# Market Power Mitigation Issues

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Market Surveillance Committee Meeting

January 16, 2026

# Topics

- Existence of Market Power
- Conduct and Impact Tests

# Market Power

The August 22, 2025 straw proposal asserts that:

> "CAISO demonstrated in its counterfactual analysis that the CAISO BAA is not always competitive." [1]

In my view, the CAISO counterfactual analysis does not assess the competitiveness of the CAISO market, it simply shows that some ways of applying a three pivotal test would result in suppliers in the CAISO and surrounding regions failing the three pivotal supplier test.

- I am not aware of any analysis identifying non-competitive outcomes in the California ISO market in recent years.
- In 2014, the CAISO department of market monitoring concluded that "In the case of the ISO, years of experience have confirmed that the total supply within the ISO system available when import congestion does occur on interties is generally highly competitive." [2] I am not aware of analysis of what has changed since 2014 to make the CAISO less competitive today than it was in 2014.

1. California ISO, "Price Formation Enhancements, BAA-Level MPM and Scarcity Pricing Straw Proposal," August 22, 2025, p. 36
2. California ISO, Department of Market Monitoring, Assessment of Potential Market Power in Energy Imbalance Market," June 30, 2014, p.4..

# Market Power

Before considering such a change in mitigation design that would apply some type of system market power test to the CAISO and adjacent balancing areas, the CAISO should assess the need for such a change, identifying days on which significant unmitigated economic withholding occurred and assessing the impact on prices.

- Such a demonstration requires not only showing that a material amount of supply that was not scheduled to provide reserves was offered at prices materially above the default energy bid, but also showing that there is little question on those days that default energy bids accurately reflected costs, and that these resources would have been economically dispatched to meet load.
- A mere showing that some battery, pondage hydro, or gas fired generation was offered at a price in excess of the default energy bid calculated by the CAISO does show that there was any actual or potential exercise of market power. It has to be shown that these default energy bids were reasonably accurate and that the offer prices materially in excess of the DEB changed the dispatch and materially raised market prices.

# Market Power

If there is a problem with the exercise of system market power, rather than with the measurement of costs, counterfactual simulations should find examples of the exercise of system market power on days when the gas system is not highly constrained.

- If the only days on which it is asserted there is evidence of prices inflated by the exercise of system power are days with a highly constrained gas supply system, it is likely that the apparent market power is simply a result of understated gas prices used to calculated default energy bids.
- In discussing the difference between simulated prices based on offer prices and the lower of offer prices or default energy bids based on 2018 data, it was pointed out in 2019 that

  > "The 20 hours with the highest differences in clearing prices were all hours with high SOCAL citygate gas prices (there was only 1 hour among these 20 in which the SOCAL citygate gas price was less than $13 and it exceeded $8.50 on that day. Hence, these were all days on which the SOCAL Gas system was expected to be constrained, which would introduce uncertainty into the cost of buying gas in post IFM scheduling cycles." [1]

1. Scott Harvey, "System Market Power Discussion," Folsom California, California ISO Market Surveillance Committee, August 19, 2019 p. 34. See also pages 35-45

# Market Power

Counterfactual simulations based on the lower of the actual offer or the default energy bid compared to the actual offer will inherently tend to find a price difference on days with volatile gas prices.

- If actual offers are lower than the default energy bid part of the time on days with volatile gas prices, there is no impact on the comparison because the default energy bid is replaced with the actual offer.
- If actual offers are higher than the default energy bid part of the time on days with volatile gas prices, that is asserted to be evidence of the exercise of market power.

# Market Power

Counterfactual simulations should take account of the application of local market power mitigation.[1]

- If local market power is exercised and not mitigated, that would reduce supply within potentially constrained regions, cause imports to rise and constraints to bind, which will tend to increase prices outside the constrained region.
- A finding that prices would be higher without local market power mitigation is not evidence of the exercise of system market power.

