

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**California Independent System)
Operator Corporation)**

Docket No. ER23-2686-000

**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.

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. Pursuant to the Commission’s Order 719, the CAISO tariff states “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.”¹ As this proceeding involves CAISO tariff provisions that would affect the efficiency of CAISO markets, it implicates matters within DMM’s purview.

¹ CAISO Tariff Appendix P, Section 5.1.

II. SUMMARY

In this filing, CAISO proposes tariff amendments to implement the Day-Ahead Market Enhancements and Extended Day-Ahead Market policy initiatives.² DMM strongly supports development of an extended day-ahead market (EDAM) to other balancing areas across the west. Adding a day-ahead market to the Western Energy Imbalance Market (WEIM) has the potential to provide significant efficiency and greenhouse gas reduction benefits by facilitating trade between diverse areas and resource types.

DMM generally supports CAISO's proposed tariff amendments to implement the extended day-ahead market.³ However, these comments identify several aspects of the proposed tariff revisions that appear inconsistent with important elements of the final policy proposal and that should be clarified.

The EDAM design requires the development of an imbalance reserve product in the day-ahead market to establish a real-time must offer obligation for resources in EDAM balancing areas. Therefore, further delaying implementation of CAISO's day-ahead market enhancements (DAME) proposal could jeopardize the launch of the extended day-ahead market. Given the large potential long-term benefits of a west-wide day-ahead market and the enormous challenges in initiating such a market, DMM supports approval of the DAME tariff amendments in conjunction with the EDAM amendments, while recommending that the ISO continue working with stakeholders on enhancements to the

² *Day-Ahead Market Enhancements – Revised Final Proposal*, California ISO, May 1, 2023: <http://www.caiso.com/InitiativeDocuments/RevisedFinalProposal-Day-AheadMarketEnhancements.pdf>

Extended Day-Ahead Market – Final Proposal, California ISO, December 7, 2022: <http://www.caiso.com/InitiativeDocuments/FinalProposal-ExtendedDay-AheadMarket.pdf>

³ *California Independent System Operator Corporation Day-Ahead Market Enhancements and Extended Day-Ahead Market*, California Independent System Operator Corporation, Docket No. ER23-2686-000, ("Transmittal Letter").

design that could be implemented before and after EDAM's initial implementation. DMM does not support implementation of the DAME tariff amendments in the absence of a functional, multi-balancing area extended day-ahead market. If the Commission does not approve the EDAM tariff amendment or CAISO does not implement EDAM, DMM recommends the CAISO consider substantial revisions to a DAME policy that would only apply to the CAISO balancing authority area.

CAISO's final proposal recognizes that further details of both the EDAM and DAME design will need to be developed and adapted based on testing the full software model prior to implementation, and based on operational experience after implementation. The final proposal also includes a set of specific configurable software parameters which can be adjusted before and after implementation in consultation with stakeholders. This approach reflects a conservative and prudent approach for dealing with the uncertainty and complexity of initiating the type of regional day-ahead market being proposed. DMM supports this approach and looks forward to collaborating with the CAISO and stakeholders on the next steps of developing and implementing a regional day-ahead market.

The comments below provide more detail on key elements of CAISO's proposed tariff revisions, several aspects of the proposed tariff revisions that should be clarified, and how the overall design may be further refined after the initial implementation of a regional day-ahead market.

III. DAY-AHEAD MARKET ENHANCEMENTS

Demand curve for the day-ahead imbalance reserve product

CAISO proposes to introduce a new reserve capacity product, imbalance reserves, into the integrated forward market (IFM) in order to address net load uncertainty that may materialize between the close of the day-ahead market and the next day's real-time markets. The quantity of imbalance reserve procured will depend on the values of the product's downward sloping demand curve and the cost of procuring the capacity.

The demand curve will be based on the same theory as the real-time flexible ramping product demand curve: For each potential net load realization, the probability of that net load realization is multiplied by the presumed cost to the real-time market from not having procured the last increment of capacity in the day-ahead market necessary to meet that particular level of net load.

DMM agrees with the Market Surveillance Committee's observation that determining an accurate value for the demand curve will be extremely difficult because capacity that does not receive an imbalance reserve or other day-ahead market award is still likely to bid into the real-time market.⁴ CAISO's proposals have assumed that failing to give an imbalance reserve award to the last MW necessary to meet any given net load realization would result in a \$1,000/MWh power shortage or a \$247/MWh flexible ramping product shortage. However, because other capacity that did not receive a day-ahead market award would be likely to bid into real-time to prevent such supply shortages, these

⁴ *Final Opinion on Day-Ahead Market Enhancements*, Market Surveillance Committee, May 3, 2023, p. 16:

<http://www.caiso.com/Documents/MarketSurveillanceCommitteeFinalOpiniononDay-AheadMarketEnhancements.pdf>

assumptions would likely significantly overestimate the value of procuring imbalance reserves in most scenarios.

The proposal addresses the risks associated with an overvalued imbalance reserve demand curve by capping the demand curve at \$55/MWh. This is a substantial improvement over prior proposals that allowed the value to exceed the \$1,000/MWh bid cap. Given the long-term opportunity cost of further delaying the extended day-ahead market implementation, DMM believes this cap constitutes a reasonable initial safeguard against the costs of an overvalued demand curve during the initial EDAM implementation phase. However, this \$55/MWh demand curve cap may still significantly exceed the actual value of procuring imbalance reserve capacity in the IFM in many scenarios.

DMM explained in stakeholder comments how an overvalued imbalance reserve demand curve in the integrated forward market could increase day-ahead energy costs while providing limited benefit relative to procuring the necessary reserve capacity in the residual unit commitment market.⁵ This is because virtual supply in the integrated forward market will tend to converge IFM prices toward expected real-time prices and outcomes. If the demand curve overvalues extra capacity over the range of potential net load realizations, virtual supply would be able to profitably displace the more expensive physical supply in the IFM that would need to be dispatched up to address the less likely net load realizations. As a result, the residual unit commitment market will still need to procure capacity that needs to be available to address these less likely net load realizations. The day-ahead market would not realize the purported benefit of co-

⁵ *Comments on Day-Ahead Market Enhancements - March 2023 Workshops*, Department of Market Monitoring, March 31, 2023, pp. 3 and 6:
<https://www.aiso.com/Documents/DMMComments-DAMEMarch2023Workshops3-31-2023.pdf>

optimizing energy and capacity awards in the IFM because the requisite physical capacity would still need to be procured in the residual unit commitment market.

Under this scenario, average IFM prices would remain inflated above average real-time prices. This is because even in a competitive virtual supply market, virtual supply bidders will include a risk premium above their estimate of expected real-time market costs. This would allow virtual supply to systematically profit at the expense of load over the long run.⁶

Due to the potentially significant increase in day-ahead market energy prices from an overvalued imbalance reserve demand curve in tight conditions, DMM recommends that CAISO continue to work on developing more accurate methods for determining demand curve values and prepare to potentially reduce the \$55/MWh cap during enhancements after the initial EDAM implementation. Given the complexity in developing an accurate estimate of the actual value of this reserve capacity, CAISO and stakeholders should also consider removing imbalance reserves from the IFM and instead procuring the necessary day-ahead reserve capacity as part of the residual unit commitment market as a future market design enhancement.

