



Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President, Market & Infrastructure Development

Date: May 2, 2016

Re: **Decision on Aliso Canyon gas-electric coordination proposal**

This memorandum requires Board action.

EXECUTIVE SUMMARY

In October 2015, the Aliso Canyon natural gas storage facility in southern California experienced a large natural gas leak significantly affecting many of the people that live and work in the area as well as the gas balancing tools available to gas users. The storage facility is a significant part of the gas system serving customers in the Los Angeles Basin and San Diego, including gas-fired electric generation. The leak has resulted in a dramatic reduction in the use of the storage facility, greatly limiting the flexibility of the Southern California Gas Company (SoCalGas) and San Diego Gas and Electric Company (SDG&E) systems to serve gas-fired generators in the area. The limitations resulting from the loss of the Aliso Canyon storage facility are expected to stress the gas system this summer when electric loads increase in times where scheduled flowing gas does not match actual gas demand. Curtailment of significant amounts of gas to electric generators may occur when such conditions overlay with planned or unplanned outages to the SoCalGas system, which could lead to electric service interruptions in the area.¹ In connection with the limitations on injections and withdrawals at the Aliso Canyon natural gas storage facility, Management initiated an expedited process to work with stakeholders to develop market mechanisms and operational tools to mitigate the risks to natural gas and electric markets to avoid electric service interruptions to the extent possible.

Management proposes a coordinated set of operational tools and market enhancements to address limitations resulting from the loss of the Aliso Canyon storage facility. The operational tools will enable ISO operators to manage gas usage resulting from generation

¹ See Aliso Canyon Action Plan to Preserve Gas and Electric Reliability for the Los Angeles Basin posted at: http://www.energy.ca.gov/2016_energy/policy/documents/2016-04-08_joint_agency_workshop/Aliso_Canyon_Action_Plan_to_Preserve_Gas_and_Electric_Reliability_for_the_Los_Angeles_Basin.pdf and Aliso Canyon Risk Assessment Technical Report posted at http://www.energy.ca.gov/2016_energy/policy/documents/2016-04-08_joint_agency_workshop/Aliso_Canyon_Risk_Assessment_Technical_Report.pdf

dispatches in southern California to address reliability issues on the gas system. These tools are designed to reflect gas limitations in the ISO market and to minimize electric generation dispatch that would otherwise operate outside gas system limitations. This will avoid further exacerbating gas system conditions and contributing to the likelihood that gas curtailments will result in the disruption of electric service in the area. The market enhancements will provide generators greater ability to reflect gas system limitations and gas prices in their bids submitted to the ISO market. These enhancements will result in the ISO market dispatching generation in a way that is consistent with gas system limitations to maintain reliability.

Upon Board approval, Management will submit tariff revisions to the Federal Energy Regulatory Commission seeking expedited consideration of mitigation measures with an effective date in early June. Given the short timeframe to develop these provisions and the request for expedited consideration by the Commission, Management proposes that the provisions proposed in this memorandum expire on December 1, 2016.

Moved, that the ISO Board of Governors approves the Aliso Canyon gas electric coordination proposal, as described in the memorandum dated May 2, 2016; and

Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.

DISCUSSION AND ANALYSIS

Management proposes several measures to mitigate reliability risks to the natural gas and electric systems caused by limitations on injections and withdrawals at the Aliso Canyon natural gas storage facility. These measures address gas system limitations over this summer, one of the major limitations being the amount of gas the system can deliver in real-time relative to the amount of gas that was scheduled on the system. The measures minimize the adverse impact real-time electric generation redispatch can have on the gas system, especially in the event there are gas system outages.

Management initiated an expedited stakeholder process to develop measures to help support gas system reliability and ensure electric system reliability over the summer. The stakeholder process focused on the following two policy objectives:

- Ensure ISO markets produce prices that reflect gas system limitations so that the risk that ISO dispatch could adversely impact gas operators' efforts to manage reliability is mitigated, and
- Provide operational tools that can be used through the market clearing process at ISO operators' discretion if needed to mitigate the risk of operating outside gas

system limitations that are severely constrained due to the limited operability of Aliso Canyon to avoid electric service interruptions to the extent possible.

Operational tools

Management proposes several operational tools to be implemented in the market clearing process, largely at the discretion of the ISO operators, to ensure the market dispatches do not exacerbate gas system conditions that could in turn compromise electric system reliability.

The first operational tool is a constraint in ISO market processes that will limit the affected area gas burn to a maximum and/or minimum limit. The ISO will coordinate with the gas company to the extent possible in setting gas burn limitations of the constraint. The ISO operators will enforce this gas burn constraint in its markets when gas system limitations exist or they have a concern that electric system redispatches could compromise gas system conditions which in turn could compromise electric grid reliability. Depending on gas system limitations, they will have the ability to apply this constraint in either, or both, of the day-ahead and real-time markets. They will also have the ability to apply the constraint for individual or groups of zones defined by the gas system. The constraint, when binding, will limit the dispatch of generators subject to the constraint and will affect resource-specific prices used for dispatch and settlement purposes. However, it will not impact the locational marginal price used for other purposes including load, congestion revenue rights, and virtual bids settlement.

