California ISO

Stakeholder Comments Template

Day-Ahead Market Enhancements Phase 2 Initiative

This template has been created for submission of stakeholder comments on the issue paper and straw proposal that was published on February 28, 2019. The paper/proposal, Stakeholder meeting presentation, and other information related to this initiative may be found on the initiative webpage at:
http://www.caiso.com/informed/Pages/StakeholderProcesses/Day-AheadMarketEnhancements.aspx

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on March 21, 2019.

Submitted by	Organization	Date Submitted
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Please provide your organization's comments on the following issues and questions.

PSE appreciates the effort that the CAISO has put into development of this issue paper and straw proposal. Although PSE does not currently participate in CAISO's Day-Ahead Market (DAM) other than through intertie bidding, PSE submits the comments below in light of the possibility that the DAM enhancements adopted in this initiative may apply to EIM Entities if the DAM is extended at some point in the future. PSE believes there is a strong possibility that the design elements adopted as part of this initiative will need to be revisited and appropriately tuned to accommodate participation of the EIM Entities if extension of the DAM occurs.

1. **Proposed Day-Ahead Market Structure**

   Due to increasing penetration of variable energy resources (VER) such as wind and solar, uncertainty is expected to increase in the DAM scheduling process. PSE agrees in principle that a Day-Ahead Market Flexible Ramping Product (DAM FRP), if properly designed, could be a vital market mechanism to reasonably pre-position the system to deal with uncertainty that materialize in real-time.

A. New DAM FRP. The DAM FRP requirement can be calculated by historical observations of DAM to Real-Time Market (RTM) net load uncertainty (or deviation). In this proposal, the CAISO proposes to quantify the uncertainty as the difference between the market net load errors from the Integrated Forward Market (IFM) to the Fifteen-Minute Market (FMM). Mathematically, the market net load can be calculated as Equation (1) in the DAM and Equation (2) in the FMM.

$$IFM\ Market\ Net\ Load \equiv Load - VER - (Virtual\ Gen - Virtual\ Load)$$
$$= (Phys\ Gen) + (Import - Export) - Losses \quad (1)$$

$$FMM\ Market\ Net\ Load \equiv Load - VER$$
$$= (Phys\ Gen) + (Import - Export) - Losses \quad (2)$$

$$Market\ Net\ Load\ Error = IFM\ Market\ Net\ Load - FMM\ Market\ Net\ Load \quad (3)$$

The DAM FRP requirement can be calculated statistically as 95th percentile of the market net load error in Equation (3) in a given time window (such as 40 days prior to the market day), similar to RTM FRP requirement today. Many stakeholders including PSE raised the concerns of virtual bidding and its impact in setting up the DA FRP requirement. The interaction between the VER forecast and virtual bids can be summarized in the following two scenarios:

- Scenario #1: The DAM could clear a significant volume of virtual supply (hence less physical generation is cleared). This leaves the Real-Time Market (RTM) with a potentially large shortage of supply to work with. CAISO argues that this would not happen since the market typically clears net virtual supply when VERs are under-forecast in the DAM. More VERs showing up in real-time would counteract the virtual supply quantity previously cleared in the DAM. So virtual supply and demand in this case are expected to bring more certainty to the market.

Table 1. Scenario #1: Net Virtual Supply, VER Under-Forecast

Market	Price	Net Virtuals (Virtual Sup-Virtual Dem)	VER (Wind, Solar)
DAM	High	1,000 MW	9,000 MW
RTM	Low	0	10,000 MW
Net Deviation = 0		1,000 MW	-1,000MW

- Scenario #2 is opposite to Scenario #1, when net virtual demand prevails in anticipation of over VER forecast in DAM. In real-time, less VERs showing up is offset by the virtual demand quantity previously cleared in the DAM. So virtual supply and demand in this case are also expected to bring more certainty to the market.

Table 2. Scenario #2: Net Virtual Demand, VER Over-Forecast

Market	Price	Net Virtuals (Virtual Sup-Virtual Dem)	VER (Wind, Solar)
DAM	Low	-1,000 MW	11,000 MW
RTM	High	0	10,000 MW
Net Deviation = 0		-1,000 MW	1,000 MW

PSE requests that CAISO develop additional analysis to support that virtual supply, virtual demand, and the VER forecast are indeed behaving as shown in Scenario #1 and Scenario #2 above.

