

Comments on Hybrid Resources Draft Final Proposal

Department of Market Monitoring

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Summary

DMM appreciates the opportunity to comment on the ISO's *Hybrid Resources Draft Final Proposal*.¹ DMM generally supports the ISO's efforts to develop a framework to accommodate co-located and hybrid resources in the ISO market, and DMM supports a number of specific elements of the Draft Final Proposal. However, some other elements of the Draft Final Proposal continue to warrant additional consideration.

DMM supports the Draft Final Proposal requirement for hybrid resource operators to submit storage component state-of-charge data. DMM also supports the ISO's preference for resources seeking investment tax credits to reflect economic objectives in energy bids rather than seeking to limit grid charging capability.

The ISO acknowledges the potential for hybrid resources to exercise market power or otherwise play a role in setting market prices under non-competitive conditions. The proposal also states that bid mitigation measures for hybrid resources will not be considered until a later phase of the initiative. DMM encourages the ISO to prioritize and commit to a near-term timeline for the development of bid mitigation procedures for hybrid resources.

Other elements of the proposal also warrant further consideration. Specifically, the ISO should reconsider the proposal for hybrid resources to use outage cards for economic purposes, whether explicitly allowing deviation of co-located resources is needed to achieve similar outcomes, and whether the aggregated capability constraint needs to be included in the CRR model.

Finally, DMM supports the ISO's recently approved implementation of the aggregate capability constraint for co-located resources, which depends on physical limitation schemes for compliance. However, should physical limiting schemes prove insufficient to restrict resource output, DMM recommends that the ISO consider exposing both co-located and hybrid resources to the pricing impacts of the aggregate capability constraint as an additional enhancement to further improve compliance.

¹ *Hybrid Resources Draft Final Proposal*, California ISO, August 3, 2020:
<http://www.caiso.com/InitiativeDocuments/DraftFinalProposal-HybridResources.pdf>

I. DMM supports the ISO requiring all data necessary to validate dynamic limits

The ISO proposes to allow scheduling coordinators for hybrid resources to reflect real-time operational capability through the submission of a real-time dynamic limit. The dynamic limit presented in the Second Revised Straw Proposal and Draft Final Proposal appears analogous to the net-to-grid forecast approach presented in earlier versions of the hybrid resources proposal.

In earlier comments, DMM supported the ISO's proposal to require submission of data by scheduling coordinators to support the submitted net-to-grid forecast.² Specifically, DMM supported the required submission of the hybrid resource renewable generation component forecast and related meteorological data, storage component state-of-charge and charging/discharging status, and the proposal for the ISO to provide the renewable component forecast for a fee.

The ISO omitted the requirement to submit storage component state-of-charge data in the Second Revised Straw Proposal, but the ISO has reintroduced this requirement in the Draft Final Proposal. DMM supports the reintroduction of this requirement and continues to support the required submission of the additional data listed above. Access to this and all other data that inform the dynamic limit is important to ensure the transparency and integrity of values submitted by resource operators.

The ability to monitor self-submitted hybrid resource forecasts is important for monitoring potential strategic forecasting to arbitrage price differences across markets, as well as to ensure that self-submitted forecasts are not otherwise used to strategically withhold capacity.

II. Resources seeking investment tax credits should reflect full physical capability in the market

The Draft Final Proposal states that entities seeking to charge storage resources exclusively from on-site renewable generation for purposes of investment tax credits may limit their reflected ability to charge from the grid. The ISO notes that this may not be optimal as there is likely a price at which the resource is better off charging from the grid and forgoing some part of the investment tax credit.

DMM supports the ISO's preference for resources seeking investment tax credits to reflect their full physical ability to the grid and manage economic incentives through energy bids. This is especially important for resources providing resource adequacy capacity. The ability to charge from both on-site generation and the grid maximizes charging opportunities, and as such can

² *Hybrid Resources Revised Straw Proposal –Comments by Department of Market Monitoring*, January 14, 2020: <http://www.caiso.com/InitiativeDocuments/DMMComments-HybridResources-RevisedStrawProposal.pdf>

maximize the potential availability of resource adequacy capacity that depends on state-of-charge.

