UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	**)** **)**	**Docket No. ER19-2347-000**

MOTION TO INTERVENE AND COMMENTS OF THE DEPARTMENT OF MARKET MONITORING OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

Pursuant to Rules 212 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"), 18 C.F.R. §§385.212, 385.214, the Department of Market Monitoring ("DMM"), acting in its capacity as the Independent Market Monitor for the California Independent System Operator Corporation ("CAISO"), submits this motion to intervene and comment in the above-captioned proceeding.

In this tariff amendment, the CAISO proposes three changes to its market rules. First, the CAISO proposes to no longer mitigate a resource in subsequent market intervals only because the resource was mitigated in a prior interval. Second, the CAISO proposes to allow an EIM entity balancing authority area in the real-time market to limit dispatch of incremental net exports under certain conditions. Third, the CAISO proposes to introduce a new hydro default energy bid (hydro DEB) option that would apply to all hydroelectric resources with storage capability that participate in the CAISO markets or the EIM.

The proposed changes should effectively address concerns about bid mitigation of hydro resources raised by some EIM participants and entities considering whether to join EIM. Some elements of the proposed changes involve potential trade-offs between the benefits of market power mitigation versus the potential for increased participation in the EIM by hydro

resources. However, on balance, DMM supports the proposed changes to its local market power mitigation in light of (1) the specific nature of hydro resources, (2) the lack of a must-offer obligation in the EIM and (3) the potential benefits from increased participation by entities with hydro resources.

I. MOTION TO INTERVENE

DMM respectfully requests that the Commission afford due consideration to these comments and motion to intervene, and afford DMM full rights as a party to this proceeding. The mission of DMM, as prescribed in the CAISO tariff pursuant to the Commission's Order 719, is as follows:

> To provide independent oversight and analysis of the CAISO Markets for the protection of consumers and Market Participants by the identification and reporting of market design flaws, potential market rule violations, and market power abuses.[1]

The CAISO tariff further states that "DMM shall review existing and proposed market rules, tariff provisions, and market design elements and recommend proposed rule and tariff changes to the CAISO, the CAISO Governing Board, FERC staff, the California Public Utilities Commission, Market Participants, and other interested entities."[2] As this proceeding involves CAISO tariff provisions which affect the efficiency and potential for market power in the CAISO markets, it implicates matters within DMM's purview.

II. COMMENTS

A. Enhanced Mitigation Process Timing Granularity

The CAISO proposes to eliminate the extension (or carryover) of mitigation from one

[1] CAISO Tariff Appendix P, Section 1.2.

[2] CAISO Tariff Appendix P, Section 5.1.

15-minute or 5-minute interval to subsequent intervals in that hour or 15-minute period. This carryover of mitigation originally stemmed from a combination of software issues and concerns about accuracy of earlier mitigation designs. Given the current levels of mitigation accuracy, DMM supports the proposal to eliminate the carryover of a resource's mitigated bids from one interval into subsequent intervals. This provision will further improve the accuracy of market power mitigation and will prevent bid mitigation when market power does not exist. Analysis by DMM performed as part of this initiative indicates that this change could reduce the frequency of mitigation by as much as 20 percent.[3]

B. Incremental Net Export Limit on Mitigated Resources

The CAISO proposes to give each EIM entity the option of limiting the net exports out of its balancing area when resources in the area are subject to bid mitigation. This provision is designed to ensure that when bids within one EIM area are lowered due to market power mitigation provisions, this does not result in any increase in energy transferred from that EIM area to another EIM area.

As illustrated in DMM's prior comments on the CAISO's Draft Final Proposal, this provision could either increase or decrease market efficiency.[4] To the extent that a resource's market bids accurately reflect the resource's marginal opportunity costs, but default energy bids are lower than the resource's actual marginal costs, the net export constraint would increase market efficiency.