The second operational tool is to provide ISO operators with the authority to reserve transfer capability on internal transmission paths. ISO operators may need to reserve internal transfer capability to ensure there is sufficient transfer capability in real-time to support reliable grid operations, including meeting incremental energy needs in southern California or assuring deliverability of contingency reserves. This would provide operators the ability to reserve transfer capability in either, or both, of the day-ahead and real-time markets. The ISO will consider limiting a corresponding amount of additional congestion revenue rights it releases in its monthly allocation process. In conjunction with using this tool, the ISO would potentially limit the amount of congestion revenue rights it releases in the monthly allocation and auction to be consistent with the reduced transfer capability.

The third operational tool is to reduce the amount of ancillary services procured from resources in southern California to ensure the ISO markets procure ancillary services that have access to sufficient fuel to respond to a contingency event if needed. The ISO operators would adjust the amount of reserves the markets procure from resources in southern California based on anticipated gas and electric system conditions. ISO operators might implement this tool in conjunction with reserving internal transfer capability to ensure reserves shifted to northern California can be delivered to southern California.

Finally, Management proposes tariff authority to deem selected internal transmission paths competitive or uncompetitive when the proposed constraint limiting the affected area's gas burn in southern California is enforced in the ISO market processes based on a determination that the actual electric supply conditions may be uncompetitive.

ISO market modifications

In addition to the operational tools described above, Management proposes several ISO market modifications to ensure ISO markets produce prices that reflect gas system limitations so that the risk that ISO dispatch could adversely impact gas operators' efforts to manage reliability is mitigated.

The first of these market modifications is to increase the gas cost estimate that is used to calculate the ISO real-time market commitment cost bid cap and default energy bids for generators on the Southern California Gas Company and SDG&E systems. This modification will allow these generators' real-time bid prices to better reflect gas system limitations and gas prices. This greater bidding flexibility will increase the likelihood that the ISO market will only dispatch these generators for local needs and not for system energy that can be provided by generators not subject to gas limitations in other areas of the electric grid. This modification is designed to increase the likelihood that the ISO markets will only dispatch individual generators to serve local needs in areas that could adversely impact gas reliability.

The gas cost estimates used by the ISO real-time market currently reflect prices for gas purchased for next day delivery. For generators on the Southern California Gas Company and SDG&E systems, Management proposes to increase these gas cost estimates in the real-time market by an amount that is:

- Sufficient to enable the ISO market to dispatch generators on the Southern California Gas Company and SDG&E systems only for local electricity needs and not system electricity needs;
- Accounts for systematic differences between actual day-ahead and same day gas prices that are likely to be more volatile for same day purchases on the constrained gas systems; and
- Needed to improve generators' ability to manage gas company requirements on the constrained systems to limit differences between individual generator's gas schedules and usage (*i.e.*, gas balancing requirements).

The amount used in the commitment cost proxy cost calculation would initially be set to scale the gas commodity price to 175 percent of the gas index price. The ISO will monitor whether this level is effective in ensuring that the ISO market dispatches generators in the affected areas only for local needs and adequately accounts for gas prices and balancing requirements. Management proposes to have the authority to adjust the scaling of the gas

commodity price in the event that it is too high or too low based on observed electric and gas market outcomes. The adjustment to the gas commodity price used in the commitment cost proxy cost calculation would be capped at \$2.50 plus two times the next day gas index price, which is the price a generator would pay for gas if it violated a gas company operational flow order based on the current gas company tariffs. This is likely to be the highest real-time gas prices rise to in southern California.

Management also proposes to adjust the gas price used to calculate default energy bids, which are the incremental energy bids used when a generator's bid is mitigated in local market power mitigation. Management proposes to initially scale the gas price used in the default energy bid calculation to 125 percent of the gas commodity price. Similar to the proxy cost calculation, Management proposes to have the authority to adjust the scaling of the gas price used for default energy bid calculations up or down based on observed electric and gas market outcomes. The gas commodity price for default energy bids would be capped at 200 percent of the gas commodity price.

Management also proposes a second market modification, applicable to all gas-fired generators, not just those in the affected area, to improve the gas price information used by the ISO day-ahead market to establish commitment cost bid caps and default energy bids for mitigated energy offers. The gas price information currently used by the day-ahead market is based on gas trading occurring the previous day and consequently does not align with gas trading for the majority of the operating day for which the ISO's day-ahead market is being run. The gas trading for the majority of the operating day occurs in the morning before the ISO runs the day-ahead market. The ISO currently manually adjusts its gas prices in the event of a large gas price increase relative to the previous day based on an updated index price received from the Intercontinental Exchange. Because the Intercontinental Exchange recently started publishing this updated index price at a time later in the day that makes this process infeasible, Management proposes to develop its own next day index for gas that approximates the Intercontinental Exchange next day gas price index. The ISO would do this by calculating a volume weighted average price using trades observed during the Intercontinental Exchange next day trading window.

