

Comments on July 15, 2019 System Market Power Working Group Meeting

Department of Market Monitoring

August 5, 2019

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the CAISO initial July 15 working group meeting on system market power.¹ DMM's comments also address some of the material and comments provided by CAISO in its presentation on system market power at the July 25 Board meeting.²

Background

Most of the analysis and discussion by the CAISO in this initiative and July 25 Board meeting has been retrospective and largely focused on 2018 data. Thus, DMM reiterates that its recommendations about the potential for system market power have been based on concern over future trends, which suggest the potential for system market power is likely to increase significantly in the next few years. At the July 15 workshop, for instance, DMM identified and discussed a number of market conditions and trends that are likely to increase the potential for system market power.³ These include:

- Retirement of gas capacity.⁴
- Increasing portion of resource adequacy requirements being met by solar/wind vs. gas-fired generation. The actual energy from these resources during the evening ramping hours is much lower than the RA rating of these resources.⁵
- Fewer energy tolling contracts between LSEs and gas units within CAISO.
- Increasing portion of resource adequacy requirements met by imports not backed by energy contracts or physical resources. These imports can avoid being called upon by simply bidding at high prices in the day-ahead market.
- Tightening regional supply conditions.

¹ <http://www.caiso.com/Documents/Presentation-SystemLevelMarketPowerWorkingGroup-Jul15-2019.pdf>

² *Briefing on system market power assessment*, Brad Cooper, Board of Governors Meeting General Session July 24, 2019. <http://www.caiso.com/Documents/Briefing-SystemMarketPowerAssessment-Presentation-Jul2019.pdf>

³ *System market power trends and issues*, Department of Market Monitoring, July 15, 2019, slide 5. <http://www.caiso.com/Documents/DMMPresentation-System-LevelMarketPowerWorkingGroup-Jul15-2019.pdf>

⁴ *System market power trends and issues*, Department of Market Monitoring, July 15, 2019, slide 5.

⁵ *System market power trends and issues*, Department of Market Monitoring, July 15, 2019, slide 8.

- An increasing portion of load being served by Community Choice Aggregators (CCAs), which is resulting in a more fragmented longer term bilateral supply and procurement process than previously done by major IOUs under CPUC guidance and jurisdiction.
- Use of a 1-in-2 year load forecast to set system RA requirement.
- In many years, the availability of hydro resources may be well below their RA capacity ratings and the energy from these resources may be limited.
- Although demand response is being relied upon to meet about 1,700 MW of peak summer resource adequacy requirement, less than 1,000 MW of demand response was available on average for dispatch during evening ramping hours (with most of this coming from Reliability Demand Response that must be offered at prices at or near the bid cap).⁶

The CAISO's comments in the CPUC's Integrated Resource Planning Proceeding indicate that ISO planners also have significant concerns about many of these same issues, and that the supply/demand balance in the CAISO system may tighten to the point where system reliability is in jeopardy as soon as summer 2021. As summarized in a recent filing at the CPUC, the CAISO's assessment of supply/demand conditions over the next few years is even more dire than that of the CPUC:

With these comments, the CAISO submits its own independent analysis demonstrating a strong potential for insufficient resources in the hours immediately after the gross peak hour, when loads remain high but solar production rapidly decreases. The CAISO's analysis shows a potential gap of up to 2,000 MW beginning in summer of 2021 and increasing to 2,500 MW in 2022. Based on its analysis and operational experience, the CAISO urges the Commission to focus immediately on developing a comprehensive plan for addressing near-term reliability needs through 2022. This plan should prioritize procurement of existing and new resources to be online as soon as possible and, as a backstop, facilitate extending the State Water Resource Control Board's (Water Board) once-through cooling (OTC) regulations for gas-fired resources that are needed to maintain near-term reliability.⁷

The CAISO's comments in the CPUC's IRP proceeding go on to describe several of the same trends and potential future developments which DMM has cited as reasons for DMM's concerns about future market power.

