Comments of Calpine Corporation on

RA Enhancements

Straw Proposal

Comments Submitted: July 24, 2019
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Summary:

Calpine appreciates the opportunity to submit comments on the Revised Straw Proposal and 2-day workshop addressing RA Enhancements. The scope and agenda of this initiative is wide-ranging. As discussed in more detail below, Calpine generally supports the consideration of the reforms offered but believes in many cases the proposals need further development before Calpine can voice either support or opposition.

The Use of UCAP

In general, Calpine supports the continued consideration of modifications to the RA program which would incorporate forced outages in the primary transactional product – also known as unforced capacity or UCAP. This product could allow the elimination of complexity that is the result of forced-outage substitution and RAAIM. However, at this point Calpine is still not completely convinced that the transition to UCAP makes sense.

First, much of the interaction between UCAP, deficiency analysis, local and flexibility requirements and NQC are unclear or unspecified.

Second, we are not convinced that the three-year lag in performance evaluation appropriately reflects the current ability to perform. For example, once a resource that has experienced a forced outage is repaired, it may be significantly more reliable than before it experienced the outage. Consequently, it would be illogical to reduce its capacity prospectively.

Third, as discussed below, Calpine is concerned that by capturing forced outages over relatively broad timeframes (such as 16 hour daily windows in winter and summer seasons), UCAP may not appropriately reward performance in the periods with the most stressful operating conditions.

Finally, it is not clear how UCAP would or would not apply to imports – which are direct substitutes for internal generation -- at a time when CAISO may be increasing its reliance on imports.

System UCAP Requirement

Calpine does not object to the CAISO's proposal to develop a UCAP requirement from the bottom up. Calpine agrees that the UCAP should be high enough, at a minimum, to cover peak load plus AS and flexible ramping requirements. Rather than adding a few percent to account for forecast error, as suggested in the July 8th presentation, the CAISO (and the CPUC) should develop a UCAP-based PRM tied to objective reliability criteria such as loss-of-load expectation (LOLE). As discussed below, Calpine also supports the consideration of higher UCAP requirements during resource maintenance periods in order to avoid the need for last-minute substitution requirements.

Local UCAP vis-à-vis NQC still unclear

The straw proposal seems to envision that the CAISO would maintain NQC-based compliance for local RA and EFC-based compliance for flexible RA. At the stakeholder meeting, there was some discussion about converting at least local requirements to UCAP terms. In the next version of the proposal, it would be helpful for the CAISO to articulate how requirements and resource counting for different requirements might be fully integrated under a UCAP approach.

Forced Outage Counting

The CAISO proposes to use three-years of historic, resource-specific, forced outages as the basis for establishing UCAP. However, the ISO itself recognizes that its outage data collection capability is limited. GADS data does not provide the causal-granularity necessary to appropriately screen outages. Specifically, the ISO does and should exempt outages that are "beyond the control" of the resource owner from UCAP counting. Unfortunately, GADS coding does not provide the necessary level of detail to perform this screening. While OMS contains the required information, that historic data is apparently not conveniently accessible. Calpine supports ISO efforts to redesign its OMS to allow the capture and reporting of outage cause-codes.

In addition, as indicated below and in previous comments, Calpine is not convinced that measuring EFOR and hence UCAP over a broad set of hours (i.e., seasonal averages) would appropriately reward performance under the most stressful conditions.

Performance Incentives

While we understand that the CAISO is seeking to "walk before it runs", Calpine believes that performance should be rewarded under stressed peak conditions. Summer availability, if reviewed over 5 month averages, is not indicative of the risk of load shedding during peak conditions. The tables on slide 16 of the RA presentation clearly show that with average summer outage estimates the CAISO would have been substantially short of capacity based on the actual number of outages.

Consequently, Calpine favors the creation of performance incentives and/or narrower EFOR windows to encourage performance when it is most needed. Mechanisms have been designed in the East that greatly encourage (through payments or penalties) availability during a handful of peak hours. In addition to providing another form of scarcity payment, these mechanisms encourage availability when it is needed most. Calpine encourages the ISO to propose targeted performance incentives in the next draft.

Sufficiency Testing

Calpine believes that sufficiency testing is the most singularly important proposal of all those embedded in the RA Enhancements Straw proposal. Consequently, perhaps the CAISO should set this part of the initiative in an accelerated track in order to initially implement, a local sufficiency test as part of the 2021 Local Capacity Technical Studies. Other sufficiency tests (e.g., system) can follow.

