

Memorandum

To: ISO Board of Governors
From: Eric Hildebrandt, Executive Director, Market Monitoring
Date: September 23, 2020
Re: Department of Market Monitoring Comments

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides comments by the Department of Market Monitoring (DMM) on three proposals being presented to the Board for approval.

- FERC Order 831 – Import bidding and market parameters
- Flexible ramping product enhancements
- Energy storage and distributed energy resources phase 4

DMM supports all three of these proposals, which represent significant improvements in the current market design.

FERC ORDER 831

DMM supports the ISO's proposal as an effective and reasonable way of complying with FERC Order 831. The proposal places reasonable limits on instances in which the ISO will allow import bids over \$1,000/MWh to set market-wide prices and will raise the power balance penalty price to \$2,000/MWh. The proposal is a vast improvement from the ISO's 2019 Order 831 compliance filing, which DMM opposed in comments filed with FERC.¹

Prior to mid-August of this year, the day-ahead bilateral electricity price indices upon which the ISO's proposal is based had not reached levels that would have resulted in allowing import bids over \$1,000/MWh to set market clearing prices and triggering scarcity pricing of \$2,000/MWh under the ISO proposal. However, market conditions over the last month have now provided several periods over which the potential effectiveness and implications of the ISO's proposed approach can be better assessed. System and market conditions in mid-

¹ *Motion to Intervene and Comments of the Department of Market Monitoring*, ER19-2757-000, September 26, 2019:

<http://www.caiso.com/Documents/MotiontoInterveneandCommentsoftheDepartmentofMarketMonitoringonOrder831Compliance-ER19-2757-Sept262019.pdf>

August and early September have highlighted the very real possibility for areas of WECC outside of the ISO to have tight supply conditions which may be the result of both market power and potential power shortages.

DMM's comments on the ISO's final proposal include an estimate by DMM of the "maximum import bid price" that would have resulted under the ISO's proposed approach under these recent unprecedented market conditions.² This analysis indicates that the proposal provides a reasonable mechanism for determining instances in which the ISO will allow import bids over \$1,000/MWh to set market-wide prices and raise the power balance penalty price to \$2,000/MWh. As illustrated in this analysis, the day-ahead bilateral price indices upon which the proposal is based must reach very high levels before triggering these provisions.

However, because the proposed approach is based on day-ahead bilateral price indices outside the ISO, this approach will, in some cases, not reflect actual real-time market and scarcity conditions in the ISO system and the broader energy imbalance market. In some cases, this could prevent price setting import bids and penalty prices up to \$2,000/MWh when potential scarcity exists in the real time market. Other times, this may allow for uncompetitively high prices up to \$2,000/MWh when market power exists but there is no actual scarcity.

Analysis in DMM's comments also highlights that on critical days when projected system conditions may be tightest, the volume of trades and number of entities trading power at the Palo Verde trading hub on the Intercontinental Commodity Exchange (ICE) may be very limited. The ISO's proposed approach will need to be based directly on the availability and accuracy of this bilateral ICE price data to be implemented as described in the final proposal. Thus, DMM suggests that the ISO may need to establish some criteria for determining when insufficient bilateral price data may be available to calculate the import bid price threshold and develop alternative options for setting this threshold.

While the current proposal is a significant improvement from the ISO's 2019 Order 831 compliance filing, DMM recommends that the ISO continue to consider numerous aspects and implications of the proposal as part of a more comprehensive review of scarcity pricing, system market power mitigation options and resource adequacy policy.

FLEXIBLE RAMPING PRODUCT ENHANCEMENTS

DMM supports the proposed refinements as significant improvements to the flexible ramping product.

Deliverability enhancements

The current process for procuring flexible ramping capacity does not incorporate transmission constraints which limit the ability for energy from flexible capacity to be

² *Comments on FERC Order 831 – Import Bidding and Market Parameters: Final Proposal* Department of Market Monitoring September 10, 2020.

<http://www.caiso.com/Documents/DMMCommentsonFERCOrder831-ImportBiddingandMarketParametersFinalProposal-Sep102020.pdf>

delivered to the grid when needed to meet ramping needs. Analysis has shown that the amount of flexible ramping capacity that could not be utilized due to transmission constraints is significant. This typically occurs when a large portion of flexible ramping capacity is procured in the northwest balancing areas of the energy imbalance market -- where energy prices are lower and unused transmission capacity to the ISO and other parts of the energy imbalance market is limited or fully utilized. Excluding these transmission constraints from the flexible ramping procurement process allows flexible ramping requirements to be met by resources that cannot be used to meet ramping energy needs and also reduces the prices paid for all flexible ramping capacity.

The proposed enhancements include a process for accounting for transmission constraints through deployment scenarios that should significantly improve the deliverability of procured flexible ramping reserves. The deployment scenarios that will be used to guide procurement of flexible ramping product will not ensure that all procured flexible ramping capacity is deliverable in all cases. However, using the deployment scenarios will be a vast improvement over the current procurement which ignores transmission constraints altogether. The ISO's proposal should greatly improve the flexibility of the real-time dispatch to meet uncertain net load. If significant amounts of stranded flexible reserves persist, the ISO can continue to refine the deployment scenarios.