CAISO's independent analysis shows a potential shortfall in resource adequacy-backed energy in the hours following the system gross peak. Currently, California relies on voluntary imports to supplement resource adequacy energy and support renewable energy integration. The CAISO is concerned that over time imports without resource adequacy contracts will decrease because as other balancing authorities in the West address growing

⁶ *System market power trends and issues*, Department of Market Monitoring, July 15, 2019, slides 9 and 10.

⁷ *Comments of the California Independent System Operator*, Rulemaking 16-02-007, July 22, 2019, p.4.
<http://www.aiso.com/Documents/Jul22-2019-Comments-PotentialReliabilityIssues-R16-02-007.pdf>

baseload retirements, climate change impacts, and other local pressures or preferences. This is especially true for imports backed by hydroelectric generation, which native balancing authorities may be more likely to rely on in the future due to their relatively low cost and clean energy profile. The Commission should plan for long-term reduced resource adequacy imports accordingly by considering system energy needs across all hours of the year and ensuring that the resource adequacy program procures accordingly. This requires specific improvements to the Commission's resource adequacy program and IRP process to more closely integrate planning and procurement efforts.⁸

The ISO's comments and analysis in the CPUC proceedings emphasize the threat to reliability posed by these trends. However, as illustrated in the following section of these comments, for each hour tight supply/demand conditions may pose a threat to reliability due to a *shortage* of supply, there are many more hours in which tight supply/demand conditions create the potential for *market power* when there is no actual shortage of supply to meet demand. Thus, if the ISO is concerned about reliability in the next few years due to tight supply/demand conditions under peak load conditions, the ISO should also be very concerned about the potential for system market power in many other hours.

Market Power vs Scarcity

The discussion at the workshop and ISO presentation to the Board included numerous references to "scarcity" and "scarce supply conditions." In many cases, it appears that the ISO and some stakeholders use these terms to refer to hours when the supply margin is relatively low, but the amount of supply is sufficient to actually meet demand.⁹ DMM believes that the most commonly accepted definition of scarcity in the electric industry is when *supply is insufficient to meet demand* (including reserves), and encourages the ISO to adopt this definition for clarity.

