

Hybrid Resources Revised Straw Proposal
Comments by Department of Market Monitoring
January 14, 2020

Summary

DMM appreciates the opportunity to comment on the ISO's *Hybrid Resources Revised Straw Proposal*. DMM supports the ISO's efforts to clarify the definition of a hybrid resource, and to develop a framework to accommodate these resources in the ISO market. In these comments, DMM identifies some areas of the Revised Straw Proposal that may warrant additional consideration. As hybrid resources and other storage and VER based technologies are expected to provide increasing amounts of capacity, addressing elements of the proposal that can disincentivize the full participation of Resource Adequacy (RA) capacity in CAISO's energy markets may be of particular importance.

The Revised Straw Proposal does not discuss the subjects of cost modeling and local market power mitigation. DMM believes that the ISO should address each of these areas as part of this stakeholder process. Failure to address these issues leaves ambiguity on how and what hybrid resource costs will be modeled, as well as how local market power mitigation will apply to these resources. Further, this may contribute to resources restricting operational flexibility in an effort to control costs when the dispatch from the market optimization does not consider all costs. This may result in lower availability and flexibility of RA and other capacity.

The ISO proposes to exclude the shadow price of its point of interconnection constraint from the settlement price of co-located resources. DMM encourages the ISO to carefully consider incentives that are created when resources subject to the constraint are not exposed to the related congestion pricing impacts. If the ISO chooses to proceed with its proposal to exclude the congestion pricing impacts of this constraint, DMM suggests the ISO consider alternative methods to incentivize co-located resources to follow dispatch instructions.

DMM is supportive of the ISO's enhancements to the forecasting proposal over earlier drafts. DMM supports the required submission of separate components of the net-to-grid hybrid resource forecast to the ISO in order to facilitate monitoring of self-submitted hybrid resource forecasts. DMM also supports the ISO offering a forecasting service for the VER component of hybrid resources as an added element of transparency. Robust means of monitoring self-submitted hybrid resource forecasts are important to ensure that forecasts are not designed to engage in strategic behavior.

We offer additional detail on these issues in the comments below.

I. Cost modeling and local market power mitigation

The Revised Straw Proposal considers many operational and modeling aspects of hybrid resources. However, the proposal is silent on the issues of hybrid resource costs, how hybrid resource operators might reflect costs in the CAISO market, and whether the ISO proposes to subject hybrid resources to local market power mitigation.

Accurate reflection of costs is an important element of any resource market participation model. In order to facilitate efficient dispatch and full market participation of hybrid resources, DMM suggests the ISO clarify an approach for hybrid resources to fully reflect costs in the CAISO market. Such costs may include fuel costs, maintenance costs, commitment costs, or potentially other costs that may be unique to the underlying technologies of a hybrid resource.

As recently highlighted in the ISO's concurrent ESDER 4 stakeholder initiative, storage resources in particular face many costs and constraints that are not currently modeled in the CAISO market. Failure to model these costs may contribute to inefficient market dispatch of energy storage resources participating in the CAISO market, or limit the extent to which energy storage resources provide some services in the CAISO market. Further, failure to model these costs leaves incentives for operators of storage resources to continue signing restrictive maintenance and warranty agreements that restrict the flexibility and availability of the resources in order to control maintenance costs.

Although the manner in which storage technologies interact with the CAISO market may be different when modeled as part of a hybrid resource, technical similarities with standalone energy storage resources suggest that hybrid resources that include an energy storage component are likely to face many of the same costs and constraints. While the series of ESDER stakeholder initiatives have contemplated issues of standalone storage resources, ambiguity remains on the treatment and modeling of costs faced by storage and other technology types when included as part of a hybrid resource. The ambiguity of how and if operational costs are modeled, and the continued incentive to manage costs through more restrictive out-of-market means, will contribute to lower availability of RA capacity from hybrid resources. The reliability and efficiency effects of this outcome will become more pronounced as the CAISO grid is increasingly dependent on these resources to fill capacity and other reliability needs¹.

Another area to consider further that also relates to cost modeling is the treatment of hybrid resources in local market power mitigation. As a general point, it would be appropriate to apply local market power mitigation to any generation resource that could potentially exercise local market power. More specifically in the context of hybrid resources, the ISO recently proposed to make standalone energy storage resources subject to local market power mitigation. Other technologies likely to comprise hybrid resources are already subject to local market power mitigation under the CAISO tariff. Therefore, it seems appropriate that hybrid

¹ CAISO estimates that about 2,500 MW of hybrid resource and co-located resource capacity currently in the interconnection queue will achieve commercial operation. See Revised Straw Proposal, pg. 5.

resources comprised of two or more of these technologies would also be subject to local market power mitigation.

A robust estimate of short run marginal cost for use as a default energy bid is a necessary input in market power mitigation processes. DMM encourages the ISO 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 can inform possible approaches to construct an estimate of short run marginal costs for use in market power mitigation of hybrid resources.

