

Memorandum

To: ISO Board of Governors

From: Eric Hildebrandt, Executive Director, Market Monitoring

Date: July 15, 2020

Re: Department of Market Monitoring update

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo summarizes comments by the Department of Market Monitoring (DMM) on two proposals being presented for Board approval:

- **Co-located resources.** DMM supports Management's proposal as an improvement that should allow more efficient dispatch and usage of co-located resource capacity. During the stakeholder process, DMM raised concerns that the pricing rules being proposed for co-located resources could create a significant economic incentive for co-located resources to generate above their dispatch levels. The ISO had indicated that this issue will be addressed by requiring co-located resources to have special equipment installed and activated that will limit the combined output of co-located resources to be within the interconnection rights or capacity. The ISO also indicates that it will closely monitor compliance with dispatch instructions by co-located resources and take action to change the market rules if significant non-compliance occurs.
- **Slow demand response resources.** Given the operational and modeling limitations associated with slow demand response resources, the ISO's proposal to only manually dispatch slow demand response resources to meet local capacity constraints appears to be a reasonable option for utilizing these resources as a final reliability option in local areas. DMM also notes that this proposal reflects how the reliability characteristics of slow demand response resources are not as valuable as other resources for meeting ongoing local reliability needs such as minimum online capacity constraints. This may not present a major reliability issue as long as the volume of such slow demand resources is relatively limited and there is usually an ample supply of other resources available to meet local reliability needs. However, DMM continues to raise concerns about the cumulative impacts of growing reliance on various different kinds of energy-limited or capacity-limited resources to meet resource adequacy and local area reliability requirements.

MANAGEMENT PROPOSALS

Co-located resources

The objective of this proposal is to improve the efficiency of how co-located resources will be dispatched. In practice, co-located resources will typically consist of a battery storage facility, combined with either a gas or solar resource which are both located at the same point of connection to the transmission system. While the number of such facilities is currently very low, the number of such resources is projected to grow significantly in the future due to various regulatory, technical and economic drivers.

As explained in the ISO's memo, the current approach for ensuring that output from co-located resources does not exceed transmission rights or capacity at their shared point of interconnection may result in inefficient use of these resources. These inefficiencies include the potential for what has been referred to as *stranded capacity* from co-located resources. This can occur when the actual availability of one of the co-located resources exceeds the static capacity rating for individual co-located resources that is used under the current approach.

DMM agrees that the proposed co-located model could allow more efficient dispatch than the current approach and can help avoid the potential for stranded capacity. Under Management's proposal, the combined output of the co-located resources will be limited by a single constraint, which will replace the static constraints placed on each individual resource under the current approach. With this new constraint, the market software can co-optimize the output of each co-located resource without exceeding the total transmission rights or capacity at their point of interconnection.

During the stakeholder process, DMM raised a concern about the pricing rules being proposed for co-located resources. When the new constraint limiting the combined output of the co-located resources is binding, the negative shadow price on this constraint will not be included in the price paid to the co-located resources. Normally, under locational marginal pricing, resources behind a binding constraint are paid the lower price that reflects this congestion.

Since negative shadow prices for this new constraint are not included in the price paid to co-located resources, when this constraint is binding these resources will be receiving system level market prices which can be significantly higher than the bid prices (and marginal costs) of additional capacity from these resources that remains undispached by the market software. Under these conditions, co-located resources could have a strong economic incentive to deviate above their dispatch instructions.¹ This in turn would create a reliability issue and/or require manual intervention by ISO system operators to limit the combined output of the co-located resources.

¹ An example of this scenario was provided in DMM's January 14, 2020 comments on the *Hybrid Resources Revised Straw Proposal*, pp. 3-4.
<http://www.caiso.com/InitiativeDocuments/DMMComments-HybridResources-RevisedStrawProposal.pdf>..

The ISO has indicated that it will address this concern in two ways:

- First, the ISO has confirmed to DMM that co-located resources will be required to have special equipment installed and activated that will limit the combined output of co-located resources to be within the interconnection rights or capacity. Although the details of these requirements are not fleshed out in the written proposal, such technological requirements should make it impossible for the combined output of co-located resources to exceed transmission limits.
- In addition, the ISO's written proposal indicates that the ISO will closely monitor compliance with dispatch instructions by co-located resources when the new constraint is binding, and take action to change the market rules if significant non-compliance occurs. The proposal suggests the ISO will include several provisions that will give it additional authority to ensure this compliance. Although technological requirements should make it impossible for the combined output of co-located resources to exceed transmission limits, DMM believes it will be valuable to include these extra provisions in the ISO tariff to ensure compliance.

Implementation of these provisions should effectively mitigate the potential for over generation that would otherwise exist under the pricing provisions proposed for co-located resources. DMM therefore supports Management's proposal as an improvement that should allow more efficient dispatch and usage of co-located resource capacity.

Slow demand response resources

In this initiative the ISO proposes to allow local slow demand response resources (which need to be dispatched on a day-ahead basis) to count as local resource adequacy capacity. The ISO does this by creating a process for allowing slow demand response resources to count towards satisfying local capacity commitment constraints (known as *minimum online constraints* or MOCs) in the day-ahead market.

These local reliability constraints require that a certain amount of capacity be available within a local area given expected system conditions. These capacity requirements can be met by a combination of energy or unloaded capacity from units committed to operate, along with fast start units that could be quickly dispatched in real time if needed. Unlike gas units, slow demand response resources can only help meet these requirements if they are fully dispatched in the day-ahead market.

In this proposal, the ISO is not proposing to try to model slow demand response in a way that would allow the optimization to commit slow demand response to relieve local capacity constraints. Instead, the ISO will only dispatch these resources for meeting local reliability needs after the market has run – after all other resources that could meet the local reliability needs have been considered. Given the limitations of slow demand response resources, the proposal to only manually dispatch these resources to meet local capacity constraints

appears to be a reasonable option for utilizing slow demand response as a final reliability option in local areas.

DMM also notes that this proposal seems to reflect how the reliability characteristics of slow demand response resources are not as valuable as other resources for meeting ongoing local reliability needs such as those reflected by minimum online capacity constraints. This may not present a major reliability issue as long as the volume of such slow demand resources is relatively limited and there is usually ample supply of other resources available to meet minimum on-line constraints. However, DMM continues to raise concerns about the cumulative impacts of growing reliance on various different kinds of energy-limited or capacity-limited resources to meet resource adequacy and local area reliability requirements. As reliance on such resources increases, it will be important for the ISO to continue to assess and monitor the accrued operational capabilities of the overall mix of resources being used to meet various planning and regulatory requirements.