UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Winter 2013-2014 Operations and Market Performance in Regional Transmission Organizations and Independent System Operators	**Docket No. AD14-8-000**

Prepared Statement of Brad Bouillon
on Behalf of the California Independent System Operator Corporation

I. Introduction

My name is Brad Bouillon. I am the Director, Day-Ahead Operations and Real-Time Operations Support for the California Independent System Operator Corporation (ISO). In this position, I oversee operation of the ISO's day-ahead market and provide support to real-time market operations on scheduling and outage coordination issues. I have nearly 25 years of experience in utility operations and have worked with the ISO for over 15 years. During my time at the ISO, I have also worked as a manager of the settlements and market quality departments. I have a Bachelor of Science degree in accounting as well as a Master's of Business Administration in management, a Master's of Science degree in computer information systems, and an Advanced Masters' Certificate in applied project management.

The ISO operates the bulk electric high-voltage transmission system that makes up approximately 80 percent of California's power grid. Approximately 60 percent of the installed capacity in the ISO's balancing authority area uses natural gas as fuel. The ISO also imports power, a portion of which is also sourced from natural gas-fired electric generating units. While the "polar vortex" weather condition that occurred in early January 2014 did not materially impact the ISO's balancing

authority, in December of 2013 and February 2014, the ISO experienced certain operational challenges arising from cold weather events.

Market participants have raised a number of questions concerning how the ISO's markets functioned during the February 6, 2014 cold weather event. The ISO plans to share information and analysis concerning the February 6, 2014 cold weather event with market participants and will discuss this information as appropriate at its next market performance and planning forum, or in relevant stakeholder processes. The ISO encourages market participants to raise their questions in this forum, or the relevant ISO stakeholder process, to allow for a complete discussion of any concerns or questions.

For purposes of today, my comments focus on two events occurring in December 2013 and February 2014 that impacted the ISO system. In these comments, I discuss 1) the steps the ISO took to prepare for these cold weather events as well as operating conditions leading into the day-ahead electricity market; 2) the ISO actions in the day-ahead timeframe as well as real-time; 3) the ISO's coordination with natural gas pipeline operators, market participants and participating transmission owners; and 4) the lessons learned from these experiences.

II. General Coordination between ISO and Gas Pipeline Operators

Prior to and during this past winter, the ISO followed its current coordination practices with gas pipelines to assess whether sufficient gas supplies existed for generators serving electric load in the ISO's balancing authority. These procedures include sharing information about system conditions and natural gas supply. In preparation for anticipated cold weather this past winter, the ISO also evaluated scheduled electric generation and transmission outages, as well as scheduled outages of gas pipeline facilities. The ISO worked with affected entities to assess

staging this work, as well as identifying outages that infrastructure owners could potentially cancel or defer to accommodate maintaining adequate electric supply to serve load.

On a daily basis, the ISO shares with pipeline operators the total projected gas consumption resulting from day-ahead generator schedules. This information provides gas pipeline operators with an indicator of gas consumption that will occur over the next operating day by the pipeline's electric generator customers. The projected gas usage reflects hourly projections over the operating day.

III. December 2013 Cold Weather Related Events

In the first half of December 2013, southern California experienced below average temperatures, causing increased use of natural gas on the Southern California Gas Company (SoCalGas) system. During that time, electric and natural gas utilities operating in southern California announced that continuing record cold weather across the United States was placing a heavy strain on short-term natural gas supplies and asked customers to conserve energy, particularly natural gas.

Starting on Friday, December 7, 2013, SoCalGas informed the ISO that they faced constraints in providing gas supply to gas-fired generators. Some scheduling coordinators for gas-fired generators in southern California also informed the ISO that they might not have access to adequate fuel supplies heading into the week of December 9, 2013. Over the weekend, the ISO continued to share hourly gas usage information with SoCalGas based on the ISO's day-ahead market results.

On the morning of December 9, 2013, SoCalGas informed the ISO that its pipeline system faced constraints as a result of high demand, and that absent reduced use of natural gas by electric generators SoCalGas would curtail natural gas supply. In order to assist with gas supply conservation efforts in the southern

California area, the ISO exceptionally dispatched generation and requested that all market participants actively monitor the ISO's automatic dispatch system dispatches for potential changes from their day-ahead schedules. SoCalGas informed the ISO that gas supply issues would normalize by the evening of December 9, 2013.