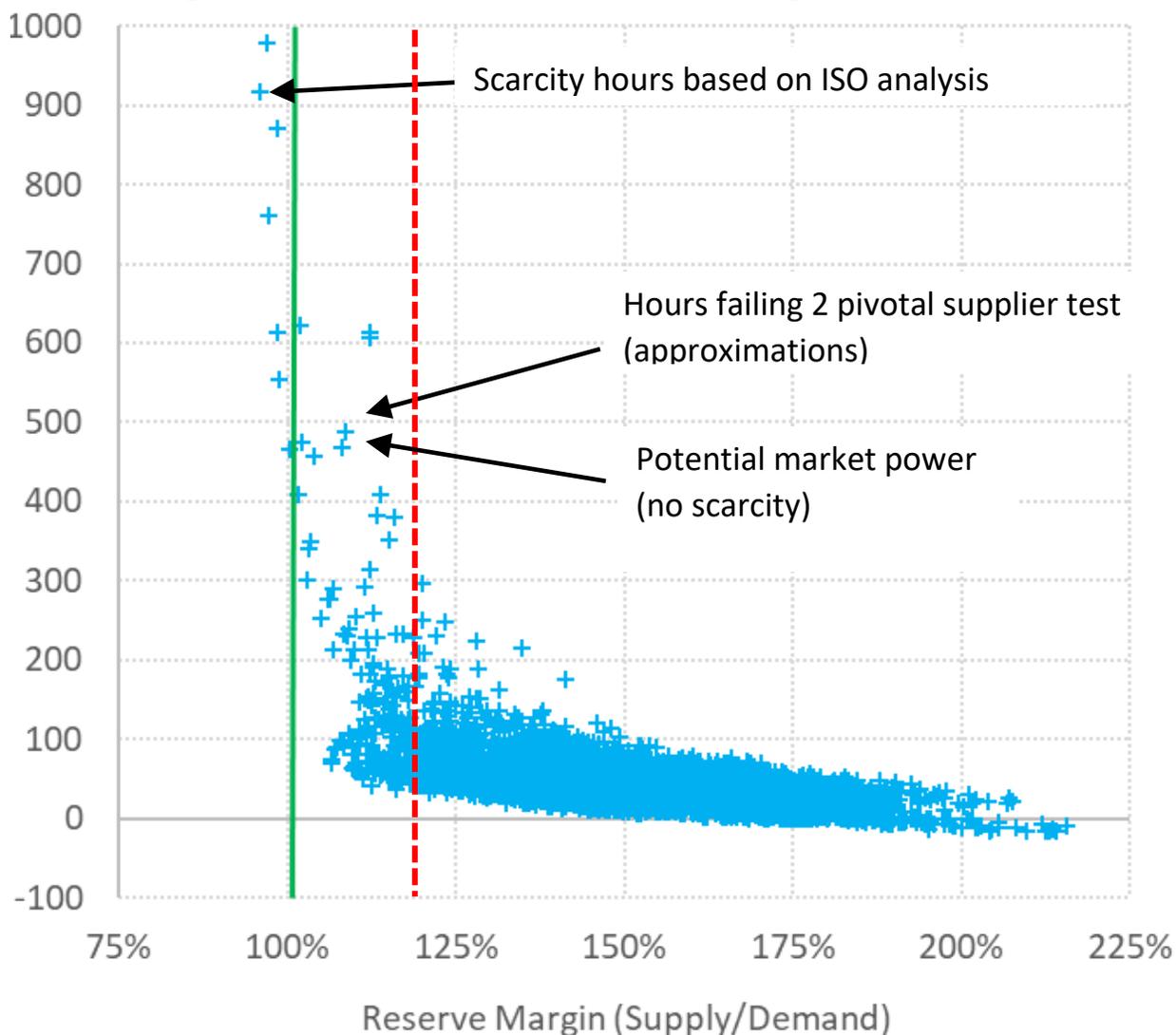
The significant difference between the frequency of hours of *shortage* and hours of potential *market power* is illustrated in the ISO's slide showing day-ahead prices compared to a calculation of the "reserve margin" by the ISO.¹⁰ Figure 1 shows this slide, with the six hours of scarcity (i.e. supply less than 100% of demand) shown in the ISO's analysis highlighted. However, assume that in the hours depicted in Figure 1, the top two suppliers controlled about 20% of the supply (i.e. which is typical in the ISO system under relatively high loads).

⁸ *Comments of the California Independent System Operator, Rulemaking 16-02-007, July 22, 2019, pp.14-15.*

⁹ e.g. an hour in which there were 31,000 MW of supply and 30,000 MW of demand (including reserves).

¹⁰ Based on the ISO's presentation at the workshop and Board meeting, DMM is still not clear how this "reserve margin" is calculated and encourages the ISO to provide a written description of this (e.g. how is virtual supply and demand and imports/exports treated, etc?)

