

Comments on Price Formation Enhancements Revised Straw Proposal

Department of Market Monitoring

July 28, 2026

Summary

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the ISO's *Price Formation Enhancements Revised Straw Proposal* and subsequent working group sessions held on July 13-14, 2026.¹

DMM continues to support grouping connected balancing authority areas (BAAs) to test for regional competitiveness, rather than testing all BAAs individually. DMM also continues to support the proposal to account for load-serving obligations in tests of competitiveness. However, DMM notes that there may be implementation challenges in doing this accurately. In addition, because the proposed grouping algorithm evaluates competitiveness at the group level, errors in the net supply calculation for a supplier in one BAA could affect competitiveness assessments across other BAAs in the group. DMM recommends the ISO provide additional details and analysis on both the proposed methodology of estimating load-serving obligations and the proposed mitigation algorithm.

DMM continues to recommend the ISO treat the CAISO BAA consistently with the other BAAs by including it in the BAA-level market power mitigation (MPM) framework rather than continuing to assume it is always competitive. While DMM acknowledges that the residual supply index (RSI) calculation may require adjustments to appropriately account for imports into the CAISO BAA, DMM does not agree that RSI failures during peak hours indicate flaws in a system-level competitiveness test. Rather, these are the hours when supply conditions are tightest and the potential for system-wide market power is greatest. Further, DMM does not agree that evidence of harm from system market power should be required prior to extending BAA-level mitigation to the CAISO BAA, as such a standard has not been applied to any other BAA that is subject to competitiveness testing.

In addition to BAA-level MPM changes, the ISO also proposed two incremental scarcity pricing mechanisms. DMM supports the interim proposal to implement an in-market scarcity pricing mechanism during load shed events, but recommends that the ISO provide additional information or analysis to better inform the evaluation of the proposed implementation options. Further, DMM recommends that the ISO consider the potential implications of a scarcity pricing design that is asymmetric across BAAs for both EDAM and WEIM. DMM supports the concept of pricing armed reserves in RTD using a single reserve slack penalty price, which is consistent with DMM's previous recommendations.

The ISO proposes to defer broader scarcity pricing redesign efforts to a longer-term track, while focusing on near-term scarcity pricing enhancements. DMM continues to recommend that the ISO place a high priority on developing an uncertainty product with a longer time horizon that would allow prices to rise more gradually as scarcity conditions approach.

¹ *Price Formation Enhancements Revised Straw Proposal*, California ISO, July 2, 2026:
<https://stakeholdercenter.caiso.com/InitiativeDocuments/Revised-Straw-Proposal-Price-Formation-Enhancements-BAA-MPM-Scarcity-Pricing-2026-07-02.pdf>

Comments

BAA-Level MPM

DMM continues to support grouping connected BAAs to test for regional competitiveness

DMM continues to support a grouping approach to assess BAA competitiveness rather than testing all BAAs individually.² DMM agrees that grouping BAAs based on their marginal energy costs (MECs) and transfer capability is a sensible approach. Testing groups of connected BAAs together, rather than individually, may reveal that the group as a whole is competitive even when an individual BAA is not competitive. This could avoid unnecessarily subjecting individually non-competitive BAAs to mitigation when unconstrained transfer capability exists between BAAs in the group.

In previous comments, DMM raised concern regarding the potential for BAAs that are competitive on their own to be found non-competitive if first tested in a group with larger non-competitive BAAs.³ DMM supports the proposed refinement to the grouping methodology that addresses this concern.

DMM continues to recommend treating CAISO similar to all other BAAs in BAA-level MPM testing

DMM continues to recommend treating the CAISO BAA consistently with other BAAs by testing the CAISO BAA in the new grouping approach, as opposed to assuming the CAISO BAA is competitive by default. DMM acknowledges that the current residual supply index (RSI) calculation may not fully account for economic imports into the CAISO. However, DMM notes that this issue is likely more significant in the day-ahead market than in real-time. Most imports are only hourly dispatchable, and uncleared imports that are not dispatchable in the 15-minute or 5-minute market should not be considered as available supply in the 15-minute and 5-minute RSI calculations.⁴ DMM recommends the ISO consider refinements to the RSI calculation that better accounts for economic bidding on the interties, but notes the real-time RSI calculation may be minimally affected by the small amount of 15-minute dispatchable imports.

