Stakeholder Comments Template

Submitted by	Company	Date Submitted
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Please use this template to provide your comments on the FRACMOO Phase 2 stakeholder initiative Draft Framework Proposal posted on November 20, 2017.

Submit comments to InitiativeComments@CAISO.com

Comments are due December 13, 2017 by 5:00pm

The Draft Framework Proposal posted on November 20, 2017 and the presentation discussed during the November 29, 2017 stakeholder web conference may be found on the FRACMOO webpage.

Please provide your comments on the Draft Framework Proposal topics listed below and any additional comments you wish to provide using this template.

Calpine generally supports the Draft Framework Proposal ("the proposal"). In particular, Calpine appreciates the CAISO's attempts to support the flexible capacity products in the proposal with more sophisticated analysis and the proposal's recognition that complementary changes to energy and AS markets are necessary regardless of any potential changes to flexible capacity requirements. As a next step, Calpine believes that a further analysis of the relative supply and demand of the CAISO's proposed products, once the products and eligibility criteria are nailed down, would help inform whether the proposal is likely to significantly impact RA procurement. If the proposal imposes constraints on RA procurement that are essentially non-binding, i.e., the requirements are already satisfied by capacity that is procured to meet system and local requirements, then the proposal should not be implemented. It would be helpful to make this determination quickly because the absence of durable flexible capacity requirements has been an impediment to other significant changes to the RA program, such as the

introduction of formal multi-year forward procurement requirements. These general issues and a few more specific concerns about the proposal are discussed below.

Identification of ramping and uncertainty needs

The ISO has identified two drivers of flexible capacity needs: General Ramping needs and uncertainty. The ISO also demonstrated how these drivers related to operational needs.

Comments:

Calpine agrees that the CAISO should be able to meet ramps that are predictable in the day-ahead time frame as well those that only manifest in real-time. Calpine believes that a key aspect of addressing ramps in real-time is having sufficiently flexible resources committed. A day-ahead load following reserve product would ensure the availability of sufficiently flexible resources in real-time. Consequently, Calpine strongly supports the development of such a product, as now proposed by the CAISO.[1] In the absence of such a product, even if sufficiently flexible resources are procured as RA capacity, they may not be available to meet real-time ramping requirements. The existence of day-ahead load following product may also impact what resources the CAISO can use to meet real-time flexibility needs, e.g., if the day-ahead market does not commit sufficient resources to meet real-time flexibility needs, then the CAISO may be forced to rely on resources that only can be committed in real-time to meet real-time flexibility requirements.

In addition, the development of a day-ahead load following reserve product might obviate the need for more refined flexible capacity requirements. The CAISO is no longer proposing a flexible capacity product related to regulation requirements because the CAISO has a well-defined spot product to satisfy regulation requirements.[2] A similar logic might apply to the real-time load following requirements targeted by the proposal once an appropriate load following reserve spot market product is in place.

With respect to some of the details of the CAISO's identification of ramping and uncertainty needs, Calpine agrees with the proposed nesting of flexible capacity requirements described on slide 23,[3] e.g., capacity that can ramp in 5 minutes and hence can address uncertainty between the FMM and RTD also should be capable of ramping in 15 minutes and addressing uncertainty between the FMM and IFM.

Slide 24 seems to suggest that under-forecasts of net load are more common than over-forecasts of net load in certain hours of the day, such as hours 9-12. Conversely, over-forecasts

[1] p. 8. The proposal also includes several other helpful spot market reforms, including 15-minute day-ahead scheduling of imports.
[2] p. 13.
[3] All references to slides in these comments are to slides in the presentation for the November 29th stakeholder meeting.

seem more common in the night. Calpine requests clarification of this result. Does this pattern indicate some systematic problem with the spot markets?

Slide 25 illustrates that the CAISO may have significant real-time flexibility needs during the largest ramps. As discussed further below, Calpine is not convinced that the CAISO needs additional *capacity* beyond the capacity needed to meet the largest ramps in order to address real-time uncertainty during the largest ramps. Instead, Calpine believes that at least some of the capacity that is needed to meet the largest ramps must be fast enough to address real-time uncertainty.

Quantification of the flexible capacity needs

The ISO has provided data regarding observed levels of uncertainty, in addition to previous discussion of net load ramps.