PSE also requests that CAISO report on its progress in developing a new quantile regression methodology to calculate the FRP requirement to replace the current net load percentile methodology that has been known to be inaccurate in today's RTM operation.

B. Retirement of DAM RUC process. With the introduction of the new DAM FRP, the ISO argued that the incremental capacity that is currently procured through the Residual Unit Commitment (RUC) process will instead be procured economically based on the corresponding FRP requirements. But the RUC and the DAM FRP are designed to accomplish fundamentally different objectives in different timeframes:

- RUC objective: to procure incremental capacity from IFM to meet DAM forecasted load in the DAM time frame.
- DAM FRP objective: to procure total ramp capacity in IFM in anticipation of market net load deviation between IFM DAM to FMM time frame.

It is therefore unclear if the two capacities are interchangeable. And even if they are, how much incremental RUC capacity can be replaced by the DAM FRP capacity procurement? Is that 100%, 50%, or some other percentage? PSE requests that CAISO perform a detailed analysis to support the retirement of the RUC process.

C. Introduction of an out-of-market Reliability and Deliverability Assessment (RDA). With the removal of RUC, the CAISO proposes to create a new RDA process after the completion of the DAM. This process is not an economic process, but rather a system engineering study using power flow to examine if the energy schedules and flexible ramping product awards from the DAM process could ensure feasible system operation under different operating scenarios. In the event an infeasible solution is observed, the market operator may take out-of-the-market exceptional scheduling action. While the RDA process is no different from today, the removal of the RUC may increase frequencies of out-of-the-market RDA action. PSE requests that CAISO perform additional market analysis to quantify the pros and cons of the RDA process.

2. Day-Ahead Flexible Ramping Product

PSE is developing a position on Section 4 of the proposal at this time, and offers the following comments for CAISO's consideration.

A. FRP performance thresholds, penalties, and disqualification. CAISO proposes that resources failing to meet the 95% performance threshold be disqualified for future months for the entire resource. PSE has concerns that this approach is overly restrictive and unnecessarily removes viable flexible ramping resources from the market. PSE suggests a performance-based cap be applied on a short term basis for under-performing resources. A performance test could be based on the more restrictive of Pmax and ramp rate limitations and applied to the remainder of the operating day – possibly continuing for the following day. We also wish to clarify the must-offer obligation and suggest that market participants be permitted to substitute similar units (same market node – common bus substitution) to provide real-time coverage for DA FRP awards.

B. RTPD and RTD Flexible Ramping Requirements Publication Timing. Real-Time flex ramp requirements should be published early enough to allow market participants to plan and trade to include those requirements. RT Bids are locked at T-75 just prior to the first time flex requirements are published. Bilateral hourly deals must be executed and tagged by the T-55 balancing test. Publishing final flex ramp requirements by T-90 would allow market participants sufficient time to trade and bid against a known requirement rather than adding another level of uncertainty to hourly balancing.

C. Tagging deadline for Inter-tie bidding for FRP awards. In order to ensure deliverability of FRP, PSE believes transmission service reservations should be in hand at market close to support inter-tie bidding.

3. Re-Optimization of Ancillary Services

PSE is developing a position on Section 5 of the proposal at this time, and offers the following comments for CAISO's consideration.

Ancillary Service Market Bidding. Spin bid pricing. CAISO proposes no bids for spin and non-spin in the real-time market. PSE disagrees with this approach as bids allow market participants to communicate operational information to the market:

- preferred start order for similar units
- risk tolerance for a given unit vs other portfolio units
- deep/recovery reserve designation through pricing

PSE suggests a $10 bid cap for all ancillary services and a requirement that lower tier ancillary service bids cannot exceed bids for higher value services (reg > spin > non-spin > FRP).

4. Energy Imbalance Market Governing Body Classification

At this time, PSE agrees with the Governing Body classification as set forth in Section 6 of the proposal.