California ISO | WESTERN ENERGY MARKETS

Memorandum

To: Western Energy Markets Governing Body

From: Eric Hildebrandt, Executive Director, Market Monitoring

Date: December 9, 2025

Re: **Comments on proposed changes to gas resource management**

This memorandum does not require WEM Governing Body action.

EXECUTIVE SUMMARY

This memo provides comments by the Department of Market Monitoring (DMM) on ISO management's proposed changes to gas resource management. Management's proposal results from a two-year initiative aimed to identify and enhance aspects of the California ISO's market design that may limit the ability for gas resources participating in the Western Energy Imbalance Market (WEIM) and the extended day-ahead market (EDAM) to accurately reflect their gas costs and availability. The proposal represents a package of proposed near-term enhancements designed to address concerns of regional market participants with natural gas-fired resources. This package includes:

- More flexible options for determining gas cost inputs used in energy bid mitigation and commitment cost bids that may better reflect different supply arrangements and market conditions
- Expanded options for recovery of gas costs incurred under exceptional circumstances that are not recovered by market revenues
- Modifications to day-ahead advisory market runs to improve fuel procurement forecasts within gas nomination timelines
- Additional options for managing gas system limitations through gas nomograms

DMM supports the proposed changes as incremental improvements that regional participants in the ISO markets have indicated will improve their ability to procure and manage their gas supply and generation resources. In practice, DMM believes the effectiveness of these measures will hinge largely on additional details that will need to be developed or clarified as these measures are implemented. DMM supports providing the ISO with this implementation flexibility, but recommends that the ISO be prepared to perform significant additional analysis of market and other data as it implements these measures.

COMMENTS

Background

Management's memo and the ISO's final proposal provide a detailed summary of the formulas and processes currently used to set and adjust commitment cost bid caps and default energy bids used in energy bid mitigation.[1] As summarized in management's memo, default multipliers are already applied to cost estimates to allow gas resources the flexibility to account for higher potential costs. The multipliers serve as a safe harbor because resources can use this headroom to account for cost variation without requesting a cost adjustment or demonstrating actual costs. Today, the default multipliers are 110 percent for default energy bids and 125 percent for commitment cost bids.

The *reference level change request process* allows resources to request that the ISO use a higher gas price for calculating commitment cost bid caps and default energy bids. Requested gas price increases are automatically approved if they are within the *reasonableness threshold*, which is normally set at 110 percent. Thus, the automated process allows commitment cost bid caps that include total headroom of more than 35 percent above gas price indexes.[2] The automated process allows default energy bids that include total headroom of more than 20 percent above gas price indexes.[3] Resources can request use of gas prices above the reasonableness threshold through the manual reference level change request process.

Historical experience indicates that the current level of headroom incorporated in commitment cost bid caps and default energy bids has covered almost all the variability between actual fuel costs and gas prices used to set cost based bid caps. We provide more discussion of this in the section of this memo on DMM's analysis of the frequency with which the reference level change request process has actually been utilized by entities in the CAISO and WEIM.

However, as explained in management's memo and the opinion of the Market Surveillance Committee (MSC), participating in EDAM may create additional challenges for gas procurement in regional markets outside of the CAISO area. These include (1) increased uncertainty about gas procurement requirements, (2) greater need to purchase gas after the close of the morning gas market, and (3) greater exposure to higher levels of gas price variability. As noted by the MSC, because of these changes, historical data may significantly understate gas purchasing challenges that will be faced by participants in the extended day-ahead market. These historical data include (1) gas

[1] *Gas Resource Management Final Proposal*, Section 3.1 (pp 7-10): https://stakeholdercenter.caiso.com/StakeholderInitiatives/Gas-resource-management-working-group

[2] The 125 percent multiplier applied to total commitment costs, plus 10 percent above gas price index from reference level change request, equals about 35 percent.