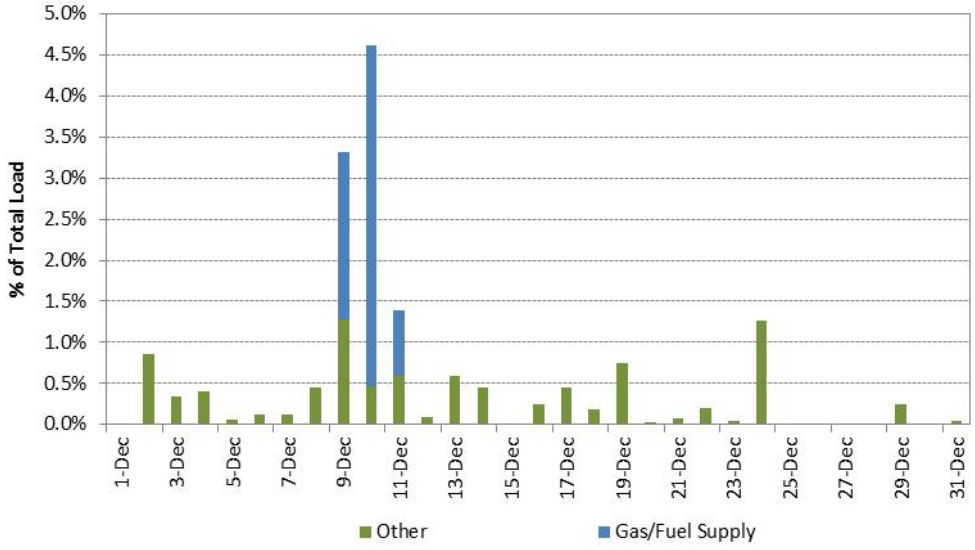
On the morning of December 10, 2013, SoCalGas again informed the ISO that it had extremely high demands on its system and specifically requested the ISO take steps to reduce natural gas use by electric generators. The ISO again exceptionally dispatched generation and requested that all market participants actively monitor automatic dispatch system dispatches for potential changes from their day-ahead schedules. Again, SoCalGas informed the ISO that gas supply issues would normalize by the end of the day, i.e. the evening of December 10, 2013.

Below average temperatures continued through December 11 and the ISO again had to exceptionally dispatch resources to accommodate gas supply shortages on the SoCalGas system. Throughout this time, ISO real-time operators were in contact with SoCalGas system operators regarding system conditions. ISO real-time operators also conferred with the Western Electricity Coordinating Council Reliability Coordinator who assisted in coordination efforts with the Los Angeles Department of Water and Power to cancel a scheduled outage on the Pacific DC Intertie. The ISO was also able to cancel a planned outage on the California Oregon Intertie to support electricity imports into the ISO.

The ISO also made real-time exceptional dispatches to reduce gas-fired resources' demand on the SoCalGas system. As reflected in Figure 1, the volume of the ISO's exceptional dispatches was high from December 9 through December 11, 2013, mainly due to gas supply limitations for electric generators in the Southern

California Edison and San Diego Gas and Electric service territories. Figure 1 reflects the sum of all exceptional dispatches during the applicable timeframe, including decreased output from certain resources and increased output from other resources.

Figure 1: Daily Exceptional Dispatch by Reason



Commencing on December 9, 2013, the ISO also issued restricted maintenance outage notifications to resource owners and participating transmission owners, alerting these entities that the ISO anticipated gas delivery curtailments in southern California and that restricted maintenance operations, as detailed in ISO Operating Procedure 4420, were in effect.[1] This procedure outlines the steps that the ISO and affected entities may take to prevent a system emergency and to stabilize the system should a system emergency occur and allows the ISO to cancel all scheduled outages and/or any planned maintenance. The notices cautioned market participants to avoid actions which may jeopardize generator and/or

[1] A copy of ISO Operating Procedure 4420 is available at the following website: http://www.caiso.com/Documents/4420.pdf

transmission availability. The ISO lifted the restricted maintenance operations condition on December 12. At no time during the December 2013 cold weather events did the ISO call a system emergency.

In terms of lessons learned from the December 2013 cold weather events, the maximum available gas usage rate for electric generators on the SoCalGas system appears to be closely tied to other gas demands. The ISO, therefore, is engaged in additional dialog with SoCalGas to better understand when to anticipate physical and operational constraints on the SoCalGas systems. The ISO believes that its coordination with gas pipeline operators is a better approach than accepting *pro rata* curtailments of gas supply because it allows the ISO to explore a more efficient use of available gas supply to electric generators needed to serve electric load.