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[3] *Market Power Mitigation Issues*, Energy Imbalance Market Offer Rules Technical Workshop, July 19, 2018, slides 5-6. http://www.caiso.com/Documents/DMMPresentation-EnergyImbalanceMarketOfferRulesTechnicalWorkshop-Jul19-2018.pdf

[4] See illustrative example in *Comments on Local Market Power Mitigation Enhancements Draft Final Proposal*, Department of Market Monitoring, p. 4. http://www.caiso.com/Documents/DMMComments-LocalMarketPowerMitigationEnhancements-DraftFinalProposal.pdf

However, if a resource's market bids exceed actual marginal opportunity costs and default energy bids are not lower than the unit's actual marginal costs, the net export constraint may reduce market efficiency. Under this scenario, the limitation on net exports would also reduce how transfers from one EIM area may help mitigate uncompetitive conditions in another EIM area. This represents a change in the current market design, under which the application of bid mitigation in one balancing area can help to mitigate potential market power in an adjacent balancing area.

Another concern about the proposal to limit exports when mitigation is triggered involves how congestion revenues are allocated when this export limit is binding. When the proposed net export constraint triggered by mitigation is enforced and binding, the ISO proposes to allocate 100 percent of the constraint's congestion rents to the exporting balancing area – rather than allocating congestion revenue equally between the exporting and importing areas.

The CAISO's rationale for allocating 100 percent of congestion revenues to the exporting area in this scenario is that the ISO allocates congestion rents this way for net export constraints that are triggered when an EIM area fails to meet a downward flexible ramping sufficiency test. DMM is concerned that under both these scenarios, allocating 100 percent of congestion revenues to the exporting area may create incentives for inefficient scheduling and bidding. However, alternatives that DMM has been able to consider for allocating net export constraint congestion rents may create outcomes that are potentially even more problematic. Therefore, DMM does not currently have a proposal for an alternative approach for allocating congestion revenues that may result when bid mitigation occurs and limits are placed on exports under this provision.

The CAISO has sought to limit concerns about this provision in several ways. First, the CAISO will set the default for this feature as unenforced, which requires each EIM entity balancing authority area to determine whether it may be appropriate for their circumstances. Second, this feature can only be activated through a CAISO master file change, which takes time and is not an hour-by-hour election. Finally, the CAISO will also notify all participants which balancing authority areas have elected to use the rule. As noted in the CAISO's filing "this transparency will allow all interested entities, including the DMM, to monitor the effectiveness."[5]

C. Hydroelectric Resources Default Energy Bid

The CAISO is proposing a special default energy bid (DEB) that will be available to all hydro resources which is designed to ensure that when mitigation is triggered, bids are not mitigated to levels below the resource's opportunity costs. The new approach being proposed is similar to the approach currently used for many hydro resources which have selected the negotiated default energy bid option incorporated in the CAISO tariff. DMM supports the general framework of the new hydro DEB being proposed, but has questioned two provisions which have been added under the long-term/geographical component of this new default energy bid option which DMM believes may not be needed to reflect the actual opportunity costs of many hydro resources.

- First, the CAISO proposal allows opportunity costs for hydro resources in the Northwest to be based on prices in the Southwest (i.e. Palo Verde hub). DMM has questioned this provision because higher prices often occurring in the

[5] CAISO transmittal letter, p. 27.

Southwest reflect *the value of transmission* from the Northwest to the Southwest, rather than the *value of energy* in the Northwest.

- Second, the CAISO proposal allows hydro resources to have default energy bids based on futures prices 12 months in the future (e.g. rather than a more limited period such as 6 months). DMM has questioned this provision on the basis that this 12 month period often extends beyond the current hydro cycle and into the summer of the next hydro year.

DMM's comments on the CAISO's Draft Final Proposal includes an analysis of the proposed hydro default energy bid with and without these additional provisions.[6] A summary of this analysis was also included in DMM's memo on the CAISO's proposal to the CAISO Board, which is included in the CAISO's filing.[7] The following section of these comments provides a review of DMM's analysis.

