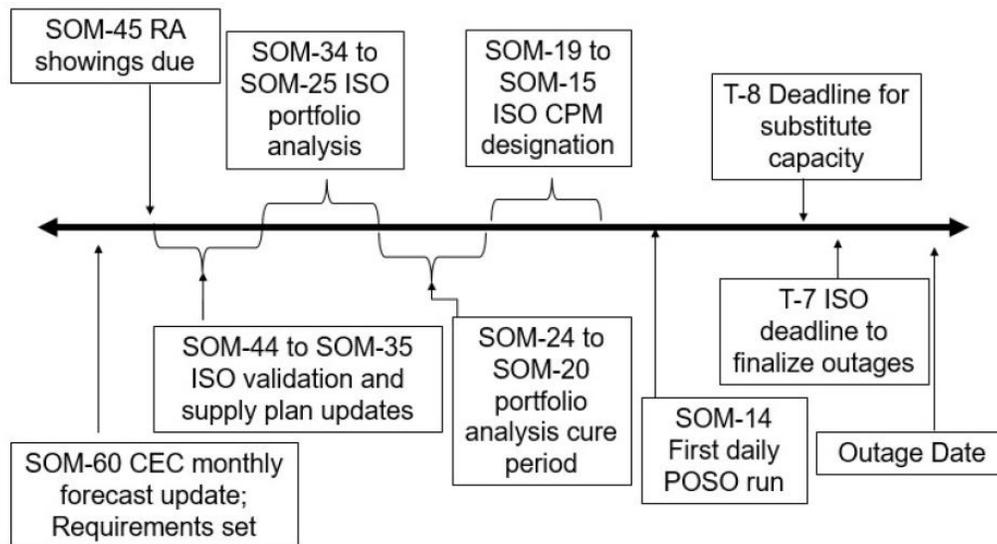
NRG supports the CAISO's proposal that a resource must offer at its NQC value, not at its UCAP value. NRG appreciates that the CAISO recognizes that the accompanying *quid pro quo* is if the CAISO makes a CPM backstop designation because of a UCAP deficiency, it must designate an amount of "NQC" that provides the needed amount of UCAP.

- Please provide your organization’s feedback on the *Planned Outage Process Enhancements* as described in *Section 5.1.5*.

NRG supports the CAISO’s proposals to implement (1) a planned outage calendar and (2) a substitution capacity bulletin board.

The CAISO’s proposed comparability considerations across all of the categories listed (Location, use limitations, availability limitations, ancillary services capabilities, and run-time duration limits) will be a very important part of the work in this process, as those considerations will greatly impact substitutability. Given the importance of these considerations, it would be better for the CAISO to make a detailed proposal on these topics sooner rather than later.

The CAISO’s proposed new planned outage process timeline is as follows:



NRG notes that this proposed process provides only six days for the generator owner, once notified of a substitution obligation from the POSO process, to provide substitute capacity or, likely have its planned outage, which it may have submitted months in advance, cancelled.

- Please provide your organization’s feedback on the *RA Import Provisions* as described as described in *Section 5.1.6*.

In the RSP, the CAISO observes that, from July 2017 through June 2018, the average monthly maximum single-hour rate of non-delivery from RA imports was approximately 10%. (RSP at page 41.) The CAISO did not detail in which hour the maximum monthly non-delivery rate was observed, nor did the CAISO indicate what the average non-delivery rates were. The CAISO further observes that the 10% rate is comparable to WECC-wide average forced outage rates. (RSP at page 43) As a result, the CAISO does not propose to require that RA imports be associated with specific resources, but instead proposes that RA import suppliers

only need identify the Balancing Authority Area (BAA) sourcing the RA import. Finally, the CAISO asserts that the CAISO's Intertie Deviation Settlement proposal provides sufficient incentive for RA import intertie delivery so that the CAISO does not need to extend the UCAP concept to RA imports.

Unquestionably, it is more difficult to ensure whether RA imports are associated with real physical resources dedicated to California than it is to ensure whether physical resources within the CAISO's footprint are dedicated to California. That difficulty, however, should not lead the CAISO away from what it purports is a key objective, namely, to create more comparable treatment between RA imports and internal RA resources (RSP at page 40).

NRG has several concerns about the CAISO's conclusion that it is not necessary to associate RA imports with specific resources outside the CAISO's BAA.

First, the RA Import non-delivery rate of 10% is not comparable to a physical generating unit forced outage rate. Import suppliers assert that one benefit of not associating RA imports with specific resources is that it makes for MORE reliable supply because the RA import can be sourced from a multitude of resources. Assuming that the 10% import non-delivery rate accounts for suppliers' ability to source RA imports from a multitude of resources, the non-delivery rate should be much lower than a physical forced outage rate.

