

Memorandum

To: ISO Board of Governors

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

Date: September 11, 2014

Re: **Decision on commitment cost enhancements**

This memorandum requires Board action

EXECUTIVE SUMMARY

Last winter extreme weather conditions in the mid-west and on the east coast caused abnormally high levels of gas price volatility across the country, including California. The ISO market could not reflect the large swings in gas prices in its resource commitment decisions because the commitment costs used by the ISO market were based largely on a fixed cost option selected by generators. This led to inefficient commitment and dispatch of generation.

Management is seeking Board approval of targeted market rule changes for generation commitment costs that will improve market efficiency by ensuring that more accurate natural gas prices are used for ISO dispatch decisions. The proposed enhancements also provide market participants with greater flexibility to manage risks associated with natural gas price volatility.

Generator commitment costs include the costs of starting up a generator and the costs of running a generator at its minimum load levels so that it is available for future dispatch. Under the current market structure, generators can choose between a fixed cost option and a variable cost option. The fixed cost option is called the “registered cost” option, and does not follow daily changes in gas prices. Rather, the registered cost option uses a monthly gas price and has a cap of 150% of calculated costs. The variable cost option, called the “proxy cost” option, tracks daily changes in natural gas prices. It uses a daily gas price and is capped at 100% of the calculated costs. Most generators have selected the fixed cost option, which led to the inefficient commitment and dispatch of generation last winter during volatile gas price periods.

Management is proposing to raise the cost cap of the proxy cost option to 125% and eliminate the registered cost option for all gas-fired resources except those designated as being “use-limited”. Management proposes that use-limited resources, which are

resources that have start and run limitations due to environmental or other operational restrictions, be able to temporarily retain the registered cost option to reflect potential opportunity costs of running the generator. Management proposes to retain the registered cost option for use-limited resources until the ISO implements new functionality to enable resources to reflect opportunity costs in their start up and minimum load bids.

These enhancements will allow generators more flexibility to provide more accurate commitment costs to the ISO and better ensure that ISO market dispatch decisions are based on current gas prices.

Management proposes the following motion:

Moved, that the ISO Board of Governors approves the proposed commitment cost enhancements proposal, as described in the memorandum dated September 11, 2014; 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

The proposed commitment cost enhancements include market rule changes that will collectively provide for more accurate generator start-up and minimum operating level costs for use in the ISO market. The proposal was specifically designed so that it can be quickly implemented for the upcoming winter season to avoid the market inefficiencies that occurred last winter during periods of extreme volatility in natural gas prices.

Background

The ISO currently has two bidding options for start-up and minimum operating level costs. The two options are designed to mitigate potential market power concerns by capping the bid price of a generators start-up and minimum load bids (collectively referred to as “commitment costs”). The two options are the registered cost option and the proxy cost option:

- The registered cost option allows market participants to bid up to 150 percent of a projected cost calculated by the ISO and is fixed for 30 days. The cost components for this option include natural gas, maintenance costs, greenhouse gas regulation compliance costs, and ISO grid management charge costs. The natural gas component is determined by the average of monthly natural gas futures price. To mitigate local market power, this relatively high 150 percent bid

cap is balanced with a requirement that the bids are fixed for 30 days.¹ This eliminates the ability of a market participant to submit high commitment cost bids during days the participant has reason to believe the ISO market must commit a certain generator.

- The proxy cost option, on the other hand, is more flexible by incorporating daily gas costs and allows for daily bidding of commitment costs. It allows a market participant to submit bid prices for commitment costs up to 100 percent of costs calculated by the ISO using a daily gas price index and the same cost items as the registered cost option.

Although the proxy cost calculation uses a daily gas price, there is a one-day lag in the gas price used in the proxy cost option. This one-day lag exists because the day-ahead gas indices used by the ISO are published late in the day after the ISO day-ahead market runs. Consequently, the ISO must use day-ahead gas indices from the previous night that are for the following day's gas market, which is one day behind the trading day for the ISO day-ahead market. For example, the gas price indices are published the evening of Day 1 for gas trading on Day 2. The ISO will incorporate these gas prices into the proxy costs on the morning of Day 2 when running the day-ahead market for Day 3. Therefore, the gas price indices for Day 2 are used for Day 3 proxy cost commitment cost calculations in the ISO day-ahead market.