Analysis of Hydro DEB Options

As part of the stakeholder process on this initiative, DMM analyzed the proposed default energy bid for hydro resources with and without several options which are available to hydro resources under the long-term/geographical component (or *Geo Floor*) of the CAISO's proposal. DMM's analysis compares the default energy bid that would have

[6] *Local Market Power Mitigation Enhancements 2018 Draft Final Proposal*, Comments by Department of Market Monitoring, February 11, 2019. http://www.caiso.com/Documents/DMMComments-LocalMarketPowerMitigationEnhancements-DraftFinalProposal.pdf

[7] *DMM Comments on proposed local market power mitigation enhancements*, memo to ISO Board of Governors, Eric Hildebrandt, March 20, 2019. (included in CAISO filing as Attachment I). http://www.caiso.com/Documents/Decision-LocalMarketPowerMitigationEnhancementsProposal-DMMComments-Mar2019.pdf

resulted under different options available to a typical hydro resource in the Northwest to 15-minute energy imbalance market prices in the 2018 calendar year.

Figures 1 and 2 compare the default energy bids that would result under the proposed approach for a hydro unit in the Northwest to 15-minute locational market prices (LMPs) during the 2018 calendar year for a resource in that area (PacifiCorp West).

- The blue line in Figures 1 and 2 shows the hydro default energy bid that includes the Palo Verde trading hub and 12 months of futures data in the *Geo Floor*.
- The orange line shows the default energy bid based on 12 months of futures data for Mid-C, but does not include Palo Verde prices in the *Geo Floor.*

Figure 1. Hydro DEB based on prices at Palo Verde vs. Mid-C (Jan-June 2018)