DMM also does not support the argument that evidence of system market power harm should be required prior to subjecting the CAISO BAA to BAA-level market power mitigation. DMM believes the CAISO should be held to the same standard as other BAAs in the Western Energy Imbalance Market (WEIM). While adjustments to the RSI calculation may be warranted to more accurately account for intertie imports, such considerations do not justify establishing a higher threshold for applying BAA-level mitigation to the CAISO BAA than is applied elsewhere. DMM recommends the CAISO refrain from relying on either the frequency of peak-hour competitiveness test failures or the absence of

² *Comments on Price Formation Enhancements Balancing Authority Area-level Market Power Mitigation Working Group: Discussions on November 6 and 20, 2024*, Department of Market Monitoring, December 13, 2024: <https://www.caiso.com/documents/dmm-comments-on-price-formation-enhancements-baa-level-market-power-mitigation-working-group-nov-06-and-20-2024-dec-13-2024.pdf>

³ *Comments on Price Formation Enhancements Straw Proposal*, Department of Market Monitoring, September 19, 2025: <https://www.caiso.com/documents/comments-on-price-formation-enhancements-straw-proposal-sep-19-2025.pdf>

⁴ *Comments on System Market Power Mitigation Revised Straw Proposal*, Department of Market Monitoring, May 4, 2020: <https://stakeholdercenter.caiso.com/InitiativeDocuments/DMMComments-SystemMarketPowerMitigation-RevisedStrawProposal.pdf>

demonstrated system market power harm as a basis for excluding the CAISO BAA from BAA-level mitigation.

CAISO BAA test failures are not indicative of a flawed test

DMM strongly disagrees with the assertion that competitiveness test failures of the CAISO BAA, or a group including the CAISO BAA, in hours-ending 19 through 21 is an indication that the competitiveness test is inaccurate. These hours typically coincide with peak demand conditions and declining solar production and thus are the hours when supply conditions in California and throughout the West are often most constrained. As a result, these are precisely the hours when the potential for system-wide market power is greatest. Rather than viewing these outcomes as evidence of a flawed test, DMM recommends the ISO continue refining the calculation of load-serving obligations to ensure the competitiveness assessment accurately identifies intervals in which the CAISO BAA, or groups including the CAISO BAA, may be non-competitive.

DMM suggests the ISO provide further details and analysis on proposals to only mitigate pivotal suppliers

The ISO is proposing to no longer apply mitigation to all suppliers in a non-competitive BAA, and instead only subject a subset of potentially pivotal suppliers to BAA-level MPM. DMM appreciates the ISO's clarification that it is not only pivotal suppliers that may have the ability to raise prices uncompetitively. The Revised Straw Proposal proposes a specific algorithm of how to determine which suppliers in a BAA or group of BAAs will be subject to mitigation when they are found to be non-competitive. DMM recommends the ISO provide more detail and analysis on this proposed algorithm.

DMM requests clarification regarding the interaction between the proposed mitigation algorithm and the grouping methodology. For example, if a group of BAAs tests as non-competitive and then is subsequently combined with another BAA (or set of BAAs) that also tests as non-competitive, it is unclear whether the algorithm to determine pivotal suppliers subject to mitigation would be applied at each stage of the grouping process, and how it would account for suppliers that may be identified for mitigation under one grouping configuration but not the other. DMM recommends the ISO provide additional details regarding this interaction.

DMM further recommends the ISO provide empirical analysis of the proposed mitigation algorithm. In January, the ISO presented hypothetical results from the proposed BAA-level MPM framework using data from 2025. DMM recommends that the ISO consider expanding this analysis by calculating the proportion of supply within each BAA that would have been subject to mitigation during intervals in which the BAA was subject to mitigation. Such analysis would provide stakeholders with a clearer understanding of the practical effects of the proposed algorithm and the extent to which mitigation outcomes may differ.

DMM agrees with stakeholders that it would be beneficial to see illustrative examples demonstrating how the proposed mitigation process would apply to suppliers that are and are not selected for mitigation under the algorithm. DMM also requests that the ISO provide additional details regarding the interaction between BAA-level MPM and local market power mitigation (LMPM). DMM recommends that the ISO clearly explain how the two mitigation frameworks interact, including any implementation challenges associated with applying different eligibility criteria within a single mitigation process.

