

June 28, 2013

By Electronic Delivery

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Coordination between Natural Gas and Electricity Markets; Docket No.
AD12-12-000

Dear Ms. Bose:

Attached are answers to questions posed by the Commission to the New York Independent System Operator, Inc. ("NYISO") on June 4, 2013 in this docket. The NYISO will serve these answers on the official service list in this proceeding and on Caroline Daly, in the Office of Energy Policy and Innovation, as the Commission requested.

Should you have any questions, please do not hesitate to connect me.

Respectfully submitted,

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1. Many ISO/RTOs have ongoing stakeholder processes looking at various issues associated with gas-electric coordination issues. What are the specific recommendations emerging that can be implemented quickly (e.g., by January 2014), for example, without requiring expensive and time-consuming software changes, while stakeholders are evaluating longer-term solutions? Please explain whether these require tariff changes.

To better manage a potential exposure to natural gas unavailability in-day, the NYISO is discussing the acquisition of real-time, next-hour information on gas units' fuel capability during cold weather events. This would require the development of an "extreme weather procedure" to allow NYISO operators to better understand the in-day fuel capability of generators during cold weather, including the availability of alternative fuels. For example, the NYISO is reviewing the usefulness of requesting generators to submit the following information at certain points during the operating day (e.g. prior to the morning ramp, prior to the peak, etc.):

- Gas nominated (DT and MW)
- Gas already burned (DT and MW)
- Alternate fuel on-site (gallons and MW)
- Time required to re-fuel

The NYISO has initiated discussions of this issue with stakeholders in the Electric-Gas Coordination Working Group. The details of this recommendation are still under discussion and will need to be shared with a broader set of stakeholders before implementation, but such a process could be in place by January, 2014. As currently being considered, this recommendation should not require a tariff change.

As is discussed in greater detail below, the NYISO has also already begun reviewing Electronic Bulletin Board notices regarding planned and unplanned maintenance on gas pipelines in an effort to improve the coordination of electric outages with those planned on gas pipelines.

2. Some of the challenges associated with gas-electric coordination occur when gas-fired generators are asked to obtain gas supply and pipeline transportation capacity, or additional gas supply and pipeline transportation capacity, on short notice or outside of the normal day-ahead nomination cycles. Is your ISO/RTO exploring ways to improve the day-ahead scheduling process to better reflect the expected real-time generation requirements? Are there "best practices" in this area that each ISO/RTO should be considering? ISO-NE recently implemented changes to its day-ahead schedule to better align the gas and electric trading days. Is your ISO/RTO considering similar modification for bidding and clearing in the day-ahead market?

The NYISO agrees that among the most significant challenges in this area is the need to obtain gas supply and pipeline transportation capacity, or additional gas supply and pipeline transportation capacity, on short notice, outside of the normal day-ahead nomination cycles or beyond the short window for liquid gas purchasing. Changing the NYISO's Day-Ahead scheduling process and time frame has been discussed in the NYISO Gas-Electric Coordination

Working Group but, to the best of the NYISO's information, there are no "best practices" in this area.

The challenges associated with improving the alignment of the gas and electric markets stems from the fact that the two markets have both: (1) different operating days; and (2) different scheduling times. A further challenge arises from the fact that the most liquid gas trading occurs during the morning hours and only on weekdays.

The electric operating day runs from 12 a.m. - 12 a.m. (ET) and the gas operating day for all parties runs from 10 a.m. - 10 a.m. (ET). Scheduling periods in both the gas and electric markets also differ and, in the gas market, the periods for purchasing gas supply and for nominating gas transportation also differ. While the timing for day-ahead electric scheduling differs across ISO/RTOs, in most markets generators either submit their energy offers before knowing what the price of gas will be (price uncertainty), or nominate their gas prior to receiving a firm operating commitment (quantity uncertainty), or both. In the NYISO, all energy offers are due at 5 a.m. when the Day-Ahead electric market closes and generator schedules are posted no later than 11 a.m.

Gas scheduling can take place throughout the gas operating day; however, most gas is scheduled during the timely nomination cycle, which closes at 12:30 p.m. (ET) the day before. For gas generators, nominating before the close of the timely cycle is important, especially in the winter. Gas transportation contracts purchased via capacity release and scheduled in the timely cycle are considered a type of firm transportation. If generators wait to schedule gas until the close of the evening nomination cycle, on a peak winter day, the pipeline could already be close to full capacity.