Ramping capability requirement for imbalance reserve product

CAISO proposes to limit the amount of a resource's unloaded capacity that can count as imbalance reserve supply to the amount the resource can ramp to within 30 minutes. This is a significant improvement to prior proposals, which defined imbalance reserve as a 15-minute product.

⁶ Average IFM prices will also remain inflated over average fifteen-minute market prices because virtual supply bidders will incorporate into bid prices their expected share of RUC cost allocations.

The imbalance reserve product is intended to meet the demand for capacity needed to address net load uncertainty that materializes between the day-ahead and real-time markets. DMM's analysis in past stakeholder comments demonstrated that the entire forecast error between the day-ahead and real-time market for a given hour or interval would not be realized over only fifteen minutes.⁷ Rather, some of the errors are realized thirty minutes, one hour, or longer before the real-time interval.

DMM analysis looked at the correlation of hourly errors between cleared day-ahead market net load and fifteen-minute market net load. There was significant correlation between errors in the hours shown and at least the previous three hours. This suggests that portions of the errors for a given hour are realized in previous hours. DMM also analyzed an example day which demonstrated that net load errors are similar across multiple intervals. This analysis showed that restricting all imbalance reserves to being rampable within fifteen minutes is overly restrictive. The Market Surveillance Committee has also demonstrated that if a net load error is positive in one hour, it is likely to be positive in several subsequent hours.⁸

DMM agrees with the Market Surveillance Committee that limiting the supply to capacity that is dispatchable within 30 minutes may still be overly restrictive. DMM continues to recommend that CAISO consider as a future enhancement to allow capacity that is dispatchable within 60 minutes or longer, including hourly block intertie resources, to meet demand for reserves needed to address uncertainty between the day-ahead and real-time markets. As a much smaller quantity of reserves would be needed to meet 15-

⁷ *Comments on Day-Ahead Market Enhancements - Second Revised Straw Proposal*, Department of Market Monitoring, August 18, 2021: <http://www.caiso.com/Documents/DMM-Comments-on-Day-Ahead-Market-Enhancements-Revised-Straw-Proposal-Aug-18-2021.pdf>

⁸ MSC final DAME opinion, p. 7

minute ramping requirements, the day-ahead uncertainty product could require only a subset of the reserves needed to address day-ahead to real-time market uncertainty to be 15-minute dispatchable.⁹

Real-time market resettlement and performance incentives for imbalance reserve and reliability capacity products

CAISO proposes that day-ahead imbalance reserves that do not receive real-time flexible ramping product awards buy back a portion of their imbalance reserves at the 15-minute market flexible ramping product price. If day-ahead imbalance reserve capacity is not available in real-time, it will have to buy back its entire imbalance reserve award at the higher of the imbalance reserve price or 15-minute market flexible ramping product price. If a reliability capacity award is not available in real-time, it simply must pay back the award at the reliability capacity price.

DMM believes it is important that the EDAM design include appropriate incentive mechanisms for capacity receiving imbalance reserve, and reliability capacity awards, to be available and capable of performing in real-time. DMM therefore supports the proposal to require imbalance reserves unavailable in real-time to buy back the imbalance reserve award at a potentially high real-time flexible ramping product price. This should provide some incentive for resources receiving imbalance reserve awards to maintain their availability in real-time.

DMM recommends that CAISO reconsider other aspects of its real-time market resettlement and performance incentive design in an initiative to enhance the initial EDAM

⁹ *Comments on Day-Ahead Market Enhancements – 4th Revised Straw Proposal*, Department of Market Monitoring, November 18, 2022, p. 4: <https://www.caiso.com/Documents/DMM-Comments-Day-Ahead-Market-Enhancements-Fourth-Revised-Straw-Proposal-2022-11-18.pdf>

implementation. DMM agrees with the Market Surveillance Committee that unavailable reliability capacity should be subject to an incentive penalty rather than simply not receiving payment of its day-ahead award.¹⁰ This penalty could be determined in part by the fifteen-minute market flexible ramping price.

DMM continues to question the appropriateness of resettling imbalance reserves against the fifteen-minute market flexible ramping price when the imbalance reserves are available in real-time but do not receive flexible ramping product awards.¹¹ As currently proposed, imbalance reserves will likely be procured in much greater quantities than flexible ramping product. This is because the reserves are intended to address uncertainty between the day-ahead and real-time markets in addition to real-time 15-minute ramping needs. Imbalance reserve capacity converted to real-time energy could be forced to operate at a loss in real-time if the energy price is at or near its marginal cost of production and there is a positive flexible ramping product price at which it must buy back its imbalance reserves. This is because the real-time energy price is not ensured to exceed the sum of a resource's marginal energy cost and flexible ramping product price.

As part of its process for enhancing the initial EDAM design, the CAISO should consider not resettling against the real-time flexible ramping product price the portion of imbalance reserves procured and available for addressing day-ahead uncertainty. As described above, DMM recommends CAISO consider a 60-minute (or longer) uncertainty product procured in the residual unit commitment process. A 60-minute uncertainty

¹⁰ MSC final DAME opinion, p. 24.

¹¹ *Comments on Day-Ahead Market Enhancements – Revised Draft Final Proposal*, Department of Market Monitoring, April 24, 2023, p. 3: <https://www.caiso.com/Documents/DMMComments-DAMERevisedDraftFinalProposal.pdf>

product that maintains real-time availability should not resettle against the fifteen-minute market flexible ramping product price. If CAISO designs a product for the IFM that only procures the 15-minute flexible ramping capacity needed in real-time, it may be appropriate to consider resettling this product against the 15-minute market flexible ramping product price.

Local market power mitigation

The supply of the proposed imbalance reserve and reliability capacity up products will be constrained by transmission elements. As a result, local market power could clearly exist for these products. Imbalance reserve bids could be used to exercise market power for reserves as well as for energy. Therefore, local market power tests and mitigation for both imbalance reserve and reliability capacity up are an important component of the proposal.

The ISO proposes to establish a uniform default availability bid floor of \$55/MWh calculated using historical ancillary service prices. DMM believes this is a reasonable initial approach. The ISO proposes to cap the demand curve for the imbalance reserve product at this initial \$55/MWh default availability bid floor. DMM agrees with the Market Surveillance Committee that this demand curve cap should effectively mitigate the exercise of local market power by imbalance reserve up bids.¹² As a result, DMM supports the proposal to build the functionality to apply market power mitigation to both imbalance reserve and reliability capacity up, but to only initially implement the functionality for reliability capacity up. If the ISO decides in the future to increase the imbalance reserve demand curve cap or to lower the default availability bid floor, the ISO will need the ability

¹² MSC final DAME opinion, p. 19.

to implement market power mitigation for imbalance reserves. It is therefore prudent to develop the functionality now.