Counterfactual simulations based on day-ahead market data require assumptions about cleared load vs the load forecast, virtual supply and price capped load bids that shift supply into real-time, RUC commitments which increase real-time supply, and price expectations based on real-time load conformance.

- These assumptions need to be spelled out and reasonably accurate.

If counterfactual simulations yield prices higher than actual prices, the simulation model needs to account in some manner for the increase in the level of import offers that would have occurred if prices were expected to be higher than they actually were.

1. Scott Harvey, "System Market Power Discussion," Folsom California, California ISO Market Surveillance Committee, August 19, 2019 pp. 46-52.

# Market Power

Real-time price/market power simulations need to account for the impact of increased dispatch of batteries, pondage hydro and other energy limited resource in the counter-factual dispatch on the ability of the resources' to meet load and cover day-ahead market schedules over the remainder of the day.

- It is not evidence of the exercise of market power that prices could have been reduced in some hours by prematurely dispatching energy limited resources and risking load shedding in subsequent hours.
- This is going to become a more and more important issue as the CAISO, Western EIM and WECC resource mix evolves.

# Market Power

Real-time simulations need to account for the impact of day-ahead market schedules.

- Entities that raise the real-time offers on output sold in the day-ahead market would lose money buying that supply back at real-time prices.
- One can tell a story about a large net seller in the day-ahead market having an incentive to keep the real-time price high in order to avoid buyers shifting purchases into real-time at a lower price.
  - This story only makes sense for market participants that are actually consistently material net sellers in the day-ahead market.
  - This is another reason that it is important to account for load serving obligations in analyzing the potential for the exercise of market power in real-time.

# Market Power

Some stakeholders suggest that testing the CAISO for market power would only trigger mitigation when there is a potential for the exercise of market power.

I do not agree with that view. This is only the case if the market power test is accurate in accounting for load serving obligations and if default energy bids accurately reflect actual costs.

- The proposed approach of testing the competitiveness of the CAISO as part of a broader region in which the load serving obligations of large utilities will be completely or largely ignored, probably guarantees the triggering of mitigation in many hours when there is no potential for the exercise of market power.
- In my view, the change in the way the CAISO is tested for market power should only be implemented after the CAISO has shown its design can accurately test the potential for the exercise of system market power within the Western EIM, including accounting for the load serving obligations of utilities and avoiding widespread triggering of mitigation unrelated to the potential for the exercise of market power.

# Market Power

My understanding is that it is proposed that the pivotal supplier test would be applied to constrained down regions as well as constrained up regions. [1]

- I am not aware of any showing that there has been any material exercise of market power in constrained down regions within either the CAISO or the western EIM.
- We should not be applying mitigation to distort the bid stack in constrained down regions without demonstration of a need for expanded market power mitigation arising from the exercise of market power.

1. See California ISO, "Price Formation Enhancements, BAA-Level MPM and Scarcity Pricing Straw Proposal," August 22, 2025, pp. 37, 39.

# Conduct and Impact Test

I am going to shift gears and review some of the discussion of the conduct and impact test.

- I am not doing this to advocate an immediate switch to a conduct and impact test.
- Since the test is being discussed, I want to try to give stakeholders an accurate understanding of the test and its consequences.
- However, I have some reasons for thinking that CAISO might need to shift to a conduct and impact test in the long-run so it is a good time to explain it.

# Conduct and Impact Test

The CAISO states in the August 22, 2025 straw proposal that:

> "CAISO argued that the existing competitive LMP framework already considers "impact" without the added complexity and potential permissiveness of a separate test." [1]

The CAISO does not provide an explanation of the reason for this view and it appears to me to be mistaken.

