

## 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 Revised Straw Proposal posted on May 1, 2017.

Submit comments to [InitiativeComments@CAISO.com](mailto:InitiativeComments@CAISO.com)

**Comments are due May 22, 2017 by 5:00pm**

The Revised Straw Proposal posted on May 1 and the presentation discussed during the May 8 stakeholder web conference may be found on the [FRACMOO](#) webpage.

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

Calpine is concerned that the CAISO’s revised straw proposal (“the proposal”) lacks a clear analytic foundation. In particular, Calpine believes that the proposed 4.5 hour start time eligibility criterion has not been justified and unduly discriminates against many resources, including many CCGTs. The requirement appears to be based on the perceived need for resources that can be committed in real-time. To the extent that the CAISO needs resources that can be committed in real-time to manage blown forecasts, for example, it should establish the size of the need. Calpine believes that the need is probably not as large as the entire flexible RA requirement yet the proposal would require all flexible RA resources to meet the real-time commitment criterion.

From a process standpoint, given that the proposal is clearly interim and probably could not be implemented before the 2019 RA year, Calpine doubts that the proposal would achieve its objective of “sustaining fast ramping and fast starting resources.” Consequently, Calpine suggests that effort is better focused on a longer-term solution.

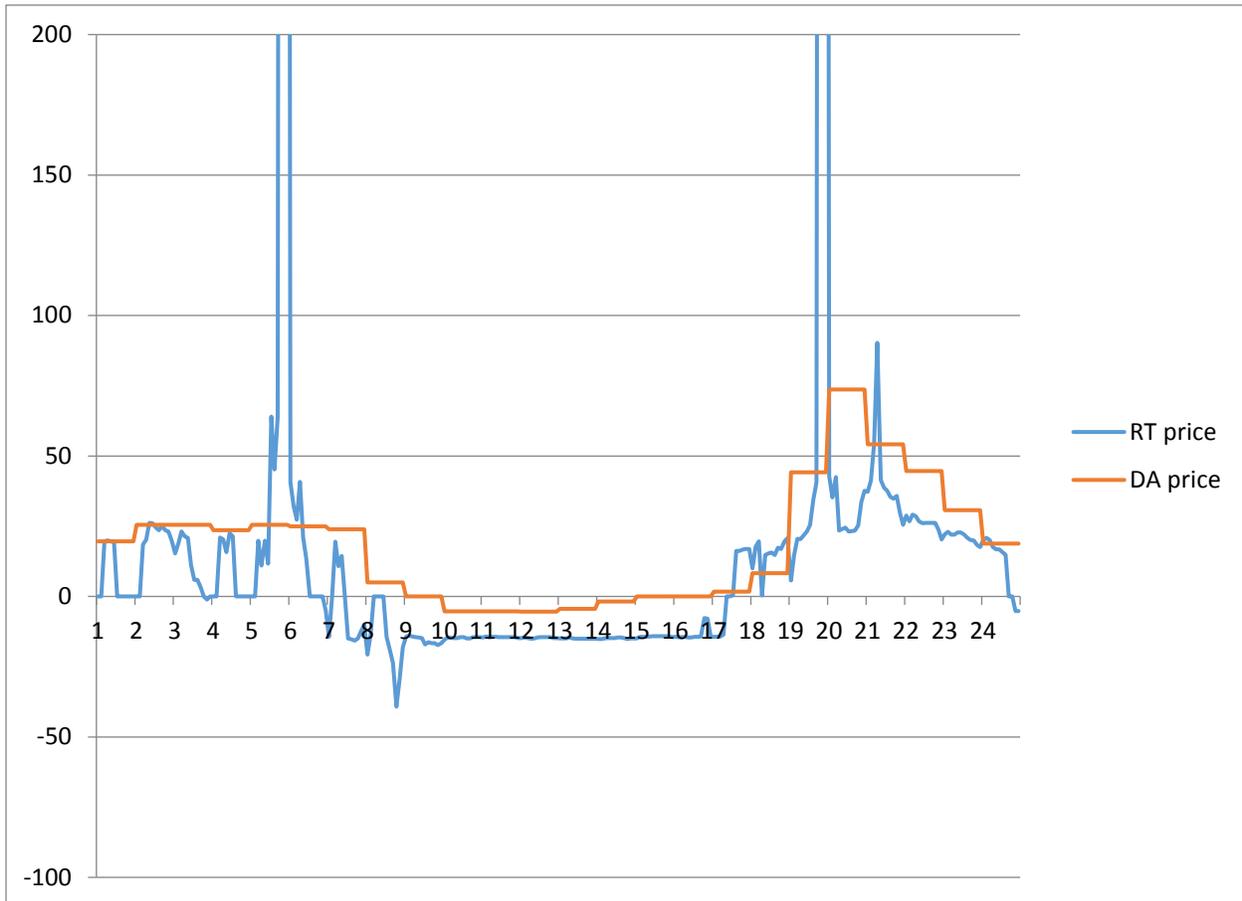
While Calpine offers a few potential modifications to the proposal below, Calpine continues to question whether forward flexible capacity products are necessary or desirable to address operational flexibility challenges. In operations, flexibility challenges are resolved through the complex optimizations underlying the CAISO’s energy and AS markets. These optimizations consider interactions between multiple resource characteristics as well as resources. As repeated efforts to develop flexible capacity products have demonstrated, it is very difficult to capture these interactions through forward flexible capacity products and repeated attempts to do so have delayed other reforms to RA, such as mechanisms to encourage more forward procurement of RA capacity, which have been conditioned on the development of “durable” flexible capacity products. In addition, the uncertainty around flexible RA product definitions has limited LSE interest in forward contracting.