Figure 1. CAISO Calculation of Reserve Margin vs. Prices¹¹

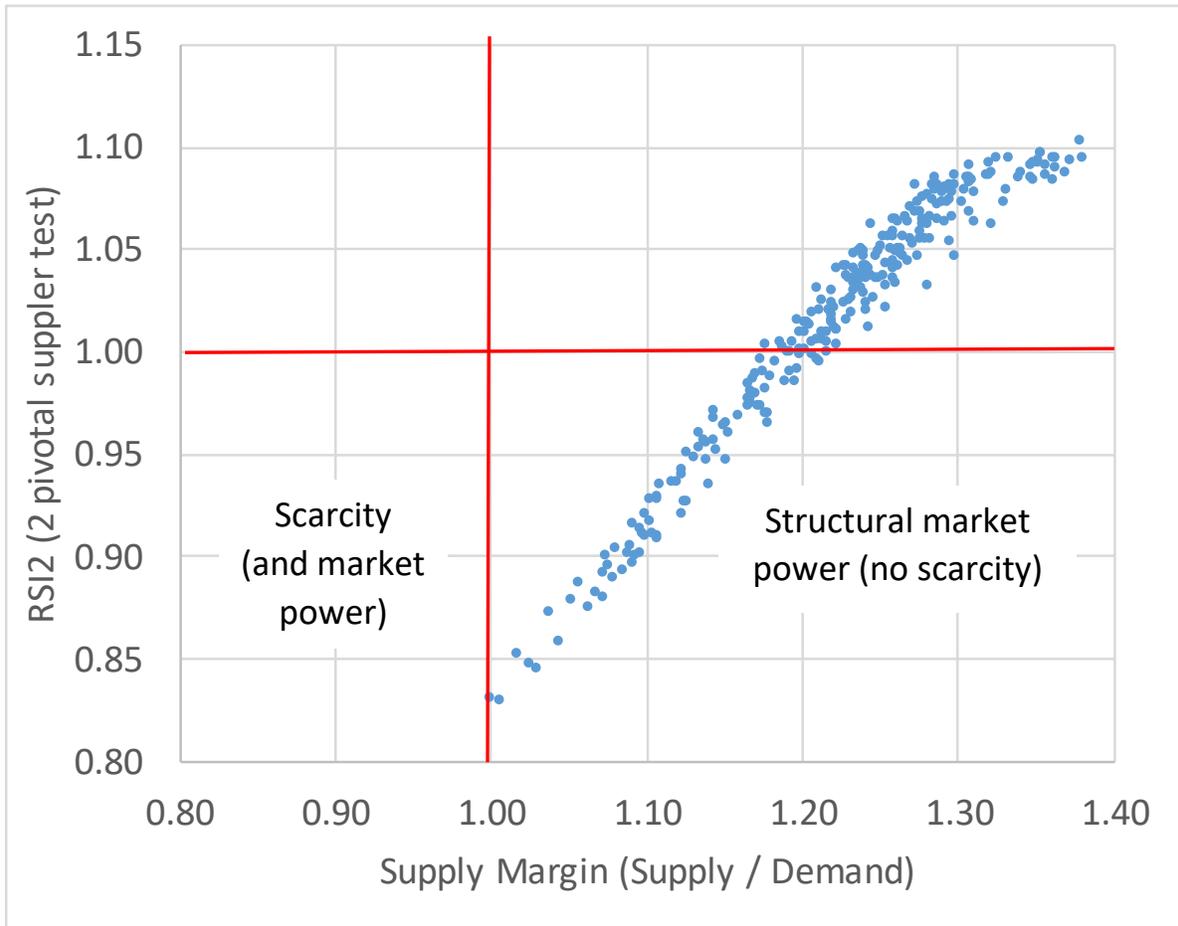


Under these conditions, all of the points in Figure 1 between the green line and the red dashed line represent hours when there was no scarcity, but the market was structurally uncompetitive (e.g. failed the two pivotal supplier test). As shown in Figure 1, the ISO’s analysis reflects the fact that there were many more hours when supply exceeds demand (so that there is no scarcity), but structural market power may exist as measured by the amount of residual supply available to meet demand.

¹¹ *Briefing on system market power assessment*, Brad Cooper, Board of Governors Meeting General Session July 24, 2019, page 5. <http://www.caiso.com/Documents/Briefing-SystemMarketPowerAssessment-Presentation-Jul2019.pdf>

This point is further illustrated in Figure 2, using data from the residual supply analysis performed by DMM that we have summarized in prior comments.¹² Figure 2 includes all hours when DMM’s prior analysis showed an RSI3 < 1. Figure 2 compares the RSI2 for these 272 hours with the total supply margin resulting from DMM’s analysis of these 272 hours. DMM’s calculation of supply margin is simply the ratio of total supply (including all suppliers) to total demand (including reserves).

