

Winter 2013-2014 Cold Weather Overview Update

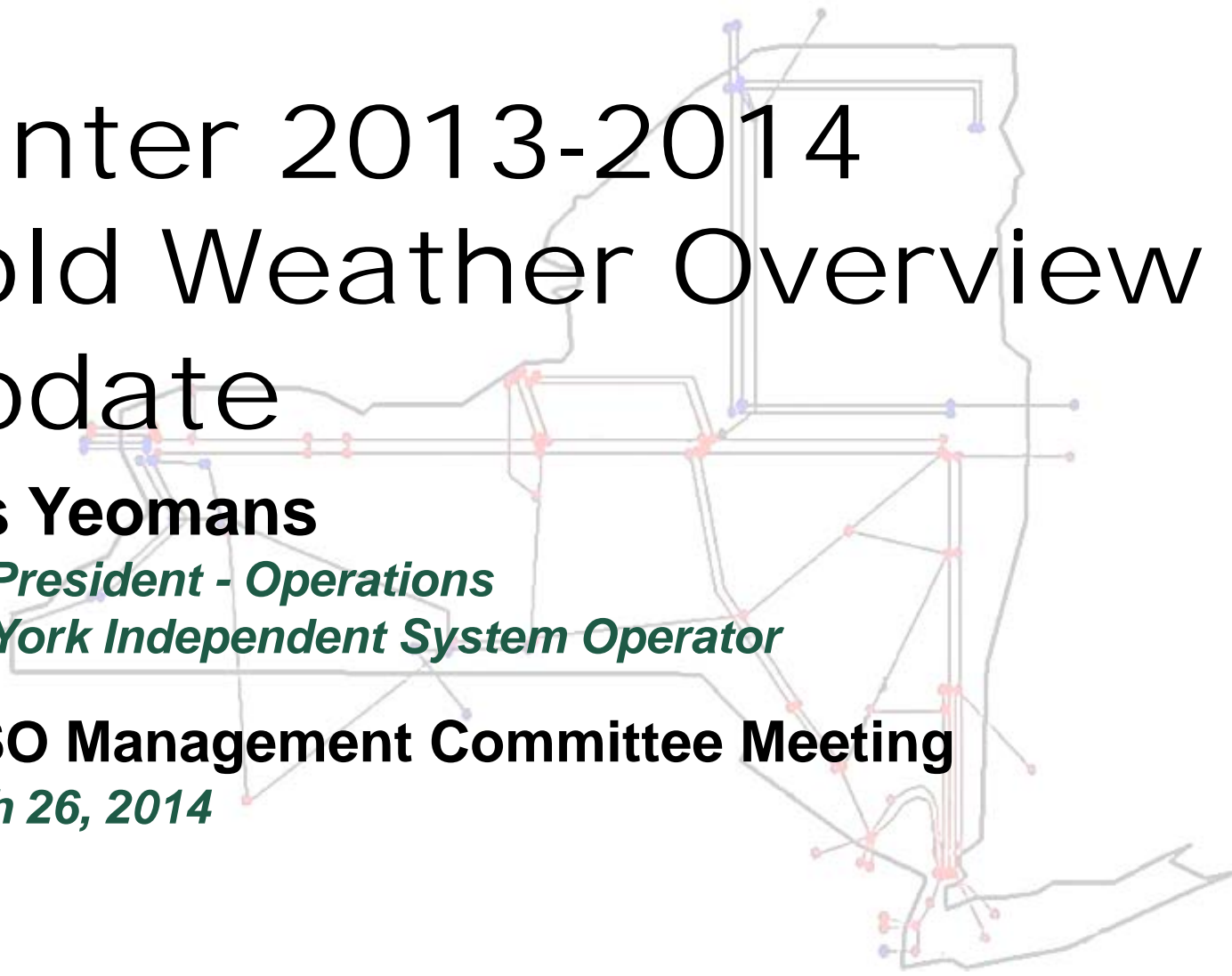
Wes Yeomans

Vice President - Operations

New York Independent System Operator

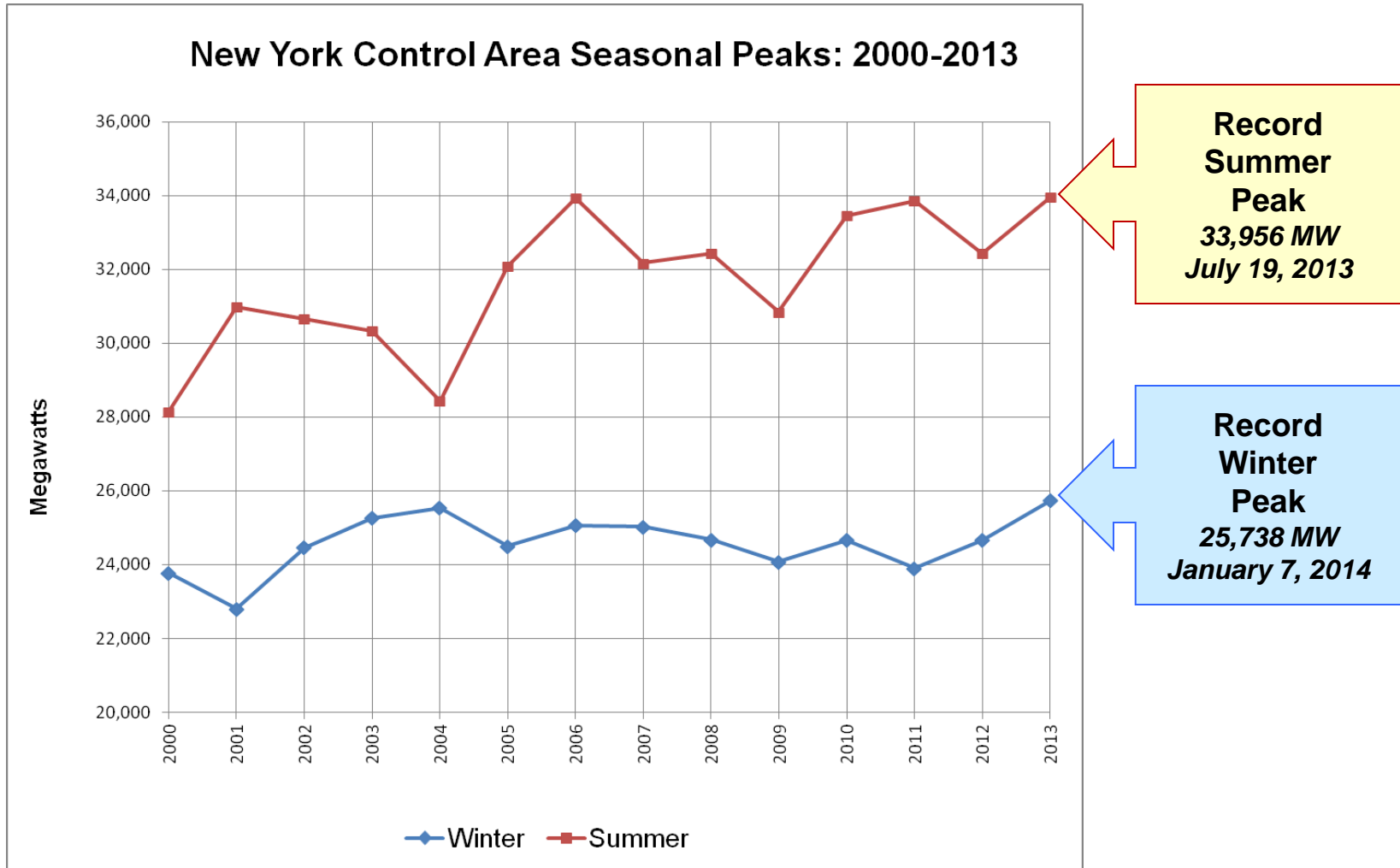
NYISO Management Committee Meeting

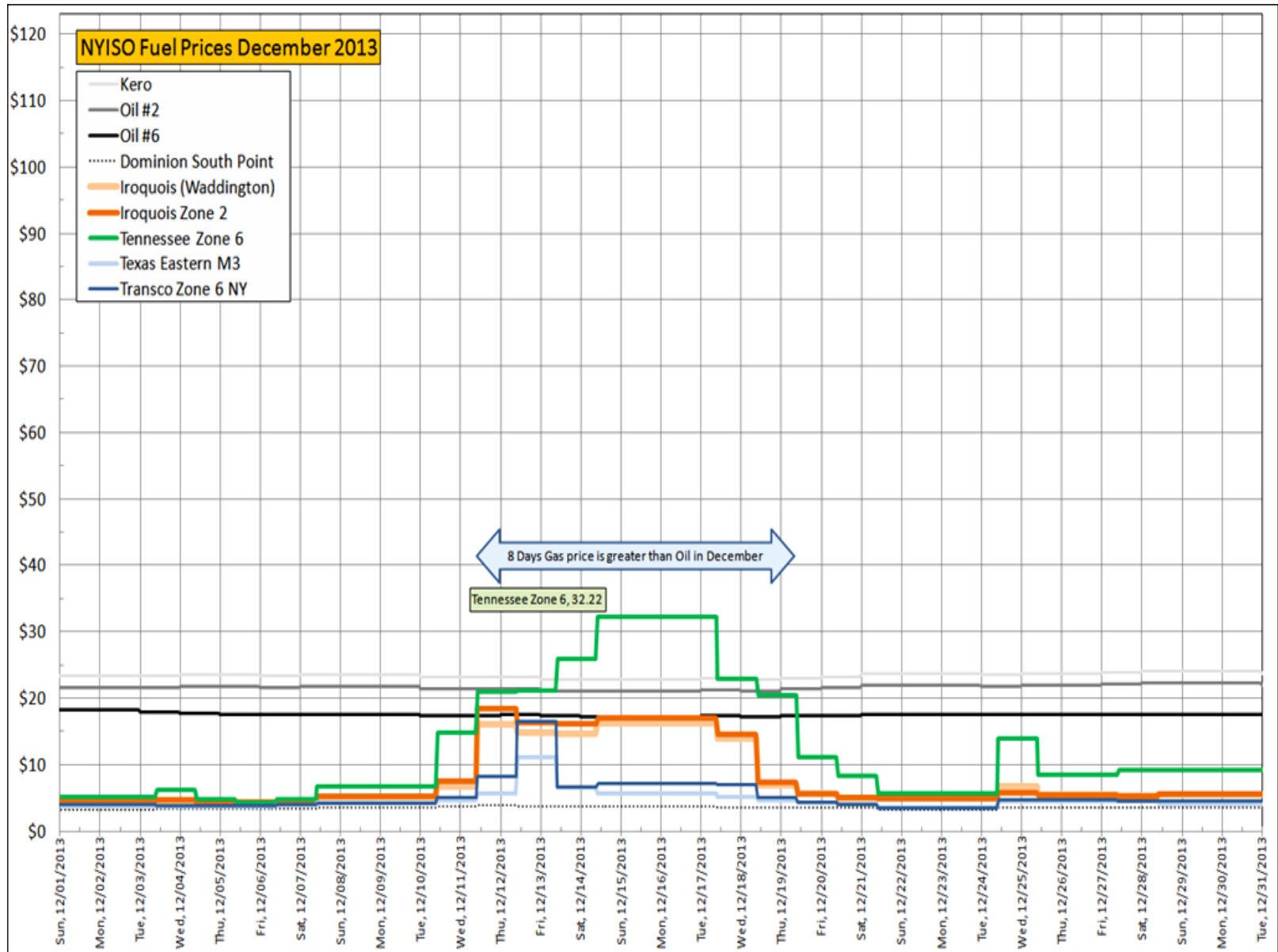
March 26, 2014

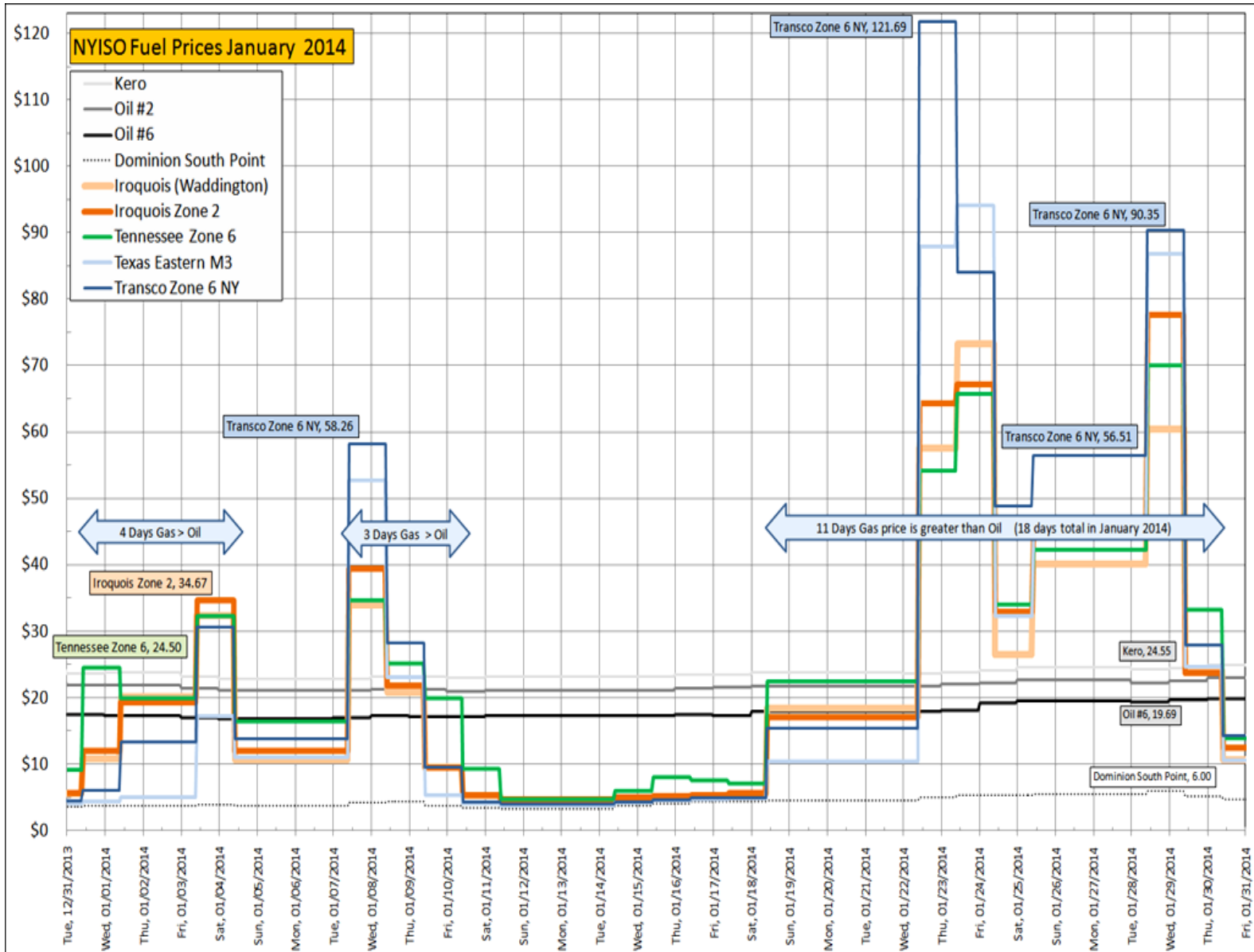


Executive Summary

- ◆ **Winter 2013-2014 has included five major “Cold Snaps” -- including three Polar Vortexes that extended across much of the country**
- ◆ **On January 7, the NYISO set a new record Winter Peak load of 25,738 MW**
 - ***25,541 MW -- Prior record winter peak load set in 2004***
 - ***24,709 MW -- “1 in 2” Forecast Winter Peak for 2013-14***
 - ***26,307 MW -- “1 in 10” Forecast Winter Peak for 2013-14***