Gas market trading occurs during normal business hours but the most liquid trading occurs between 8a.m. - 9a.m. weekday mornings. Even though the gas market is "open" during normal business hours, there is no liquid trading platform available in other hours. This means that gas-fired generators cannot easily procure gas during evening hours, early morning hours, weekends, or holidays.

Some effort to ameliorate the impacts of these scheduling disparities has already been made. In New York, for example, generators can manage some gas price uncertainty by increasing their real-time electric offer of day-ahead scheduled energy to reflect the higher gas purchase price. This re-bid option, known as Increasing Bids in Real-Time or IBRT, allows generators to increase their real-time offer to match the actual cost of gas. By creating an opportunity to be dispatched down, IBRT can convert the need to burn expensive gas into an electric balancing obligation. This reduces the generator's cost exposure and improves reliability for the NYISO by maintaining resource availability.

On the gas side, if there were a more liquid gas trading market that continued to the close of the timely gas nomination cycle at 12:30 p.m., as well as a more liquid gas trading market during evening hours, early morning hours, weekends, and holidays, this would help to improve gas availability. Additional gas nomination cycles would also be useful in expanding the opportunity

to secure gas pipeline transportation capacity, under short-notice situations, when transportation remains under-utilized. However, additional nomination cycles may not relieve the challenges associated with securing gas supply outside of the most liquid gas trading hours, especially during winter seasons, and particularly during extreme weather events.

The NYISO understands that advancing the 11 a.m. Day-Ahead market posting time would be helpful, particularly in informing generators of the quantity of gas necessary for the next day, and the NYISO is seriously reviewing the opportunities it may have for accomplishing that. However, it appears that moving the posting of the NYISO's Day-Ahead market results to an earlier time would not resolve the difficulty gas generators may have in ascertaining the price of natural gas, nor the difficulty in purchasing that gas outside of the most liquid trading times.

3. *What are the specific concerns that your region has for this coming winter? Are there specific actions the Commission can take to help address those concerns?*

The price and quantity uncertainties described above, resulting from differences in market timing between the gas day purchase and nomination schedules and the electric day scheduling process, may lead to concerns about the sufficiency of gas purchased and scheduled day-ahead and, more specifically, the ability of gas-fired generators to respond to changing system conditions in real-time this winter.

Four types of situations could arise:

1. A generator with a day-ahead commitment did not schedule enough gas to meet that commitment in the timely cycle (*i.e.* before 12:30 p.m.).

Concern: Significant use of gas pipelines in the winter could make it difficult for generators (holding secondary firm or interruptible transportation contracts) to make additional nominations outside of the timely cycle.

Potential Relief: Pursuit of in-day information on generator fuel availability, as discussed in response to question one above, is intended to alert the NYISO to this potential problem ahead of time, before an electric unit derate is the generator's only available option.

2. A generator has a day-ahead commitment and real-time system conditions change, requiring it to operate outside of the scheduled dispatch.

Concern: Same as above.

Potential Relief: As mentioned above, during seasons when gas transportation remains under-utilized, additional gas purchase and nomination cycles should expand the opportunity to secure gas supply and pipeline transportation capacity, on short notice or outside of the normal day-ahead nomination. New gas pipeline capacity could also expand additional gas procurement options in these situations.

3. A cold snap occurs over the weekend, or over a holiday, requiring generators to operate outside of their scheduled dispatch.

Concern: Gas is not easily purchased on weekends/holidays.
Potential Relief: See above.

4. The end of the gas operating day coincides with the morning load pick-up on the electric system.

Concern: If generators did not purchase enough gas to operate throughout the gas day, balancing restrictions, for example a gas system alert or OFO, could limit the ability of generators to respond to dispatch signals during the morning ramp.
Potential Relief: See Answer to Question 4.

In addition, although many of the gas-fired generators in the NYISO have dual-fuel capability, there are concerns about the ability of generators to switch to their alternate fuel. During the January, 2013 cold snap, some dual-fuel units called in derates, for both fuel (*e.g.* lack of fuel or problems related to switching) and non-fuel related reasons. The NYISO is collecting information on dual-fuel capability of generating units, as well as creating a procedure for assessing next-hour fuel capability of generators during extreme cold weather conditions to provide it with advance notice of these potential reliability issues.