DMM supports consideration of net supply position in BAA-level MPM testing but notes challenges in accurately estimating load-serving obligations

The ISO proposes to incorporate net supply position into the BAA-level MPM framework by excluding an entity's load-serving obligations from the calculation of withholdable capacity. The ISO argues that it would be economically irrational for affiliates to withhold supply up to their load-serving obligations, because they would then have to buy energy at that inflated price. While this may hold for suppliers under certain regulatory regimes, DMM notes that load-serving obligations may not fully capture all incentives relevant to the exercise of market power. Some suppliers may have incentives associated with longer-term contractual positions that could outweigh short-term cost impacts.⁵ Nevertheless, DMM continues to support consideration of net supply position when calculating the withholdable capacity for purposes of BAA-level MPM testing. However, DMM notes that there may be significant challenges in doing this accurately and the consequences of any inaccuracies may be more widespread when combined with the proposed grouping methodology.

DMM continues to note that the net supply position of many entities may vary significantly from hour to hour and day to day, and that complete information regarding actual available supply (taking into account bilateral physical and financial positions) may not be available until just prior to day-ahead and real-time markets. The ISO is proposing to calculate an entity's load-serving obligation in real-time by utilizing the real-time demand forecast. For single-affiliate BAAs, the entire real-time demand forecast will count towards that affiliate's load-serving obligation. For multiple-affiliate BAAs, the real-time demand forecast is multiplied by an estimate of each affiliate's historical share of total BAA load. DMM recommends the ISO calculate the historical load share on an hourly and either monthly or quarterly basis to account for different load profiles across entities and any seasonal variations in load patterns.

While calculating historical load shares on an hourly and monthly or quarterly basis may improve the accuracy of the estimates, there will still be discrepancies between the ISO's estimate and the entity's actual load obligation in a given interval. DMM recommends the ISO provide analysis comparing estimated load obligations under the proposal with actual metered load. Such analysis would allow the ISO and stakeholders to better understand the magnitude of these discrepancies and whether the proposed estimate yields systematic inaccuracies.

DMM further recommends the ISO build on the analysis presented in January by rerunning the grouping algorithm using the proposed estimate of load-serving obligations and comparing the results with the original analysis that used metered load. This would allow stakeholders to observe how accurately this estimate correctly identified BAAs as competitive or non-competitive. While this issue may have limited implications in the current extended day-ahead market (EDAM) and WEIM footprint, which has limited multiple-affiliate BAAs, it could become more significant as new entities join these markets, as BAA structures evolve, or if the CAISO is eventually included in BAA-level mitigation. It is important that the market design remain robust to future changes in market participants and BAA composition.

DMM notes that inaccuracies in estimating a supplier's load-serving obligations may have more widespread consequences when combined with the proposed grouping framework. Because competitiveness is assessed across groups of interconnected BAAs, incorrectly classifying some amount

⁵ *Comments on System Market Power Mitigation Revised Straw Proposal*, Department of Market Monitoring, May 4, 2020: <https://stakeholdercenter.caiso.com/InitiativeDocuments/DMMComments-SystemMarketPowerMitigation-RevisedStrawProposal.pdf>

of capacity as withholdable or non-withholdable for a supplier in one BAA could affect the competitiveness determination for not only that BAA but also for other BAAs within the group. As a result, errors in estimates of load obligations could propagate through the grouping algorithm and potentially lead to multiple BAAs being incorrectly designated as competitive or non-competitive.

Implementing MPM rules that implicitly rely on state regulations and regulatory agencies to prevent non-competitive behavior may warrant further consideration

DMM acknowledges that many load serving utilities subject to state regulations have limited incentives to withhold available capacity to raise prices. However, relying on assumptions regarding regulatory incentives when determining the need for mitigation incorporates aspects of state regulatory oversight into the MPM framework that do not currently exist and may warrant further consideration.

In some cases, regulatory requirements and oversight may serve as a backstop for inaccuracies in estimating the net supply position of regulated entities. However, DMM notes that regulatory requirements vary across states, and therefore incentives faced by regulated entities may not be uniform throughout the market footprint. For instance, DMM has encountered cases where regulated load serving entities (LSEs) have indicated they have state regulatory requirements to ensure that any excess capacity they make available for market sales must provide net revenues for their ratepayers, who pay the fixed costs for these resources. Some LSEs appear to interpret this regulatory requirement to mean that they must ensure that any market sales are clearly profitable during every interval or commitment cycle. Some LSEs appear to be more concerned about potential regulatory scrutiny of this profitability requirement than on any sales that may raise market prices. In such cases, LSEs may err on the side of offering any excess capacity at relatively high prices in order to essentially guarantee that these sales are significantly profitable under all scenarios.

