

Stakeholder Comments Template

Submitted by	Company	Date Submitted
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Please use this template to provide written comments on the revised draft final proposal for the Flexible Ramping Product initiative posted on December 17, 2015.

Please submit comments to initiative@caiso.com by close of business January 12, 2016

The revised draft final proposal is available on the ISO website at:

<http://www.caiso.com/Documents/RevisedDraftFinalProposal-FlexibleRampingProduct-2015.pdf>

Other related materials are available at:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleRampingProduct.aspx>

Please use the following template to comment on the key topics addressed in the initiative proposal.

1. Overall design

Comment: Powerex appreciates the opportunity to comment upon CAISO's December 17, 2015 Revised Draft Final Proposal on the Flexible Ramping Product. Powerex strongly supports the conceptual design set out in the Revised Draft Final Proposal, which represents a significant improvement over earlier drafts and meaningfully takes into account stakeholder comments and concerns with the previous design.

Powerex particularly supports CAISO's decision to modify the settlement of the Flexible Ramping Product to distinguish between two distinctly different factors that drive the need for the product—known variances and uncertainty—and to allocate costs based on the extent to which a market participant's activities increase or decrease the need for the product, in accordance with cost-causation principles. CAISO's proposed design will not only provide a market mechanism for CAISO to

procure the flexible ramping capability needed to effectively balance its system in real-time, but will also encourage market participants to schedule in a manner that minimizes the need for flexible ramping capability in the first place. Although Powerex believes that stakeholders would benefit from further clarification of certain technical aspects of CAISO's design, Powerex believes the essential elements of the design are sound and encourages CAISO to move forward with the product's implementation.

2. Procurement only in real-time market

Comment: CAISO's proposal to implement a real-time Flexible Ramping Product represents an important step towards ensuring that CAISO is able to meet the challenges of balancing its system under conditions increasingly characterized by greater system variability. Implementation of the real-time Flexible Ramping Product should also provide the CAISO with valuable experience regarding the amount of flexible ramping capability needed during different operating hours and grid conditions, as well as the primary drivers of that need. For these reasons, Powerex supports the Flexible Ramping Product being initially implemented in the real-time timeframe.

However, limiting implementation of the Flexible Ramping Product to the Real-Time Market leaves a critical gap. Namely, the CAISO will have mechanisms for market-based procurement of flexible capacity in real-time (through the Flexible Ramping Product) and in the year-ahead and month-ahead timeframe (through the Flexible Resource Adequacy Criteria and Must-Offer Obligation ("FRACMOO") framework) but there will be no framework in place to allow CAISO to procure or optimize flexible resources on a day-ahead basis. The lack of such a framework poses two main problems.

First, the failure to enforce procurement of a targeted quantity of ramping capability in the Day-Ahead Market may result in a "disconnect" between the flexible capacity provided under FRACMOO and that procured in real-time through the Flexible Ramping Product. The FRACMOO framework will ensure that a certain quantity of flexible capacity is offered into CAISO's Day-Ahead Market, but there appears to be nothing to ensure that the Day-Ahead Market will preserve an appropriate portion of this flexibility to be dispatched in real-time, rather than being fully committed for hourly energy on a day-ahead basis. For instance, the Day-Ahead Market may include an offer from a flexible resource at \$30/MWh and an offer from a less flexible resource at \$32/MWh. The day-ahead optimization might commit the less-expensive flexible offer for energy, and reject the more expensive inflexible offer altogether. When the Flexible Ramping Product constraint is enforced in real-time, CAISO may find that its ability to procure flexible capacity is highly limited, in part because the flexible resource was effectively used to obtain a \$2/MWh day-ahead energy savings, but without replacing that flexibility with other resources.¹ As a result, CAISO may need to replace the

¹ Moreover, offers from flexible resources under Flexible RA contracts may become unavailable to CAISO if the Day-Ahead Market solution constrains the transmission paths over which energy from those flexible resources would flow. This, in turn, would undermine the effectiveness of the Flexible RA commitments of internal resources and could do the same for external resources once CAISO enables inertia participation in the FRACMOO framework.

flexibility in real-time (when the Flexible Ramping Product is enforced), which may be considerably more expensive, if it is possible at all.