In light of current market conditions and the significant capital and maintenance expenses faced by many generators, Calpine believes that additional forward procurement is critical so that generators that are needed to maintain reliability can take the steps necessary to continue to operate with reasonable assurance of cost recovery. To the extent that uncertainty around flexible RA capacity product definitions remain, Calpine recommends targeted additional forward procurement of local resources. Given the limited number of resources available to meet local RA requirements in each local area, refinements of flexible RA rules are unlikely to change significantly the relative attractiveness of different resources to meet local requirements. Forward procurement of local resources could be implemented through uniform requirements on all LSEs or through centralized procurement, effected by the CAISO or IOUs (with appropriate cost allocation).

In addition, Calpine recommends that the CAISO give greater consideration to the role of energy and AS markets in encouraging the retention (and potentially development) of flexible resources. To the extent that the CAISO can rely on energy and AS markets to reward operational flexibility, it might be able to dispense with explicit flexible RA capacity products entirely, providing the certainty around capacity product definitions that would enable greater forward procurement.

Even in the absence of an explicit flexible RA product, resources that are more flexible should be able to, for example, adjust their output more easily to benefit from the energy price volatility associated with large ramps, and hence earn more from the combination of energy,

AS, and RA capacity payments.<sup>1</sup> For example, consider the following day-ahead and real-time price data from a recent “duck curve” day, April 23.



A resource capable of ramping up and down could have realized the moderate to moderately high day-ahead prices in the morning and evening hours while avoiding the zero or negative prices in the middle of the day. A less flexible resource might have had to run at a loss through the middle of the day in order to realize higher morning and/or evening prices. Further, a resource capable of adjusting its output in real-time could have operated even more profitably by adjusting its output downwards in the intervals in which prices dipped and generating more when prices spiked. (The two big spikes in the graph are truncated. During those spikes, prices approached the \$1000/MWh offer cap.) Calpine would appreciate greater analysis of the extent to which the energy and AS markets currently reward flexible resources before the CAISO concludes that it needs different or additional flexible capacity products to encourage the retention (and development) of flexible resources.

<sup>1</sup> DMM’s annual analysis of the economics of CTs and CCGTs suggest that the two classes of resources earn similar amounts from energy and AS markets despite CTs inferior heat rates. As energy price volatility increases and energy and AS markets provide additional compensation opportunities for flexible resources, such as Flexi Ramp, the energy and AS net revenues of CTs should improve further relative to CCGTs.