[3] The 110 percent multiplier applied to total energy costs, plus 10 percent above gas price index from reference level change request, equals about 20 percent.

price variability, (2) participants' purchase costs, and (3) the frequency of reference level change requests submitted by market participants.[4]

Use of reference level change requests

While DMM supports targeted improvements to gas prices used in setting commitment cost bid caps and default energy bids – especially in anticipation of EDAM – DMM believes it is important to consider how often participants have sought the use of the reference level change request process. To assess this issue, DMM reviewed reference level change request data for the last three years and provided these results in the stakeholder process.[5] These data indicate the reference level change request process has very rarely been used by participants within the ISO balancing area and in other WEIM balancing areas.

- Over the last three years, the frequency of reference level change request data in the CAISO balancing area has been extremely low (.01% to .49% of resource-days).
- Over the last three years, no reference level change requests have been made and approved for balancing areas outside of California.

Further review of reference level change request data by DMM indicated that since the inception of this process, it has only been used by resources in WEIM areas outside of California on just one day by one participant.[6]

DMM recognizes that data for areas outside the CAISO only encompass the real-time market, and that most unit commitment decisions and a large portion of generation in the WEIM is base scheduled by participants, rather than being dispatched by the market software based on bid prices. Regional participants bidding a large portion of their resources into EDAM will face greater uncertainty about the amount of generation that is scheduled, as well as the quantity and cost of gas needed to support scheduled generation.

DMM supports enhancements to provide greater flexibility to increase fuel prices used to set commitment cost bid cap and default energy bids when warranted by market and system conditions. While DMM appreciates that EDAM will create new gas procurement challenges and operating conditions for resources outside of California, we have not

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[4] *Opinion on Gas Resource Management*, Market Surveillance Committee, pp 9-10: https://www.caiso.com/documents/market-surveillance-committee-draft-opinion-gas-resource-management-dec-12-2025.pdf

[5] *Supplemental Comments on Gas Resource Management – Draft Final Proposal*, Department of Market Monitoring, October 15, 2025: https://www.caiso.com/documents/dmm-supplemental-comments-on-gas-resource-management-draft-final-proposal-oct-15-2025.pdf

[6] One WEIM participant had a manual request approved for its fleet of gas units for September 8, 2022—which was during the extreme heat wave that year—which resulted in record high load in the CAISO on September 6, 2022.

seen evidence that the current process is significantly flawed, or has resulted in any significant use of the reference level change request process.

In addition, DMM notes that it seems several of the key problems cited by participants with the reference level change request process could be addressed through relatively easy enhancements to the ISO or participants' software. These issues include (1) the complexity of the software system for submitting bids and requests (called SIBR); and (2) that the automated process requires that a separate request be submitted for each unit.[7]

DMM understands that most or all participants currently have software that allows bids and all other market inputs to be generated and submitted automatically for fleets of units. The ISO has committed to working with participants to implement software system enhancements that will minimize the burden on scheduling coordinators utilizing the process for submitting updated cost information. The ISO will partner with stakeholders to ensure proposed enhancements are defined and prioritized through existing ISO processes.[8]

DMM also continues to recommend extending the 8 a.m. deadline for reference level change requests for the real-time market. DMM realizes there must be some lag between when requests are made and when they can be implemented in the market. However, DMM has suggested that the ISO allow reasonableness thresholds, default energy bids and commitment cost bids to be updated on an ongoing basis in the real-time market. DMM understands that other regional transmission operators offer this type of flexibility, especially under unusual market conditions.

Customized fuel price volatility multipliers

Management proposes to allow customizable multipliers that will be applied to the gas price index used to calculate minimum load bid caps and default energy bids to account for the fact that some gas resources face higher gas price volatility and costs than others. Eligibility for a custom multiplier will be established by a resource demonstrating that its actual costs exceeded reference level calculations over the last year. Once eligibility is established, the ISO has committed to conducting an analysis of supporting data and documentation to establish the gas price multiplier. The proposed multiplier will cover systematic or typical volatility tied to a resource's specific circumstances and will apply going forward.

As previously noted, historical data comparing gas purchase costs to the default gas price indices could significantly understate gas purchasing challenges that will be faced by EDAM participants. DMM supports a data driven approach to establishing customized gas price multipliers, and believes the effectiveness of the proposed approach will hinge largely on additional details that will need to be developed or

[7] MSC *Opinion on Gas Resource Management*, p 7.