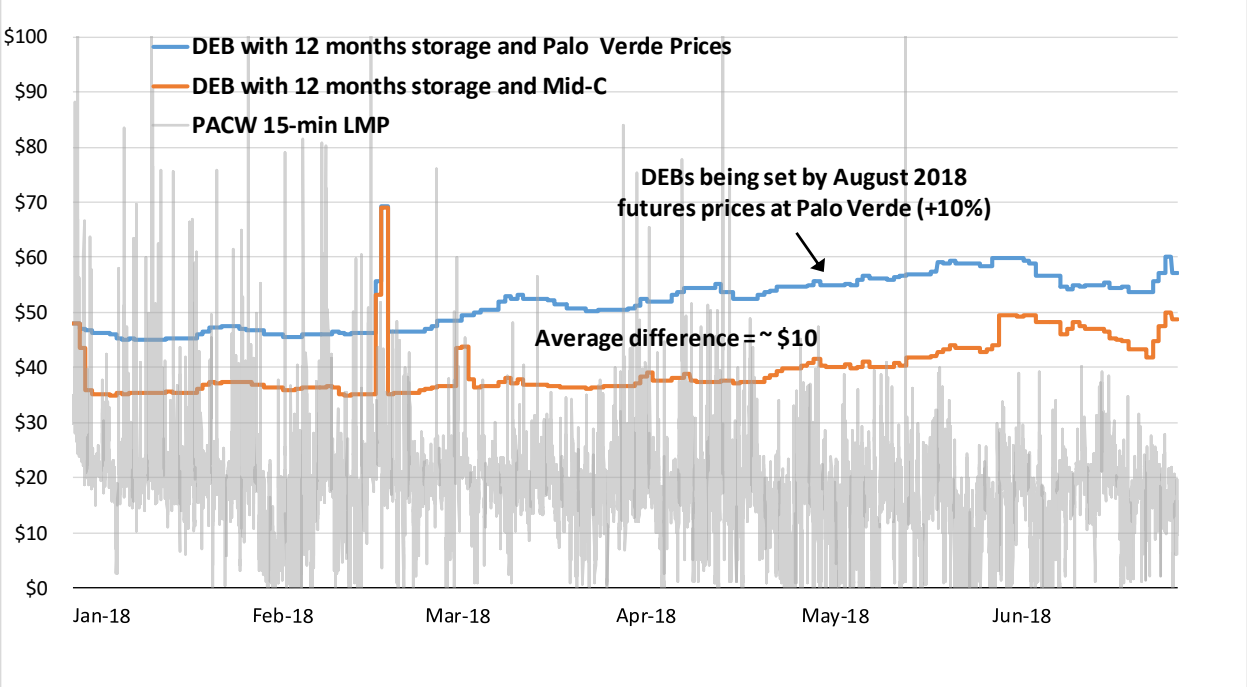
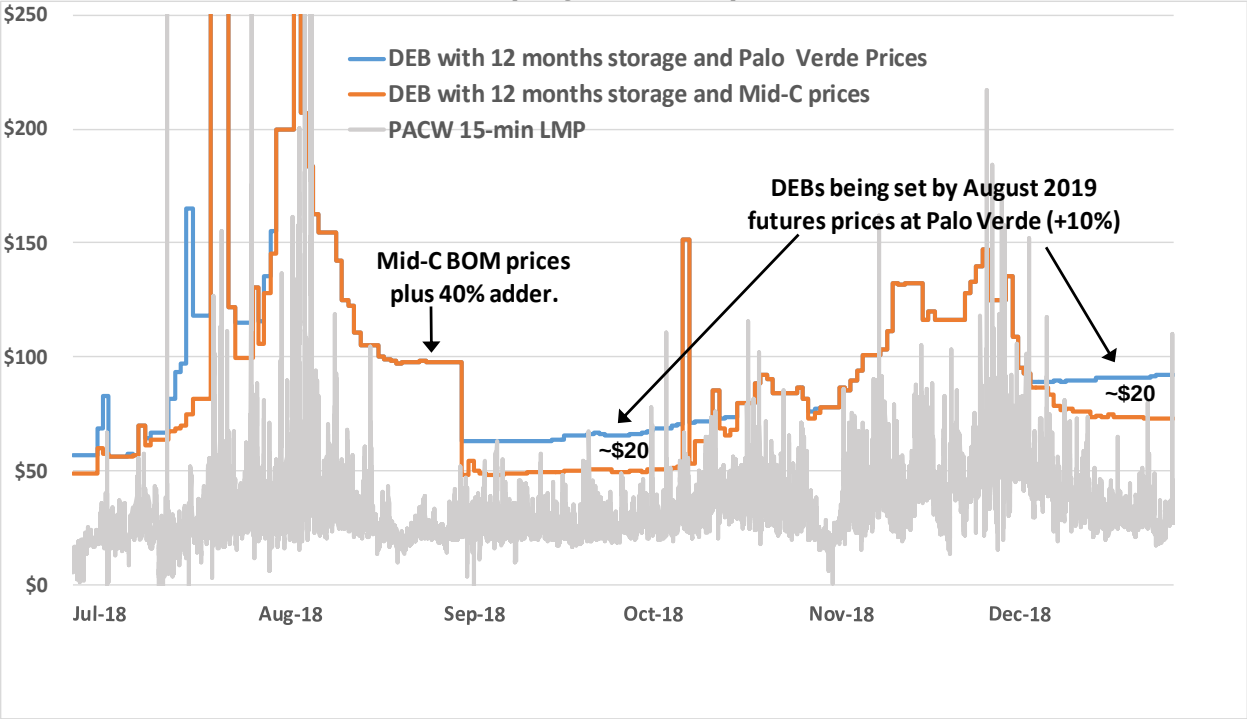


Figure 2. Hydro DEB based on prices at Palo Verde vs. Mid-C (July-Dec 2018)



As shown in Figures 1 and 2, the hydro default energy bids under both of these scenarios are almost always greater than the resource's LMP. Without inclusion of the Palo Verde prices in the *Geo Floor*, LMPs exceed the DEB in only 1 percent of all 15-minute intervals. With Palo Verde prices included in the hydro DEB calculation, the LMPs exceed the DEB in only 0.4 percent of 15-minue intervals.

As shown in Figure 1, the combined impact of using prices at Palo Verde and futures prices for August 2018 adds about $10/MW to the default energy bids in the late winter and spring months, raising it from an average of about $40/MWh to about $50/MWh. During these months, the default energy bid would frequently be set by futures prices at Palo Verde for August 2018 (plus the 10 percent adder included in the formula).

