Gas Market Discussion

Scott Harvey
Member, California ISO/Western EIM Market Surveillance Committee

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Topics

- Gas Burn Forecasting
- Gas Price Indices and Gas Cost Variability
- Market Power Mitigation of Energy Offer Prices
- Commitment Cost Capping
- CAISO Proposed Design Changes

Gas Burn Forecasting

In today's WEIM, market participants need to forecast the gas burn needed to meet their expected load, contractual obligations, and flexiramp requirement in order to enable them to buy gas in the morning gas market.

- They may need to buy gas in later day-ahead cycles or in real-time to cover their forecast error, and potentially to cover supply offered in the Western EIM spot market that is dispatched to a higher than expected output.
- In EDAM, balancing area resources may be scheduled to operate to meet load in other EDAM balancing areas, and to provide RUC capacity.
  - As the CAISO has noted, individual balancing areas may have difficulty forecasting the level of gas purchases needed to support exports to other balancing areas scheduled in the EDAM market, or to support RUC schedules, prior to receiving their actual EDAM market schedules. [1]
  - These gas needs will likely need to be covered by purchases for the evening nomination cycle after EDAM schedules have been posted.

1. See Sylvie Spewak, California ISO, "Gas resource management straw proposal, August 12, 2025 slide 7.

Gas Burn Forecasting

CAISO development of balancing area level D+2 and perhaps D+3 gas forecasts for both energy market and RUC schedules has the potential to enable balancing areas to better assess the appropriate level of balancing area gas purchases in the morning gas market.

- However, the ability of balancing areas to use these forecasts to anticipate gas scheduling needs does not depend on the average accuracy of the forecasts over the month as analyzed by the CAISO for the CAISO balancing area. [1]
- A gas burn forecast that was off 5% on average could be off 25% on 5 days a month and within 2% on the other days.

1. See Sylvie Spewak, California ISO, “Gas resource management straw proposal, August 12, 2025 slide 16.

Gas Burn Forecasting

There is a potential for the CAISO to take steps to improve the accuracy of D+2 gas burn forecasts, and provide valuable information to balancing areas in projecting gas purchases on days on which the gas prices are stable and the D+2 reflects expected variations in load and renewable output across the footprint.

Such an improved forecast could provide useful input into balancing areas gas purchasing decisions.

Gas Burn Forecasting

The ability of balancing areas to use CAISO D+2 gas burn forecasts to anticipate their gas scheduling needs will depend on the accuracy of the CAISO forecast.

- An accurate D+2 forecast will be easier for the CAISO to achieve on days on which demand and supply are varying from day to day across the Western EIM and EDAM footprints but the gas pipeline system is largely unconstrained.
- Developing accurate D+2 gas burn forecasts will be more challenging on days with material gas pipeline constraints and volatile gas prices that will be difficult for the CAISO, or market participants, to accurately predict a day in advance. Looking back to gas prices on past days will not work.

Gas Burn Forecasting

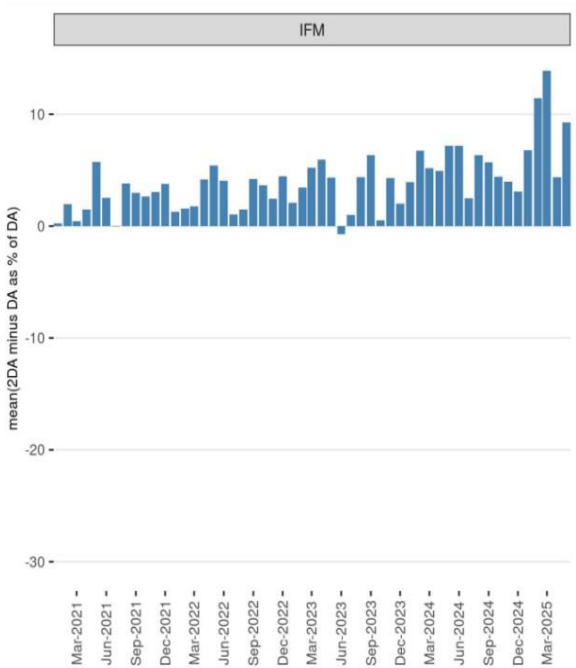
Both balancing areas and the CAISO may have difficulty forecasting D+2 gas prices on the kind of days when the afternoon gas market will have limited liquidity and higher prices.