IV. February 2014 Cold Weather Related Events

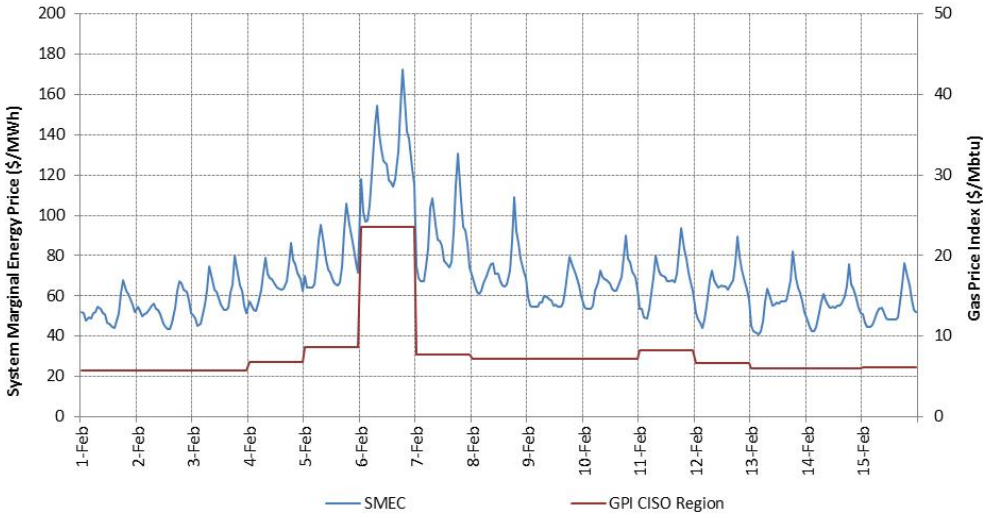
On February 6, 2014, natural gas prices increased three-fold from approximately $7/MMBtu the previous day to over $20/MMBtu at some of the western trading hubs. This increase in prices appears to have been linked to a shortage of natural gas, triggered by extreme cold weather in much of the United States and Canada. SoCalGas informed the ISO that storage levels were near all-time lows in part because higher gas prices outside of California led to higher storage withdrawals.

In the weeks and days before February 6, 2014, the ISO continued to monitor infrastructure outages for reliability concerns, and ensured daily gas usage reports were sent to gas pipeline operators. While the ISO had initiated efforts to enhance the granularity of the gas usage rate reports to the pipeline operator at the unit level, those changes were not in place in early February. This information will, in time,

help gas pipeline operators anticipate constraints on their systems due to the expected fuel use.

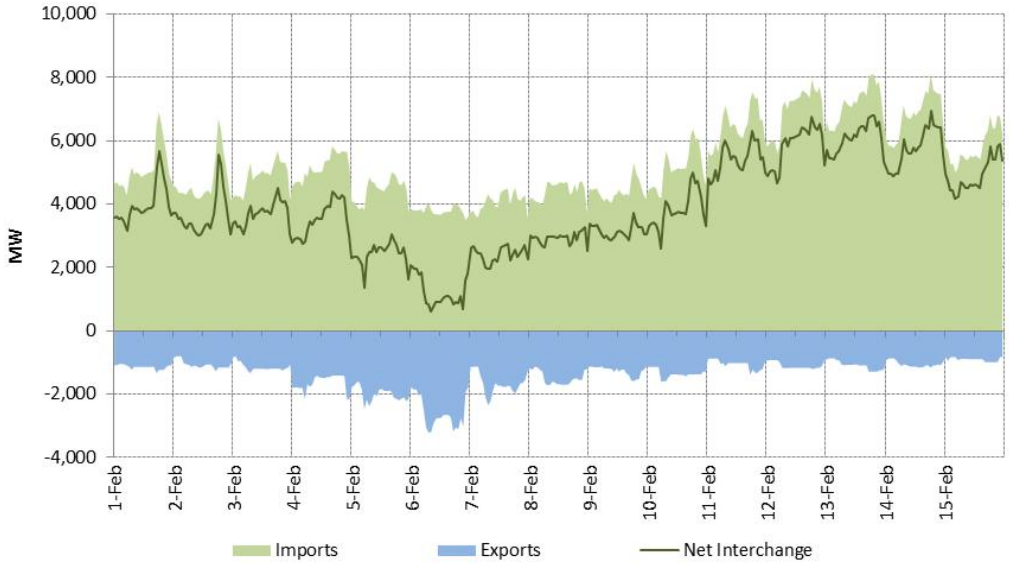
Competition for gas across the west for trade date February 6, 2014 reflected more expensive gas prices and consequently increased day-ahead energy prices in the ISO market, including at the interties. Figure 2 shows the day-ahead energy prices for the first half of the month of February 2014 along with the California gas price index.