**Figure 2. DMM Calculation of Supply Margin vs. Residual Supply Index
(Chart shows RSI2 for the 272 hours with RSI3 < 1 in 2018)**



¹² http://www.aiso.com/Documents/Presentation-AnalysisOfSystemLevelMarketPowerDMM-June7_2019.pdf

<http://www.aiso.com/Documents/DMMComments-SystemMarketPowerAnalysis.pdf>

As shown in Figure 2, DMM’s analysis shows only one hour in which potential scarcity occurred in the day-ahead market during these 272 hours of 2018. However, another 90 of these 272 hours also failed the two pivotal supplier test ($RSI2 < 1$). In other words, for the one hour of potential scarcity, 90 other hours failed the two pivotal supplier test and 271 hours failed the three pivotal supplier test. Furthermore, as shown in Figure 2, if the supply margin was lower in all of these hours (e.g. due to higher demand or less supply), then the increase in the number of hours in which the market was much less structurally uncompetitive (e.g., would fail the two pivotal supplier test) would be many times great than the number of hours in which scarcity may occur.

Again, DMM notes that these examples based on 2018 data are provided to simply illustrate two points that are relevant to a discussion of market power under future conditions:

- The difference between tight supply/demand conditions and actual scarcity (i.e. when supply is insufficient to meet supply); and that
- For every hour that tight supply/demand conditions may pose a threat to reliability due to a shortage of supply, there are many more hours in which tight supply/demand conditions create the potential for market power when there is no actual shortage of supply to meet demand.

System-level market power mitigation

In the ISO’s presentation to its Board, CAISO noted two reasons why the ISO believes system market power mitigation may not be possible.¹³

- That system market power mitigation could address increased price-cost markups but could reduce import supply (and threaten system reliability).
- It is difficult to estimate costs of import supply.

Options for addressing these issues were addressed in the July 15 workshop. At the workshop, the following potential options were mentioned and discussed (presented here in order of the potential impact or effectiveness in mitigating system market power):

- *Modify (e.g. lower) the competitive LMP that is used as a floor (below which bids are not mitigated) when local market power mitigation is triggered within the ISO.* This could help mitigate market power by “shifting” the supply curves of resources within the ISO when local market power mitigation is triggered but system prices exceed the marginal cost of gas resources.

¹³ *Briefing on system market power assessment*, p. 7.

- *Extend bid mitigation to all resources within the CAISO when system conditions are structurally uncompetitive (e.g. as measured by the residual supply index). With this approach, DEBS used in local market power mitigation could be used or a different higher DEB could be used (e.g. similar to the hydro DEB recently developed).*
- *Extend bid mitigation to all resources within the CAISO and RA imports when system conditions are structurally uncompetitive (e.g. as measured by the residual supply index). With this approach, a higher DEB (e.g. similar to the hydro DEB recently developed) could be used. Since RA imports are subject to a must-offer obligation, these could not be physically withheld or sold to other control areas.*

DMM believes the ISO should give further consideration to these and other options that may be developed by the ISO or stakeholders. DMM recognizes mitigation of system market power can be problematic and require approaches that have not been applied in other RTOs. However, DMM continues to recommend that the ISO and stakeholders continue the process of identifying and assessing options.

Scarcity pricing provisions

In this initiative, the ISO is classifying scarcity pricing as a market power mitigation measure. At the Board meeting, CAISO also indicated that it believes “enhanced market scarcity pricing provision” could help mitigate market power during times of tight supply. According to the ISO, if the ISO has well-functioning scarcity pricing provisions, then market prices will reflect the “increased scarcity premium,” which suppliers can get without raising their own bid prices. With such scarcity pricing, the ISO contends that suppliers should have the incentive to bid their marginal costs to increase the likelihood of getting dispatched.

DMM disagrees that scarcity pricing mitigates market power, as described by the ISO. Under actual scarcity, all of the supplier’s capacity would need to be dispatched (or utilized as reserves) to meet demand – whether or not they bid marginal costs. Moreover, if a supplier wants to simply ensure that prices are set by the bid cap when there is scarcity (while also ensuring its capacity is dispatched at the \$1,000/MWh cap when there is scarcity), each individual supplier would only need to bid the last small portion of their supply at the \$1,000/MWh bid cap. In practice, however, many suppliers bid significant portions of their capacity significantly in excess of marginal costs when supply conditions are tight, but there is no expectation of market scarcity.

Thus, DMM believes the ISO’s explanation of how “enhanced market scarcity pricing provisions” could help mitigate power is flawed theoretically and empirically. In addition, DMM

notes that scarcity pricing can increase the incentive for physical withholding of supply in order to raise prices by triggering scarcity pricing.

Information on Market Conditions and Competitiveness

DMM and the ISO have received requests from stakeholders to provide more detailed and timely information on system market conditions, structural competitiveness and performance. The two key metrics requested are the Residual Supply Index and the Price–Cost Markup. These metrics could be used by stakeholders to help track market competitiveness and the potential impacts of any observed market power for purposes of making decisions on market rule and regulatory options they may be able to recommend or request.

DMM is currently working with the ISO to be able to calculate the Price–Cost Markup using the day-ahead market software in a timely manner using different assumptions and inputs. DMM is optimistic that these efforts will allow DMM to provide price-cost mark-up analysis in the near future on a timely basis.

With respect to the Residual Supply index, DMM continues to disagree with the methodology described and used in the ISO’s last report. In its July 25 report to the ISO Board, the ISO cited different results showing significantly less structurally competitive conditions. DMM encourages the ISO to provide an updated report with a description of its revised methodology and results.

DMM suggests that if further discussion leads to a consensus on any methodology (or a limited number of scenarios), it may be useful for the ISO to calculate and report RSI metrics on an ongoing basis, as requested by some stakeholders.

Other Market Design Issues

Finally, DMM notes that our past recommendations relating to system market power include several market design issues not being addressed in this initiative.

Given the increasing role that RA imports are likely to play in CAISO system reliability and market competitiveness, DMM has recommended consideration of options that would increase the supply and availability of energy from RA imports beyond the day-ahead market into real-time. Such options need not be an all-hours must-offer for all RA imports, such as exists in other RTO/ISO’s. Options might include mechanisms to increase the amount of RA imports clearing the day-ahead market in tight supply conditions or high load uncertainty, and/or a more targeted means of ensuring sufficient RA imports are offered into real-time through the residual unit commitment process. Options may involve a combination of RA rules for imports established by the CPUC as well as CAISO market rules.

In the ISO’s *Resource Adequacy Enhancements Revised Straw Proposal*, the ISO is proposing to require specification of the Source BA for all RA imports. However, the ISO is no longer considering extension of the RA must-offer requirement beyond the day-ahead market

and into the real-time market. Under the CAISO's proposed changes, import RA could still avoid any meaningful must-offer obligation in both the day-ahead and real-time markets by bidding at or near the \$1,000/MWh bid cap in the day-ahead market. DMM is concerned that this approach may simply increase the cost of procuring RA import capacity, without resulting in any actual increase in system reliability or market benefits.¹⁴

DMM has also recommended that under the ISO's plan for implementing Order 831, the ISO should (1) ensure that import bids over \$1,000/MWh are subject to *ex ante* cost justification and (2) avoid setting penalty prices at \$2,000/MWh except when needed to implement the provisions of Order 831. These market design features have important implications in terms of mitigating potential system market power.¹⁵

¹⁴ <http://www.caiso.com/Documents/DMMComments-ResourceAdequacyEnhancements-RevisedStrawProposal.pdf>

¹⁵ http://www.caiso.com/Documents/DMMcomments-ImportBidCostVerification_IssuePaperandStrawProposal.pdf