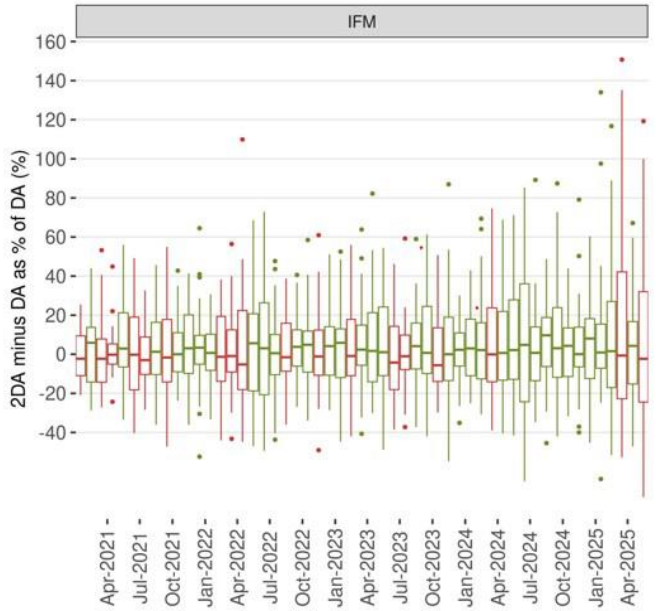
- The CAISO does not appear to have done any analysis of its ability to forecast gas prices on these kinds of days. [1]
- Either balancing areas will need to forecast what gas price the CAISO will use to determine their commitment cost offers, or the CAISO will need to apply mitigation in the D+2 run based on an expected DEB calculated by the CAISO. Because the CAISO caps commitment cost offers based on the DEB without regard to competition, the CAISO would need to forecast its DEB with reasonable accuracy for every balancing area on every day with gas market constraints.

1. DMM has expressed similar concerns, see Comments of California ISO Department of Market Monitoring, May 2, 2025 p. 2

Gas Burn Forecasting

CAISO analysis shows that historically, there appears to often have been considerable daily variation between day-ahead market gas requirements and a gas forecast based on D+2 schedules. The CAISO observes that the D+2 projected gas burn "was never less than 50% of the DA gas burn" [1] but 50% is a huge error.





Source: Sylvie Spewak, California ISO, "Gas resource management straw proposal, August 12, 2025 slide 41.

1. California ISO, "Gas Resource Management, Straw Proposal," July 25, 2025 p.52

Gas Burn Forecasting

The D+2 gas burn forecast errors that would likely be the most costly for balancing areas operators, would be errors on days with large differences between the default energy bid gas cost calculated by the CAISO and the cost of gas for the evening cycle.

- It would be informative to assess how accurate the D+2 gas forecast has been on days with small day to day changes in gas price prices, and how accurate it has been on days with material gas price volatility.
- I expect that Western EIM balancing areas will be able to assess gas market conditions and make judgments regarding the days on which the CAISO D+2 forecast is likely to be sufficiently accurate to be considered.

Gas Burn Forecasting

Another important element of gas burn forecasting is that it needs to be accurate at the balancing area level, not just at the overall EDAM footprint level.

- Hence, it would be informative to examine the accuracy of CAISO D+2 gas burn forecast relative to day-ahead gas burn requirements at the DLAP, and perhaps sub-LAP, level rather than just at the overall CAISO level.