[8] In response to stakeholder requests, the ISO will make staff and a testing environment available to identify potential enhancements, *Gas Resource Management Final Proposal*, p 25.

clarified as these measures are implemented. DMM supports providing the ISO with this implementation flexibility, but recommends that the ISO be prepared to perform significant additional analysis of market and other data as it implements these measures.

DMM supports this added flexibility as a *supplement*—rather than a replacement—for the current reference level change request process. For example, multipliers should not be set at very high levels based on extreme but infrequent historical outcomes or future scenarios. We believe it is reasonable to set thresholds so that participants may need to utilize the reference level change request on a limited basis. The manual reference level change request process and after-the-fact cost recovery provisions are designed to address extreme but infrequent events.

In addition, DMM also supports providing the ISO with the discretion to proactively increase reasonableness thresholds on days when the ISO can reasonably anticipate a significant change in gas usage or prices, as discussed in the following section.

Increasing reasonableness thresholds based on system and market conditions

Management is also proposing to increase reasonableness thresholds in certain conditions when the market operator can reasonably anticipate a significant change in gas demand from one day to the next based on the ISO's two-day ahead (D+2) advisory market run. Specifically, the ISO will increase the reasonableness threshold for the day-ahead market when the ISO observes forecasting changes that indicate day-ahead market gas schedules will be greater than the D+2 advisory. Similarly, the ISO will increase the real-time reasonableness threshold when day-ahead energy schedules for gas resources increase significantly over D+2 advisory schedules.

DMM strongly supports providing the ISO with the flexibility to increase the reasonableness thresholds based on differences between the D+2 forecast of gas usage and subsequent updated forecasts of gas usage. Moreover, DMM suggests that this flexibility be expanded to include consideration of other system and market conditions beyond differences in gas usage forecasts. Other indicators of extreme gas and electric market conditions that warrant an increase in reasonableness thresholds could be developed, in the same manner that the ISO makes many out-of-market decisions based on such conditions.

Again, DMM believes the effectiveness of this approach will hinge largely on additional details that will need to be developed or clarified as these measures are implemented. The ISO's final proposal indicates the ISO will effectively delay activation of this functionality pending more comprehensive analysis sometime after extended day-ahead market go-live when new data becomes available. DMM supports this approach given the ISO's commitment to conduct such analysis based on data after implementation of the extended day-ahead market.

Expansion of after-the-fact cost recovery options

Currently, the ISO requires resources to submit a reference level change request by 8 a.m. before the day-ahead market to be eligible for after-the-fact cost recovery. Since physical supply disruptions can occur after the reference level change request deadline, the ISO is proposing to allow resources to be eligible for after-the-fact cost recovery if they can demonstrate with supporting documentation that a physical supply disruption occurred after the day-ahead bidding deadline on the fuel region actively indexed in the resource's reference levels, and provide documentation on the incurred fuel costs that were not covered in the market.

DMM supports the proposal to expand after-the-fact cost recovery for physical supply interruption circumstances that were not foreseeable in advance of the day-ahead market timeline. DMM also believes the ISO proposal includes reasonable documentation requirements and conditions that must be met for resources to qualify for after-the-fact cost recovery for physical disruptions.

Advisory reports to help determine gas procurement

The ISO is proposing to provide participants with more accurate advisory gas burn schedules in advance of fuel procurement timelines based on the ISO's two-day ahead (D+2) advisory market run. The ISO will make changes to the two-day ahead market run to improve outcomes for resource-level gas schedules, which will be provided to the scheduling coordinators for each resource. DMM supports the proposal to provide D+2 advisory schedules to market participants to better inform gas procurement. However, DMM notes that these advisory schedules will be subject to some error and should not be used as the sole determinant of gas procurement. DMM also recommends the ISO continue to evaluate the accuracy of the D+2 forecasts on an ongoing basis to determine which inputs provide the most accurate results.