Consider procuring imbalance reserve in the residual unit commitment process

DMM supports the development of an imbalance reserve product to procure reserves to address net load uncertainty between the day-ahead and real-time markets. Under the current EDAM design, such a product is necessary for creating the requisite real-time must offer obligation for generation in EDAM balancing areas. However, DMM has suggested that it may be preferable to procure this product as part of the residual unit commitment process instead of in the integrated forward energy market.

If the IFM demand curve places a value on imbalance reserve above its actual probabilistic value for reducing real-time market costs, energy market inefficiencies may arise. As previously described, in this scenario DMM expects the imbalance reserve product to raise day-ahead energy prices, while still requiring the residual unit commitment market to assign the real-time must offer obligations to the more expensive physical supply that would be needed in case net load uncertainty materializes. However, if the IFM demand curve places an accurate value on imbalance reserves, the IFM may not always assign real-time must offer obligations to the additional physical supply that would be needed in case net load uncertainty materializes. In this scenario as well, the residual unit commitment market would still need to address uncertainty between the day-ahead and real-time markets.

Procuring imbalance reserves in the IFM rather than the residual unit commitment market has the potential advantage of allowing the market to co-optimize energy and reserve awards. This can occur when the cost of procuring capacity in the IFM remains

less than the actual expected real-time value of procuring it. However, both scenarios described above require the residual unit commitment market to continue to serve its current role of procuring excess capacity to address net load uncertainty after the IFM has issued energy awards. Therefore, if there is frequent occurrence of either of these scenarios (i.e. an overvalued demand curve causes virtual supply to displace needed physical capacity; or a more reasonably-valued demand curve does not procure sufficient capacity to cover uncertainty), DMM recommends that the ISO and stakeholders more carefully consider whether it would ultimately be more efficient to procure imbalance reserves in the residual unit commitment market.¹³

DMM cautions strongly against considering raising the \$55/MWh demand curve cap as a potential solution to the IFM not procuring sufficient imbalance reserve up capacity to address all uncertainty between the day-ahead and real-time markets. Similarly, DMM also cautions strongly against considering raising the demand curve cap as a potential solution to limiting the extent to which EDAM transfers out of a balancing area could reduce the reserve capacity that the balancing area needs for addressing uncertainty. As described above, if the IFM demand curve places a value on imbalance reserve above its actual probabilistic value for reducing real-time market costs, significant energy market inefficiencies may arise. If an accurately valued demand curve does not procure sufficient capacity to address uncertainty, the residual unit commitment market

¹³ This could include a more nuanced approach if the ISO adopts DMM's ongoing recommendation described above to separate imbalance reserves into a 60-minute (or longer) product for addressing net load uncertainty and a 15-minute product for addressing the smaller requirement for fast ramping resources. Because the demand for the 15-minute ramping product would presumably remain in the real-time market in the form of the flexible ramping product, the ISO could consider including the 15-minute ramping product in the integrated forward market and moving the 60-minute uncertainty product to the residual unit commitment market.

can be designed to procure the requisite imbalance reserve up capacity. As explained in the EDAM section below, under the current EDAM design, the net export constraint is the necessary and appropriate tool for a balancing area to ensure capacity needed to address uncertainty does not support EDAM transfers out.

Designing real-time market mechanism to hold and access capacity reserves procured in the day-ahead market

DMM also continues to recommend that CAISO develop mechanisms to allow the real-time market to efficiently determine whether or not to preserve imbalance reserves procured in the day-ahead market.¹⁴ If the real-time market does not have a mechanism to maintain these reserves, the value of procuring them in the day-ahead market could be significantly reduced. Extending the real-time flexible ramping product and real-time market lookout horizons would help the real-time market manage this capacity.

DMM continues to recommend that CAISO consider extending the uncertainty horizon of the real-time flexible ramping product so that the markets can procure and compensate the capacity required to address net load uncertainty that exists over the real-time market's four-hour time horizon. If these changes are not considered, CAISO should at least consider adding simpler products to the real-time markets in order to procure and compensate the ramping capacity and energy required to meet expected net

¹⁴ *Comments on Day-Ahead Market Enhancements - August 13, 2019 Working Group*, Department of Market Monitoring, September 6, 2019, pp. 1-3:
<http://www.caiso.com/Documents/DMMCommentsDay-AheadMarketEnhancements-Aug13-Aug19Meetings.pdf>

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

load uncertainty over a multi-hour horizon (e.g. 1, 2, 4, and potentially even 8 hours out from the current market run).

These new products could resemble more traditional reserve products. Therefore, they may be much easier to implement in the near-term than a more complicated approach that incorporates net load uncertainty directly into advisory intervals of the multi-interval optimization. To help incorporate energy storage resources and the energy required to meet net load demand overnight when there is no solar production, it will be important for these new reserve products to consider energy requirements in addition to just rampable capacity several hours out from each real-time market run.

Including storage resources in the residual unit commitment process

CAISO's proposal includes provisions for energy storage resources to participate in the residual unit commitment process. DMM supports the inclusion of storage resources in the residual unit commitment process. However, because residual unit commitment awards will be constrained by the resource's state of charge from its IFM schedules, the proposal may lead to limited additional battery capacity awards in the residual unit commitment process. Further, real-time exceptional dispatch may be necessary to ensure the availability of RUC capacity awarded to storage resources in real-time.

Accounting for ancillary services and reliability products in day-ahead market state of charge constraints

In order to support feasible awards of all market products (energy, ancillary services, and reliability products), CAISO proposes to modify existing constraints and implement new constraints on state of charge in the IFM and residual unit commitment processes. These constraints are important to help ensure that day-ahead awards for

ancillary services and capacity products could be feasible over the 24-hour horizon. The feasibility of awards is required by the CAISO tariff for ancillary services.

CAISO's proposed "envelope constraints" appear to be a reasonable approach to ensure that the impacts of capacity awards in opposite directions do not cancel out, and that the impacts of day-ahead energy and capacity awards would not exceed the limitations of the resource. This may be important since, as CAISO notes, when day-ahead capacity awards are deployed as energy in real-time, this is likely to occur in a single direction even when awards may exist in both directions.¹⁵

In general, the use of multipliers and constraints in the day-ahead market processes to estimate state of charge impacts of day-ahead ancillary service and capacity awards may improve — but will not guarantee — the real-time deliverability of day-ahead storage awards of any product. Estimating multipliers specific to each product and hour seems likely to provide the best estimate of real-time availability. However, as with reliability capacity awards, the availability of imbalance reserve capacity in real-time may ultimately rely on real-time exceptional dispatch to ensure real-time deliverability.

