Stakeholder Comments Template

Flexible Ramping Product Refinements Initiative

This template has been created for submission of stakeholder comments on the draft final proposal and technical documents that were published on May 8, 2020. These materials can be found on the initiative webpage at: http://www.caiso.com/StakeholderProcesses/Flexible-ramping-product-refinements.

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on June 2, 2020.

Submitted by	Organization	Date Submitted
Brian Theaker *530-295-3305*	*Middle River Power, LLC ("MRP")*	*June 2, 2020*

Please provide your organization's overall position on the FRPR draft final proposal:

☐ Support
☒ Support w/ caveats
☐ Oppose
☐ Oppose w/ caveats
☐ No position

Please provide written comments on each of the revised straw proposal topics listed below:

1. Proxy Demand Response Eligibility**:**

   MRP has no comments on this topic.

   Ramp Management between fifteen minute market and real-time dispatch**:**

   MRP supports the CAISO's proposal to retain 100% of the FRP requirement in the buffer interval.

2. Minimum Flexible Ramping Product Requirement for BAA**:**

MRP supports the CAISO's proposal to set a minimum FRP requirement in a Balancing Authority Area ("BAA") if the BAA's FRP requirement is greater than or equal to 60% of the total requirement across the EIM footprint.

3. Nodal Procurement:

MRP supports the CAISO's proposal to procure FRP on a nodal basis to better ensure that the energy from the FRP can be delivered.

4. FRP Demand Curve and Scarcity Pricing:

MRP shares the CAISO's hope that moving to nodal procurement of FRP will reduce or eliminate the amount of FRP that is awarded but cannot be delivered due to congestion (e.g., is awarded to resources that have additional unloaded capacity because they have been "dispatched down" by congestion management). MRP also hopes that this modification will have the collateral benefit of requiring the FRP constraint to be relaxed when there is insufficient FRP instead of allowing FRP to be awarded to resources that are "congested down". Relaxing the FRP constraint when there is insufficient FRP available should set a scarcity price as the CAISO describes.

5. Calculating FRP Requirements:

How the CAISO sets the requirements for the market products it procures, including FRP, is critically important.

The CAISO's proposal – to apply quantile regression to a blended input variable (which the CAISO refers to as "MOSAIC", and which that incorporates load, wind and solar – is complex.

The stated goal of using the quantile regression is to reduce the average FRP requirement but also ensure that the FRP requirements are set high when appropriate. An examination of the CAISO's "Requirement" metric – the average of the FRP requirements as driven by both the histogram ("H") and quantile regression ("Q") – indeed shows that the average requirement in each of the six tested BAAs is lower, especially for the CAISO and Nevada Power BAAs, when using the quantile regression method:

	H	Q	Ratio
AZPS	122.72	117.17	95.5%
CISO	602.85	547.13	90.8%
IPCO	66.02	61.58	93.3%
NEVP	70.63	62.02	87.8%
PACE	108.79	107.11	98.5%
PACV	59.33	53.81	90.7%

The proposal to use quantile rather than standard least mean squares regression to better capture the "outliers" of the requirement rather than emphasizing the average requirement seems sound. The "coverage" metric, which the CAISO describes as "the percentage of the observed imbalance exceeding the requirement", however, does not seem to show that the quantile regression provides greater coverage than the histogram approach:

Table 2: Comparing Performances of Histogram (H) and Quantile Regression (Q) approaches

BAA	Coverage		Requirement		Closeness		Exceeding	
	H	Q	H	Q	H	Q	H	Q
AZPS	96.87%	96.17%	122.72	117.17	144.24	139.08	49.56	45.65
CISO	96.71%	96.10%	602.85	547.13	595.46	540.99	175.07	163.74
IPCO	97.16%	96.80%	66.02	61.58	67.61	63.08	24.84	20.75
NEVP	97.00%	96.08%	70.63	62.02	78.05	69.79	29.10	26.77
PACE	96.99%	96.57%	108.79	107.11	110.65	109.08	36.86	33.97
PACV	97.19%	96.86%	59.33	53.81	58.40	52.70	23.51	18.35

In each BAA, the "coverage" metric obtained using the quantile regression is smaller than the "coverage" metric obtained using the histogram approach. This outcome does not seem to support one of the stated goals of the quantile regression approach.

The CAISO proposal that the output of the quantile regression will be bounded by two configurable parameters (which the CAISO labels as $\bar{y}_1$ and $\bar{y}_2$) warrants further explanation, as this proposal introduces the possibility that these configurable parameters will serve to override the results of the regression.

6. Additional comments:

MRP has no other comments.