Last winter due to extreme weather conditions, gas markets experienced abnormally high volatility. The ISO market could not reflect the large swings in gas prices in its resource commitment decisions for two reasons. First, the majority of the natural gas fueled generators had selected the registered cost option, which provides for a fixed cost for start-up and minimum load costs based on a monthly gas price. Next, for generators that had selected the proxy cost option that captures daily changes in natural gas costs, the large price swings were not captured because the commitment costs used by the ISO market were determined by gas prices from the previous trade day. As discussed above, this second issue was due to timing conflicts with the ISO market process and the publishing of daily gas indices. Both of these issues led to inefficient commitment and dispatch of generation during volatile gas price periods.

To address the potential for additional gas price spikes, in February of this year the ISO sought and received Federal Energy Regulatory Commission approval to implement a temporary tariff waiver to manually update the gas price used by the market with the most recently available natural gas index price during periods of extreme gas price volatility. This waiver expired on April 30, 2014. As part of that tariff waiver filing, the

¹ A market participant can only switch a generator to the "proxy cost" option if they have been under the registered cost option for 30 consecutive days or if the proxy cost is higher than the registered cost. If the participant chooses to switch to the proxy cost option because it is higher than the registered cost, they must remain under the proxy cost option for the remainder of the 30-day period.

ISO committed to conduct a stakeholder process to address the issues raised by the volatile gas market conditions by developing and implementing a more comprehensive solution in advance of the upcoming winter season.

Proposed enhancements

Given the current structure and the issues that arose due to volatile gas prices last winter, Management proposes three enhancements to the market rules for bidding commitment costs:

1. Increase in the proxy cost option bid cap from 100 percent to 125 percent of the daily-calculated cost.
2. Eliminate the registered cost option, except for temporarily retaining it for use-limited generators until the ISO can implement market enhancements that effectively account for use-limitations.
3. Retain a manual process to update gas prices used by the market in the event of extreme gas price spikes between the time the natural gas price indices are published and the time of the ISO's day-ahead market.

Each of these is discussed in detail below.

Increase proxy cost option bid cap from 100 percent to 125 percent

Management proposes to increase the proxy cap under the proxy cost option from 100 percent of a generator's calculated cost to 125 percent of its calculated costs. This will provide additional flexibility for market participants to account for commitment costs not included in the proxy cost calculation while providing protection against local market power. Costs not captured by the proxy cost calculation include day-over-day and intra-day gas price volatility, and generator-specific variations from the generic costs the ISO considers. While the registered cost option's cap of 150 percent of calculated costs could ostensibly cover these costs, the proxy cost option more accurately reflects generators' current costs because it uses an updated gas price index each day. Because of this, it does not need the large "headroom" above calculated costs. The register cost option needs this large headroom because it locks gas prices in for 30 days.

Management analyzed historic gas price day-over-day and intra-day gas price volatility and found that increasing the proxy cost cap from 100 percent to 125 percent will account for the vast majority of gas price volatility. Since April 2009, there have been only seven instances in which the gas price for the next day was more than 125 percent of the previous night's price. For those limited days when the gas price increases more

than 25 percent, Management proposes to use a manual process, described below, to update the gas prices used in the day-ahead market.

Eliminate the registered cost option for most generators

The proposed enhancements to the proxy cost option largely eliminates the need for the registered cost option. The single exception is in the consideration of use-limited resources as explained below.

The registered cost option has identical inputs to the proxy cost option except that registered cost option has the strong disadvantage that it uses a monthly futures gas price that often does not reflect current gas prices. Consequently, the gas price used as the basis for the registered cost option can lead to the inefficient dispatch of resources. This occurred during the February 2014 gas price spike when most generators were under the registered cost option. As a result, the commitment costs used by the ISO market were significantly lower than generator's actual costs. Moreover, once gas prices fell in March 2014, the registered cost option continued to reflect the higher prices from February and the commitment costs used by the market were too high. This resulted in inefficient generator commitment and dispatch in both months. Given the proposal to increase the bid cap on the proxy cost option to 125%, which should provide sufficient headroom for recovery of a resource's actual commitment costs, Management is proposing to eliminate the registered cost option for all resources except, temporarily, for those having use limitations.

Management proposes to temporarily retain the registered cost option for use-limited generators. A use-limited generator is a generator used to meet resource adequacy requirements but has environmental or operational restrictions on how often it can start up or operate. Market participants submit start-up or minimum load bids for these generators at higher prices to account for these restrictions. As a result, use-limited generators are only started and operated at minimum load when the system need is greatest. The increased bid amount to reflect these limitations reflects opportunity costs of only running the generator when prices are high. The opportunity costs for some use-limited generators could be greater than the proxy cost option's 125 percent cap. Therefore, it is reasonable to retain the registered cost option with a 150 percent cap until new provisions are implemented to enable these resources to bid their opportunity costs.