Finally, as with the implementation of any new or modified market constraint, the addition of new or modified state of charge constraints has potential to interact in unexpected ways with existing constraints. DMM recommends CAISO carefully monitor the implementation of the newly proposed state of charge constraints, and be prepared to quickly modify the implementation as needed to address any unexpected market outcomes.

¹⁵ *Day-Ahead Market Enhancements: Draft Revised Final Proposal*, California ISO, April 6, 2023, p.56: <http://www.aiso.com/InitiativeDocuments/DraftRevisedFinalProposal-Day-AheadMarketEnhancements.pdf>

IV. EXTENDED DAY-AHEAD MARKET

Net export constraint

DMM supports the proposal to allow each balancing authority area (BAA) to utilize a net export constraint to determine hourly limits on net exports of EDAM energy, imbalance reserve up (IRU) and reliability capacity up (RCU). In tight system conditions, each balancing area needs a mechanism to help ensure EDAM transfers do not cause it to take responsibility for load curtailment caused by another balancing area with a capacity shortfall.

The EDAM should continue to increase coordination and collaboration between Western balancing areas. However, CAISO is not proposing that all EDAM balancing areas share load curtailment if there is a collective supply shortfall. Instead, if there is a collective supply deficiency in real-time, the real-time optimization will identify EDAM balancing areas that do not have sufficient supply to meet their real-time load, export, and EDAM transfer obligations.

As a result, if one or more balancing areas do not bring sufficient capacity to the EDAM in tight system conditions, EDAM transfers can shift responsibility for potential load curtailment from balancing areas that have insufficient capacity in the day-ahead time frame to balancing areas that had sufficient capacity in the day-ahead time frame. One way this shift of responsibility can occur is in situations when greater uncertainty materializes than the imbalance reserve up product is designed to procure.¹⁶ In addition, if an EDAM area allows convergence bidding, virtual supply can also cause the balancing

¹⁶ *Comments on Extended Day-Ahead Market Straw Proposal*, Department of Market Monitoring, June 17, 2022, pp. 4-6: <http://www.aiso.com/Documents/DMM-Comments-Extended-Day-Ahead-Market-Straw-Proposal-June-17-2022.pdf>

area to assume responsibility for real-time load curtailment, even if the area provided sufficient capacity to cover its obligations in EDAM.¹⁷

As a result, during tight system conditions, each EDAM balancing area needs a mechanism to help ensure EDAM transfers do not cause that area to take responsibility for load curtailment caused by another EDAM balancing area with a capacity shortfall. The net export constraint is designed to provide this critical function in the EDAM design.

EDAM balancing areas that do not have day-ahead must offer obligations, and that do not allow virtual bidding, could potentially prevent this adverse outcome by withholding capacity in excess of their EDAM resource sufficiency evaluation (RSE) requirements. However, even for these balancing areas, utilizing a net export constraint would be more efficient because it would allow the balancing area to bid their excess capacity into EDAM. This would allow this additional capacity to be efficiently re-dispatched within its own balancing area through the EDAM optimization.

For balancing areas — such as the CAISO BAA — that allow convergence bidding or have day-ahead must offer obligations in excess of their EDAM resource sufficiency evaluation requirements, the net export constraint could be critical for ensuring its reliability in situations when other EDAM balancing areas' capacity shortfalls could cause the EDAM footprint to have insufficient supply in real-time. The net export constraint will not be able to serve this critical function in the EDAM design if a balancing area has not obtained authority under its open access transmission tariff (OATT) to properly utilize the constraint in tight system conditions. Therefore, it is important that each balancing area

¹⁷ *Comments on Extended Day-Ahead Market Draft Final Proposal*, Department of Market Monitoring, November 22, 2022, pp. 5-7: <http://www.caiso.com/Documents/DMM-Comments-Extended-Day-Ahead-Market-Draft-Final-Proposal-2022-11-22docx.pdf>

develop and test procedures for implementing its own net export constraint prior to EDAM participation. For the constraint to be effective in preventing shifting of responsibility for load curtailment from another balancing area, these procedures must allow sufficient flexibility to cover the dynamic nature of a balancing area's load and resource uncertainty, which can fluctuate based on the specific mix of resources a balancing area is relying on for a particular day.

DMM recognizes that the use of a net export constraint can reduce the potential efficiency benefits of an extended day-ahead market relative to not using a net export constraint. However, other fundamental elements of the EDAM design have made this constraint the critical tool for some balancing areas to ensure EDAM transfers do not shift responsibility for load curtailment from another balancing area when they have brought sufficient capacity to EDAM.

DMM continues to believe the ideal EDAM design would involve a stringent day-ahead resource requirement sufficient for meeting all participating EDAM balancing areas' reliability thresholds. This would then allow mutually agreed upon sharing of any supply shortfalls that ultimately materialize in real-time.¹⁸ DMM understands that it would have been extremely difficult for diverse balancing areas to agree upon one standard set of day-ahead reliability standards for this initial phase of EDAM implementation.

DMM continues to recommend that CAISO and participating EDAM balancing areas work towards this goal in upcoming initiatives to enhance the EDAM design. In the meantime, some loss of potential EDAM efficiency due to the use of the net export

¹⁸ *DMM's 6-17-2022 comments on EDAM Straw Proposal*, pp. 1-3.

constraint in tight system conditions is an unfortunate, but necessary, cost for the implementation of this initial design.

Clarifying how the real-time market optimization will prioritize between EDAM transfers and an EDAM areas' demand

Proposed tariff section 33.7.5 – EDAM Transfer Priority Relative to Demand states that “EDAM Transfers will have a priority equal to Demand in the EDAM Area.” Similarly, the Transmittal Letter states that “the market will afford a transfer between balancing areas equal priority with demand in the balancing area”.¹⁹ DMM’s understanding of the intended policy for prioritizing between EDAM Area Demand and EDAM transfers in real-time is that there is a difference between how the real-time optimization software will prioritize between demand and EDAM transfers, and how operators in an EDAM Area that has to curtail load and/or EDAM transfers will prioritize between demand and EDAM transfers.

The equations defined in Appendix 3 of the EDAM Final Proposal specify how the real-time optimization software will prioritize between each area’s demand and EDAM Transfers.²⁰ DMM’s understanding of these equations is that when system-wide real-time supply cannot meet real-time demand, the software will assign the power balance violation to the EDAM Area whose supply is insufficient to meet its real-time demand plus net EDAM transfers out. The real-time software will not assign power balance violations to EDAM Areas that may have insufficient supply to meet demand in the absence of EDAM Transfers in from other areas, but which have sufficient supply to meet demand

¹⁹ *Transmittal Letter*, p. 123.

²⁰ *Extended Day-Ahead Market – Final Proposal*, CAISO, December 7, 2022, pp. 136-137: <http://www.caiso.com/InitiativeDocuments/FinalProposal-ExtendedDay-AheadMarket.pdf>

with the addition of all net EDAM energy, IRU, and RCU Transfers in. Therefore, the EDAM policy defined by the Final Proposal calls for the real-time market software to assign a higher priority to EDAM Transfers than to Demand in an EDAM Area.