Second, the CAISO's Resource Adequacy Availability Incentive Mechanism current availability standard is 96.5%. This allows for a forced outage rate for internal resources of only 3.5% - well below the 10% non-delivery rate the CAISO seems to find acceptable. (Even rolling in the allowed two percent deadband, the resulting 5.5% implied forced outage rate is still much less than the 10% import non-delivery rate.) If the CAISO (1) finds a 10% non-delivery rate from RA resources to be acceptable and (2) truly wants comparable treatment between internal resources and RA imports, the CAISO should lower the RAIM target to either 92% or 90%, depending on whether the two percent deadband is included in the acceptable non-delivery rate.

Finally, the CAISO's assertion that a 10% non-delivery rate from imports is acceptable because that non-delivery "is not a significantly large or overly concerning magnitude, and therefore may not represent as substantial a reliability concern"¹ does not align with other expectations that California may be depending more heavily on RA imports as the once-through-cooled units and other economically distressed gas-fired generating units within the state retire. A recent ruling in the Integrated Resource Planning proceeding suggests that, by 2021, the bilateral RA market could be relying on approximately 8,800 of "MIC" (presumably meaning RA imports, not just available import capacity) to meet the system peak

¹ RSP at page 43.

demand.² That same ruling proposes 2 GW of new procurement by August 2021; in NRG's estimation, only battery energy storage, demand response, energy efficiency, and "new imports" (whatever those happen to be) could meet that proposed time frame. Thus, it seems clear that California seems poised to expand, not reduce, its reliance on imports, and the expectation that RA import non-delivery rates observed in 2017-2018 might be acceptable in 2020 or 2021 seems premature.

The RSP further proposes to perpetuate the discriminatory treatment afforded RA import suppliers by not requiring RA imports to be associated with specific generating resources outside the CAISO. Instead, the CAISO proposes that RA Imports must identify the source BAA. (RSP at page 44). The CAISO asserts that identifying the source BAA would allow the CAISO to ensure that RA imports are not double counted in EIM entities' resource sufficiency tests. This, too, falls completely short of comparable treatment between internal resources and RA imports. Only if the CAISO were performing the EIM resource sufficiency tests on a year-ahead or month-ahead basis, comparable to the timing of the current forward showing requirements in the RA program, would the proposed EIM sufficiency test resemble comparable treatment between internal resources. If the CAISO is comfortable with ensuring Resource Adequacy only within the confines of the time frames of its Day-Ahead market, the EIM sufficiency test would constitute comparable treatment between RA imports and internal resources, *if* the monthly and annual RA showings were eliminated. Given that eliminating the monthly and annual showings would be completely inconsistent with the far-forward design of the current RA program, NRG cannot discern how the near-real-time resource sufficiency tests amount to comparable treatment relative to the current forward RA showings. NRG respectfully requests that the CAISO explain how the two mechanisms (forward RA showings and the EIM sufficiency tests) comparably ensure that capacity and fully deliverable energy adequate to meet reliability needs has been secured well in advance of the operating horizon, in keeping with the purpose of the RA program.

With regards to the CAISO's proposal to not subject RA imports to a 24 x 7 MOO, NRG agrees that not all RA resources, whether providing system, local, or flexible capacity, need to have a 24 x 7 MOO. The CAISO, however, should provide some analysis as to what percentage of the RA fleet is required to have a 24 x 7 MOO. (Ideally, the analysis should parallel the Maximum Cumulative Capacity structure and identify the maximum percentages that can be associated with each type of restricted MOO (e.g., 6 x 16, superpeak, etc.).

- Please provide your organization's feedback on the *Maximum Import Capability Provisions* as described in *Section 5.1.7*.

² *Assigned Commissioner and Administrative Law Judge's Ruling Initiating Procurement Track and Seeking Comment on Potential Reliability Issues*, issued June 20, 2019 in CPUC Rulemaking R.16-02-007, at page 12.

NRG supports replacing the MIC allocation steps with an auction mechanism as proposed.

In summary, please provide your organization's position on System Resource Adequacy (Section 5.1). (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

NRG strongly opposes the CAISO's proposal regarding RA imports.

2. Flexible Resource Adquacy

- Please provide your organization's feedback on the *Identifying Flexible Capacity Needs and Requirements* as described in *Section 5.2.1*.