As part of the stakeholder initiative leading to this proposal, Management proposed provisions for including opportunity costs into the proxy cost cap for use-limited resources. However, stakeholders commented there was not enough time to vet fully the methodology and raised concerns that this could delay the implementation of proposed enhancements past this winter. Management thus proposes to retain the registered cost option for use-limited resources until it completes a subsequent stakeholder initiative to complete the opportunity cost methodology. Management

expects to have the opportunity cost provisions to be implemented prior to the winter of 2015-2016.

Use a manual process to update gas prices if a gas price spike occurs

To address relatively rare extreme gas price spikes, Management proposes to use a manual process to update gas prices used by the market when the price in the morning is over 125 percent of the previous night's index prices. Management found only seven instances since April 2009 where the gas price for the next day is greater than or equal to 125 percent of the previous night's prices. One of the events occurred in February 2014.

To implement this manual process, when the ISO observes a significant increase in gas prices the ISO will delay the close of the day-ahead market and incorporate an updated gas price published by the Intercontinental Exchange. The price from this index will be used to update the commitment cost bid cap and other market inputs that use the gas price index. Market participants have the opportunity to rebid after the gas prices are updated. Since this process only updates the proxy cost option, Management proposes an automatic day-of switch for use-limited resources under the registered to the proxy cost option so that their commitment costs also reflect the updated gas price. This will ensure that the ISO market reflects accurate costs for all generators in the event of a gas price spike.

POSITIONS OF THE PARTIES

Stakeholders generally support the increase of the proxy cost cap from 100 percent to 125 percent but several generators feel the proxy cost cap should be set even higher (e.g., 150%) to better ensure recovery of costs associated with intra-day gas price volatility. Stakeholders also overwhelmingly support the use of the manual process on the day of a natural gas price spike. Finally, stakeholders that are concerned about bidding opportunity costs for use-limited resources support the retention of the registered cost option.

The Market Surveillance Committee supports Management's proposal as a near term solution. The MSC's Final Opinion is attached. The Department of Market Monitoring also supports Management's proposal. The DMM report is also attached for reference.

The following addresses stakeholder positions raised during the stakeholder process. A detailed stakeholder comment matrix is attached.

Position 1: Some stakeholders believe the proxy cost option should have a bid cap of 150 percent of calculated costs rather than 125 percent to address intra-day gas price volatility.

Response: Management's own analysis and confidential data provided under non-disclosure agreements show the proposed 125 percent cap under the proxy cost option will cover the vast majority of gas price volatility due to day-over-day and intra-day gas price movements. In addition, the proposed manual process addresses the remaining extraordinary events. A higher bid cap is appropriate under the registered cost option because the bid price is locked in for a month and there can be significant gas price changes over this time. Conversely, the ISO updates the gas price for the proxy cost option bid cap every day so a lower amount of headroom is appropriate. This bid cap is an important market power mitigation measure.

Position 2: Some stakeholders have requested direct out-of-market reimbursement of incurred natural gas costs.

Response: Management's analysis shows that the 125 percent proxy cap and the manual process support recovery of natural gas costs as reflected in commitment costs. Out-of-market reimbursement of costs not reflected in the market optimization would reduce market efficiency and potentially create gaming opportunities.

Position 3: Some market participants requested additional bidding flexibility to reflect intra-day and penalty costs from gas pipeline companies to market participants in the ISO market.

Response: Given the flexibility provided under the increased proxy cap and manual process, the ISO believes there is sufficient flexibility to address the vast majority of gas price increases. This initiative seeks to find solutions that the ISO can implement by the upcoming winter. Greater bidding flexibility will be addressed in a longer term bidding rules initiative scheduled to begin later this year, which will consider long term market design changes for both energy and commitment cost bids. Finally, Management is considering further enhancements that will provide for recovery of gas pipeline penalties caused by ISO dispatches.

CONCLUSION

Management recommends the Board approve the commitment cost enhancements proposal described in this memorandum. The enhancements can be implemented in time for the upcoming winter and will result in increased market efficiency and provide market participants with greater ability to manage risks associated with natural gas price volatility.