The tariff language in section 33.7.5 seems to accurately describe the Final Proposal policy for how an EDAM balancing area's operators should prioritize between EDAM Transfers and Demand if the balancing area assigned the power balance violation by the real-time software actually has to curtail either load or EDAM Transfers.

However, DMM has not identified tariff language that defines the policy for how the real-time optimization software will prioritize between Demand and EDAM Transfers. DMM believes the policy defined in the Final Proposal clarifying that the software will prioritize EDAM Transfers over Demand is an important aspect of the overall EDAM policy. In DMM's experience, when the market software attempts to implement equal priority between two types of uneconomic schedules, the actual market outcome can be anywhere on the spectrum between 100% priority for one schedule and 100% priority for the other schedule. It is not clear how the CAISO software would implement a reliable pro-rata prioritization between Demand and EDAM Transfers. Therefore, DMM requests that CAISO clarify its intention to implement the prioritization of EDAM Transfers over Demand in the real-time market software, and to consider revising the proposed tariff language if necessary to ensure this aspect of the final policy proposal is effectuated.

EDAM resource sufficiency evaluation penalty

CAISO proposes to levy an out-of-market penalty on balancing areas that fail the EDAM resource sufficiency evaluation. This penalty is based on bilateral hub prices for a 16-hour on-peak block of energy, along with the quantity (MWs) of the balancing area's

largest hourly resource sufficiency evaluation failure.²¹ If the external hub prices accurately reflect the market rate for procuring power before the EDAM market closes, this penalty should be a reasonable reflection of the costs a balancing area would need to incur in order to avoid an EDAM resource evaluation failure, and to thereby avoid the penalty. Given this reasonable theoretical foundation for the penalty and the general consensus among potential participating balancing areas that this penalty creates the appropriate incentives for areas to procure sufficient capacity in advance of each day's EDAM market run, DMM supports the penalty.

Potential for transmission rights holders to exercise market power in the market for supply to meet EDAM resource sufficiency evaluation requirements

CAISO proposes that for a specific resource within a source EDAM balancing area to count towards meeting the EDAM resource sufficiency evaluation requirement of a sink EDAM balancing area, the resource owner has to have procured firm transmission between the balancing areas before the start of the day's EDAM market run. This element of the proposal can potentially contribute to EDAM reliability. However, as several stakeholders noted in comments to CAISO, this can create the potential for transmission rights holders to exercise market power in the market for supply to meet the EDAM resource sufficiency evaluation requirements.

To address this concern, DMM has recommended that CAISO prioritize assessing the extent to which this market power can exist on specific transmission paths, and develop EDAM market design enhancements to mitigate this market power where it has the potential to be exercised. While this can be completed through an upcoming initiative,

²¹ For details, see *ISO's December 7, 2022 EDAM Final Proposal*, pp. 71-73.

this should be completed before a significant number of balancing areas have joined EDAM. We provide additional discussion of this issue below.

Currently, if a sink balancing area does not require a resource to have firm transmission before the 10 a.m. day-ahead time frame, the set of resources that the balancing area's load serving entities can contract with is not limited to the resources which have transmission rights into the balancing area. As a result, a larger pool of resources can compete to sell supply to load serving entities to meet the balancing area's day-ahead capacity requirements. This competition should help keep capacity contract prices down at or near competitive levels.

Because the transmission rights holders have to release any unused transmission by the end of the day before power flow, the transmission generally becomes available for the resources ultimately chosen in the day-ahead time frame to provide energy to the sink balancing area. As long as the sink balancing area has limited the amount of generation that it counts towards meeting its day-ahead capacity requirements to the amount that can be supported by transmission to its border,²² the balancing area should generally not have over counted the quantity of supply that it can rely on to ultimately flow into its area to serve its load.

The proposal to require generation in a source EDAM balancing area to have firm transmission to the sink EDAM balancing area before each day's 10 a.m. EDAM run can limit the pool of resources within EDAM balancing areas competing to meet a sink EDAM balancing area's resource sufficiency evaluation requirements. This can limit the pool of resources to those resources that already own the transmission rights to the sink EDAM

²² Minus the amount of firm wheeling rights the balancing area has sold through its area.

balancing area. Under this requirement, if all the transmission rights on a path to a sink EDAM balancing area have been purchased in advance of the day-ahead time frame, a generator in an EDAM area that has not purchased the transmission rights will not be able to offer its capacity to load serving entities seeking capacity to meet their EDAM balancing area's RSE requirements. These load serving entities would have to buy the transmission rights from the transmission rights holders, or be limited to negotiating with the resources in EDAM balancing areas that had procured the transmission rights in advance.

If one company holds so much transmission rights on a path that the sink EDAM balancing area cannot get the total capacity it needs from generation upstream of the path without buying some of that company's transmission rights, the company holding the rights could force load serving entities in the sink EDAM balancing area to buy supply from its affiliated resources in order for the sink EDAM balancing area to pass the EDAM resource sufficiency evaluation. The resources affiliated with the large transmission rights holder could exercise market power in the resource sufficiency evaluation supply market, charging excessively high prices for the capacity that the sink balancing area needs to pass the evaluation.

The potential for holders of large quantities of transmission rights on key paths to exercise market power in this way is likely to be mitigated during the initial EDAM implementation due to a limited number of balancing areas initially participating in EDAM. This is because contracts for energy with resources *not* in EDAM balancing areas can count towards meeting a sink EDAM balancing area's resource sufficiency evaluation

requirements without having firm transmission to the sink EDAM balancing area prior to each day's 10 a.m. EDAM market run.

If the EDAM optimization utilizes less expensive energy from transmission rights holders or from transfers from other EDAM balancing areas to meet the sink EDAM balancing area's energy needs, the contracted resource from a non-EDAM area will not have to e-Tag transmission. If the EDAM optimization instead schedules the energy from this non-EDAM area resource into the sink EDAM balancing area, a corresponding amount of energy from transmission rights holders will not have been scheduled. As a result, those transmission rights holders will have to release the transmission after EDAM market results are published. The non-EDAM balancing area resource that received the energy schedule to the sink EDAM balancing area should then be able to e-Tag at least the last leg of transmission to the sink EDAM balancing area.

Therefore, as long as there are a limited number of participating EDAM balancing areas, the ability for EDAM load serving entities to contract with generation from non-EDAM balancing areas for EDAM resource sufficiency evaluation capacity should mitigate the potential exercise of market power by entities that may hold large quantities of transmission rights on key paths. Before a substantial number of balancing areas join EDAM, DMM recommends CAISO prioritize assessing the extent to which this market power can exist on specific transmission paths and develop EDAM market design enhancements to mitigate this market power where it has the potential to be exercised.

Potential for the same source of non-source specific supply to be counted more than once towards EDAM balancing areas' resource sufficiency evaluation requirements

CAISO's proposal acknowledges that allowing contracts for non-source specific energy to count towards EDAM balancing areas' resource sufficiency evaluation requirements creates "potential double counting of resources."²³ This can occur if a supplier has not procured the capacity or energy it schedules into EDAM to meet resource sufficiency evaluation requirements by the 10 a.m. day-ahead market close. In this scenario, the supplier could be relying on there being excess capacity in non-EDAM balancing areas. However, the supplier may also be relying on capacity in an EDAM balancing area that had counted towards the area's EDAM resource sufficiency evaluation requirements.

For example, a supplier could sell a WSPP-C contract to a load serving entity (LSE) in an EDAM balancing area and then submit a self-schedule of a non-source specific import into that area to count towards its EDAM resource sufficiency evaluation requirement. This supplier could potentially source the import from a low priority export out of the CAISO balancing area in the day-ahead market. Or the supplier could potentially purchase energy out of a non-CAISO EDAM balancing area after the day-ahead market results are published from resource capacity that was not assigned a real-time must offer obligation through EDAM.

CAISO proposes that CAISO and DMM monitor and report on activity related to these scenarios, such as "the volume of day-ahead non-resource specific schedules that

²³ ISO's December 7, 2022 EDAM Final Proposal, p. 66.

fail to submit valid e-Tags prior to conclusion of the WEIM RSE”.²⁴ To monitor these scenarios, CAISO will need to provide DMM all relevant e-Tag data for any transaction that goes into or out of any EDAM or WEIM balancing area. DMM will monitor and analyze these scenarios to the extent CAISO has made the requisite data available in a usable format.

DMM notes that monitoring and reporting on the behavior related to the above scenarios is unlikely to be sufficient for preventing undesirable behavior and adverse outcomes. The proposal explains that “WEIM entities depend upon [energy contracts for which the source and transmission path may not be known by the day-ahead market close] to varying degrees.”²⁵ There are likely to be efficiency benefits from power marketers waiting until closer to real-time to determine the least expensive energy available to serve import schedules.

Therefore, DMM recommends that in its next initiative for enhancing the initial EDAM design, CAISO and stakeholders consider more nuanced rule and design changes that could better prevent the same capacity from being counted more than once towards EDAM balancing areas’ resource sufficiency evaluations. For example, the overall design may benefit from crafting more explicit rules prohibiting supply that has received an EDAM energy or capacity award, and that therefore has a real-time must offer obligation, from supporting a non-source specific import that was counted towards each balancing area’s EDAM resource sufficiency evaluation requirements.

²⁴ Ibid, p. 68.

²⁵ Ibid, p. 66.

Similarly, the real-time must offer obligations assigned by the EDAM could potentially be enhanced by incorporating into the residual unit commitment load forecast each EDAM balancing area's entire EDAM resource sufficiency evaluation requirement. Tariff rules that more clearly define the undesirable behavior will enhance the process of monitoring and taking enforcement action against the undesirable behavior, while still allowing the arrangements that WEIM entities depend upon.

Clarifying rules and settlement of a non-resource specific import counted towards EDAM RSE that tags its source as being from an EDAM BAA

CAISO's proposal contemplates the possibility of a non-resource specific import counted towards an EDAM balancing authority area's EDAM RSE. CAISO would model the import as a distributed injection at the sink BAA's Demand Aggregation Points. In its concurrent initiative on the CAISO balancing area's EDAM participation rules, CAISO described the policy for how the real-time market would treat such an import, if the import ultimately sourced from within the EDAM footprint:

In the real-time market, once the source of the supply is known, the scheduling coordinator would be expected to submit a bid at the resource if the source supporting the firm delivered energy is located within the EDAM footprint. The scheduling coordinator would be expected to cancel the DA schedule at the resource in the EDAM footprint through a base transfer deviation with the ISO at the applicable interface between EDAM areas. This base transfer associated with the resource in the footprint would contribute to the ISO WEIM RSE.²⁶

²⁶ *Extended Day-Ahead Market ISO Balancing Authority Area Participation Rules – Track A1 Final Proposal*, California ISO, August 25, 2023, p. 33:
<http://www.caiso.com/InitiativeDocuments/TrackA1FinalProposal-EDAMISOBAAParticipationRules-Redline.pdf>

DMM has asked CAISO to clarify this policy. CAISO responded in its Final Proposal in that initiative by saying that “the ISO believes that questions related to inertia transactions in the EDAM are more appropriately addressed in a forum that applies to all participating EDAM BAAs and will look to do so there.”²⁷

DMM continues to ask CAISO to clarify this policy. Is the scheduling coordinator for the resource or for the EDAM entity expected to execute the base transfer deviation? What direction is the base transfer deviation and which market does that settle in? And what are the settlement implications for the source EDAM resource, the source and sink EDAM entities, and the import resource? CAISO’s description seems to only address non-resource specific imports at interfaces between two EDAM balancing areas. What would the settlement rules be if the non-resource specific import into the CAISO BA was at an interface with a non-EDAM balancing area, and the source was tagged from an EDAM area, through that non-EDAM area, to the CAISO BA’s border?

The proposal’s description of how a scheduling coordinator is “expected” to cancel the day-ahead schedule of the source resource in the EDAM balancing area is also vague. CAISO’s EDAM proposal states that DMM will monitor for non-resource specific imports ultimately tagging the supply as sourcing in an EDAM balancing area. DMM requests that in order to facilitate that monitoring and to assess this aspect of the market design, CAISO clarify what adjustments to import, generator, and base transfer schedules will be automated, which actions specific entities will be required to perform in these scenarios, and to better specify what the settlement implications will be for the impacted entities and resource schedules.

²⁷ *Extended Day-Ahead Market ISO Balancing Authority Area Participation Rules – Track A1 Final Proposal*, p. 38

DMM supports the clarification of EDAM policy on bids and schedules that can cure untagged non-resource specific import awards.

Section 33.30.8.3 of CAISO's proposed tariff amendment states:

An EDAM Entity Scheduling Coordinator will have until 5 hours before the start of the Operating Hour to submit E-Tags and/or replace the capacity with other firm schedules or physical resources for schedules that lack a valid Day-Ahead E-Tag within the timeframe. If the EDAM Entity Scheduling Coordinator does not E-Tag the outstanding import schedules, including import EDAM Transfers, and fails to resupply by submitting additional incremental Energy Bids from internal supply EDAM Resources above the resource's Day-Ahead Schedule not encumbered by Day-Ahead capacity awards to cover the E-Tag insufficiency prior to the deadline, the CAISO will remove the EDAM Entity Balancing Authority Area from the group of Balancing Authority Areas that comprise the EDAM Upward Pool.²⁸

DMM supports CAISO having clarified in this section that firm schedules, or bids from specific resources in excess of day-ahead energy, IRU, and RCU awards, can count towards curing untagged non-source specific imports. DMM noted in prior comments on EDAM policy that ambiguity in the Final Proposal language seemed to leave open the problematic possibility of only counting real-time bids in excess of day-ahead market *bids*.²⁹ Counting real-time bids in excess of day-ahead *awards*, as clarified in the tariff language, now resolves this potential ambiguity.