- The only impact of the "competitive LMP" design is to place a floor on mitigation equal to the clearing price outside the constrained area.
- Under the CAISO mitigation design a battery with a default energy bid above the "competitive LMP" would have its offers reduced to its default energy bid if the generation within the constrained region failed the three pivotal supplier test.
- This would be the case even if the battery offer price had no impact on the clearing price within the constrained area because the battery's capacity was small relative to the amount of high cost generation setting price.
- With a conduct and impact test, a small limited energy resource whose output was so small it would have no impact on the clearing price within the constrained region would not have its offer price reduced to its default energy bid.

1. See California ISO, "Price Formation Enhancements, BAA-Level MPM and Scarcity Pricing Straw Proposal," August 22, 2025, p. 36.

# Conduct and Impact Test

A simple example illustrates how the impact test in a conduct and impact design differs from the CAISO competitive LMP.

The example assumes:

- The clearing price outside the constrained area, “the competitive LMP” is $40.
- The clearing price inside the constrained area in the unmitigated market power pass is $120, set by gas fired generation with a default energy bid and offer price of $120.
- 100 MW of gas fired generation offered at $120 is dispatched to meet load within the constrained area in the market power pass.
- A 25MW battery offers its supply at $150, its default energy bid is $80.

# Conduct and Impact Test

Under the CAISO “competitive LMP” the offer of the 25MW battery would be mitigated to $80 and dispatched, even though the mitigated dispatch had no impact on the clearing price within the constrained region.

- This would be the case even if depleting the battery would result in demand response with an offer of $500 being dispatched to meet load and setting price in subsequent hours.
- With a conduct and impact test design, the offer of the battery would not be mitigated because the clearing price within the constrained region would be the same in the mitigated and unmitigated pass.
- The outcome of a conduct and impact test can be less impacted by miscalculated default energy bids for resources with energy limits or gas fired resources located away from reported liquid gas trading hubs than the current CAISO design.

# Conduct and Impact Test

Another set of benefits of a conduct and impact test design is that unlike a pivotal supplier test it can accurately account for the impact of high cost fringe suppliers or constrained down fringe suppliers in assessing the potential for the exercise of market power.

- The MSC noted these weaknesses of the three pivotal supplier test in our 2013 report and these weaknesses have been noted since then in discussions of system market power. [1]
- The Department of Market Monitoring in its September 19, 2025 comments expressed concern with not applying mitigation to non-pivotal suppliers based on an example in which most of the fringe supply is high cost. [2]
- If overstated competition from high cost fringe supply is a material concern with the application of a three pivotal supplier test, the CAISO should consider a shift to a conduct and impact test rather than maintaining features of the three pivotal supplier test that tend to result in mitigating everyone, all the time, without regard to the potential for the exercise of market power.

1. James Bushnell, Scott Harvey, Benjamin Hobbs, and Shmuel Oren, "Report on the Appropriateness of the Three Pivotal Supplier Test and Alternative Competitive Screens," June 27, 2013. See also Scott Harvey, "System Market Power Discussion," Folsom California August 19, 2019 pp. 2-5; Scott Harvey, "System Market Power Discussion," Folsom, California, October 11, 2019 pp. 8-11.
2. California ISO, Department of Market Monitoring, Comments On Price Formation Enhancements Straw Proposal, September 19, 2025, p. 9.

# Conduct and Impact Test

The MSC's June 27, 2013 Report observed: [1]

> "Three pivotal supplier tests can be overly conservative for at least two reasons. First, if all suppliers in a market have similar costs of providing counterflow on a given constraint, a three pivotal supplier test would be extremely stringent. This because it suggests a potential for the exercise of market power even in situations in which the fringe has enough capacity to completely replace the output of the two largest suppliers and most of the output of the third largest suppliers. In other words, the underlying residual demand curve is in fact quite elastic or price responsive. Hence suppliers will only pass a three pivotal supplier test when there is an extremely large amount of surplus supply."

1. James Bushnell, Scott Harvey, Benjamin Hobbs, and Shmuel Oren, "Report on the Appropriateness of the Three Pivotal Supplier Test and Alternative Competitive Screens," June 27, 2013. p.16.