Scarcity Pricing

DMM supports near-term scarcity pricing enhancements, but continues to recommend the ISO prioritize creation of an hour-ahead uncertainty product

The ISO proposes implementing near-term scarcity pricing enhancements that impact pricing during extreme conditions and suggests postponing more comprehensive scarcity pricing enhancements to a longer-term track. DMM supports the proposed near-term enhancements, but DMM continues to recommend that the ISO place a high priority on developing a new hour-ahead uncertainty product that would allow the real-time market to better reflect tightening real-time supply conditions and provide earlier price signals prior to a scarcity event.⁶ An uncertainty product with a time horizon longer than one interval would allow prices to rise gradually and reflect upcoming scarcity in more distant advisory intervals.

DMM believes the development of such a product should be a very high priority from the perspective of price formation, as well as from the perspective of overall market design. For example, this type of real-time uncertainty product could increase the likelihood that imbalance reserve up (IRU) capacity procured in the EDAM is available in the real-time market when needed. In addition, such a product

⁶ 2024 Annual Report on Market Issues and Performance, Department of Market Monitoring, August 2025, pp 27-28: <https://www.caiso.com/documents/2024-annual-report-on-market-issues-and-performance-aug-07-2025.pdf>

appears to be the only viable mechanism to reduce grid operators' reliance on load biasing to create the capacity needed to manage real-time uncertainty and flexibility. Thus, a real-time uncertainty product would address a variety of the most important market design issues that remain following EDAM implementation.

DMM continues to support in-market scarcity pricing during load shed events, but recommends that the ISO provide analysis of different implementation options

The ISO proposes a new mechanism to trigger in-market scarcity pricing during load shed events. The proposed in-market pricing mechanism would modify the market optimization so that the demand input continues to treat curtailed load as unserved demand in the market, ensuring that prices continue to reflect real-time scarcity and attract additional supply to serve the curtailed load. The ISO proposes implementing this mechanism either by adding the quantity of firm load shed back into the demand input or by switching to a standard weather forecast (instead of persistence forecast) during load shed events.

At a high level, DMM supports the proposed market design of modifying the demand input to account for curtailed firm load as unserved demand. However, it is unclear which implementation option is preferable without additional information regarding how the standard weather forecast may differ from the persistence forecast. Specifically, DMM is concerned that elements of demand captured by the persistence forecast could be missed by a standard weather forecast. For example, if actual load was consistently exceeding the real-time weather-based load forecast throughout the day, the persistence forecast might estimate load to be much higher leading up to the load shed event than a standard weather forecast. Using the weather-based forecast as a market input during load shed would therefore be an inaccurate correction for the amount of the load shed. DMM recommends that the ISO provide analysis or historical data quantifying the differences between these forecasting approaches across a range of peak days and peak hours.

If a standard weather forecast produces a materially different estimate of system load, DMM supports the option of adding verified firm load shed back to the persistence forecast. This option would hold all other inputs to the persistence forecast constant while only modifying the demand input. To inform the quantity of firm load shed added back to the forecast, DMM suggests that the ISO provide analysis or historical data quantifying the difference between operator instructions and verified load disconnection.

DMM supports in-market scarcity pricing in both RTPD and RTD markets

The ISO proposes to include the in-market scarcity pricing during load shedding events in both the 15-minute (RTPD) and 5-minute (RTD) markets. In previous comments, DMM indicated that applying this pricing mechanism only in RTD would reasonably reflect physical market conditions and actual scarcity.⁷ Additionally, prices would likely reflect power balance constraint (PBC) violations prior to a load shed event, meaning RTPD prices would not be entirely unaffected by tight supply and potential scarcity conditions.

While RTPD prices may already be impacted by tight supply conditions, DMM supports the ISO's proposal to implement scarcity pricing during load shed events in both RTPD and RTD. DMM recognizes

⁷ *Comments on Price Formation Enhancements Straw Proposal*, Department of Market Monitoring, September 19, 2025: <https://www.caiso.com/documents/comments-on-price-formation-enhancements-straw-proposal-sep-19-2025.pdf>

the potential for asymmetrical scarcity pricing between RTPD and RTD. For example, a BAA may be actively shedding load or anticipating shedding load in a given interval at the time of the RTPD market run, while load shedding conditions may be resolved by the time of the RTD market run. However, considering the expected frequency and duration of load shedding events, the potential for this type of scarcity pricing asymmetry is relatively limited. Incorporating scarcity pricing in RTPD may allow the market optimization to clear additional supply needed to alleviate scarce conditions prior to RTD. This is similar to the pricing asymmetry that can occur between RTPD and RTD for PBC violations, when PBC violations in RTPD can be resolved before RTD. Additionally, the expectation of potential scarcity pricing in RTPD can influence day-ahead prices on days expected to have tight system conditions.⁸ This can result in additional supply clearing in the day-ahead timeframe that may be otherwise unavailable in real-time. This additional supply cleared in the day-ahead market can prevent some scarcity events and increase real-time reliability on days with stressed system conditions.