**Proposal to modify eligibility criteria**

1. Start-up time less than 4.5 hours

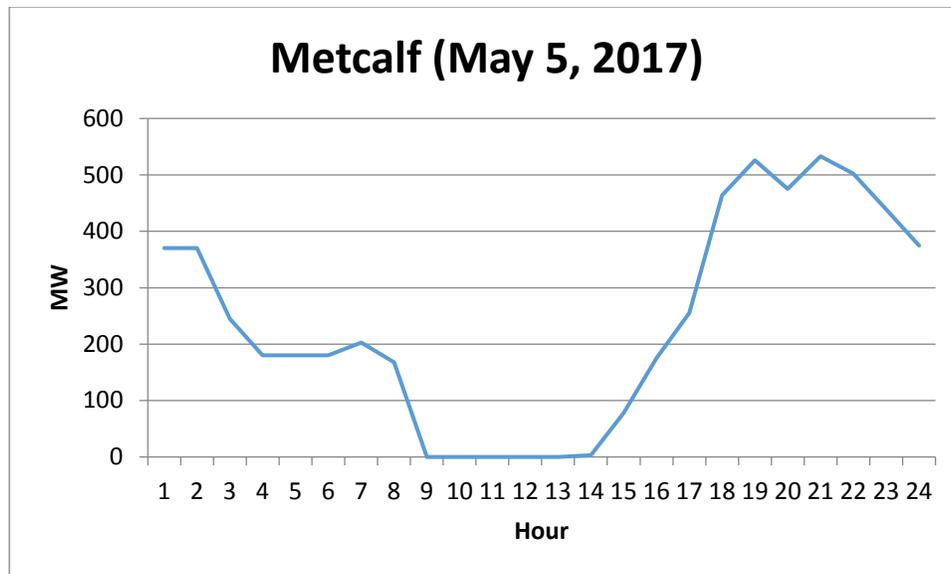
**Comments:**

The CAISO has presented limited evidence that resources that can start within 4.5 hours, i.e., resources that can be committed in real-time, are necessary to manage operational flexibility issues. The CAISO repeatedly has articulated the need for resources that are capable of ramping up and down to meet net load peaks in the morning and evening hours while minimizing output in the middle of the day. It is unclear why the resources required to meet this pattern of net load must be capable of commitment in real-time. Presumably, large portions of ramps are predictable, albeit with some error, and can be addressed by committing units day-ahead. For example at a recent CEC workshop, CAISO indicated that 47% of the afternoon ramp on a recent day with a large afternoon ramp was met by imports that were scheduled day-ahead.<sup>2</sup>

Similarly, despite the fact that most or all of Calpine's CCGTs cannot meet the 4.5 hour (cold) start criterion, they are capable of meeting both morning and evening ramps and cycling off in the middle of the day. For example, the following figure shows the operation of one of Calpine's CCGTs on a recent day and is typical of how Calpine's CCGTs have operated recently. It operated overnight, ramped up to meet the morning ramp, cycled off in the middle of the day, and then started to meet the evening ramp.

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<sup>2</sup> The CAISO discussed this point in reference to slide 10 of [http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-07/TN217546\\_20170511T112640\\_Renewable\\_Integration.pptx](http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-07/TN217546_20170511T112640_Renewable_Integration.pptx)



To better understand the CAISO's need for resources that can be committed in real-time, it would be helpful to understand recent volumes of real-time commitments and/or instances in which limitations on the availability of resources that could be committed in real-time caused reliability problems.

For example, at the aforementioned CEC workshop, CAISO presented evidence that it has been failing to meet CPS1 standards more often due to the variability of solar and wind resources.<sup>3</sup> Presumably, fast-starting resources could help address short-term variability of supply. Calpine would appreciate more information on the causes of CPS1 violations, in particular whether they are related to insufficient procurement of fast resources as RA capacity or the failure to commit and dispatch fast resources, that have been procured as RA capacity, through the energy and AS markets. If the CAISO is routinely failing to commit sufficient flexible resources day-ahead, perhaps the CAISO should reconsider the design of the day-ahead market. For example, perhaps the CAISO should be procuring more or different energy and AS day-ahead.

## 2. Minimum run-time less than 4.5 hours

### Comments:

Calpine has no objection to this criterion. As Calpine indicated at the May 8<sup>th</sup> workshop, many resources likely could meet this criterion at modest cost if they do not already.

Given the CAISO's interest in resources that can meet dual peaks in the same day, a criterion that combines start and minimum run-time criteria into a cycle time criterion may merit further consideration. For example, a resource that can cycle off after the morning net load peak and

<sup>3</sup> See slide 13.

start and ramp to meet the evening peak, 10-12 hours later may address the CAISO's operational flexibility requirements. Such a criterion would recognize that if a resource operates to meet the morning peak, then a start to meet the evening peak would be warm or hot, not cold.

3. Category 3 flexible capacity resources must be available seven day per week

**Comments:**

Calpine supports this new requirement. Generally, Calpine favors uniform performance requirements for all resources.