4. *There has been some discussion about shifting the start of the gas operating day ahead of the electric morning ramp. Would such a change improve gas-electric coordination in your region?*

The NYISO believes that shifting the start of the gas operating day ahead of the electric morning ramp would improve gas / electric coordination and electric reliability. Because the end of the gas operating day currently coincides with the morning load pick-up (about 6 a.m. - 8 a.m.), generators may need to rely on the interstate pipeline or on the LDC for gas balancing service (*i.e.* utilizing a pre-existing contract to cover deviations between actual consumed gas and scheduled gas service) to meet the increasing morning electric load ramp. If balancing capability is limited, due to a system alert or OFO, balancing may not be an option and gas may be unavailable to complete the generator's morning schedule. In this case, generators make an economic decision to switch to an alternate fuel for a few hours or derate their facility. These choices may need to be made throughout the day, but removing the need for such a choice during one of the critical morning load pick-up would improve electric reliability.

If the 10 a.m. start of the gas operating day were moved to an earlier time (such as 6 a.m.), generators, during the morning load pick-up (6 a.m. to 8 a.m.), would be burning gas at the start of the current gas day, rather than relying on the pipeline or LDC for balancing. If the gas day began earlier, any generator derates to avoid balancing obligations at the end of the gas day would occur during the overnight hours (*e.g.* 2 a.m. - 4 a.m.). This is a preferable period of time from an electric reliability perspective, as other resources will likely be available to replace the

derated gas fired generation, rather than dealing with derated capacity during the morning load pick-up (e.g. 6 a.m. - 8 a.m.) when most, if not all, of the available resources are being utilized to meet the increasing morning electric load.

5. Are gas system contingencies included in your ISO/RTO system planning? If so, what are they, how were they selected and how often are they updated?

The NYISO conducts an annual assessment of the reliability of the planned New York State Bulk Power Transmission Facilities in accordance with established North American Electric Reliability Corporation (NERC) Reliability Standards, Northeast Power Coordinating Council (NPCC), New York State Reliability Council (NYSRC), and NYISO criteria, rules, and procedures.

The NPCC Area Transmission Review (ATR) requires each Area to conduct a Comprehensive Area Transmission Review (CATR) at least every five years, and either an Interim or an Intermediate ATR in each of the years between CATRs, as appropriate. Gas system contingencies are evaluated in the ATR, as part of the NYSRC Rules.

NYSRC rules also require that the New York bulk power system be operated such that the loss of a single gas facility does not result in the loss of electric load within the New York City or Long Island zones. Since the loss of a single gas line on the New York Facilities Gas System could result in the loss of multiple generators, gas system contingencies are considered when assessing the reliable delivery of electricity in the New York City and Long Island zones. Specific loss-of-generator-gas-supply studies are performed by Consolidated Edison (Con Ed) and the Long Island Power Authority (LIPA) ("local Transmission Owners") and are reviewed by the NYISO. The planned system is expected to be compatible with local rules regarding loss of generator gas supply.

To assist in managing this loss of gas contingency, the local Transmission Owners have designated certain generators within New York City and Long Island to switch to their alternative fuels or become prepared to automatically switch to their alternate fuel in the event of an actual gas system contingency or gas system loss of pressure. When notified by the local Transmission Owners, usually when electric load is predicted to be above a certain level, these generators will be required to operate on an alternate fuel source or trigger their auto-swap capability. If they are equipped with the ability to swap to the alternative fuel while operating, they will be required to trigger that auto-swap capability. If they do not, they will be required to begin to burn their alternative fuel. In addition, all new generators connecting to the Con Edison system will be required to build in the capability to switch automatically to an alternate fuel.

6. What specific steps is your region taking to improve situational awareness of local conditions, such as planned or unplanned maintenance of natural gas pipelines? Are these steps on track to be implemented before the next winter heating season? What actions should

the Commission consider taking to facilitate improvements in this area?

The NYISO reviews all pipeline Electronic Bulletin Board (EBB) notices regarding planned and unplanned maintenance. The NYISO also has held additional conversations with pipelines and LDCs regarding any significant (e.g. long-term, compressor station shut-down, etc.) maintenance, as well as any possible overlapping pipeline maintenance that may impact the availability of gas supply, and thus electric system reliability.

Current steps to improve situational awareness of local conditions include a focus on any planned or unplanned maintenance taking place during extreme temperature conditions in Summer and Winter. If any scheduled maintenance or outages are planned during extreme cold or hot days, and it is possible to move the planned outage on either system, the NYISO will discuss this possibility with pipelines and LDCs.