In the stakeholder process, the ISO sought feedback on what to do when bids are not submitted in time for the two-day ahead (D+2) advisory market run. The proposal suggested different alternatives to be used at the discretion of operators. DMM suggested the ISO analyze historical data to determine if using a particular alternative results in more accurate gas burn forecasts on average, and if there are specific situations where one set of bids outperforms the other (e.g., when weather conditions are drastically different than the previous week).

Nomograms for gas burn limitations

The ISO proposes a process to allow participants in regions outside the CAISO balancing area to make use of a gas nomogram to impose gas limitations for specific groups of gas units in the market software. To establish a gas nomogram, participants must meet certain conditions that are based the ISO's previous experiences seeking FERC approval for gas nomograms. These conditions include:

- Establishing a relationship between the balancing area and the gas pipeline operator,

- Demonstrations from the balancing area and gas pipeline operator that a gas system limitation can impact electric system reliability,

- Determination by the gas pipeline operator, balancing area, and the ISO that a gas nomogram constraint is needed and is a reasonable approach, and
- Confirmation from the ISO that the requested procedure is consistent with existing operational procedure.

DMM supports the conditions and guidelines the ISO developed for interested market participants to follow if they want to pursue implementing a gas nomogram to limit gas usage based on available supply. DMM will monitor use of any gas nomograms for any indication of potential capacity withholding.

Market Surveillance Committee opinion

One of main concerns emphasized by the MSC involves how "increased scheduling of resources in the extended day-ahead market increases the potential for large amounts of gas-fired generation to be scheduled … to support exports that might not have been anticipated by the EDAM participant when they bought gas in the morning gas market." [emphasis added][9] The MSC notes that gas resources may be exposed to additional gas price volatility when scheduled to support EDAM exports in cases when the gas price used in setting commitment cost bid caps is lower than the resource's actual gas procurement costs. This risk could cause regional participants (which are not subject to must offer requirements) to avoid offering all available gas-fired capacity into EDAM.

To address this concern, the MSC encourages the ISO to place a high priority on implementing the dynamic market power mitigation approach for commitment cost bids that was part of the commitment cost and default energy bid enhancements initiative approved by the ISO Board of Governors in 2018. Management has indicated it will pursue implementation of this policy.

DMM and the MSC have supported providing greater bidding flexibility through automated mitigation of commitment cost bids since about 2009. However, due to the complexity of developing this feature, this has proven to be a difficult enhancement to design. As summarized in DMM's memo to the ISO Board in 2018 on this proposal, a variety of factors make dynamic mitigation of commitment costs significantly more difficult than mitigation of energy bids.[10] In view of this complexity, DMM has recommended that the ISO carefully design and test any approach for mitigating commitment costs before implementation.

Again, however, while DMM recognizes that EDAM may increase challenges associated with gas procurement that are facing regional participants, there is limited evidence that the current commitment cost bid caps have created significant issues in the WEIM. As noted in DMM's 2004 annual report, about 20 percent of startup capacity and only 2 percent of minimum load capacity for resources in the WEIM was bid in at or near the commitment cost

[9] MSC *Opinion on Gas Resource Management*, p 4.

[10] *Department of Market Monitoring Comments on CCDEBE* (Commitment Costs and Default Energy Bid Enhancements) *Proposal*, March 14, 2018: https://www.caiso.com/documents/decision_ccdebeproposal-department_marketmonitoringmemo-mar2018.pdf

bid caps (which include an adder of 125 percent above total estimated commitment costs).[11] And as previously noted, WEIM participants have used the reference level change request process to increase these bids on only one occasion. Consequently, DMM has recommended that the ISO carefully design and test any approach for mitigating commitment costs before implementation.

[11] *2025 Annual Report on Market Issues and Performance*, Department of Market Monitoring, 2025, p 156. https://www.caiso.com/documents/2024-annual-report-on-market-issues-and-performance-aug-07-2025.pdf

DMM also notes that the 125 percent adder is applied to the sum of all components of estimated start-up and minimum load bid costs. A significant portion of these estimated costs consists of adders for amortized major maintenance costs and non-fuel variable costs. Thus, the 125 percent adder on total commitment costs should cover gas costs significantly in excess of 125 percent of the gas cost component of commitment costs.