Figure 2 – Day-Ahead Energy Prices for the California ISO Market



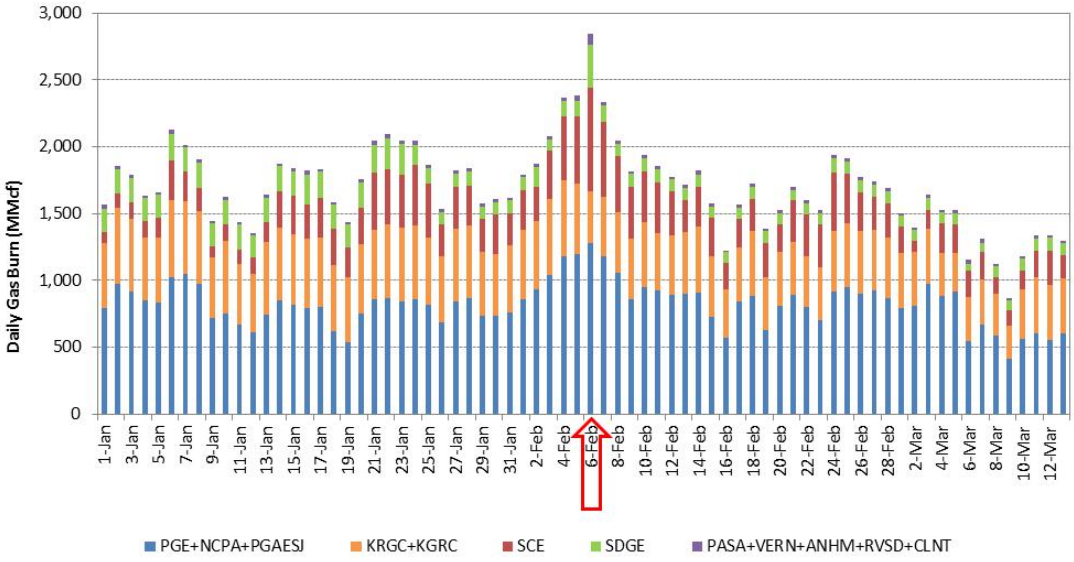
While day-ahead energy prices reflected increased gas prices, internal resources' minimum load costs reflected lower gas prices from the prior day. The ISO's day-ahead market solution, therefore, resulted in a commitment of internal generation resources and very low procurement on the ISO's interties. Figure 3 reflects the daily profile of day-ahead imports and exports on the ISO system during the first half of February 2014.

Figure 3 – Day-Ahead Intertie Awards for the California ISO Market



The gas usage projections provided to gas pipeline companies for trading date February 6th reflected a system-wide 20 percent increase with respect to the previous day's gas usage, with significantly higher projected gas usage rate in southern California than the projections reported for previous trading dates. Figure 4 reflects day-over-day projected gas usage.

Figure 4 – ISO Projected Gas Usage by Electric Gas-Fired Generation January through March 12, 2014