Comments:

On slides 28-29 (and pp. 18-20 of the proposal), Calpine does not believe that the CAISO has justified that addressing real-time uncertainty requires additional capacity on top of the capacity required to meet the maximum 3-hour net load ramp as opposed to a sufficiently fast subset of the capacity needed to meet the maximum 3-hour net load ramp. By definition, the largest 3-hour net load ramp is the largest 3-hour net load ramp. Assuming that the CAISO positions resources correctly in operations, it should be able to meet the largest 3-hour net load ramp if it has sufficient capacity that can ramp over 3-hours. Because certain portions of the ramp may occur more quickly than the average speed of the maximum 3-hour net load ramp and/or because it may be difficult for the CAISO to anticipate the entirety of the maximum 3-hour net load ramp and hence have sufficient resources committed, it may be necessary to have some resources that are faster than the average speed of the maximum 3-hour net load ramp and/or can be committed in real-time to meet the maximum 3-hour net load ramp.

Eligibility criteria and must offer obligations

The ISO has outlined the need for three different flexible RA products: Day-ahead load shaping, a 15-minute product, and a 5-minute product. Additionally, the ISO has identified a preliminary list of resources characteristics and attributes that could be considered for resource eligibility to provide each product. Additionally, the ISO is considering new counting rules for VERs that are willing to bid into the ISO markets.

Comments:

Calpine is unaware of any analytic basis for limiting eligibility to provide the various proposed products beyond the capability to ramp sufficiently quickly to address uncertainty in the relevant time frame. If the CAISO has enough resources that can ramp sufficiently quickly, it should be able to position those resources to meet the largest ramps. Doing so may involve curtailing renewables and/or committing resources to Pmin. In the past, the CAISO has expressed concern about "Pmin burden," i.e., the cost of the need to commit units to Pmin in terms of renewable curtailment and/or uplift to have sufficient resources available to meet upward ramping requirements. While such costs may be real, they have not been quantified and hence cannot currently inform whether additional eligibility restrictions to provide certain types of flexible capacity, e.g., the capability to start within a certain time frame, are warranted.

With respect to the ramp rates that would determine how a resource might count towards the CAISO's various proposed flexible capacity requirements, for the day-ahead requirement, Calpine recommends continued reliance on the average ramp rates that are currently used to establish EFCs. It is Calpine's understanding that these ramp rates incorporate start and transition times to the extent that they impact how a resource might be able to ramp over three hours. CCGTs are generally not able to start and/or transition between configurations within 5 or 15 minutes, so how far a CCGT can ramp in 5 and 15 minutes within a particular configuration should determine how a CCGT counts towards the 5 and 15 minute requirements. To the extent that a CT (including storage hybrids) can start within 5 or 15 minutes, the capacity that it can start and ramp within 5 or 15 minutes should count towards the 5 or 15 minute requirement respectively.

Relatedly, for the proposed day-ahead product, Calpine recommends the elimination of the current rule that a resource have a cold start time of less than 90 minutes in order for its Pmin to count towards flexible capacity requirement. As long as the CAISO can start a resource in the day-ahead time frame, it can use the resource to meet ramps that are predictable in the day-ahead time frame.

It is unclear to Calpine how VERs would or should count under the proposal. For example, should solar capacity that is kept unloaded when it otherwise would be generating and offers into real-time markets count towards the 5 and 15 minute requirements? How would the proposal address the situation in which net load is higher than forecast due to lower than expected solar generation, e.g., due to cloud cover? In such a situation, solar might not be available to address positive forecast error. Might solar be pre-curtailed to reduce the ramps associated with solar forecast error? If so, in what time frame would this pre-curtailment occur?

Once the CAISO settles on eligibility criteria, an assessment of the relative supply and demand of the day-ahead and real-time products would be helpful. If the supply greatly exceeds the demand for the three products, as is the case with the current flexible RA product, or if the

proposed flexible capacity requirements are likely to be satisfied by resources that are procured to meet local requirements and/or utility-owned generation, especially hydro, that is likely to be available to the CAISO regardless of flexible capacity rules, CAISO may want to reconsider the efficacy of the three products with respect to changing RA procurement and supporting the economic viability of specific types of resources.

Equitable allocation of flexible capacity needs

Equitable allocation of flexible capacity needs is a critical element of a new flexible RA framework. The ISO seeks comments on potential allocation methodologies.

Comments:

Calpine offers no views on the equitable allocation of flexible capacity requirements at this juncture.

Other

Please provide and comments not addressed above, including any comments on process or scope of the FRACMOO2 initiative, here.

Comments: