UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	**)**	**Docket No. ER17-2568**

COMMENTS OF THE DEPARTMENT OF MARKET MONITORING FOR THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

The Department of Market Monitoring (DMM) for the California Independent System Operator Corporation (CAISO) files comments in the above-captioned proceeding. DMM respectfully requests that the Commission accept these comments six days out of time. DMM believes that its comments will help the Commission in its consideration of the CAISO's tariff amendment in this proceeding and is in the public interest. In this filing, the CAISO seeks approval for tariff amendments to temporarily extend some measures adopted to address the limited operability of the Aliso Canyon gas storage facility and to gain permanent approval for some other measures to address potential gas limitations.

As described in the CAISO's filing, the CAISO made a number of modifications and clarifications to address the recommendations and concerns DMM expressed during the CAISO's stakeholder, Board approval and tariff drafting process.[1] Given these modifications and clarifications, DMM supports the extended and expanded authority sought under the CAISO's proposed tariff revisions.

[1] *Filing to Extend Temporary Measures to Address Limited Operability of Aliso Canyon Facility and to Make Permanent and Modify Other Measures to Address Potential Gas Limitations*, California Independent System Operator Corporation, Docket No. ER17-3-000, September 29, 2017" (CAISO filing")

However, DMM continues to provide numerous recommendations concerning the extended and expanded authority sought by the CAISO:

1. DMM recommends that tariff provisions relating to the authority to update gas prices used in the day-ahead market based on gas market data available each morning be made permanent. The CAISO has requested only a temporary extension of this authority. This simple enhancement greatly improves the accuracy of gas costs used to calculate commitment cost bid caps and default energy bids by eliminating the one day lag in next day gas prices that otherwise exists for gas costs used by the CAISO in the day-ahead market. This change needs to be made regardless of any further changes the CAISO may make in the Commitment Cost and Default Energy Bid Enhancements (CCDEBE) initiative the CAISO hopes to implement in fall 2018.

2. DMM continues to recommend that the CAISO begin to develop the ability to update gas prices used in the real-time market based on same day gas market data available each morning, rather than relying on much less effective and accurate tools such as the gas cost scalars which the CAISO is proposing to extend through this filing. Changes being considered as part of the CCDEBE initiative for implementation in fall 2018 do not include the ability to update gas prices used in the real-time market. Therefore, the potential changes proposed in the CCDEBE initiative will not avoid the problems associated with the gas cost scalars which the CAISO seeks to extend.

3. DMM continues to recommend that the CAISO further refine the market software and operational procedures for the maximum gas usage constraint before expanding

usage of the constraint to other parts of the CAISO or EIM. Needed enhancements include modification of the penalty prices associated with violating gas usage constraints, improving how gas usage constraint limits are set and adjusted in real-time, and incorporating gas usage limits in the CAISO automated market power mitigation and resource sufficiency tests.

I. Gas prices used in day-ahead market

The CAISO proposes to temporarily extend tariff provisions that the Commission accepted in the Aliso Phase 2 proceeding. These provisions allow the CAISO to use the most recent gas commodity price information to improve the accuracy of the gas commodity price indices used to calculate commitment cost bid caps and default energy bids for the day-ahead market. Specifically, the CAISO proposes to temporarily extend tariff provisions stating that, for the day-ahead market, the CAISO will use a volume-weighted average price reported between 8:00 a.m. and 9:00 a.m. that ICE calculates based on trades transacted on ICE during its next-day trading window, *i.e.*, on the morning of the CAISO's day-ahead market. This procedure eliminates a one day lag that previously existed in the prices from the next-day gas market used by the CAISO in its day-ahead market.

As indicated in the CAISO's filing, the revised procedure has substantially improved resources' ability to reflect their actual costs in their commitment cost bids and default energy bids.[2] The impact of this revised procedure is further illustrated in Figures 1 and 2. Figure 1 shows the difference (in percentages) between actual gas trades on ICE in the next day gas market and the lagged next day gas price index previously used by the CAISO.

[2] CAISO filing, pp. 17-19.

Figure 2 shows the difference between these same gas trades on ICE in the next day gas market compared to the next day gas price used under the current procedure.

Figure 1. Next day ICE gas market trade prices compared to next day price index from prior flow day (June 2016 to September 2017)

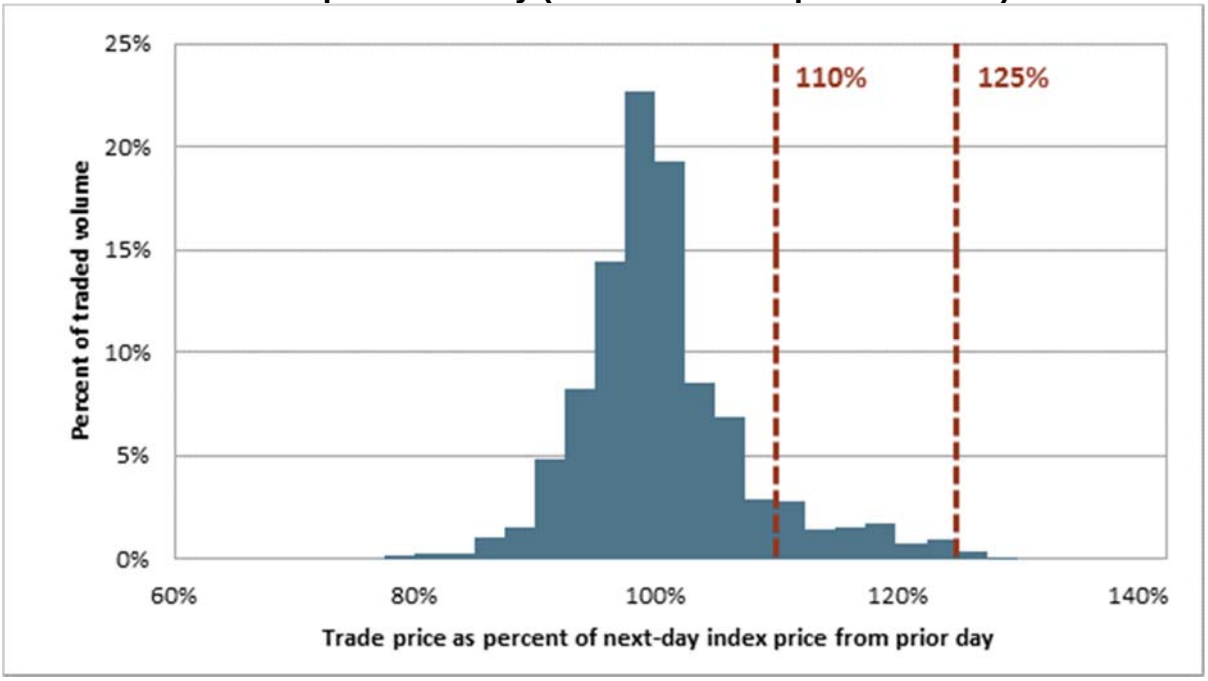
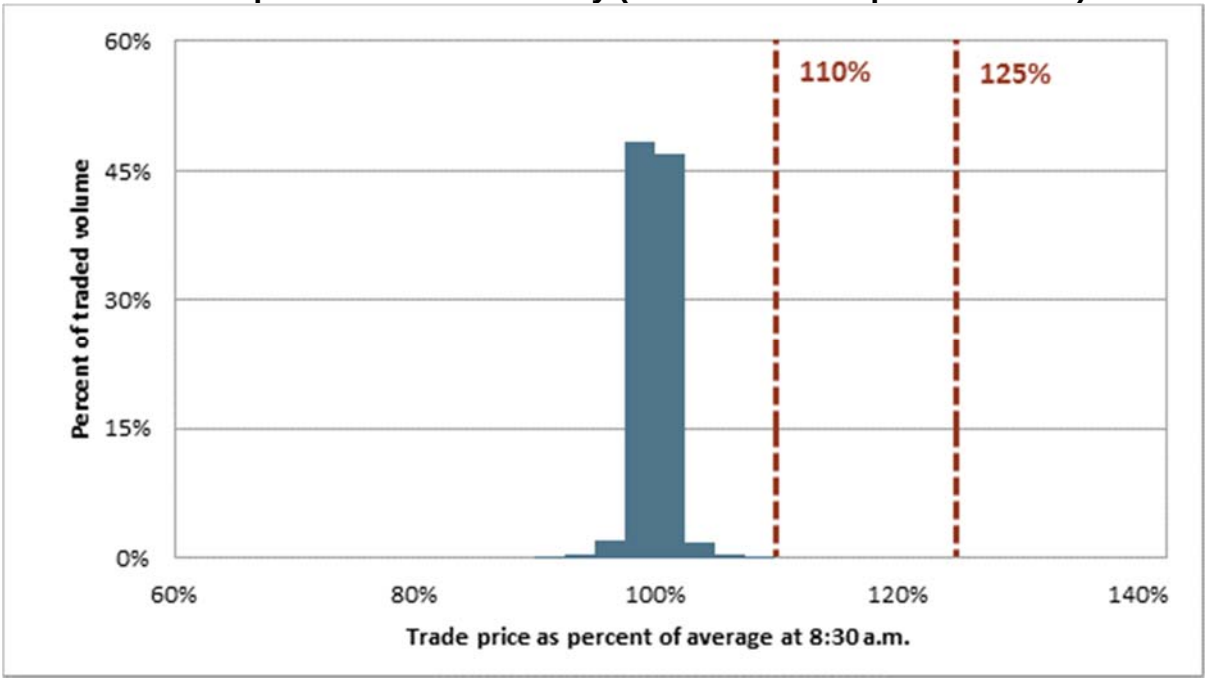


Figure 2. Next day ICE gas market trade prices compared to average next day ICE trade price for same flow day (June 2016 to September 2017)



The CAISO's filing indicates that the CAISO is not requesting to make this procedure permanent since the CAISO "expects to develop various means of determining the gas costs used in the day-ahead market as part of the ongoing CCDEBE stakeholder initiative," and will "consider whether this measure is still necessary … in conjunction with the additional measures to be considered in the CCDEBE stakeholder process." [3] In the CAISO's Draft Final Proposal in the CCDEBE initiative, the CAISO indicates that the CAISO is evaluating the feasibility of making this a permanent feature, but that:

> … at this time the CAISO has not been able to successfully negotiate access to these early volume weighted average prices of the next day gas index in a manner that can be automated. The current process is very manual and extremely exposed to risk of manual failure which may not make it a long-term feasible solution [4]

DMM staff has observed this process and believes it to be quite simple, straightforward and largely automated. The CAISO has successfully implemented the process for well over a year without any significant problems. If any problems occur, the CAISO can simply use the next day gas price index from the prior gas flow day (which would be used in the absence of the updated process). Therefore, DMM recommends this process be made a permanent feature for the CAISO's day-ahead market. This change needs to be made regardless of any further changes the CAISO may make in the CCDEBE initiative the CAISO hopes to implement in fall 2018.

[3] CAISO filing, p. 19

[4] *Commitment Costs and Default Energy Bids Draft Final Proposal*, California Independent System Operator, August 23, 2017, p. 42 http://www.caiso.com/Documents/DraftFinalProposal_CommitmentCosts_DefaultEnergyBidEnhancements.pdf

II. Gas cost scalars for real-time market

The CAISO also proposes to extend for an additional 12 months interim tariff provisions that allow the CAISO to increase the gas price index used to calculate real-time market commitment cost bid caps and default energy bids for gas-fired resources in the SoCal gas area using special gas cost scalars. When in effect, the scalars have been set so that the gas costs used to calculate real-time market commitment cost bid caps for units in the SoCal gas area are increased to 175 percent above the gas price index for the next day gas market. Gas costs used to calculate default energy bids have been increased to 125 percent of the gas price index using the scaler.

The initial values of the gas cost scalars were developed by DMM in spring 2016 for use on a temporary basis to allow the CAISO to protect against the substantial uncertainties that existed at that time about the impact that Aliso Canyon limitations may have on gas markets. Since then, however, DMM has closely monitored gas market trends and performed analysis of the need for these gas cost scalers.[5] Based on this analysis, DMM concluded that there was a very limited need for the increased bidding flexibility created by the gas cost scalars and recommended that the CAISO review and reduce the gas cost scalars used in the real-time market.[6]

At the time the CAISO's proposal was provided to the Board in July 2017, DMM opposed extension of the CAISO's authority to apply the gas cost scalars. As explained in DMM's comments in the CAISO stakeholder process and memo to the Board,

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[5] *2016 Annual Report on Market Issues and Performance*, Department of Market Monitoring, April 2017, pp.90-91. http://www.caiso.com/Documents/2016AnnualReportonMarketIssuesandPerformance.pdf

[6] *Q1 2017 Report on Market Issues and Performance*, Department of Market Monitoring, July 10, 2017, pp.6-7. http://www.caiso.com/Documents/2017FirstQuarterReport-MarketIssuesandPerformance.pdf.

analysis by DMM did not support the need to routinely scale up gas prices used for mitigating potential market power in the real-time market above the next day gas price indices normally used.[7] Since the CAISO had not adjusted the scalers or provided any analysis of the need for the gas cost scalars or reduced the scalars, DMM did not support extension of the CAISO's authority to apply the gas cost scalars.

Shortly prior to the July 26, 2017 Board meeting, the CAISO informed DMM that the gas cost scalars would be set to 100 percent, so that the scalers would not increase the gas costs used by the CAISO in the real time market. Based on this commitment, DMM expressed support at the July Board meeting for extension of CAISO's authority to re-instate the gas cost adders if appropriate due to a change in gas market conditions. The CAISO lowered the bidding adders to 100 percent on August 1, 2017, but has not provided any analysis performed by the CAISO that supported this decision.

DMM supports the CAISO's request for another temporary extension of CAISO's authority to re-set the gas cost adders above 100 percent if appropriate due to a change in gas market conditions. However, DMM believes that these gas cost scalars are a very crude tool for seeking to manage potential reliability issues associated with gas limitations in the real-time market while protecting against market power. For example, under current CAISO processes, if gas limitations become apparent during any point of

[7] Memorandum to ISO Board of Governors, Eric Hildebrandt, Director, Market Monitoring, July 19, 2017, re: Department of Market Monitoring update, p. 2. http://www.caiso.com/Documents/Department_MarketMonitoringUpdate-Memo-Jul2017.pdf

Comments on Aliso Canyon Gas-electric Coordination Phase 3 Initiative, Department of Market Monitoring June 14, 2017, p. 2. http://www.caiso.com/Documents/DMMComments_AlisoCanyonGas_ElectricCoordinationPhase3StrawProposal.pdf

an operating day, the CAISO cannot apply the gas cost scalars in the real-time market until the following operating day.

In addition, the CAISO has indicated that if it determines the scalars will be triggered, the scalars will be set at default values of 175 percent for commitment cost bid caps and 125 percent for default energy bids. With this approach, the initial value of the scalars will not be based on any actual gas or electric market conditions. Therefore, DMM continues to recommend the CAISO begin taking steps to modify its software and processes so that real-time commitment cost bid cap and default energy bids can be modified based on same day gas price and market information available between 8:00 and 9:00 am each morning.[8] DMM believes this approach will provide much better protections than the gas cost scalars in terms of system reliability, market efficiency, cost recovery and market power mitigation.

Since the CAISO lowered the gas cost scalars to 100 percent on August 1, 2017, the CAISO has temporarily re-set the gas scalars back to the 175 percent and 125 percent default levels on two occasions. DMM believes each of these events highlight the problems associated with use of the gas cost scalars as a tool to help ensure reliability while effectively mitigating market power. Both events also highlight the need for the CAISO to develop the capability to update gas prices used in the real-time market based on same day gas market price information that is available each morning, as recommended by DMM.

[8] *Comments on Aliso Canyon Phase 3 Draft Final Proposal*, *op. cit*.p.2,.

As noted in the CAISO's filing, the first event began shortly after the gas scalars were lowered to 100 percent on August 1, 2017.[9] On August 3, the CAISO reset the gas cost scalars back to 175 percent and 125 percent because of potential gas curtailments in the Southern California area. Under the CAISO's current process the scalars could not be made effective in the real-time market until August 4. The CAISO left the scalars in place until August 7, 2017.

As shown in Figure 3, after the scalars were raised to 175 percent and 125 percent beginning in the real-time market on August 4, actual same day gas prices continued to stay about equal to the next day gas index without the gas cost scalars.[10] As a result, gas costs used by the CAISO were significantly above actual gas costs during this period. If the CAISO developed the capability to update gas costs used in the real-time market based on observed same day prices, gas costs used in the real-time would not have needed to be increased using the gas cost scalers during this situation.

The gas cost scalars were raised back to 175 percent and 125 percent a second time from October 23 through October 25, 2017 due to anticipated days of high temperatures and potential for gas curtailments in Southern California.[11] In this case, same day gas prices rose sharply on October 23, 2017, averaging about 260 percent of the next day gas cost index (see Figure 4). Thus, the 175 percent and 125 percent scalars resulted in gas costs that were in this case well below prevailing gas prices in the same day market. As shown in Figure 4, the scalers then caused gas costs used by the CAISO in

[9] CAISO filing, p. 24.
[10] The green bars in Figure 4 show the range of same day gas trade prices on ICE.
[11] Adjustment of Gas Price Index Scaling Factors Effective 10/23/17, Market Notice issued October 22, 2017, http://www.caiso.com/Documents/Adjustment_GasPriceIndexScalingFactorsEffective102317.html

the real-time market to be two to three times greater than actual gas prices in the same day market on October 24 and October 25.

Figure 3. Effect of gas cost scalars compared to same-day gas trade prices

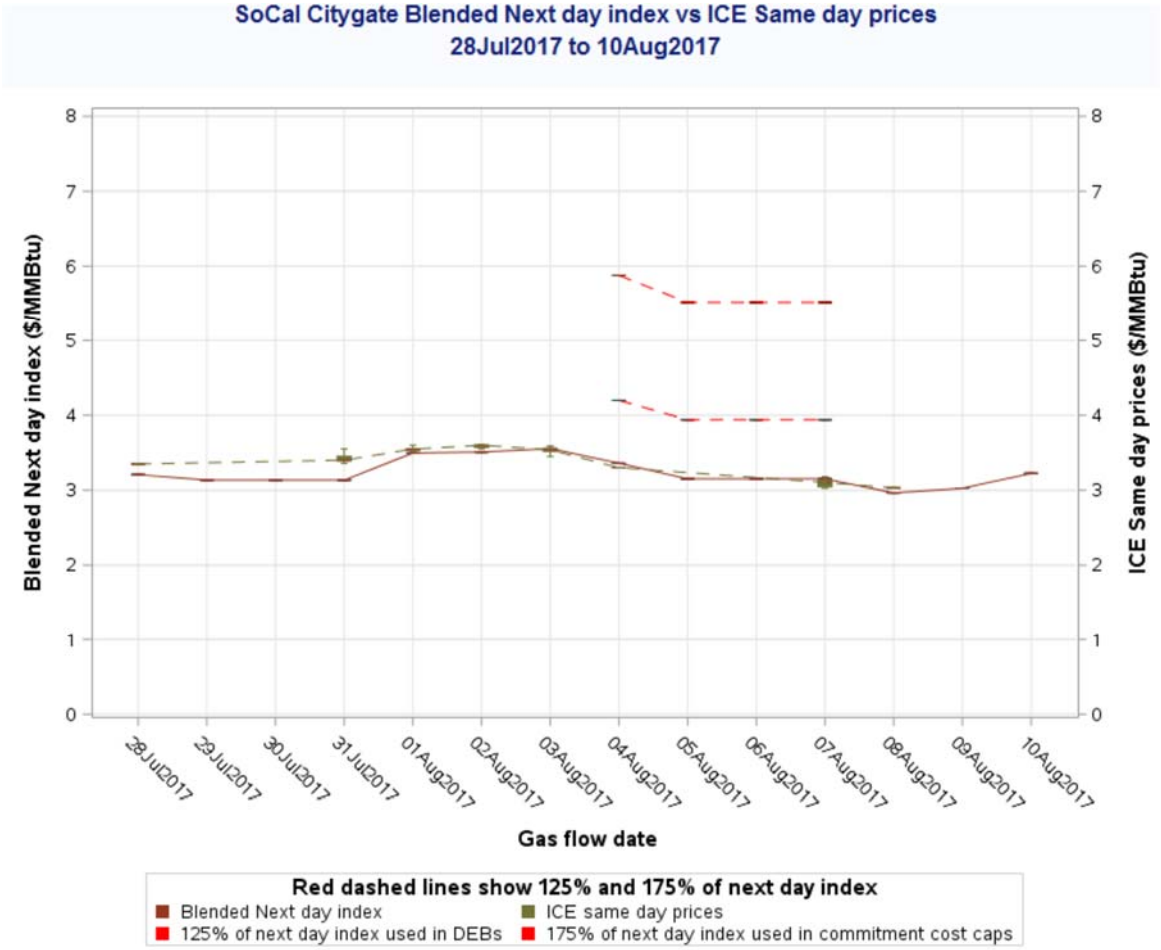
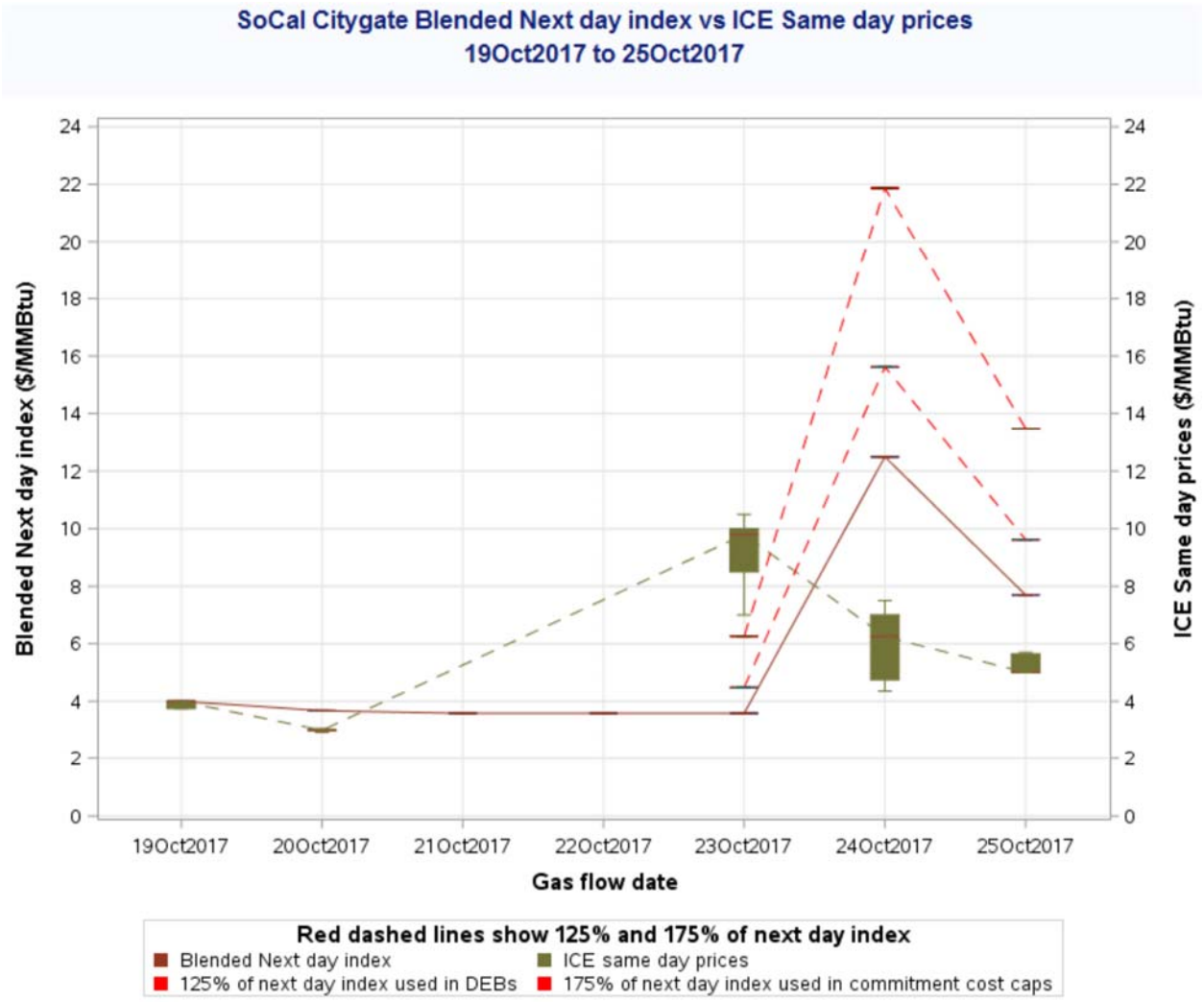


Figure 4. Effect of gas cost scalars compared to same-day gas trade prices



Again, as shown in Figure 4, if the CAISO developed the ability to adjust gas costs used in the real-time market based on observed prices on ICE the morning of each operating day, gas costs used in the real-time market during this period would have been closely aligned with actual costs for gas purchased in the same day market.[12] DMM

[12] For example, the weighted average price on ICE for same day trading at 8:30 a.m. on October 23, 2017 was $9.32/MMBtu, compared to a final weighted average price of $9.41/MMBtu and a maximum same day trade price of $10.50/MMBtu.

continues to recommend the CAISO begin development of this capability as the best way to ensure system reliability, efficiency and effective market power mitigation without relying on the gas cost scalars.

III. Maximum gas usage constraint

The CAISO proposes to make permanent and expand the geographic scope of its existing interim tariff authority to implement a gas constraint (or gas nomogram) that limits the maximum amount of natural gas that can be burned by natural gas-fired resources. The CAISO is requesting authority to extend the use of maximum gas usage constraints to the entire CAISO balancing area and to the balancing areas of all EIM entities.

The CAISO indicates that the maximum gas constraint "has proven to be a useful and discrete tool that balancing authority areas can use to reflect the interactions of gas limitations in the electric market optimization."[13] The CAISO indicates that "lessons the CAISO has learned by applying the maximum gas constraint in the SoCalGas and SDG&E gas regions … has shown that this tool can and should be applied in other areas in which the CAISO operates markets, to ensure the market systems produce a dispatch solution that considers the gas system constraints and does not aggravate them or cause a system reliability issue."[14]

DMM's review of the CAISO's very limited experience with maximum gas usage constraints suggests that while such constraints may be a useful tool in the future, additional refinement of the software and operational processes through which the constraints are implemented is necessary. While DMM does not oppose expansion of

[13] CAISO filing, p. 4.
[14] CAISO filing, p. 27.

this authority at this time, DMM recommends that the CAISO implement refinements and gain additional experience in the SoCal gas region before actually expanding usage of the constraint to other parts of the CAISO or EIM.

DMM also believes the type of physical gas limitations for which the constraint is intended are extremely rare and may not exist outside of the SoCal gas system at this time. This affords the CAISO the opportunity to implement these software and process refinements in the SoCal gas region before expanding usage of the constraint in other parts of the CAISO or EIM. The following sections provide a more detailed description of these recommended software and process enhancements.

Penalty parameters of gas usage constraints

To allow the market pricing and dispatch to accurately reflect physical limitations on the gas system, the gas nomograms must be properly calibrated and managed. As indicated in DMM's memo to the CAISO Board, the penalty prices currently set on these nomograms (which are in $/MMCF of gas consumption) appear to need further adjustment.[15] The penalty prices currently placed on these nomograms appear to be relatively low in terms of the cost of electric generation at which the nomograms would be relaxed instead of enforced. The CAISO has indicated that "it is in the process of doing this and will propose changes to these parameters through the business practice manual change process."[16]

[15] Memorandum to ISO Board of Governors, Eric Hildebrandt, Director, Market Monitoring, July 19, 2017, re: Department of Market Monitoring update, pp.4-5. http://www.caiso.com/Documents/Department_MarketMonitoringUpdate-Memo-Jul2017.pdf

[16] Memorandum to ISO Board of Governors, Keith Casey, July 19, 2017, Re: Decision on Aliso Canyon gas-electric coordination phase 3 proposal, p.6, http://www.caiso.com/Documents/Decision_AlisoCanyonGas-ElectricCoordinationPhase3Proposal-Memo-Jul2017.pdf

The gas nomograms have been implemented in the market on only a few occasions. During each of these occasions, the gas usage limits set by the CAISO were exceeded due to relaxation of these constraints by the market software. In the first quarter of 2017, the CAISO enforced two gas constraints (San Diego Gas and Electric system and the broader Southern California Gas Company system) on four days, from January 23-26. These constraints do not appear to have been sufficient, on their own, to limit gas burn from participating gas resources.[17] DMM analysis suggests that one or both of the constraints were violated in the 15 minute market in about 40 percent of hours during those days.

If the penalty prices of relaxing the gas usage constraint are not set high enough, relaxing the constraint is more economic than dispatching additional power outside of the gas constrained area. If the constraint is accurately set to reflect a physical gas limitation, violating the constraint means that more gas is scheduled to be burned in the gas constrained area than can be accommodated by the system. Thus, DMM recommends that the CAISO implement and test new values for penalty prices associated with the gas nomograms before expanding use of the gas usage constraints.

Setting and managing the gas limits in the real-time market

The ISO contends that "the gas constraints are a better tool for limiting the gas burn when the gas systems are experiencing constraints than manual exceptional dispatches".[18] DMM respectfully disagrees with this assertion, especially without further

[17] As shown in slides presented by the CAISO at the Market Performance and Planning Forum on March 14, 2017, shadow prices of each nomogram were either zero or set at the penalty price for most intervals, indicating that these constraints were likely to be either relaxed or not binding. http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForum-Mar14_2017.pdf

[18] CAISO filing, p.3.

additional refinement of the software and operational processes through which the gas constraint is implemented.

In practice, establishing and managing a gas constraint in the CAISO market model requires a substantial degree of judgement by grid operators. As explained in the CAISO's Business Practice Manual, CAISO operators must first identify whether there is an anticipated risk that gas demand over a day could exceed system capacity. Operators must then convert a potential limit on cumulative gas flow over a day or multi-hour period into a constraint applicable to each market interval in which a gas constraint will be enforced in CAISO (hourly, 15-minute and/or 5-minute). The CAISO's Business Practice Manual indicates that to do this, the CAISO will "distribute the daily limitation across the hours by a ratio of hourly load forecast to daily load forecast to support greater electric flexibility, unless the CAISO has coordinated an alternative specific gas limitation with the gas company."[19] CAISO operators may then modify the constraint limit based on the CAISO's observations of actual or expected system conditions. The CAISO's Business Practice Manual indicates that in the real-time market, the CAISO will then seek to adjust the maximum gas usage constraint to "recapture portions of the allocated range unused for earlier intervals." [20]

Figure 5 illustrates the issues involved in effectively setting and managing the maximum gas usage constraint. This example shows data from the only period in which the CAISO has used the gas constraints for a significant period of time (January 23 to 26, 2017).[21] As shown in Figure 5, the CAISO set the constraint for total gas usage in

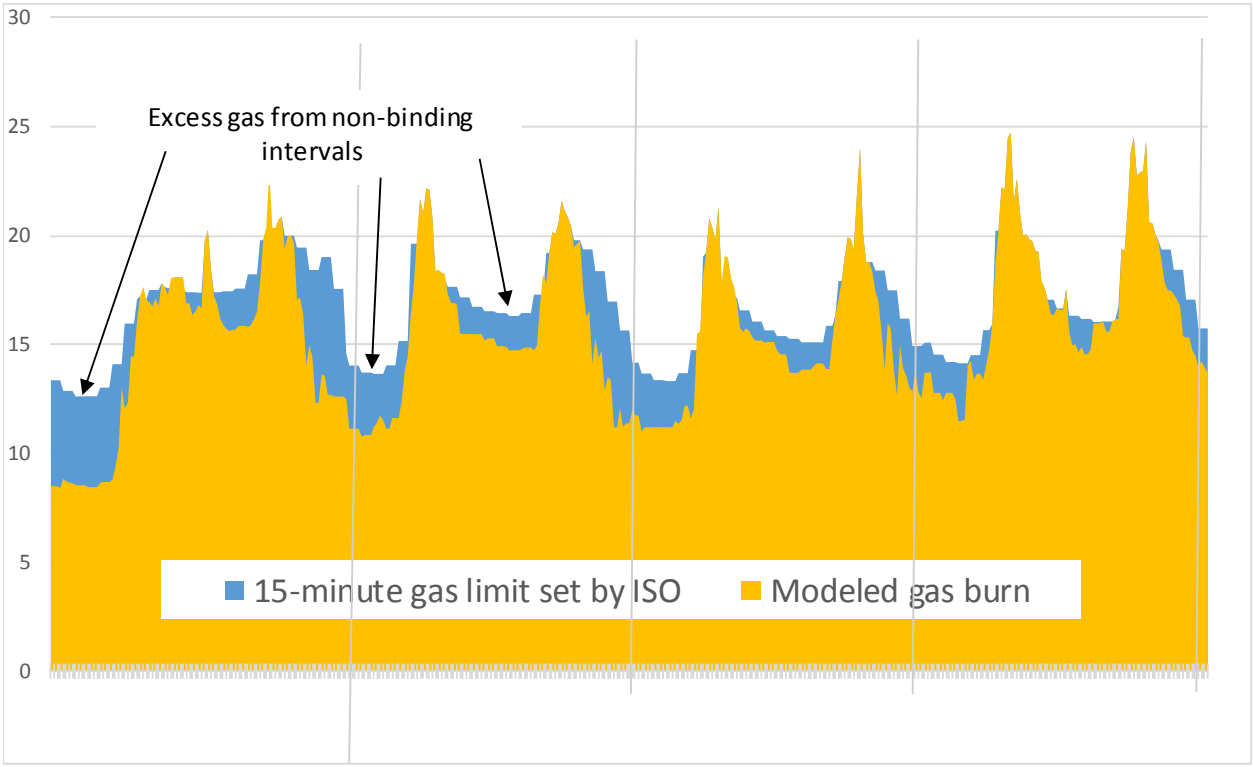
[19] Business Practice Manual for Managing Full Network Model, California ISO, p. 83.

[20] Ibid.

[21] The only other time since this January 23-26, 2017 period that gas constraints have been used in the real-time market is during about ten hours on August 3 and August 4, 2017.

the Aliso Canyon area for each 15-minute market interval over these days to follow the basic shape of CAISO loads. During many hours, the gas that the constraint calculated as being used by units in the Aliso Canyon area (modeled gas burn) was well below the maximum limit set by the CAISO for each 15-minute interval (see blue areas). In other 15-minute intervals modeled gas burn hit or exceeded the limit set by the CAISO.

Figure 5. Aliso Canyon Area Gas Usage Limits and Modeled Gas Burn (January 23-26, 2017)



DMM's review indicates that when the CAISO has activated the gas usage constraints in the real-time market indicates that CAISO operators do not appear to have adjusted the maximum gas usage constraint in real-time to "recapture portions of the allocated range unused for earlier intervals."[22] DMM believes that the gas usage constraint may not be more effective and reliable than exceptional dispatches, depending on how effectively the process of setting and adjusting the maximum gas usage constraint is done. However, if the limits are not set appropriately and updated by grid operators, the gas nomogram may not reflect real conditions.

Gas constraints in EIM balancing areas

The CAISO is also proposing to expand use of gas usage limits to EIM balancing areas. The CAISO indicates that it "understands from EIM stakeholders that similar constraints exist in portions of the EIM footprint," and contends that the "maximum gas constraint will provide a more efficient means to managing gas usage" than the authority to issue manual dispatches which EIM entities currently have.[23] As discussed above, DMM believes that the gas usage constraint may not be more effective and reliable than manual dispatches within EIM areas, depending on how effectively the process of setting and adjusting the maximum gas usage constraint is done.

DMM's monitoring and discussions with EIM participants also suggest that few if any physical gas constraints have occurred that could be effectively modeled using gas nomograms. DMM's experience suggests that many, if not most, gas supply issues that have developed in EIM balancing areas involve limitations on the amount of gas that

[22] Ibid.
[23] CAISO filing, p.29.

has been scheduled and purchased by EIM participants prior to the real-time market, rather than actual physical gas limitations. In the limited number of cases where gas supply may have been physically limited by curtailments or specific limits, the supply limitations appear to have occurred during the operating day on a timeline which would require development and use of special gas constraints on very short notice. DMM believes in such situations it may be very difficult to actually utilize gas constraints effectively.

In response to DMM's comments, the CAISO has included provisions in the proposed tariff modifications intended to clarify that any gas constraints enforced in the EIM balancing area represent "physical limitations in applicable gas regions anticipated by [an] EIM entity during specific hours." [24] As noted in the CAISO's filing,

> …. prior to establishing the natural gas constraint, the EIM entity must notify the CAISO of the need for the constraint and provide the CAISO with sufficient information for the CAISO to evaluate, develop, and test the performance of the constraint. Further, the CAISO proposes to require that the EIM entity submit to the CAISO information sufficient to verify the physical limitations it asserts may materialize on the natural gas pipeline systems that serve generating facilities in its balancing authority area. The CAISO may deny the creation of such a gas constraint if the CAISO finds, based on the information submitted by the EIM entity or any other available information, that the physical limitations on the natural gas system that are asserted by the EIM entity are unlikely to materialize. These tariff provisions adopt DMM's recommendation.[25]

In practice, DMM also notes that EIM entities and participants have additional options for managing any physical gas limits that may develop before or during an operating day. Since there is not a must-offer obligation in the EIM, entities in the EIM can (and should) only submit bids for an amount of capacity for which gas is available. If a gas constraint develops after bids must be submitted, EIM participants can (and

[24] CAISO filing, p. 37.
[25] CAISO filing, p. 38.

should) also submit plant outages to reflect fuel limitations. EIM entities can (and do) also manage any gas constraints by setting limits on transfer constraints to limit or prevent transfers out of an EIM balancing area.

All of these options ensure that the impact of any gas limitations are directly incorporated in the amount of gas-fired capacity available for dispatch by the EIM market software, and that the amount of capacity available for dispatch is correctly represented in the CAISO's automated market power mitigation and resource sufficiency tests. As discussed in the following sections, extending the gas usage constraints to EIM areas may also undermine the accuracy of various sufficiency tests unless these tests are modified to account for capacity that is unavailable due to gas usage constraints.