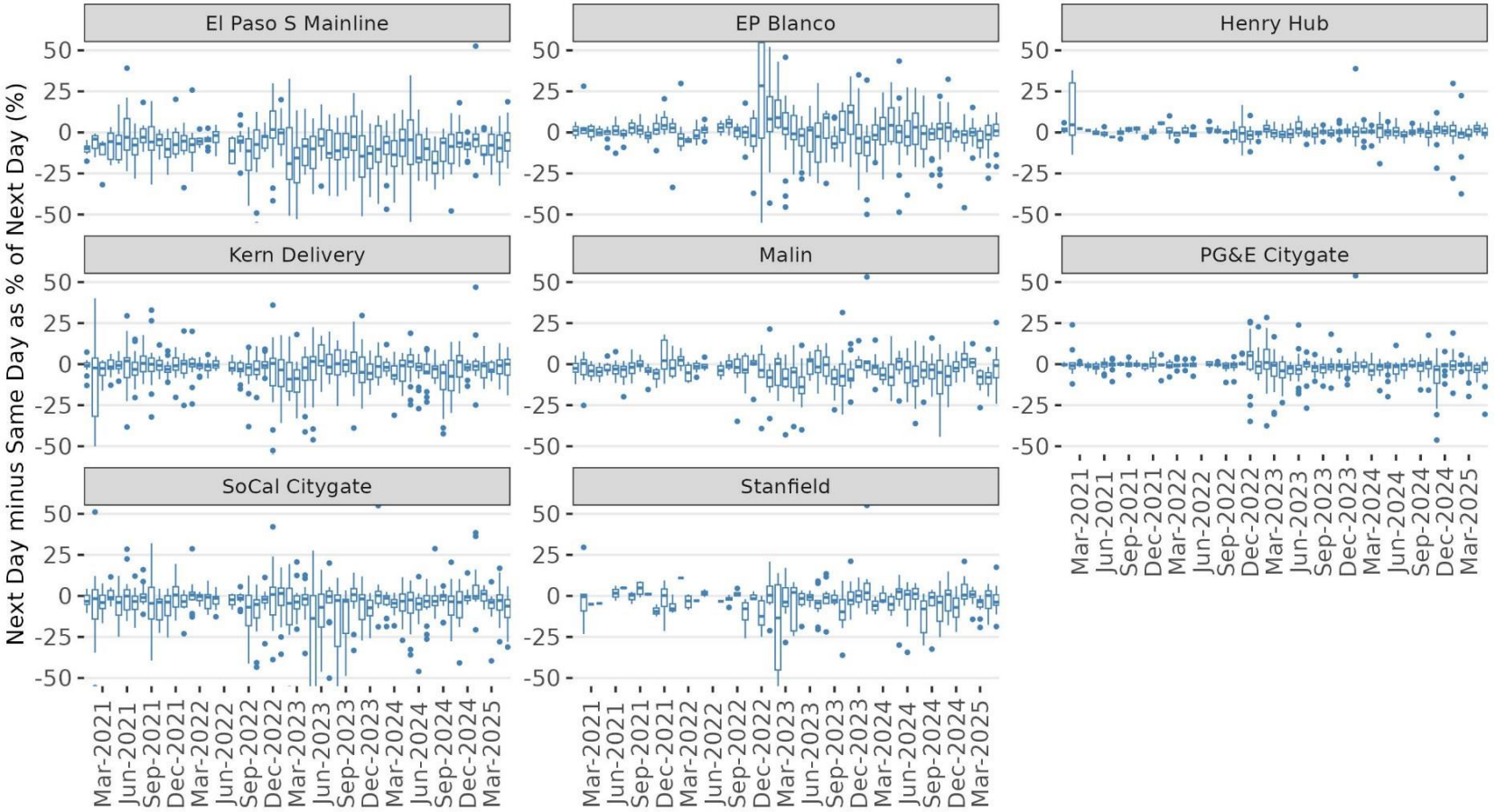
Gas Price Indexes

Another important consideration affecting the ability of EDAM participants to benefit from EDAM participation is their ability to accurately reflect their expected gas costs in their EDAM offer prices when their offers are capped by the CAISO's default energy bid.