As shown in Figure 2, beginning in September 2018, setting the hydro DEB for resources in the Northwest based on prices at Palo Verde and 12 months of futures prices

adds about $20/MWh, raising the default energy bids from a range of about $55 to $65/MWh to about $75 to $85/MWh. During the months of September through December 2018, the default energy bid would have been frequently set by futures prices at Palo Verde for August 2019 (plus the 10 percent adder included in the formula).

Figure 3 shows the total number of hours per day in 2018 that the LMP in the PacifiCorp West area would be higher than the default energy bid for a hydro unit in this area under four different scenarios. These four scenarios include different combinations of default energy bid based on futures prices for either 6 or 12 months, both *with* and *without* Palo Verde prices included in the *Geo Floor* of the formula. Table 1 provides a numerical comparison of these data for two potential DEBs for hydro units in the Northwest: (1) a basic DEB based on Mid-C futures prices over a 6 month period, and (2) a higher DEB that can be set by futures prices at Palo Verde for up to 12 months in the future.

During intervals in which a resource's default energy bid exceeds its LMP, mitigation would not cause the resource to be dispatched up to provide energy, even if the default energy bid was lower than the resource's perceived opportunity cost. As shown in Figure 3 and Table 1, under both of the default energy bid formulas, during 98 percent of days the default energy bid would be less than the LMP during less than 2 hours. Based on 2018 prices, the default energy bid under both formulas would be less than the LMP during 4 to 5 hours on only one or two days of the year, and would never be less than the LMP during more than 5 hours on any day.

Discussion of Analysis

Based on this analysis, DMM believes that under the CAISO's proposed methodology, the default energy bids available to hydro resources in the Northwest will be high enough to allow hydro units to avoid being dispatched in all but a very small percentage of intervals and hours per day – with or without the use of prices at the Palo Verde hub and a full 12 months of futures prices. Thus, the proposed approach appears to create very minimal risk that a hydro resource would be depleted, unless it was extremely energy limited on numerous days and was also subject to mitigation during a significant portion of hours in which high prices occurred. In the event participants view the standard default energy bid options for hydro resources as inadequate for any resource, participants can and should continue to propose alternative more customized approaches under the negotiated default energy bid option of the ISO tariff.

At the same time, including the provisions allowing use of prices at the Palo Verde hub and up to 12 months of futures prices in the methodology results in a limited increase in the default energy bid during the spring and fall months and still provides significant protection against the potential for the exercise of market power.

Figure 3. Total Hours per day with LMP greater than hydro DEB (2018 data for PacifiCorp West area)

