Comments on Day-Ahead Market Enhancements Revised Straw Proposal

Department of Market Monitoring

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Overview

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the Day-Ahead Market Enhancements (DAME) Revised Straw Proposal.[1]

The revised proposal uses multiple optimization iterations to set reliability capacity requirements without creating different prices for physical supply than for load, VERs supply and virtual supply. This iterative approach provides a reasonable path forward for the DAME initiative. The revised proposal balances the goal of procuring sufficient capacity to meet the ISO forecast plus uncertainty requirements with the goal of reducing the ISO's direct impact on transactions between market participants. The proposed iterative approach builds on the ISO market's current iterations and is in line with how other ISOs use multiple optimization iterations or passes in their market clearing. DMM supports this iterative approach which will allow the DAME initiative to move forward and brings the ISO closer to day-ahead procurement of flexible reserves.

DMM believes that there are still several aspects of the proposed DAME design that need further consideration and development:

- The ISO should consider options for a more robust real-time market incentive for day-ahead imbalance reserves and reliability capacity to be available.
- The ISO should eliminate or mitigate a potential gaming opportunity in the proposed design involving physical supply and virtual bids which could inflate reliability capacity payments**.**
- The proposed real-time energy offer cap would have the undesirable effect of moving the markets away from marginal cost pricing.
- The fixed default capacity offer price floor of $30 is not well supported.
- The ISO should consider multiple ramp time frames for imbalance reserves rather than procuring all to be deliverable within 15 minutes.
- As currently proposed the imbalance reserves are not a sufficient replacement for real-time must offer obligations from resource adequacy capacity.
- The ISO should also consider extending the real-time flexing ramping product time horizon to preserve the value of procured day-ahead flexible reserves.

We provide more detailed comments on the revised straw proposal below.

[1] *Day-Ahead Market Enhancements: Revised Straw Proposal*, California ISO, June 8, 2020: http://www.caiso.com/InitiativeDocuments/RevisedStrawProposal-Day-AheadMarketEnhancements.pdf

Detailed Comments

The proposed iterative approach provides a reasonable path forward

The ISO's proposed iterative approach provides a reasonable path forward for the DAME initiative. The ISO proposes multiple optimization iterations to set reliability capacity requirements without creating different prices for physical supply than for load, VERs supply and virtual supply. The revised proposal balances the goal of procuring sufficient capacity to meet the ISO forecast plus uncertainty requirements with the goal of reducing the ISO's direct impact on transactions between market participants. While the formulations are complex and still require more examination, DMM supports the direction of the iterative approach which bring the ISO markets closer to the needed day-ahead procurement of flexible reserves.

ISO New England has proposed similar reliability constraints but they will not change LMPs to be different for physical supply than for load, VER supply and virtual supply.[2] The New York ISO runs a series of four optimization iterations: a first iteration with the market bids; then two reliability iterations, with forecasts for load and VERs and without virtual bids, are run to determine additional necessary commitments; and a final market iteration using bids but fixing the needed commitments from previous iterations.[3] The ISO's current market already uses multiple iterations. The revised proposal builds on the ISO market's current iterations and is in line with how other ISOs use multiple optimization iterations or passes in their market clearing.

Imbalance reserves lack real-time financial incentives

As currently proposed, the financial incentive for a resource operator to offer their imbalance reserves into the real-time market would not be significantly larger than the resource operator's financial incentive for offering capacity that has neither a day-ahead energy schedule nor an imbalance reserve award into the real-time market.[4] The only differences are that imbalance reserve awards have a real-time must-offer obligation and that the ISO could claw back day-ahead imbalance reserve payments. This leaves open the possibility that resources with no intention of being available in real-time could try to get day-ahead imbalance award payments knowing that if they are called upon in real-time and do not deliver the only market consequence is they lose some of the payments. This is unlike energy and ancillary service awards where resources that do not deliver must pay the real-time price for these products. While a real-time price for reliability capacity and imbalance reserves may not be feasible, the ISO should consider other potential mechanisms. One potential mechanism to explore, which ISO New England is pursuing, is to have day-ahead capacity awards sell financial options against the real-time prices.[5]