²⁸ *Updated Revised Draft Tariff Language – Extended Day-Ahead Market – Section 33 Extended Day-Ahead Market*, CAISO, July 25, 2023, pp. 70-71:
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Extended-day-ahead-market>

²⁹ *Memorandum to ISO Board of Governors and WEIM Governing Body*, Department of Market Monitoring, January 25, 2023, p. 9:
<http://www.caiso.com/Documents/DepartmentofMarketMonitoringReport-Feb2023.pdf>

Real-time market prioritization of firm transmission rights neither released to EDAM nor used by transmission customer by the close of the day-ahead market

Transmission customers with firm rights in an EDAM balancing area may choose to neither utilize those rights by scheduling energy in the day-ahead market nor fully release those rights to the EDAM market before the close of the day-ahead market. CAISO proposes to allow each EDAM balancing area to determine how the real-time market will prioritize those rights relative to day-ahead market schedules and native load if the transmission customer self-schedules energy over those rights after the day-ahead market. DMM supports this proposal as a prudent solution for integrating into one organized market potentially differing prioritization protocols in balancing areas across the West.

As CAISO has explained, Section 13.8 of the pro-forma OATT “does not expressly obligate the transmission provider to utilize re-dispatch to accommodate a customer’s late scheduled transmission service request”.³⁰ However, some potential EDAM balancing areas have expressed the preference for the market software to prioritize the post-EDAM self-schedules utilizing firm rights over day-ahead market schedules and native load. Providing each EDAM balancing area the choice of how it prefers to prioritize these late transmission service requests seems to align with the intent of the pro-forma OATT and should therefore help to integrate OATT practices and procedures in the rest of the West with CAISO’s centralized market structure.

EDAM balancing areas that elect to give late scheduled transmission priority over day-ahead market schedules will have the ability to protect against the late exercise of transmission rights causing reliability concerns. Operators in these balancing areas can

³⁰ *EDAM Final Proposal*, p. 41.

reduce the day-ahead market limits on transmission elements that the late schedules may utilize in the real-time markets. While operators can use this option to help ensure their balancing area's reliability, DMM notes that preemptively reducing day-ahead transmission limits can increase dispatch costs and reduce the overall efficiency of the markets. This is because the transmission reserved for potential use by late scheduled transmission rights holders will not be able to be utilized for efficient scheduling in the day-ahead market. The dispatch could be sub-optimal in situations when the rights holder does not ultimately exercise those rights after the day-ahead market. Therefore, DMM hopes that as balancing areas across the West integrate into and become familiar with CAISO's centralized day-ahead market structure, stakeholders can coordinate on making adjustments to transmission rights release timelines and resource adequacy programs to enable more efficient future use of the West's transmission system.

Greenhouse gas accounting framework

DMM supports the overall design of the greenhouse gas (GHG) accounting framework from CAISO's EDAM Final Proposal. The proposal adopts the general methodology from the WEIM. This method allows the optimization to consider individual resource emissions costs when determining schedules, and keeps GHG regulation area states' valuations of emissions costs from directly increasing LMPs in non-GHG regulation areas. Furthermore, the design allows resources in non-GHG regulation areas to still recover bid costs for both energy production and GHG allowances through LMPs and GHG congestion rents.

The EDAM GHG accounting proposal significantly improves upon the WEIM design by introducing an optimized counterfactual for what schedules in non-GHG

regulation areas would have been in the absence of demand in GHG regulation areas. This is an improvement over WEIM's use of each area's individually determined base schedules as a counterfactual. It should help with GHG regulation area air regulators' goal of reducing secondary dispatch, while also helping to minimize constraints on GHG attribution and optimal schedules that may be unrelated to secondary dispatch.

DMM appreciates the enhancement CAISO made to the fifteen-minute market GHG counterfactual in the Final Proposal. Using the difference between the day-ahead energy schedule and day-ahead GHG award rather than simply the day-ahead energy award seems counterintuitive and more complex. However, DMM agrees with CAISO that this is a far superior counterfactual that better identifies the total real-time capacity, and therefore the capacity incremental to day-ahead attributions, available to be attributed to each resource in real-time.

DMM is not opposed to the GHG net export constraint. However, the "proposal maintains implementation flexibility on whether the constraint will be static...or dynamic".³¹ DMM has concerns that under the dynamic implementation of the constraint, situations can arise in which the price paid to resources with attributions do not support the optimal dispatch. In these situations, the resource's LMP and share of GHG congestion rents may only cover the cost of the resource operating at as many MWs as it is receiving GHG attribution for (i.e., if the resource has a 40 MW schedule and 8 MW GHG resource attribution, the per MWh compensation may only fully cover the cost of the first 8 MWs of its schedule). Therefore, DMM cautions against CAISO committing to the

³¹ *EDAM Final Proposal*, p. 102.

dynamic approach before carefully considering the adverse impacts it may have on price incentive compatibility.

Clarifying how the GHG net export constraint will limit a BAA's GHG attribution

CAISO's Final Proposal states the GHG net export "constraint limit would be set relative to the net transfer of the BAA in the GHG reference pass; therefore, GHG attributions will be allowed to resources in a BAA with a reduced net import transfer in the IFM compared to the net transfer in the GHG reference pass." The policy is clearly intended to allow resources in a non-GHG regulation balancing area that has negative net exports (i.e., net imports) in the IFM to receive GHG attributions.

For example, consider a non-GHG regulation EDAM balancing area with mainly hydro resources that has -100 MW of net exports in the GHG reference pass. It has 100 MW of imports because a neighboring non-GHG regulation EDAM balancing area with mainly coal resources transfers 100 MWs of coal power to the hydro balancing area in the GHG reference pass. In this scenario, we assume the coal power has a lower energy bid cost than the hydro power, but the coal power has a significantly higher GHG emissions bid cost. In the IFM market pass, the hydro balancing area's net exports increase to -10 MW because the GHG regulation areas value the low emitting hydro. This results in 90 MW of the hydro in this balancing area dispatching up to displace higher emitting natural gas resources in the GHG regulation areas. The policy explained in CAISO's Final Proposal would appropriately allow the hydro balancing area's GHG attribution to be limited to 90 MW = [-10 MW exports – (-100 MW exports)], even though the balancing area is not a net exporter.