III. Prioritize market power mitigation for hybrid resources

DMM encourages the ISO to prioritize the development of market power mitigation procedures for hybrid resources.

In the Draft Final Proposal, the ISO states that significant amounts of hybrid resource capacity are expected to come online over the next few years. The ISO also acknowledges that some of these resource will be well-positioned to exercise market power or otherwise play a role in setting market prices under non-competitive conditions.

Despite the ISO's acknowledgement of the projected growth of hybrid resource capacity and the potential for these resources to set prices under non-competitive conditions, the Draft Final Proposal does not include market power mitigation provisions for hybrid resources. The ISO states only that it will likely include market power mitigation in a future version of the hybrid resources initiative.

In the Second Revised Straw Proposal stakeholder presentation dated May 7, 2020, the ISO states that it will retain authority to review generator information and that DMM will monitor for gaming or manipulative behavior.³ The ISO states again in the Draft Final Proposal that it intends to collect forecast data, as well as bid and outage data, which it intends to use to monitor, check, and understand hybrid resource bidding practices. These measures should be viewed as supplements to a robust market power mitigation framework, rather than as a substitute for market power mitigation. Further, it is not clear why it would be appropriate or acceptable to forgo mitigation of hybrid resources when the technologies underlying hybrid resources would each be subject to mitigation if modeled as separate resources.⁴ This approach may present risk of not gaining regulatory approval, given the different treatment of similar resources.

DMM encourages the ISO to continue to leverage the hybrid resources stakeholder initiative, and the ESDER 4 initiative where appropriate, to develop an understanding of costs faced by common hybrid resource types. This information could inform possible approaches to construct an estimate of marginal costs for use in bid mitigation for hybrid resources.

³ *Hybrid Resources Second Revised Straw Proposal – Stakeholder Web Conference*, California ISO, May 7, 2020: <http://www.caiso.com/InitiativeDocuments/Presentation-HybridResources-SecondRevisedStrawProposal-May7-2020.pdf>

⁴ Although energy storage resources are not currently subject to mitigation, the ISO is proposing in the ESDER 4 stakeholder initiative to apply mitigation to energy storage resources.

DMM further encourages the ISO to commit to a near-term timeline for developing bid mitigation procedures for hybrid resources, rather than stating generally that this issue will be addressed in a future initiative.

IV. Bids should be used in lieu of outage cards to achieve economic objectives

The ISO continues to propose to allow hybrid resources to submit outage cards when resource operators wish to use renewable capacity to charge on-site storage. The use of outage cards to derate the output capability of the hybrid resource is not appropriate when the resource is not facing a physical output limitation. This is especially true for hybrid resources with RA capacity that will have a 24x7 must-offer obligation under the Draft Final Proposal. Allowing use of outage cards in this manner allows this capacity to be physically withheld from the market.

DMM recognizes that hybrid resource operators will seek to optimize operation of storage components over the day, and that part of this optimization will include periods of on-site charging. However, with sufficient renewable generation capacity or storage resource state-of-charge, the desire to conduct on-site charging at a given time to achieve economic objectives is not a physical limitation. The resource remains physically capable of forgoing on-site charging and instead generating output for the grid.

As with other storage resources, economic objectives stemming from expected optimal operation over a period of time can be effectively managed through energy bidding patterns. At some price, the choice to forgo on-site charging becomes the profit maximizing operation for the resource. Energy bids that reflect the expected opportunity cost of forgone on-site charging can result in more efficient market outcomes while also serving to benefit hybrid resource operators.

V. Allowing deviation of co-located resources may not be necessary to achieve similar outcomes

Some stakeholders have requested that the ISO allow co-located resources to deviate from dispatch in order to charge storage resources with excess renewable production. The stated need for this rule is to avoid curtailment of renewable output which may occur when the aggregate capability constraint is binding, but the co-located storage resource has un-dispatched charging capacity.