The third market modification involves two provisions that the Board already approved but are mentioned here for the sake of describing the entire mitigation plan for Aliso Canyon. The first of these is to allow resources to re-bid commitment costs in the real-time market for hours for which they did not receive a day-ahead schedule. Resources would not be able to re-bid commitment costs in the real-time market once operating and subject to a minimum run-time constraint. The Board already approved this element at its March 2016 meeting, however, Management will include this provision in the FERC filing for expedited treatment and implementation. Second, Management will include a provision the Board also approved at its March meeting that will result in the ISO market no longer automatically inserting bids into the real-time market for resources that had bid into the day-ahead market but did not receive a day-ahead schedule and that do not have a real-time must offer obligation. This will ensure the real-time market will not consider bids from generators that did not have an

obligation to plan for gas procurement to operate in real-time from neither receiving a day-ahead schedule nor having a real-time must offer obligation.

Management proposes a fourth market modification to make two day-ahead advisory market results available with the clarification that they are not financially binding and for information purposes only. Currently, the ISO runs a two day-ahead market, which provides advisory results. The ISO uses these results for internal planning purposes only. The ISO would provide advisory information to market participants on estimates of their day-ahead market schedules so that they can consider this information in purchasing gas in the next day gas trading that primarily occurs before ISO day-ahead market results are available.

The final market modification is to permit market participants to file with the Federal Energy Regulatory Commission to have the opportunity to recover incurred commitment costs that exceed the commitment cost bid cap not recovered through market revenues as the result of high marginal fuel procurement costs not being fully reflected in the bid cap. The Board previously approved this measure at its March Board meeting. However, in light of the Aliso Canyon situation, Management proposes to expand this measure to also allow an opportunity for market participants to seek recovery for marginal fuel procurement costs associated with providing incremental energy and to modify its reimbursement method. The expanded measure will permit market participants to file with the Federal Energy Regulatory Commission to have the opportunity to recover incurred incremental energy costs that exceed the default energy bid not recovered through market revenues as the result of high marginal fuel procurement costs not being fully reflected in default energy bid. At the March Board meeting, Management proposed to reimburse the FERC-approved costs through its bid cost recovery mechanism. Management now proposes to adjust the reimbursement method to allocate costs the Commission finds to be just and reasonable to measured demand.

POSITIONS OF THE PARTIES

Stakeholders support Management's objective to quickly develop market and operational tools to mitigate the reliability issues raised by the limited operability of the Aliso Canyon gas storage facility. Stakeholders generally support the provisions to provide more flexibility to accurately reflect gas prices and to provide ISO operators with additional tools to manage electric system dispatch impacts on the SoCalGas and SDG&E systems. However, several stakeholders requested that Management provide further explanation and clarification on the details as to how the proposed provisions would be designed and implemented. In response, Management posted a revised draft final proposal that includes additional details. However, Management cannot at this time explain in exact detail how and when the operational tools would be used. The specific impacts of the limited operability of the Aliso Canyon facility on the electric system under various system conditions this summer are unknown. Consequently, implementation flexibility will be critical for both the market provisions and the application of the new operational tools.

Six Cities raised concerns that the proposed gas availability constraint would disproportionately impact certain small load serving entities. This concern was based on the understanding that the constraint would be uniformly applied to all generators in the affected area. Management clarifies that the constraint is not uniformly applied. It takes into account local reliability needs, efficiency of units, and resource costs to most effectively and efficiently limit generation dispatch consistent with gas availability limitations.

Some stakeholders are concerned that the real-time pricing provisions in Management's proposal only apply to affected generators on the SoCalGas system. They argue that the proposed provisions should apply to all gas generators in the ISO system. The pricing provisions in Management's proposal are intended to be short-term measures to address the immediate needs of the system to provide reliable operations in southern California over the summer. The pricing provisions are designed to only be applied to the affected generators so that the market will limit real-time dispatches of these generators for local reliability needs and in a manner supportive of gas system limitations. This will mitigate the primary limitation of the gas system—using more gas over the real-time operating day than that which was scheduled for that day.

Finally, some stakeholders also urged Management to commit to a process to replace the short-term solutions included in the proposal with more market-based solutions. Management has made several enhancements to its bidding rules and commitment cost market designs and will continue to pursue further enhancements to effectively address issues related to allowing accurate marginal costs to be fully reflected into ISO market bids.

CONCLUSION

Management requests Board approval of the proposal discussed above. The proposed market and operational tools will provide important functionality to mitigate the reliability impacts of the limited operability of the Aliso Canyon natural gas storage facility. The proposal includes flexibility so that the ISO can adjust the use of the new tools in line with market and reliability needs.