Automating impacts of gas nomograms on the market power mitigation processes

The effectiveness of the CAISO's automated market power mitigation procedures can be adversely affected when operators enforce the gas burn constraints. The gas burn constraints would limit the amount of generation available to relieve congestion on a transmission constraint in a way that is not currently accounted for by the CAISO's current market power mitigation procedures. An electric transmission constraint may therefore be deemed competitive when in fact the amount of supply that can be dispatched to relieve congestion on these constraints is more restricted and uncompetitive because of the gas constraints. To address this limitation, the temporary tariff amendments include the authority for the CAISO to deem transmission paths uncompetitive. Because of the limited use of the gas burn constraints during 2016 and 2017, this authority has not been used.

The existing authority and manual process for the CAISO to deem transmission paths uncompetitive was meant to function as a temporary measure. It is a reactive process that is less transparent and less accurate than the automated process could be. To facilitate making the gas nomograms a permanent feature of the market, the impact of these constraints on the available supply used to assess the structural competitiveness of constrained areas should be part of the automated process. The CAISO has "agreed to work on automation, which it intends to implement by the end of 2018."[26]

To include the impacts of gas nomograms in the automated process, the CAISO will essentially need to assign some level of outage (or derated capacity) for each resource that is subject to the gas nomogram. The CAISO could use several different methods to allocate capacity that is unavailable due to gas limits across the different gas-fired units that are subject to the nomogram. Different methods may have different impacts on stakeholders and on the effectiveness of market power mitigation procedures. Therefore, stakeholder involvement and review will be appropriate in determining the details of how gas usage limits are incorporated in the CAISO's market power tests.

Impact of gas nomograms on sufficiency tests

When a gas constraint is imposed in an EIM area, the constraint limits the dispatch of a group of resources to ensure that the physical limit on the gas system is reflected in the market software and processes. Imposing the gas nomogram has essentially the same effect as de-rating available capacity or limiting the energy bids

[26] CAISO filing, pp. 40-41.

from a specific group of generating resources (rather than one individual resource). If capacity from individual resources is de-rated using the CAISO's outage reporting system or is not bid into the market, the various sufficiency tests used in the EIM market account for this capacity being unavailable.

Under the proposed tariff modifications, the impact of gas usage limits would continue to not be incorporated into the resource sufficiency and flexible ramping sufficiency tests used in the energy imbalance market. DMM believes that the impacts of gas nomograms on the amount of generation available from groups of resources should be incorporated into these tests.

The ISO has indicated it does not believe that generation supply limits due to the gas nomograms need to be included in these supply sufficiency tests at this time because "gas constraints are similar to transmission limitations, which are currently not considered by the sufficiency test," and because "the use of the gas constraint is expected to be very infrequent and only used in times of severe gas system limitations." [27] DMM continues to believe that gas nomograms (unlike transmission limitations) represent a clear limit on output from a specific group of gas generators, and believes it would be relatively straight forward to incorporate the impacts of a gas nomogram into the important supply sufficiency tests.

The CAISO has agreed to study the possibility of including the impacts of gas nomograms in the EIM sufficiency tests, and to consider including this impact if it was

[27] Memorandum to ISO Board of Governors, Keith Casey, July 19, 2017, Re: Decision on Aliso Canyon gas-electric coordination phase 3 proposal, p.7, http://www.caiso.com/Documents/Decision_AlisoCanyonGas-ElectricCoordinationPhase3Proposal-Memo-Jul2017.pdf

feasible.[28] DMM believes that the mathematics involved in including the impact of gas nomograms in the sufficiency tests are actually a simplified version of including the impacts of the gas constraint in the market power mitigation tests. Thus, DMM believes that if the gas constraint is incorporated into the market power mitigation process it will also be feasible to incorporate the gas constraint into the various balancing area sufficiency tests.

Process for new gas nomograms

In the stakeholder process, DMM also expressed concern about how stakeholders will be notified of, and allowed to review, each potential new gas constraint before it is implemented and enforced in the market model. The CAISO has indicated that it will "provide stakeholders adequate notice regarding adoption of a new constraint in the CAISO's market, including the EIM" and agreed to include specific language in the proposed tariff revisions that states the CAISO will provide all stakeholders the technical details of the new gas constraint prior to its adoption and an opportunity to comment on such details." [29] DMM appreciates these modifications and clarifications, and looks forward to working with the CAISO and stakeholders in the process of reviewing any new gas usage constraints the CAISO or EIM entities seek to implement.

[28] Ibid.
[29] CAISO filing, pp. 38-39.

IV. Conclusion

As described in the CAISO's filing, the CAISO made a number of modifications and clarifications to address the recommendations and concerns DMM expressed during the CAISO's stakeholder, Board approval and tariff drafting process. Given these modifications and clarifications, DMM supports the extended and expanded authority sought under the CAISO's proposed tariff revisions.

However, DMM continues to recommend that the CAISO begin to develop the ability to update gas prices used in the real-time market based on same day gas market data available each morning, rather than relying on much less effective and accurate tools such as the gas cost scalars which the CAISO is proposing to extend through this filing. Changes being considered as part of the CCDEBE initiative for implementation in fall 2018 do not include the ability to update gas prices used in the real-time market. Therefore, the potential rule changes currently proposed by the CAISO in the CCDEBE initiative will not avoid the problems associated with the gas cost scalars which the CAISO is seeking to extend.

DMM also continues to recommend that the CAISO further refine the market software and operational procedures for the maximum gas usage constraint before expanding usage of the constraint to other parts of the CAISO or EIM. DMM looks forward to working with the CAISO and stakeholders in the process of continuing to enhance the gas constraint software and procedures, and reviewing any new gas usage constraints the CAISO or EIM entities seek to implement.

Respectfully submitted,

/s/ Eric Hildebrandt

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Dated: October 26, 2017

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California this 26th day of October, 2017.

/s/ Anna Pascuzzo
Anna Pascuzzo