# Conduct and Impact Test

The MSC's June 27, 2013 Report also observed that the three pivotal supplier test was not necessarily conservative in practice because of a number of flaws: [1]

> "First, in practice, all suppliers generally do not have the same costs of providing counterflow on a given constraint and no workable method exists to accurately account for these cost differences in applying pivotal supplier tests…Second, because pivotal supplier tests are applied to individual constraints, there is a potential for competition to be less effective than suggested by the result of a pivotal supplier test because some of the counterflow potentially available from fringe suppliers to reduce congestion on a particular constraint cannot be dispatched because the output of the fringe is limited by another transmission constraint. Third, although it might be preferable from a theoretical standpoint to apply a single or two pivotal supplier test together with another test that evaluates the potential for the joint exercise of market power, it is not workable to apply multiple tests within the timeframes of the day-ahead market or the real-time dispatch."

1. James Bushnell, Scott Harvey, Benjamin Hobbs, and Shmuel Oren, "Report on the Appropriateness of the Three Pivotal Supplier Test and Alternative Competitive Screens," June 27, 2013. pp.16-17.

# Conduct and Impact Test

The CAISO believes that "many stakeholders" feared a conduct and impact test "would allow suppliers to exercise market power up to an arbitrary threshold." [1]

- The basis for this belief is not explained. The current design allows suppliers to offer their supply at 10% above the calculated reference prices without risking having their offer price mitigated. A conduct and impact test could be based on the same, or lower, threshold.
- The NYISO threshold is set at 2% of the prior year price, times the proportion of hours the region was constrained. [2]
- A different formula for testing impact could be selected.

1. See California ISO, "Price Formation Enhancements, BAA-Level MPM and Scarcity Pricing Straw Proposal," August 22, 2025, p. 36.

2. See Scott Harvey, Offer Price Mitigation in the Western EIM, CAISO/Western EIM market surveillance committee meeting, August 3, 2018

# Conduct and Impact Test

A conduct and impact test would not necessarily eliminate all inappropriate mitigation of small energy limited resources.

- Suppose in the example above that the gas fired generation offered at $120/MW had a default energy bid of $100/MW.
- The price would then be $100/MW in the mitigated pass, and $120 in the unmitigated pass.
- If the conduct and impact threshold were $10/MW, all generation within the constrained area that failed the conduct test would fail the impact test.
- The battery would be dispatched before the gas fired generation based on its default energy bid, even though the dispatch of the battery would have no effect on the clearing price in that hour. In effect, the battery would be collateral damage from the high offer prices of the gas fired generation.

# Conduct and Impact Test

A conduct and impact test would not necessarily eliminate all inappropriate mitigation of gas fired generation due to reference prices calculated using understated gas costs.

- If the gas cost used to calculate default energy bids materially understates the gas price throughout a constrained the region, gas fired generators throughout the region could fail the conduct and impact test and be subject to mitigation based on the understated gas price.
- However, if the ISO only misestimates the gas price for one or two gas fired generators at particular locations within a larger constrained region, the understated reference prices would likely not materially impact the overall clearing price. If so, the one or two gas fired generators with understated reference prices would not necessarily be mitigated and hence not required to operate at a loss.

# Conduct and Impact Test

A conduct and impact based market power test design offers the CAISO the potential to shift in the long run to a more accurate mitigation design for resources with short-term energy limits.

- Suppose the CAISO extended the STUC look-ahead to 10 hours and used STUC to apply mitigation to storage resources. The STUC run at noon would look-out over the evening net load peak to 22:00.
- Even if storage resources had a zero default energy bid, an impact test would not trigger mitigation in the afternoon hours if the energy in storage would be needed to meet load over the evening peak because none of the energy in storage would be dispatched in the afternoon in the impact test dispatch.
- The IESO currently applies mitigation based on a conduct and impact test in its ERUC tool, which looks out at least to the end of the day in one hour increments.