The storage resource presumably has some price below which it is willing to charge, while the renewable resource will have some price below which it is willing to curtail. These values are expected to be reflected in the resource energy bids.

If the co-located resources are the only resources providing flow on the aggregate capability constraint, and the price at which the renewable resource is willing to curtail is below that at which the storage resource is willing to charge, deviation may be unnecessary to achieve the

desired outcome. In this scenario, when the aggregate capability constraint is binding, the market dispatch would be expected to charge the storage resource to the extent possible before curtailing the renewable resource.

Given that the relative bids described above align with the indicated scheduling priorities of co-located resource stakeholders, the need to explicitly allow deviation as outlined in the Draft Final Proposal is somewhat unclear. The same outcome could potentially be achieved in a more efficient manner, and without the use of uninstructed deviation, through the use of energy bids and market dispatch.

VI. Clarify the need to include the aggregate capability constraint in the congestion revenue rights model

In the Draft Final Proposal, the ISO highlights that the co-located resources aggregate capability constraint will create a modeling discrepancy between the congestion revenue rights (CRR) model and the day-ahead market. While the constraint will be included in both the CRR model and day-ahead market, only the CRR model would reflect the pricing impacts of the constraint.

The ISO has elected to exclude the pricing impacts of the aggregate capability constraint in the day-ahead market, but states that making a similar changes to the CRR model would be complicated and costly and as such would be postponed until a broader planned software update in 2022. The expected impact of delaying this change in the CRR model is a pricing inconsistency between the CRR model and day-ahead market that results in a premium in the CRR model.

The ISO has identified a potential issue with including the aggregate capability constraint in the CRR model, but has not stated the potential impacts of excluding the constraint from the CRR model altogether. Given that no congestion resulting from the aggregate capability constraint would be priced in the day-ahead market, DMM asks the ISO to clarify the need to include this constraint in the CRR model.

VII. Exposing co-located and hybrid resources to pricing impacts of aggregate capability constraints could complement physical limiting schemes

The ISO Board of Governors recently approved the ISO's proposed aggregate capability constraint at the point of interconnection (POI) for co-located resources. As DMM understands, this constraint is intended to ensure that the collective output of resources that are co-located behind the same point of interconnection does not exceed the level of interconnection rights.

The ISO proposed to not include the shadow price of the point of interconnection constraint in the price received by co-located resources. DMM commented in earlier phases of the Hybrid Resources policy development that this design could create incentives for co-located resources to deviate above dispatch. However, DMM was ultimately supportive of the ISO's proposed

implementation of the aggregate capability constraint, which included requirements for physical limiting schemes to ensure co-located resources cannot exceed interconnection rights.

DMM supports the ISO's implementation of the aggregate capability constraint relying on physical limitations for compliance. However, should physical limiting schemes prove insufficient to restrict resource output, DMM recommends that the ISO consider exposing both co-located and hybrid resources to the pricing impacts of the aggregate capability constraint as an additional enhancement to further improve compliance.

The ISO has stated that one reason for not reflecting the pricing impacts of the aggregate capability constraint is that congestion at the POI is not congestion on the ISO grid. The ISO has stated an additional reason for this implementation approach is to avoid pricing outcomes that are different than similarly situated hybrid resources.

DMM asks that the ISO provide additional detail and explanation of the argument that congestion at the POI is not congestion on the ISO grid. As DMM understands, limitations at the point of interconnection reflect an entity's rights to flow onto the ISO system, as determined by an entity's investment in any interconnection studies and necessary upgrades to ISO controlled transmission infrastructure. The constraint is one established by limitations and rights to the ISO's system rather than infrastructure behind the point of interconnection. Therefore, DMM does not follow the ISO's argument that any congestion resulting at the POI between co-located resources and the broader ISO grid is not part of the ISO's transmission system.

Regarding the possibility for pricing inconsistency between co-located and hybrid resources, DMM suggests the ISO resolve this potential inconsistency by pricing the aggregate capability constraint for both co-located and hybrid resources.