Effects on energy prices

As transmission constraints are enforced as part of the flexible ramping procurement, energy prices will rise as the quantity of flexible ramping capacity procured is reduced along the demand curve. This reflects the intent of the flexible ramping product design, which is to have energy prices include the cost of reducing available flexible reserves.

Currently the energy price often does not include the cost of reducing *effective* flexible reserves. This is because the flexible ramping product does not account for transmission. As a result, the optimization can often procure *ineffective* flexible reserves that cannot be converted to energy because the reserves are behind constrained transmission elements. By enforcing transmission constraints in the flexible ramping procurement, the energy price will account for the cost of reducing effective flexible reserves consistent with the purpose of the flexible ramping product design.

Deriving flexible ramping product demand curves from regressions

DMM supports the ISO's effort to improve the accuracy of its estimates of net load uncertainty. The proposal to use quantile regression to estimate the percentile points along the demand curve could be a significant improvement over the current approach. The ISO plans to put the regression formulation in a business practice manual. DMM recommends that the ISO continue to inform stakeholders and seek their input on the regression formulation in this stakeholder process and through the business practice manual process. Stakeholders can provide valuable input on the formulation and should be kept informed on how demand curves are created.

DMM recommends that the ISO begin to explore extending the real-time flexible ramping product time horizon.

DMM continues to recommend that the ISO enhance the real-time flexible ramping product to address uncertainty in net load forecasts over longer time horizons. Currently, ISO operators take numerous and significant out of market actions to procure additional flexible reserves. Extending the real-time market uncertainty time horizon should reduce the need for such manual intervention, increase the procurement and pricing of flexible reserves through the real-time market, and also maintain and utilize the value of flexible reserves procured in the day-ahead or extended day-ahead market.

Extending the time horizon of the real-time flexible ramping product in the real-time market beyond the current 15-minute horizon will be a significant but valuable design change. This change is not needed to implement the ISO's proposed refinements which should go forward without extending the time horizon. However, DMM believes the ISO should begin to explore extending the flexible ramping product time horizon as soon as practical.

This enhancement will be increasingly important as the ISO implements a day-ahead ramping product as part of the enhanced day-ahead market (EDAM) initiative. With this new product, resources will be scheduled, positioned and compensated in the day-ahead market based on a 24-hour optimization so that they can be positioned to provide ramping capacity in real-time. However, in real-time these resources will be re-dispatched (and possibly de-committed) based on real-time energy and commitment cost bids without consideration of their day-ahead flexible ramping awards. Thus, if the real-time flexible ramping product time horizon is not extended beyond 15-minutes, there will not be a mechanism in the real-time market software to ensure that units with day-ahead flexible ramping awards will be positioned to actually provide that ramping capacity in real-time.³

DMM recognizes that extending the time horizon of the flexible ramping product to the 3 to 4 hour lookout of the short-term unit commitment process incorporated in the real-time market software involves significant additional complexity. However, DMM believes the likely benefits of this enhancement – especially once a day ahead flexible ramping product is implemented – warrant further development of this option. DMM believes this enhancement may be key to reducing the need for manual operator intervention in the real-time market, and would also ensure that ramping capacity procured in the day-ahead market under the EDAM initiative is actually available in real-time.

³ *Enhancing the flexible ramping product to better address net load uncertainty*, presentation to Western EIM Body of State Regulators Webinar, June 12, 2020: <http://www.caiso.com/Documents/Presentation-Real-TimeFlexRampProductEnhancements-WesternEIMBodyofStateRegulators-June122020.pdf>

ENERGY STORAGE AND DISTRIBUTED ENERGY RESOURCES

DMM supports the ISO's *Energy Storage and Distributed Energy Resources Phase 4 (ESDER 4) Final Proposal*.⁴ A key enhancement included in the proposal is to introduce a biddable end-of-hour state-of-charge parameter for storage resources. Under the ISO's proposal, a supplier would have the option to submit maximum and minimum state of charge values as a part of real-time bids. DMM agrees with the ISO and other stakeholders that this feature could provide battery operators with a more flexible option to manage real-time schedules as opposed to using self-schedules.

DMM also supports the ISO's efforts to apply bid cost recovery eligibility rules in the hour preceding a self-schedule and when the end-of-hour state-of-charge parameter is used by storage resources. The ISO's proposal should effectively limit gaming opportunities related to the interaction of the new biddable end-of-hour state-of-charge feature with bid cost recovery rules.

⁴ *Comments on Energy Storage and Distributed Energy Resources Phase 4 (ESDER 4) Final Proposal*, Department of Market Monitoring, September 16, 2020. <http://www.caiso.com/Documents/DMMComments-EnergyStorageandDistributedEnergyResourcesPhase4-FinalProposal-Sep162020.pdf>