Proposed tariff amendment Section 33.32.5 – GHG Net Export Constraint states that the “constraint will limit the aggregate attribution of EDAM Resources within a specific EDAM Entity Balancing Authority Area such that the aggregate attribution does not exceed the net exports from that EDAM Entity Balancing Authority Area.”³² Similarly, the Transmittal Letter states:

Under this constraint, attributions of GHG transfers to EDAM resources located in an EDAM balancing authority outside of a GHG regulation area may not exceed the net exports from that EDAM balancing area. If an EDAM balancing area is a net importer during any hour, no EDAM resource located with the EDAM balancing area may receive an attribution of a GHG transfer during that hour.³³

These sections of the proposed tariff language and transmittal letter do not describe the policy defined for the net export constraint in the Final Proposal. The policy described by the tariff language and transmittal letter would inefficiently constrain GHG attribution and dispatch so as to increase costs and inhibit the ability of the optimization to increase the dispatch of low emitting resources to serve GHG regulation areas.

DMM notes that the Final Proposal’s policy may not have been clear as to whether the GHG net export constraint limit would be (1) the difference between its net exports in the GHG reference pass and the IFM market pass; or (2) the maximum of #1 and the net exports in the IFM market pass. DMM asks CAISO to clarify how it intends to determine the limit for the GHG net export constraint and to revise its proposed tariff amendment as necessary.

³² *Transmittal Letter*, p. 495.

³³ *Transmittal Letter*, p. 170 (p. 174 of pdf).

Clarifying that local market power mitigation in EDAM will include testing competitiveness of any non-CAISO EDAM balancing area whose power balance constraint shadow price is higher than that of the CAISO balancing area

In a recent public workshop on BAA-level local market power mitigation, after EDAM policy had been approved by CAISO's Board of Governors, CAISO raised questions about whether EDAM implementation would include BAA-level local market power mitigation.³⁴ DMM's reading of CAISO's Final Proposal is that the EDAM policy is unambiguous in its intention to implement BAA-level local market power mitigation for all EDAM balancing areas besides the CAISO balancing area. DMM requests that CAISO clarify that this is what it intends to implement. If CAISO intends to implement BAA-level local market power mitigation in EDAM, CAISO may need to modify its proposed tariff amendment language to effectuate this policy.

The Final Proposal states:

[T]his final proposal continues to retain the extension of the WEIM market power mitigation practices in the WEIM to the EDAM and to discussing any necessary adjustments to those practices in the *Price Formation Enhancements* initiative...The paragraphs that follow summarize the existing WEIM market power mitigation processes that would be extended to the EDAM...In the context of the WEIM, the ISO performs a DCPA to test if the supply in an individual WEIM BAA can meet the demand competitively or provide counter-flow on congested transmission constraints. Where the binding constraint is the BAA power balance constraint, then all supply resources provide supply counter-flow. The ISO only performs the test when there are binding transfer limits in the import direction to that BAA that restrict

³⁴ *Price Formation Enhancements – Working Group Session #3*, August 17, 2023, p. 13: <http://www.caiso.com/InitiativeDocuments/Presentation-Price-Formation-Enhancements-Aug17-2023.pdf>

external resources from meeting internal demand. This method assumes that the ISO BAA is competitive.³⁵

This passage from the EDAM Final Proposal describes the BAA-level market power mitigation that CAISO currently has implemented for the WEIM and which the Final Proposal explains is the intended policy for EDAM — when the power balance constraint shadow price of an EDAM balancing area is elevated relative to the CAISO balancing area due to transfer congestion, the entire balancing area will be tested for competitiveness.

CAISO has proposed eliminating the system power balance constraint and replacing it with a CAISO balancing area power balance constraint. With this change, BAA-level local market power mitigation for all non-CAISO BAAs can still be applied in the exact same situations in WEIM as it is currently applied. This method can be directly extended to EDAM BAA-level local market power mitigation as proposed in the Final Proposal. Currently, a non-CAISO BAA's power balance constraint will be tested in the DCPA for competitiveness if its BAA-specific power balance constraint shadow price is positive. This is because the CAISO BAA does not currently have a power balance constraint. Instead, every other BAA has a power balance constraint, and there is a system power balance constraint in place of a CAISO area constraint. With this current configuration of power balance constraints, a positive shadow price for the power balance constraint of a non-CAISO balancing area reveals that there are binding transfer constraints in the EDAM footprint in the import direction between the CAISO area and

³⁵ *EDAM Final Proposal*, pp. 86-87.

that balancing area which create congestion price separation between it and the CAISO BAA.

With CAISO's proposed substitution of a CAISO area power balance constraint for the system power balance constraint, a positive shadow price on a non-CAISO balancing area's power balance constraint can no longer be used to determine whether or not there is transfer constraint congestion in the import direction towards a balancing area that increases the price of the balancing area relative to the CAISO BAA. Instead, the new equivalent to the BAA-specific power balance constraint binding with a positive shadow price is if the BAA's power balance constraint shadow price is larger than the CAISO BAA's power balance constraint shadow price.

DMM's understanding of the Final Proposal's policy on EDAM local market power mitigation is that CAISO intends to test a non-CAISO EDAM balancing area's power balance constraint in the DCPA for local market power mitigation when its power balance constraint's shadow price is larger in the positive direction than the CAISO BAA's. Language in the proposed tariff amendment section 33.39 and the existing language in section 39.7 (referenced in section 33.39) may allow BAA-level local market power mitigation to be implemented as intended by the Final Proposal. This may be the case if the term Transmission Constraint as used in section 39.7.2 can be interpreted to include BA-specific power balance constraints, and if a BAA-specific power balance constraint is deemed binding when its shadow price is larger in the positive direction than the CAISO balancing area's power balance constraint shadow price. However, CAISO should amend its proposed tariff revisions to effectuate the intended policy, if necessary.

V. CONCLUSION

DMM generally supports CAISO's proposed tariff amendments to implement the extended day-ahead market. However, these comments identify several aspects of the proposed tariff revisions that should be clarified. These include:

- 1) Clarifying how the real-time market optimization will prioritize between EDAM transfers and an EDAM areas' demand;³⁶
- 2) Clarifying rules and settlement of a non-resource specific import counted towards EDAM RSE that tags its source as being from an EDAM BAA;³⁷
- 3) Clarifying how the GHG net export constraint will limit a BAA's GHG attribution;³⁸ and
- 4) Clarifying local market power mitigation in EDAM will include testing competitiveness of any non-CAISO EDAM balancing area whose power balance constraint shadow price is higher than that of the CAISO area.³⁹

DMM supports approval of the DAME tariff amendments in conjunction with the EDAM amendments. DMM does not support implementation of the DAME tariff amendments in the absence of a functional, multi-balancing area extended day-ahead market.

³⁶ See comments at pp. 19-20.

³⁷ See comments at pp. 27-28.

³⁸ See comments at pp. 33-34.

³⁹ See comments at pp. 35-37.

DMM respectfully requests that the Commission afford due consideration to these comments as it evaluates the proposed tariff provisions before it.

Respectfully submitted,

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Dated: September 21, 2023

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 21st day of September, 2023.

/s/ Aprille Girardot
Aprille Girardot