DMM supports the operational and settlement safeguards proposed for in-market scarcity pricing, but continues to recommend additional analysis to determine the potential magnitude of these issues

The ISO recognizes that the proposed in-market pricing mechanism may create operational and settlement challenges associated with supply over-dispatch, management of area control error (ACE), and increases in real-time imbalance energy offset (RTIEO). To help mitigate these risks, the ISO proposes safeguards that would allow operators to suspend or reduce the pricing mechanism if necessary and monitor the impact of the mechanism on RTIEO.

DMM supports the operational and settlement safeguards proposed by the ISO. However, it remains unclear how significant the operational and settlement risks may be given the relative infrequency, duration, and magnitude of historical load shedding events. DMM continues to recommend that the ISO consult market operations regarding the likelihood of supply over-dispatch in order to better assess the potential reliability and settlement risks associated with this proposal.

DMM continues to recommend further discussion of the scarcity price “circuit breaker” concept

To mitigate financial risk to market participants, the ISO proposed a “circuit breaker” under which the scarcity pricing mechanism would be deactivated after four hours. DMM recognizes the potential risk of credit and default risk from prolonged exposure to extreme prices. However, load shed events are exceedingly rare, and the few recent instances have been short in duration. In the unlikely event that a load shed event were to exceed four hours, it may still be appropriate for market prices to remain at or above the market bid cap for the duration of the load shed event, rather than administratively removing the scarcity price signal. Conversely, because the circumstances under which the circuit breaker would be triggered are likely to be infrequent, there may be limited downside to including such a feature for the reasons described in the straw proposal. DMM recommends continued discussion on this issue and further consideration of why a four-hour timeframe would be appropriate if a scarcity pricing circuit breaker is implemented.

⁸ Virtual bids, day-ahead intertie bids, and other day-ahead bids will generally reflect 15-minute prices in expectation. Therefore, the expected value of scarcity pricing intervals in the 15-minute market will influence day-ahead bids and day-ahead prices on days when market participants expect scarcity pricing conditions may occur.

DMM supports using a single reserve slack penalty price when load is armed to meet reserves, but recommends further consideration of asymmetric price implications of an armed-reserve scarcity pricing mechanism

The ISO proposes an additional scarcity pricing mechanism intended to reflect the scarcity value of ancillary services (AS) in RTD when operators arm load. Under this approach, energy from previously awarded AS capacity could be economically dispatched based on the opportunity cost of reserve shortages being met through armed load. This opportunity cost would be represented through a single reserve slack penalty price on the Scarcity Reserve Demand Curve (SRDC). The ISO states that this approach would allow real-time prices to reflect the marginal cost of serving energy demand and reserve scarcity without requiring full AS re-procurement in RTD.

DMM supports the ISO's proposal to use a single-tier reserve slack penalty price for the armed-reserve scarcity pricing mechanism. A single-tier penalty price is consistent with DMM's previous recommendation that the ISO consider a single price to reduce implementation complexity and avoid unnecessary precision for a near-term scarcity pricing enhancement.⁹

While DMM supports the conceptual framework of pricing armed reserves as a scarcity pricing mechanism, DMM notes there are potential implications of a scarcity pricing design that is asymmetric across BAAs for both the EDAM and WEIM. Because the EDAM and WEIM do not procure or deploy ancillary services for BAAs outside of the ISO, this pricing mechanism would only impact prices in CAISO. This asymmetry across BAAs could increase real-time prices and day-ahead price expectations that result in higher prices in CAISO compared to other BAAs, which has potential implications for transfers in both the EDAM and the WEIM. DMM suggests that the ISO weigh the interim benefit of implementing this near-term scarcity pricing mechanism against the potential implications this asymmetric design may have in the EDAM and the WEIM.

⁹ *Comments on Price Formation Enhancements Straw Proposal*, Department of Market Monitoring, September 19, 2025: <https://www.caiso.com/documents/comments-on-price-formation-enhancements-straw-proposal-sep-19-2025.pdf>