NRG appreciates the CAISO's detailed discussion supporting its proposed three-product flexibility framework. On page 57, did the CAISO mean that the three-hour net load ramp is *logarithmic*?

- Please provide your organization's feedback on the *Identifying Flexible RA Requirements* as described in *Section 5.2.2*.

NRG supports the three-product framework described in this section.

- Please provide your organization's feedback on the *Setting Flex RA Requirements* as described in *Section 5.2.3*.

NRG agrees with leaving the formula for determining the long ramp (three-hour) requirement the same as it is today. NRG also agrees with basing the one-hour ramp requirement on the largest forecast one-hour net load ramp.

The CAISO indicates it will extrapolate the uncertainty requirement by examining three years of historic data that will determine the maximum difference between the day-ahead and fifteen minute forecasts and the rate the difference is changing. Does the CAISO propose the CAISO to do this on a fifteen-minute basis? Does the CAISO make day-ahead forecasts on a fifteen-minute basis? If not, how does the CAISO propose to account for the difference between the hourly forecasts and the fifteen-minute forecasts?

- Please provide your organization's feedback on the *Establishing Flexible RA Counting Rules: Effective Flexible Capacity Values and Eligibility* as described in *Section 5.2.4*.

NRG supports eliminating the two-start requirement to provide long ramp.

NRG does not object to the CAISO's proposal to set a resource's EFC at the largest ramp a unit can accomplish over three hours capped at the resource's UCAP value, including the resource's Pmin.

The CAISO has proposed that solar resources' EFC be "...a high percentage of historic output". (RSP at page 63.) The CAISO also offers that solar production, or lack of production, is a significant contributor to net load ramps (e.g., net load

ramps are directly proportional to solar output; more solar means more solar coming off at the end of the solar day and higher net load ramps.).

NRG does not yet understand the CAISO's position that EFC should be a high percentage of a solar resource's historic output. The need for upward ramping capability results from solar ramping off at the end of the solar day. When solar is ramping off, it cannot contribute towards meeting the net load ramp (in fact, the fall-off in solar production is driving the net load ramp.) NRG understands that solar could have a high EFC in the down direction, but the defining need during the afternoon net load ramp is in the up direction. Perhaps NRG misunderstands the CAISO's proposal and rationale; NRG requests the CAISO provide additional explanation for its proposal.

- Please provide your organization's feedback on the *Flexible RA Allocations, Showings, and Sufficiency Tests* as described in *Section 5.2.5*.

NRG has no comment on this section.

- Please provide your organization's feedback on the *Flexible RA Must Offer Obligation Modifications* as described in *Section 5.2.6*.

NRG supports the CAISO's proposal to make the flexible capacity MOO align with the proposed generic RA MOO (5 AM – 9 PM).

In summary, please provide your organization's position on Flexible Resource Adequacy (Section 5.2). (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

NRG supports with caveats as noted above.

3. Local Resource Adequacy

- Please provide your organization's feedback on the *Local Capacity Assessments with Availability Limited Resources* as described in *Section 5.3.1*.

NRG supports the CAISO's proposal. Accounting for reduced availability is critical.

- Please provide your organization's feedback on the *Meeting Local Capacity Needs with Slow Demand Response* as described in *Section 5.3.2*.

NRG has no comment.

In summary, please provide your organization's position on Local Resource Adequacy (Section 5.3). (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

Support.

4. Backstop Capacity Procurement Provisions

- Please provide your organization's feedback on the *Capacity Procurement Mechanism Modifications* as described in *Section 5.4.1*.

NRG supports the CAISO's proposal to authorize it to engage in backstop procurement to cure a UCAP deficiency. As noted above, in a UCAP paradigm, in which substitution for forced outages is not required, NRG believes that the CAISO *must* cure UCAP deficiencies, not simply be authorized to cure UCAP deficiencies. NRG also agrees with the need to CPM at NQC to get desired amount of UCAP.

- Please provide your organization's feedback on the *Reliability Must-Run Modifications* as described in *Section 5.4.2*.

NRG supports eliminating RAAIM when a UCAP requirement is implemented. Given that NRG did not support applying RAAIM to RMR units, NRG simply notes the CAISO's acknowledgment that this issue was discussed at length in the RMR initiative.

- Please provide your organization's feedback on the *UCAP Deficiency Tool* as described in *Section 5.4.3*.

NRG supports the CAISO's proposal.

In summary, please provide your organization's position on Backstop Capacity Procurement Provisions (Section 5.4). (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

Support with caveats, as noted.

Additional comments

Please offer any other feedback your organization would like to provide on the Resource Adequacy Revised Straw Proposal.