- The CAISO has made substantial progress in improving the quality of the gas price estimates used to formulate the default energy bid.
- Nevertheless, basing the default energy bid on prices in morning gas trading, while suppliers will at times need to procure gas to cover their day-ahead market schedule in afternoon gas markets, can result in gas procurement costs that exceed the default energy bid, with a 25% threshold, on days with substantial gas price volatility.
- For suppliers lacking market power, comparisons of the monthly average gas price to the monthly average DEB are not meaningful, because the offers of competitive suppliers will be constrained by the market, as well as by the default energy bid.

Gas Price Indexes

This potential dispersion in gas costs relative to the gas price index can be seen in CAISO data. See Sylvie Spewak, California ISO, “Gas resource management straw proposal, August 12, 2025 slide 30.



Gas Price Indexes

The CAISO data show some historical day-ahead to intra-day gas price variability at WEIM trading hubs. This price variability between morning gas prices and evening gas prices may increase for EDAM participants if they need to buy more gas for the evening cycle or intra-day cycles than they do today.

- Increased gas purchases in the afternoon gas market is a likely outcome if EDAM results in increased shifting of the generation used to meet load among EDAM balancing areas, unless the impact of EDAM trading can be forecasted by the CAISO (in D+2 runs or some other way) and used to inform timely gas purchases.
- The CAISO price dispersion data is based on morning gas prices compared to intra-day gas prices. My expectation is that there would be less variability between the morning and afternoon gas markets, but the data we have does not allow us to assesse if there is a material difference in price volatility.
- The CAISO data is for a selection of liquid trading hubs. We need to keep in mind that we need to assess gas price variability, and how the gas price indexes, perform at every WEIM location, not just at the most liquid trading hubs.

Gas Price Indexes

Another consideration is that the generation of some WEIM and potential EDAM participants is located downstream from trading hubs with reported prices. This has the consequence that trading hub prices may not reflect the actual cost of gas for these WEIM and EDAM participants.

- A further consideration is that there is no gas storage available in proximity to many WEIM generation locations. Higher than expected day-ahead market schedules at these locations cannot be met by pulling gas from storage, resulting in more gas cost variability and potentially load being met by shifting to oil at a much higher cost. This also means that excess gas purchases will be more costly because they cannot be injected into storage for use the next day.

Nevertheless, absent market power mitigation, EDAM market participants should be able to manage their gas cost risk in covering their day-ahead market schedules with their offer prices.

Energy Offer Price Mitigation

The exception to EDAM market participants being able to manage their gas price risk with their offer prices are days in which their energy offer prices are subject to mitigation based on gas price estimates that do not reflect the actual cost of gas at their location, or do not reflect the cost of gas purchased for the evening cycle.

- Since resource energy price offers are currently only potentially mitigated when transmission congestion triggers the three pivotal supplier test, the intersection of inaccurate gas prices used to calculate default energy bids and transmission congestion triggering the three pivotal supplier test may not be very frequent.
- It would be informative to understand how often high variability in gas prices has been associated with import constrained balancing areas in WEIM.

Commitment Cost Capping

There is a much more serious problem with the mitigation of commitment costs in EDAM (and WEIM).

- Unlike other North American ISOs, the CAISO caps commitment cost offers based on a default energy bid calculated by the CAISO based on the CAISO's gas price estimate, without applying any competition or congestion based trigger.
- Hence commitment cost offers will be mitigated on every single day on which gas price variability exceeds the automatic threshold, on every single day on which the default energy bid is inaccurate for the afternoon gas market, as well as at locations without a reported price, and on every single day on which the D+2 gas consumption forecast is off.

Commitment Cost Capping

The CAISO is making efforts to reduce the potential for inaccurate or non-existent gas cost indexes to result in the CAISO committing generation based on understated commitment costs. There are challenges with the approaches described in the straw proposal.