Second, the lack of a day-ahead product is likely to increase overall Flexible Ramping Product costs. As a practical matter, CAISO's Day-Ahead Market may present the best opportunity to procure flexible ramping capability at least-cost by affording CAISO an opportunity to commit longer lead-time resources (both internal and external resources) that would not otherwise be available in real-time. Limiting the Flexible Ramping Product to the Real-Time Market, in contrast, will force CAISO to satisfy its flexibility needs using only a subset of the resources capable of supplying flexible ramping capability. By shrinking the pool of resources available, CAISO's decision to limit the Flexible Ramping Product to the Real-Time Market may prevent CAISO from meeting its need for flexible ramping capability using the most efficient and cost-effective resources.

A properly designed day-ahead Flexible Ramping Product would thus achieve the following two objectives:

1. Ensure that the day-ahead solution sets aside sufficient deliverable flexible capacity (with a real-time offer obligation) to meet the expected Flexible Ramping Product requirement for uncertainty that will be enforced in real-time, with a high degree of certainty.²
2. Ensure that flexible capacity is procured at least cost, by adding flexible capacity procurement to the co-optimization process in the Integrated Forward Market (which will permit the economic displacement of FRACMOO resources by non-FRACMOO resources where appropriate).

Thus, while Powerex supports CAISO's decision to move forward with implementation of the Flexible Ramping Product in the Real-Time Market, this should be viewed as an initial step, and Powerex encourages CAISO to take steps to "close the gap" by extending this framework to the Day-Ahead Market as soon as possible. More specifically, Powerex recommends that CAISO timely pursue development and implementation of a day-ahead flexible capacity product, with a goal of implementing it in the Spring 2017 release. Powerex looks forward to working collaboratively with CAISO and other stakeholders as CAISO moves forward with this important initiative.

3. Settlement of forecasted movement

² Since the Day-Ahead Market performs a multi-hour optimization across all hours of the operating day, taking unit flexibility characteristics into account, the Flexible Ramping Product required for forecast movement is arguable already enforced. Extending the Flexible Ramping Product design to the day-ahead timeframe will ensure that service is explicitly compensated within the market mechanism (as opposed to through RUC or bid-cost recovery), and will also ensure the day-ahead solution provides flexible capacity to meet uncertainty. In the day-ahead timeframe, uncertainty will arise both from potential deviations between the 5-minute load forecast in the binding and non-binding Real-Time Dispatch intervals (as defined in the current proposal), but also between the day-ahead load forecast and the real-time load forecast.

Comment: Powerex generally supports CAISO's settlement of forecasted movement as described in the Revised Draft Final Proposal.

4. Settlement of uncertainty

Comment: Powerex generally supports CAISO's settlement of uncertainty on a monthly basis, based on cost-causation principles. Powerex believes it would be helpful to stakeholders, however, if CAISO could provide some additional examples illustrating the settlement of uncertainty, perhaps through issuance of a supplement to the Revised Draft Final Proposal.

5. Demand curve for uncertainty

Comment: Powerex generally supports CAISO's initial approach for estimating the level of flexible ramping capability needed to address uncertainty and greatly appreciates CAISO's commitment to provide transparency into the manner in which it determines this requirement. Powerex encourages CAISO to fine-tune its approach as it gains experience with the Flexible Ramping Product and to include any changes in its tariff and/or business practice manual, with opportunities for stakeholder input, as appropriate.

6. Double payment rules

Comment: Powerex supports CAISO's general concept that double payments should be avoided. However, Powerex continues to believe that Table 13 in the Revised Draft Final Technical Appendix would benefit from clarification. In particular, Powerex believes that the example(s) related to application of the rescission proposal may contain errors.³

7. Other

Comment:

³ See Comments of Powerex Corp. on Flexible Ramping Product Revised Draft Technical Appendix at 6 (Dec. 2, 2015).