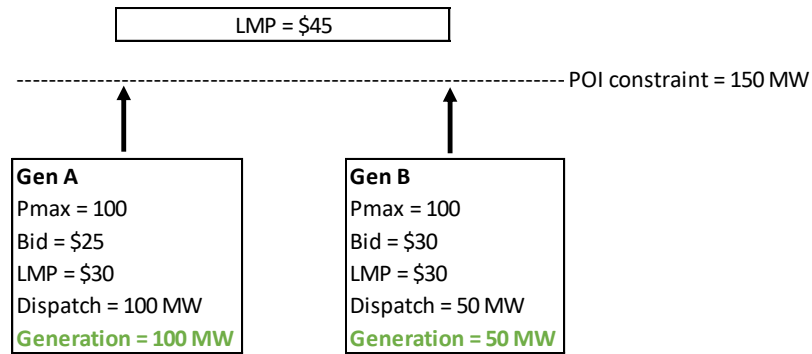
II. Point of interconnection constraint for co-located resources

DMM does not oppose the point of interconnection constraint as a means to avoid stranded capacity from co-located resources. However, as the ISO notes in the Revised Straw Proposal, price formation and settlements issues, and any related incentives, are important to consider and address for any proposed solution.

The ISO states in the Revised Straw Proposal that congestion may result on the proposed point of interconnection constraint, but that this is artificial congestion since there is not really congestion between the resource and the point of interconnection. Therefore, the ISO proposes to exclude the pricing impacts of this congestion from pricing and settlement of resources subject to the constraint. As DMM understands the Revised Straw Proposal, the constraint is intended to limit total flows past the point of interconnection on to the rest of the CAISO grid, rather than to the point of interconnection from either or both of the resources. This implies that congestion on the constraint does not represent congestion between either of the individual resources and the point of interconnection, but instead represents congestion between the two resources and the rest of the CAISO grid.

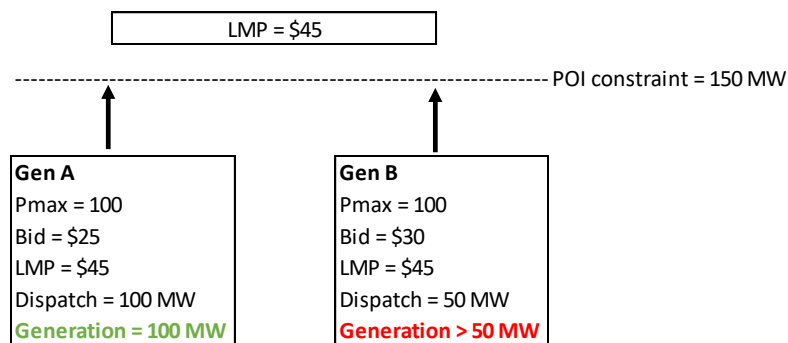
If resources subject to a point of interconnection constraint were to realize the congestion pricing impacts when the constraint binds, the resources would face a price equal to the bid of the highest cost dispatched resource subject to the constraint. Assuming the resources bid competitively at marginal cost, this would imply all remaining capacity that could create flow on the constraint has marginal cost greater than or equal to the realized price.

In this case, the resources have incentive to follow market dispatch thereby not exceeding the interconnection rights limit:



Total Generation: Gen A + Gen B = 100 MW + 50 MW = 150 MW = POI constraint limit

However, if resources subject to the point of interconnection constraint are not exposed to the congestion pricing impacts of the binding constraint, the price faced by the resources may exceed the marginal cost of un-dispatched additional capacity subject to the constraint. Because the point of interconnection constraint is not a hard physical constraint limiting output, and because additional capacity is available at a marginal cost less than the realized price, the operator of the co-located resources has incentive to exceed its interconnection rights limit through uninstructed deviation above the level of the market dispatch:



Total Generation: Gen A + Gen B > 150 MW > POI constraint limit

If the ISO proceeds with the proposal to exclude the congestion pricing impacts of point of interconnection constraints from resource LMPs, DMM suggests that the ISO consider alternative incentives for co-located resources to follow market dispatch signals that respect interconnection rights.

III. Forecast for output of entire resource

The Revised Straw Proposal for forecasting requirements of hybrid resources includes several significant enhancements over the earlier Straw Proposal to require only a self-submitted forecast of total output capability for the entire hybrid resource. DMM supports the Revised Straw Proposal to require additional data to support the hybrid resource forecast. Specifically, DMM supports the required submission of VER component forecast and related meteorological data, storage component state-of-charge and charging/discharging status, as well as the proposal for the ISO to provide the VER component of the hybrid resource forecast for a fee. These enhancements will add significant transparency to the net-to-grid forecast for the entire hybrid resource, which the resource operator will calculate and submit to the ISO. 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.

The ISO proposes to use the hybrid resource forecast in real-time only, drawing analogies to the current construct for standalone VER resources. However, in addition to the use of a forecast in real-time, the ISO also currently uses VER forecasts in the IFM RUC process. The demand forecast used in RUC is adjusted up or down as needed to account for the difference between cleared VER schedules in the IFM and the total day-ahead VER forecast. DMM suggests that the ISO contemplate using hybrid resource forecasts in a similar manner, to account for potential hybrid resource production that is likely to occur in real-time but does not clear in the IFM. This may be particularly important if a substantial amount of hybrid resource capacity has VER forecasts that can significantly exceed the resources' must-offer obligations during some hours.