- It is not clear how the CAISO will be able to set the "N" parameter on a basis that will be associated ex ante with understated gas price indices.
  - Looking back at historical averages will provide limited insight into conditions on a particular day.
  - A general relaxation of commitment cost offer mitigation by using a higher "N" factor, not only allows resource operators and balancing areas lacking market power to more often be able to bid their actual commitment costs, it can also allow suppliers possessing market power to offer supply at prices that enable the exercise of some degree of locational market power that might be realized in inflated BCR payments.
  - It would be preferable to provide the greatest increased offer price flexibility to market participants lacking material market power.

Commitment Cost Capping

Allowing make whole payments for gas costs in excess of the gas price used to clear the market will result in uplift costs that need to be allocated and recovered from market participants.

- The CAISO unit commitment cannot be least cost if it is not based on actual costs.
- The inefficiency from using understated commitment costs will be small if the uplift costs are rare and small, but this might not be the case.
- Allowing resources to recover costs capped at their unmitigated offer when their offer is too low, while capping their recovery at actual costs when their offer is high, does not make the resource owner whole.
- In addition, my understanding is that resource uplift costs would be allocated proportionately to balancing area load and exports. If balancing area load is met with gas purchases in the morning market and gas cost losses are incurred on gas purchased to support exports cleared in EDAM, this approach will allocate most of the unrecovered gas cost of EDAM exports to balancing area load (and bilateral exports).

Commitment Cost Capping

These challenges raise the question of whether the CAISO should maintain a policy that commitment costs will be mitigated without regard to the potential for the exercise of market power.

- I reviewed the CAISO's prior rationales for continued capping of market participant commitment cost offers without regard to the potential for the exercise of material market power in a May 2025 presentation . [1]
- The CAISO states that "one stakeholder supports moving in this direction; however, most working group participants did not highlight this functionality as an immediate priority."
- My discussions with a number of WEIM stakeholders indicate that there are a number of EDAM participants that favor basing commitment cost mitigation on the potential for the exercise of market power.

1.Scott Harvey, "Market Power Mitigation Issues," Market Surveillance Committee Meeting, May 2, 2025.

Commitment Cost Capping

The CAISO states in the straw proposal that "The CAISO also understands that any resultant design may require significant technology investment to implement."[1]

- The CAISO should explain the nature of the need for significant technology investment, and what specific elements of the CCDEBE design create those needs. This would allow stakeholders to assess whether minor changes in the design or implementation would eliminate those needs.
- If there are significant implementation challenges with the final CCDEBE design, perhaps we should fall back to the design I proposed in July 2017. This design would simply test whether a resource provided counterflow on an active constraint, i.e. a constraint in the constraint set. [2]

1. California ISO, "Gas Resource Management, Straw Proposal," July 25, 2025, p. 38.
2. Scott Harvey, "EIIM Commitment Cost Issues," California ISO Market Surveillance Committee Meeting, July 10, 2017, slides 12-19.

CAISO Proposed Design Changes

The CAISO current design of capping commitment costs at a value calculated by the CAISO without regard to the potential for market power creates a number of challenges to EDAM participation. The proposed CAISO approaches to mitigating these adverse impacts appear to have a number of limitations.

- Is the CAISO going to be able to develop accurate D+2 schedule forecasts not just for normal days, but for the kind of days with high cost evening gas cycles?
- Absent dynamic market power mitigation, how will the CAISO set an “N” factor that allows EDAM participants to recover their gas costs in the market, without enabling the exercise of locational market power?
- Clearing the day-ahead market based on CAISO commitment cost caps, then allowing market participant to recover up to their actual commitment costs, could create inefficiencies and unpredictable costs for all market participants.
- The capping of cost recovery at the lower of offer price or after the fact cost, ensures that balancing areas lacking perfect foresight will have unrecovered costs during periods of high gas price variability.
- Recovery of actual gas costs largely from BAA loads, when the commitment costs were incurred to support EDAM exports, does not resolve the underlying cost shift problem.
- Commitment cost caps that are applied when there is no transmission congestion and no potential for the exercise of locational market power also hinder the ability of WEIM and EDAM participants with gas turbines to manage resource starts to preserve their availability over the summer season.