**Future considerations**

The ISO identified the following six objectives for long-term RA enhancements:

- 1) Provide for the efficient retention and retirement of resources needed to maintain reliable grid operations by aligning resource adequacy requirements with operational needs;

Calpine might re-frame this objective to focus more narrowly on reliability. Calpine believes that RA rules should encourage the retention of sufficient resources to maintain system and local reliability.

Calpine believes that CAISO should give greater consideration to utilizing energy and AS markets to reward operational flexibility.

The proposal notes that energy prices are likely to continue to decline as penetrations of renewables increase. While energy (and AS) prices may decline overall, as illustrated by the example above, their volatility may increase. That volatility should increase the energy and AS compensation of flexible resources, at least on a relative basis, reduce the costs that they must recover through RA capacity payments on a relative basis, and hence increase the likelihood that they are procured as RA capacity.

- 2) Simplify RA procurement and showing processes through alignment with system and local capacity provisions;

As discussed below with respect to 6), some form of centralized procurement might obviate the need for some or all LSE showings.

In addition, Calpine believes that RA compliance could be further simplified by a transition to annual or seasonal products, similar to the approaches in most other markets, instead of the

current monthly products. The proposal observes that under current rules, the most flexible resources may not be procured as RA capacity for the months in which flexibility challenges are greatest. If RA were an annual product, the CAISO could ensure the availability of appropriately flexible resources in certain months through the outage management process.

- 3) Enhance requirements to more closely differentiate particular resource attributes of flexible capacity needed to maintain operational reliability and achieve state policies;

As indicated above, Calpine is not convinced that RA capacity markets should be the primary means of rewarding specific operating characteristics, precisely for the reasons cited in the proposal, i.e., the targeting of operational characteristics through RA capacity markets probably would involve additional RA capacity products, which likely would be difficult to trade and increase the already complex compliance process, and/or complicated ex ante analyses to ensure that portfolios of resources meet various operational flexibility requirements. Such analyses may provide little transparency into what operational characteristics actually matter. In addition, to the extent that the CAISO uses production cost modeling to perform these analyses, as it has proposed in the past, it essentially would be using a simplified representation of the energy and AS markets to validate RA procurement. Rather than relying on a simplified representation of the energy and AS markets to encourage operational flexibility, why not rely on the energy and AS markets themselves?

- 4) Align long-term planning and annual RA processes to ensure the long-term planning objectives and assumptions are properly reflected through RA procurement and vice versa;

Calpine has long expressed concerns that long-term planning assumes the continued operation of resources that may not be economically viable. Longer-term procurement to meet RA requirements would provide greater assurance that resources that are presumed to be available in planning actually would be economically viable and contractually committed to meet reliability requirements.

- 5) Provide opportunities for internal and external resources to qualify to supply flexible capacity if they are able meet the specified requirements; and

Calpine suspects that it would be easier to induce greater participation of external resources in energy markets than in flexible capacity markets if for no other reason than the former is presumably a prerequisite for the later.

As discussed above, the CAISO has indicated that imports are already playing an important role in managing operational flexibility challenges through their participation in day-ahead energy markets.

- 6) Solutions should be scalable regardless of number of LSEs or size of LSEs

Energy (and AS) market solutions are inherently scalable. CAISO energy and AS markets already have numerous participants, including suppliers and marketers in addition to LSEs, and clear rules for cost allocation.

With respect to RA, in Calpine’s experience, non-IOU LSEs are less willing to contract forward for RA capacity than the IOUs. In addition, given the uncertainty around load migration associated with CCA and the potential re-opening of DA, all LSEs, including the IOUs are increasingly reluctant to make forward commitments. Given the reluctance of load to contract forward, it is difficult for suppliers to make rational decisions about whether to continue to operate. As suggested by PG&E,<sup>4</sup> one potential solution to this problem is centralized procurement with appropriate cost allocation, i.e., one entity would buy forward and then allocate the costs of the procurement to load, wherever it happens to be, in the delivery year. This type of procurement could be undertaken by the CAISO, a state agency, or potentially an IOU as long as it can allocate the costs to all load, not only its bundled load.

Please provide comments, as appropriate, on these objectives.

**Comments:**

Should additional objectives be added?

**Comments:**

**Other**

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

**Comments:**

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<sup>4</sup> [http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-14/TN217484\\_20170508T153558\\_Valerie\\_Winn\\_Comments\\_Pacific\\_Gas\\_and\\_Electric\\_Company\\_Risk\\_of.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-14/TN217484_20170508T153558_Valerie_Winn_Comments_Pacific_Gas_and_Electric_Company_Risk_of.pdf)