Sufficient resources to meet the single peak-hour demand cannot be ignored, but given the rapid development of use-limited resources, the CAISO must begin to evaluate the duration of demand and whether the portfolio of resources procured and shown for RA compliance is capable of meeting that underlying energy need. The local areas are the logical (and well-defined) place to begin the enforcement of a sufficiency test.

While Calpine supports sufficiency testing, it has several general concerns about the proposal. First, Calpine agrees with comments at the July stakeholder meeting from PG&E, SCE, and others, that the RA program should be based on clear ex ante procurement requirements. To the extent that the CAISO needs resources backed by certain amounts of energy, for example, it should endeavor to identify those requirements upfront rather than through ex post validation of LSE procurement.

Second, Calpine is concerned that the deterministic approach proposed by CAISO for system RA sufficiency tests will not ensure that RA procurement is sufficient to meet the most extreme conditions. For example, the very challenging conditions at the beginning of September 2017 were driven at least partly by load that was significantly higher than forecast. Calpine would prefer

either stochastic simulations of load and renewable generation or deterministic analysis of historical load and renewable generation conditions that were particularly challenging.

Finally, Calpine supports the use commercially available software and known input parameters so market participants can perform their own *ex ante* sufficiency analysis. In this regard, we believe that the CAISO proposal to use CAISO-proprietary, non-public software (IOOC) is troublesome.

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No comments at this time.

Planned Outages

Calpine believes that the current procedures for establishing and confirming planned outage substitution obligations (POSO) are inefficient and causing needless capacity shortages. Perhaps the CAISO should enforce earlier RA showings (e.g. at T-75 rather than T-45), include a higher planning reserve margin during outage months (e.g., Nov through April), or both.

Currently, the CAISO approves outages shortly after being submitted or, if necessary, shortly after being studied. The first-in, first-freed rule allows early submitters a priority in avoiding substitution. However, even the earliest approved outages can be assessed a POSO obligation at T-22. This requires the submitter to find replacement RA, cancel the outage, or reschedule, resize and resubmit the outage in a manner acceptable to the ISO. Many times, POSO requirements are only for a fraction of the NQC or a part of the target month (maybe even a day or two), and given the short duration and very late notification, it is very difficult to find replacement capacity.

This process encourages the wasteful acquisition of replacement capacity before the RA submissions at T-45. That capacity might or might not be needed, but is acquired in order to confidently stage contractors, reasonably manage delivery of supplies, as well as perform scheduling and administrative tasks. In addition, for multi-week outages, a POSO obligation is not known for a second calendar month until maintenance is well underway, creating the very high probability that the resource is incapable of returning to service. Purchasing replacement capacity in advance of knowing the POSO obligation while encouraged by current rules, is costly to the resource owner and harms consumers by exacerbating the growing shortages of effective RA capacity.

The ISO should reevaluate the planned outage timeline and structure as part of this initiative. Unfortunately, the Straw Proposal would aggravate rather than address the difficulties of planning outages.

First, the CAISO suggests that substitution capacity have performance capabilities nearly identical to the resource being placed on outage. Table 6 of the Straw Proposal suggests that "comparable" resources would have virtually the same attributes in terms of local capacity, use limits, availability and run time limits. Calpine queries whether a CCGT in a local area could ever find suitable replacement capacity to support a POSO obligation.

Second, given that the ISO now proposes to perform a sufficiency test after the monthly RA showings (in addition to all other current tests) and potentially issue CPM designations, it proposes to move the first POSO more than a week closer to the first day of the month (see Figure 8, "SOM-14 First Daily POSO run.") For most significant outages, parts and people are already deployed and arriving on-site at Start of Month -14 days.

Calpine is sensitive to the interests of operators who would prefer to wait until the very last minute to determine replacement obligations. They reasonably prefer to establish compliance with adequacy targets only when most generation, transmission and load uncertainties have been resolved.

In light of this, the CAISO should consider alternatives. The CAISO's ability to review and analyze the impact of outages is currently constrained by submission date of RA showings. In fact the CAISO does not know what resources it will have available until they are "shown" at T-45. Conceptually, the simplest solution is to make the resource adequacy requirements and demonstrations known further in advance. While annual showings for the full annual system, local and flex requirement might be best, enforcing a T-75 day showing obligation might be beneficial. An earlier showing will allow the ISO to perform its local, flex, system and portfolio reviews with sufficient runway to identify deficiencies and resolve them with the CPM mechanisms.

But an earlier "showing" date, by itself, would not resolve and may raise the concerns of the operators. Higher reserve margins during those critical outage months could provide a reliability cushion for confirmation and approval of planned outages. With this higher resource headroom and the ongoing right to use CPM for needed resources closer to RT, the operators would have the tools they need entering real time operations.

Import Provisions

Calpine does not believe that the CAISO revised straw proposal will address the speculative nature of import RA. Additionally, Calpine does not support the interpretation that "firm energy deliveries" would replace the must-offer obligation with a must-flow obligation[1].

[1] We observe that both the CAISO and DMM filed comments at the CPUC with similar concerns over this interpretation.

Rather than demanding appropriate documentation that an Import RA offering is backed by physical generation and transmission, the ISO now proposes a minimalist, ambiguous and non-constraining requirement for RA Import qualification. By merely requiring that an Importer identify a "source BAA" (while allowing substitution from any other BAA), the CAISO does little to improve the likelihood of deliveries during constrained operations. Certainly the identified BAA assumes no obligation to bid or schedule merely because it is identified as the source of alleged transactions.

In fact, an identification that a Northwest (COB or NOB) import comes from the BPA BAA merely narrows down the source to *somewhere in BPA's 300,000 square mile metered boundary and nearly 15,000 thousand miles of transmission*. Calpine fails to see how this "documentation" meets the objectives stated in the Straw Proposal, such as to reduce double counting or speculative supply.

Calpine suggests that the CAISO must describe with detail the "documentation" necessary to support and RA import and define the conditions and expectations for "firm energy deliveries" as represented in the following statement in the Straw Proposal:

> Therefore, CAISO proposes that all LSEs must submit supporting **documentation** that any nonspecified RA import resource being shown on annual and monthly RA and Supply plans have **firm energy delivery**.

As represented in our comments to the CPUC Calpine believes that "firm energy delivery" (1) is not well-defined and (2) should not be interpreted to convert the import must-offer obligation to a must-flow obligation.

First, parties in the Western Interconnection (including members of the CAISO) have been unsuccessfully trying to define "firm energy" for decades. Calpine suggests that rather than reigniting that debate, that perhaps the CAISO could specifically describe the attributes it seeks in order to ensure deliverability and thereby avoid ambiguity. For instance, we think that to ensure deliverability of imports, pre-arranged transmission access and a dedication of physical capacity are necessary conditions.

However, unless the dispatch constraints and operating parameters of specific external resource are fully modeled, Calpine expects that the must-offer obligations would result in infeasible dispatches. Consider a simple example where a CCGT is the source of an import, but imports continue to be modeled as energy only, without commitment costs, minimum run times or maximum starts (as they are today). The energy-only bids from the CCGT might be infra-marginal in hours 8, 17 and 22, but the operating characteristics of a CCGT would not permit such a dispatch without significant unrecoverable costs. Under these circumstances, the CAISO should allow replacement deliveries.

Second, a must-flow obligation would be uneconomic, irrational and create a strong difference between imports and internal generation. First, a must-flow obligation will certainly displace lower cost resources when the import cost is above that of the alternatives. One can imagine unnecessary and higher renewable curtailments, higher GHG emissions, and higher costs for consumers and market participants, including significant uplift costs. These conceptual "must-take resources" could be forced to flow when their opportunity cost is very high which rationally would be a cost that resources would include in their capacity bids – further harming consumers as capacity prices for imports and the direct substitute, system RA rises.

The CAISO's revised proposal appears to be based on Figure 10 which suggests that import RA non-delivery is not significant ("… the amount of non-delivery is a relatively small fraction of the RA imports the CAISO anticipated…".) Interestingly, the ISO is not alarmed that 10 to 25 percent of non-delivery occurs occasionally and concludes that 10 percent is "comparable to WECC-wide forced outage rates".

However, the analysis seems to calculate the non-delivery as a percentage of RA showing, not as a percentage of the dispatched quantity. If one were to very conservatively estimate that the dispatched quantity is one half of the RA showing, the maximum non-deliveries suddenly blossom to 20 to 50 percent. Recall that internal resources are expected to perform to a target availability of 96.5 percent, with penalties assessed when physical availability drops below 94.5 percent.

MIC Changes

Calpine supports the development of an auction for MIC capacity as an efficient way to distribute capacity to those who most-desire individual paths. Calpine however, does not support the exclusion of suppliers from the auction.

The limited or fractional availability of allocated MIC is a substantial and unnecessary barrier to RA import availability and contracting. The fragmentation of LSE-buyers – and therefore fragmentation of MIC allocations – results in complicated, and unnecessary transactional costs. In part, Calpine asserts, these barriers are driving to the fact that Import RA is a small fraction (40 percent) of the total MIC capability. Allowing suppliers to bid for MIC could produce significantly more competition in import and system RA markets. Calpine would support allocation of all auction revenues back to load.

Flexibility Requirements

Calpine continues to question the need for separate flexible RA requirements. In general, when ramps, variability, and uncertainty are driven by solar which increasingly solar itself can solve, it is unclear how CAISO would fail to address flexibility issues—as long as enough solar is dispatchable. Consequently, before changing flexible RA requirements, it would be helpful for CAISO to document how current RA procurement is failing to meet the requirements that it identifies in the straw proposal.

In addition, as with previous flexible capacity requirements proposals, Calpine does not believe that the requirements in the straw proposal are tied to objective reliability criteria.[2] To the extent possible, it would be helpful for the CAISO to demonstrate how failure to satisfy flexible RA requirements might actually jeopardize reliability and lead to loss of load, for example.

Further, Calpine agrees that it might make sense to base a new "uncertainty ramp" flexible RA requirement on CAISO's need for imbalance reserves/day-ahead flexi-ramp. Calpine notes however that procuring sufficient capacity to meet projected imbalance reserve requirements would not assure that "uncertainty ramp" flexible RA resources actually would be available to provide imbalance reserves in operations. For example, they might be used for other needs, e.g., regulation. This highlights a challenge that has troubled flexible RA development efforts in the past. On a forward basis, it is difficult to project how resources will be used in operations without doing more forward simulations or sufficiency tests—which Calpine is not necessarily advocating.

More generally, it is unclear to Calpine from the proposal how the proposed requirements might be interrelated. For example, would they lead to sufficient procurement of flexible capacity if the biggest ramps are contemporaneous with the biggest uncertainty requirements, in which case capacity that counts towards both set of requirements might not actually be available to meet both sets of requirements?

Flex Counting Rules

The straw proposal suggests that use-limited resources would be eligible to meet ramping requirements as long as their use-limits can be reflected with opportunity cost adders in the CAISO's market optimization. Calpine believes that the CAISO should give greater consideration to reliance on use-limited resources to meet ramping requirements. For example, how would a resource with a limited number of starts or run hours be used to meet ramps that occur daily or nearly daily?

[2] For example, the CES-21 modeling effort tried and largely failed to identify loss of load events attributable to insufficiently flexible resources. CAISO's proposed requirements are not tied to a similarly robust analysis that yields clear reliability metrics, such as LOLE.

As with previous flexible RA proposals, Calpine continues to object to the calculation of EFC for gas-fired generation based on cold start times. As Calpine has documented in previous comments, Calpine's experience has been that its CCGTs rarely start cold.

With respect to the uncertainty flexible RA product, the CAISO has offered no justification for limiting eligibility to short start resources. Calpine's understanding is that one purpose of the introduction of the imbalance reserve product is to give the CAISO a means to commit capacity day-ahead to address uncertainty in real-time. Given that the uncertainty flexible RA product is intended to align with the imbalance reserve product, resources that could be committed day-ahead to provide imbalance reserve should be eligible for the uncertainty flexible RA product.

Flexibility Sufficiency

Calpine would appreciate confirmation of its understanding of the straw proposal that (just as now?) CAISO will assess the sufficiency of flexible capacity showings by confirming that each LSE has bought sufficient amounts of all three kinds of flexible capacity, so there should never be a collective deficiency of flexible capacity in the sense that all LSEs have satisfied requirements but the showings are not sufficient—unless, for example, an LRA sets requirements that are inconsistent with CAISO requirements.

Slow Demand Response

See previous comments which say in summary, if a local resource cannot respond in the 30 minute mandatory restoration period, (1) it should not be counted toward local requirements, or (2) it should be dispatched before a limiting contingency occurs.

CPM Modifications

Calpine supports the development of new CPM categories associated with sufficiency evaluations, although, as described above, Calpine prefers clear ex ante requirements that can be modeled with commercially available software when compared with ex post identification of insufficiencies that might be cured with backstop procurement.

Thanks