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[2] ISO New England *Energy Security Improvements: Creating Energy Options for New England* April 30, 2020 p.149: https://www.iso-ne.com/static-assets/documents/2020/04/esi-white-paper-final-with-cover-page-04152020.pdf

[3] New York ISO, *Manual 11: Day-Ahead Scheduling Manual* May, 2020 pp.25-27: https://www.nyiso.com/documents/20142/2923301/dayahd_schd_mnl.pdf/0024bc71-4dd9-fa80-a816-f9f3e26ea53a

[4] The only incentive is the potential to profit from an incremental real-time market award.

[5] ISO New England *Energy Security Improvements: Creating Energy Options for New England* April 30, 2020.

Potential game to inflate reliability capacity payments

In prior proposals, DMM pointed out that the REN constraint created a gaming opportunity where a physical resource could clear the day-ahead market while also clearing an offsetting virtual demand bid. In real-time the resource would not deliver its day-ahead schedule. This allowed the resource to collect a reliability payment without delivering or intending to deliver actual energy. Because resources that do not expect to clear energy in the market benefit the most from this game, the previous proposals created incentives for resources to bid into the day-ahead market below their actual costs. The removal of the REN pricing in the current proposal eliminates this particular gaming concern.

However, during the call stakeholders pointed out a similar potential game with the current proposal. In this potential game a physical resource would not clear energy in the day-ahead market but instead clear a virtual supply bid and receive an RCU or IRU capacity award. In real-time the resource would deliver energy equal to the virtual supply award and collect an extra payment, its RCU or IRU award, relative to simply clearing the physical resource in the day-ahead market. In order to avoid potentially losing money, the resource owner would need to offer the virtual supply at the physical resource's actual cost into the day-ahead market, and offer the physical resource at actual cost into the real-time market. This potential game would likely not increase the RCU price because the increase in the required RCU would be offset by a corresponding increase in available RCU capacity.[6]

Under the ISO's current proposal, the potential game is that a physical supply resource masquerades as a virtual supply offering energy at the physical resource's actual costs. It is not clear to DMM that this is worse than the previous proposals where the game rewarded implicit virtual supply for masquerading as actually available physical supply offering energy below cost into the day-ahead market that would not show up in real-time. But there is a potential for resources to inflate their capacity payments without providing additional services or value. The ISO should develop measures to eliminate or mitigate this potential gaming opportunity.

Real-time energy offer caps for resources receiving RCU or IRU awards would undermine optimal dispatch and marginal cost pricing

The ISO proposes implementing a real-time energy offer cap for resources that receive day-ahead RCU or IRU capacity awards. The purpose of this offer cap is to attempt to get resources with lower energy costs to bid lower for RCU and IRU and make the market more likely to clear lower energy cost resources to provide RCU and IRU reserves. Unlike spinning and non-spinning reserves, which are only used in contingencies, the RCU and IRU capacity will be dispatched for energy often. DMM understands why the ISO would want to have lower rather than higher energy cost resources receive these awards (with the lowest cost resources receiving energy awards). However the offer caps would, by design, force resources to bid below their actual marginal costs and thus undermine the optimal dispatch of resources and marginal cost pricing in the real-time market. If the ISO wants to award imbalance reserves to lower energy cost resources it should consider other mechanisms.

[6] Though RCU payments could increase because the quantity paid the RCU price increases. It is also possible that by carrying out this game the resource would cause the RCU price to fall by offering its capacity at a low price to ensure it clears RCU awards.

The ISO should consider procuring imbalance reserves for multiple ramp time frames

The ISO currently proposes procuring imbalance reserves with individual awards constrained by fifteen-minute ramp capability. The imbalance reserve requirements will be based on the uncertain difference between day-ahead and real-time net load for a trade hour. But not all of this uncertainty is realized within that trade hour alone or just within fifteen minutes. Often much of the uncertainty is realized over the course of the day.[7] Enforcing fifteen-minute ramp constraints on all the capacity procured to meet the entire uncertainty requirement could overly restrict what is counted as available supply.