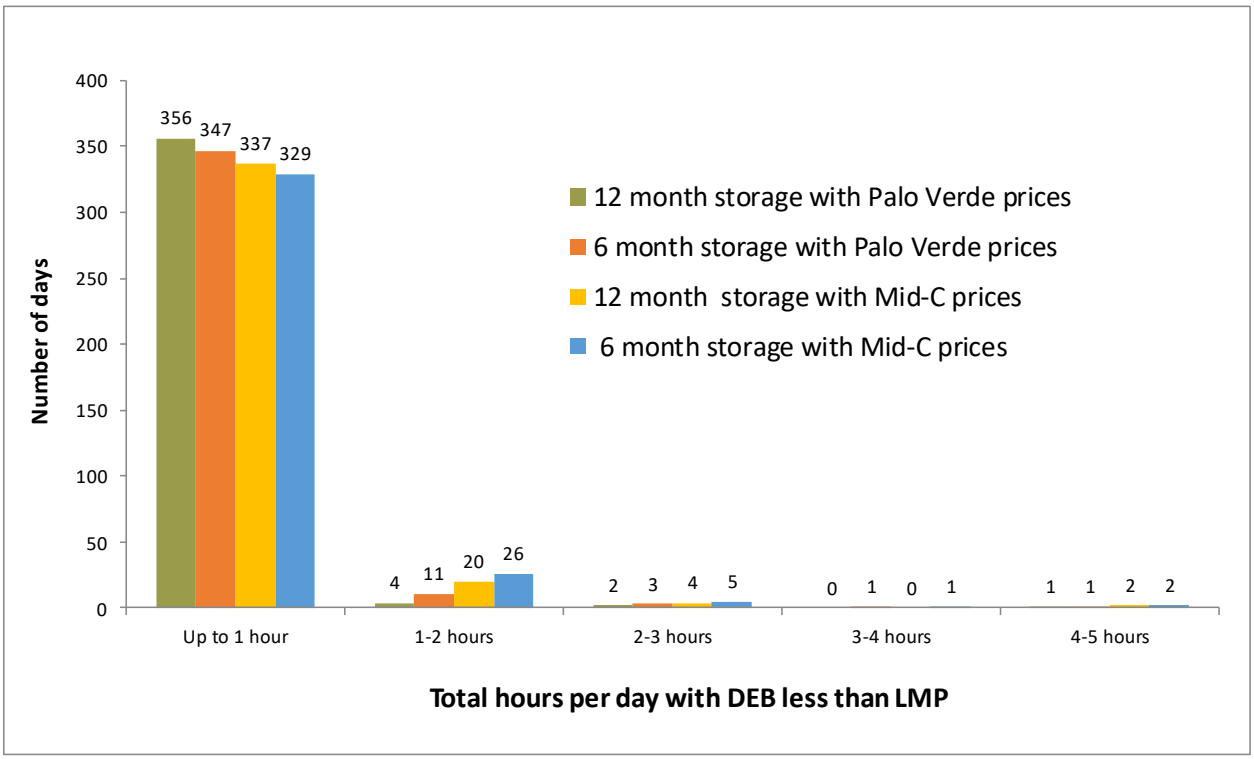


Table 1. Total Hours per day with LMP greater than hydro DEB (2018 data for PacifiCorp West area)[8]

	Mid-C hub and 6 months of futures prices		Palo Verde hub and 12 months of futures prices	
Hours/day LMP > DEB	Days	Percent	Days	Percent
1 hour or less	329	90.6%	356	98.1%
1-2 hours	26	7.2%	4	1.1%
2-3 hours	5	1.4%	2	0.6%
3-4 hours	1	0.3%	0	0.0%
4-5 hours	2	0.6%	1	0.3%
More than 5 hours	0	0.0%	0	0.0%
	363		363	

[8] This analysis reflects data from calendar year 2018. Missing data occurring on weekend and holiday periods are filled from the last available trade. Therefore, the dates of January 1 and 2, 2018 are not reflected in this analysis.

The CAISO has sought to further address concerns about these two provisions by including some additional information requirements and criteria that will be used by the CAISO to determine if resources should be eligible for DEBs that include these elements.[9]

III. CONCLUSION

DMM supports the CAISO's overall proposal in light of (1) the special nature of hydro resources, (2) the lack of a must-offer obligation in the EIM, and (3) the competitive benefits that can come with increased participation by entities with hydro resources. DMM's analysis shows that the new default energy bid for hydro resources being proposed is high enough that resources could still bid high enough to rarely be dispatched even when subject to mitigation, while being low enough to significantly mitigate market power (or the ability to significantly raise prices) when market conditions are uncompetitive.

DMM notes that the special default energy bid that will be offered for hydro resources would not be appropriate for other non-hydro resources. Under the CAISO tariff, default energy bids used in mitigation for all other resources are designed to be reasonable estimates of a resource's actual marginal cost – including opportunity costs based on the actual characteristics of each resource. For other energy limited resources, such as gas resources with environmental limitations, opportunity costs can and should be based on actual energy limits of the resource over a specific time period (e.g. daily, monthly or annual). This can be done using the negotiated default energy bid option in the CAISO tariff.

Finally, the impact of several provisions of the proposal – such as the limit on exports and the level of hydro DEBs – merit ongoing review after implementation, and the CAISO

[9] CAISO transmittal letter, pp. 35-39.

should be prepared to make any adjustments that may be warranted based on market conditions. The impact of these provisions can be readily monitored based on market data and results available to the CAISO and DMM.

Respectfully submitted,

/s/ Eric Hildebrandt

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Independent Market Monitor for the California
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CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California this 23rd day of July, 2019.

/s/ Grace Clark
Grace Clark