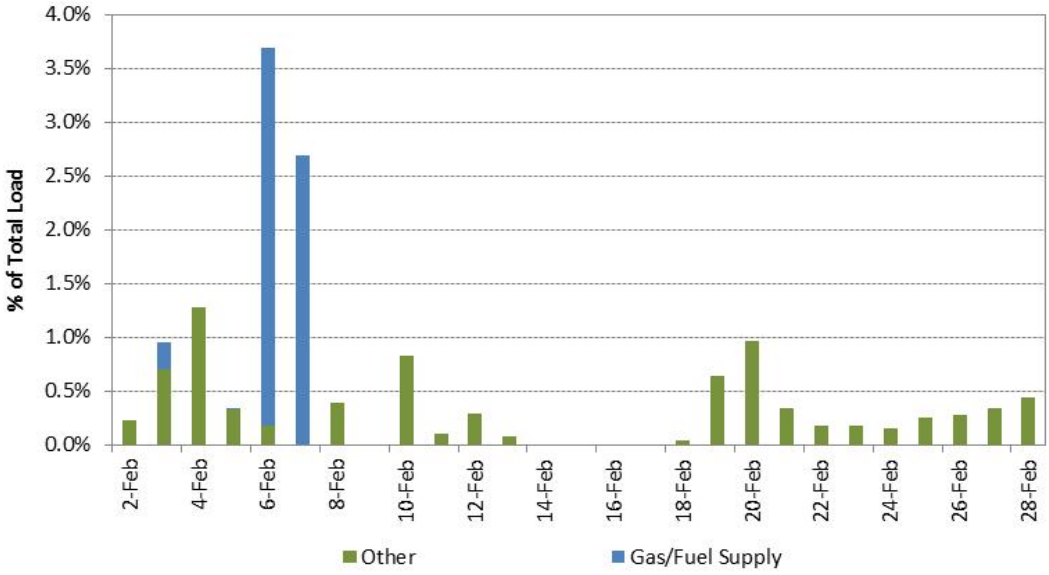


ISO real-time operators contacted gas pipelines on February 5, 2014 to inquire as to whether the gas pipeline systems were able to support day-ahead electric schedules for February 6. The ISO received an affirmative response. Early on February 6, 2014, ISO real-time operators contacted gas pipelines to reconfirm that they could support the electric schedules for February 6, 2014. Again, the ISO received an affirmative response.

But, before 7 a.m., SoCalGas contacted the ISO with concerns over generating units' gas usage rates. The ISO also received forced outage notifications from generating units based on gas usage limitations imposed by SoCalGas. Soon thereafter, SoCalGas directed that all generating units located in the southern portion of its system not increase their natural gas usage rates. The ISO also understands that SoCalGas curtailed gas supply to specific generating units.

The ISO immediately issued a restricted maintenance operations notice cautioning market participants to avoid actions which may jeopardize generator and/or transmission availability. The ISO also issued exceptional dispatches to generators to ensure they did not increase their gas usage rate, consistent with SoCalGas' directive. These exceptional dispatches included decreasing output from some resources taking service from SoCalGas. ISO real-time operators then dispatched other generating units and intertie resources to make up for the loss of electric supply. Figure 5 shows the daily profile of exceptional dispatches and reflects the sum of all exceptional dispatches during the applicable timeframe, including decreased output from certain resources and increased output from other resources.

Figure 5: Daily Exceptional Dispatch by Reason



Later on the morning of February 6, 2014, SoCalGas informed the ISO that it needed to reduce further gas usage on its system in advance of the evening electric load increase. ISO real time operators took several steps, including repositioning generating units on the SoCalGas system; issuing a system wide Flex Alert, which consists of a general public appeal for conservation; and issuing a grid warning notice explaining the gas use constraint. The grid warning notice also encouraged market participants to offer additional energy and ancillary service bids. The ISO also contacted utility distribution companies to request that they activate their interruptible load. The ISO received approximately 800 MW of load reduction from these utility programs at the time of the evening peak electric demand. The WECC Reliability Coordinator also issued Energy Emergency Alerts to initiate its own efforts to help mitigate the system conditions. In the late afternoon, wind generation output increased as evening peak electric demand occurred. This output reduced the need for additional gas-fired generation to meet this demand.

After the evening electric peak, the ISO informed the utilities that they could restore interruptible loads and terminated its Flex Alert and grid warning notice. For February 7, 2014, the ISO re-issued a restricted maintenance outage notice as a precaution in case conditions on the gas system did not stabilize.

Based on outcomes from February 6, 2014, the ISO continues to work with SoCalGas to improve communications and awareness between ISO and SoCalGas real-time operators. The ISO understands that SoCalGas is currently examining several rule changes, including new low-pressure operation flow order warnings that the ISO hopes will improve the transparency of system conditions on the SoCalGas system by signaling when there is a need to obtain greater physical deliveries of natural gas on the system to meet electric generation and other commitments.

Among the lessons learned from the February 6, 2014 cold weather events was that gas prices used for the calculation of generating unit minimum load costs and startup costs may not reflect the current gas price in the event of a sudden gas price spike. This is because the ISO bases these gas prices on gas market indices that are based on gas trades the day prior to the ISO's day-ahead market. As a result, the ISO's market committed resources in the day-ahead market that reflected the lower gas prices traded the previous day. This created concerns because the situation resulted in an inefficient dispatch that did not accurately reflect generation production costs.

To address this issue in the immediate future, the ISO requested, and the Commission has granted, temporary waivers of its tariff to allow it to incorporate a more recent gas price forecast into its day-ahead market solution as well as settlement practices under certain conditions, including the option for registered-cost resources to switch to proxy cost option when gas price spikes occur. The ISO plans

to undertake a stakeholder process to explore refinements to its market rules to address this issue on a permanent basis.

Dated April 1, 2014

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 2nd day of April, 2014.

/s/ Anna Pascuzzo
Anna Pascuzzo