As an alternative the ISO should consider breaking the total uncertainty into multiple requirements one with a fifteen-minute ramp timeframe, and the others with different ramp timeframes. For example, there might be three products with hourly, fifteen-minute and five-minute ramp timeframes. Figuring out how to treat ramp capabilities can be complicated, particularly given the different market granularities between day-ahead and real-time, but DMM thinks this aspect of the imbalance reserve design requires additional design consideration.

Market power mitigation for reliability capacity and imbalance reserve offers

As the ISO proposes, local market power mitigation needs to be applied to RC and IR capacity offers. However putting a floor on the default capacity offers used for mitigation at $30 does not appear to be well supported. This floor is based on the 90th percentile of spinning reserve prices.

Spinning reserves are a different product than the RC and IR products will be. The set of resources that can provide RC and IR capacity will be larger than the set of resources qualified to provide spinning reserves. The demand for the RC and IR products will be different than for spinning reserves. Unlike spinning reserves the RC and IR products, as currently designed, do not have a real-time price at which they must buy back their capacity if it is unavailable or converted to energy—a difference in cost structure from the spin product. Therefore we do not know if what is a competitive price in the spinning reserve market will be a competitive price in the RC and IR markets.

Further, even within a single product, what is a competitive price at one time period may not be the same as the competitive price in another time period. The competitive energy price when load is twenty gigawatts is not necessarily the same as when load is forty gigawatts. Having a fixed floor on all default capacity offers that is above the majority of competitive market prices would reduce the effectiveness of market power mitigation.

Rather than trying to create a fixed floor, DMM recommends that the ISO use a "competitive capacity price" that excludes non-competitive congestion prices similar to the competitive LMP used in energy offer mitigation. The calculated "competitive" prices in market power mitigation is meant to keep offers from being mitigated below estimated competitive prices, even if those prices are above a resource's estimated marginal cost.

[7] The hourly uncertainty requirements are not independent of each other but are correlated.

Replacing resource adequacy real-time must offer obligations needs more consideration

The effectiveness of replacing current resource adequacy real-time must offer obligations with obligations from reliability capacity and imbalance reserve awards needs more consideration.

If replacing resource adequacy must-offer obligations with reliability capacity and imbalance reserve obligations, using a demand curve to reduce procured imbalance reserve up awards as capacity prices rise may not be appropriate. It would not make sense to only procure enough capacity to meet net load, say, 80 percent of the time before expecting to use ancillary services. An IRU requirement set to the 97.5 percentile of forecast errors may be too low if the IRU is meant to replace resource adequacy.

Further, if the capacity awards are not for contiguous hours, or long enough stretches of contiguous hours, the RC and IR real-time must offer obligations may have little or no value. Consider a resource with a three hour minimum run time that receives only a one hour IRU award, and only submits a real-time energy offer for that hour. The real-time market could not use that resource without violating the minimum run time constraints. Similarly, if the resource had alternating blocks of two hours of IRU awards and one hour without, and only offered when it had an obligation to do so, it does not seem like the resource would be very useful to the real-time market.

DMM continues to recommend that the ISO extend the real-time flexing ramping product time horizon to preserve the value of day-ahead flexible reserves that are procured

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.[8] Currently ISO operators take numerous and significant out of market actions to procure additional flexible reserves. Extending the real-time market uncertainty time horizon would reduce such manual intervention, increase procurement of flexible reserves through the real-time market, and also maintain and utilize the value of flexible reserves procured in the EDAM.

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

Comments on Issue Paper on Extending the Day-Ahead Market to EIM Entities, Department of Market Monitoring, November 22, 2019: http://www.caiso.com/InitiativeDocuments/DMMComments-ExtendedDay-AheadMarket-IssuePaper.pdf