- ◆ **Operations efforts during early January cold weather events were related to managing generator capacity derates**
- ◆ **Operations efforts in later January were related to managing potential fuel depletions that could lead to a capacity derate**







Preparation

◆ Prior to Winter 2013-2014

- *Conducted a fuel survey -- both gas transportation arrangements and oil inventory and replenishment capability (oil transportation capability)*
- *Produced a Winter Assessment inclusive of base assumptions and stress case assumption like loss of all gas and 90/10 peak, oil burn rates relative to oil replenishment rates*

◆ Prior to each cold snap

- *Participated in several NPCC/PJM conference calls*
- *Worked with the NY Transmission Owners to cancel some transmission outages*
- *Invoked “Cold Weather Protocol” to confirm day-ahead gas nominations and oil inventories with NY generation owners*

◆ Preparation at end for late January cold snap

- *FERC granted NYISO waiver request for supplier costs in excess of the \$1,000/MWh offer cap -- effective January 22 – February 28*
- *Toward the end of January, with sustained cold snaps, oil depletion concerns led to increased NYISO efforts to manage projected unit capability on alternate fuels*

Operating Performance

Early January

- ◆ *On January 6 -- NYPA 345kV Y49 cable tripped early morning and remained out-of-service through January 16*
- ◆ *On January 7 -- breakers at the 345 kV Beck Station tripped on low pressure, opening the Beck-Niagara 345 kV PA-302*
- ◆ *Significant Generation Derates in early January*
- ◆ *NYISO Supplemental Resource Commitments*
- ◆ *DR Activated on January 7*
- ◆ *Public Appeals for customers to curtail non-essential use on January 7*
- ◆ *NERC Energy Emergency Alert 1 issued January 7 -- indicating that the NYISO is just meeting reserve requirements*

Operating Performance

Late January

- ◆ *Initially, weather forecasts projected another Polar Vortex for the week of January 27-31. Preliminary load forecasting for 26,000 MW – predicted new record winter peak – by Tuesday, January 28 (This did not occur)*
- ◆ *Began to see the potential for oil depletion, and reported difficulty receiving fuel deliveries (barges and trucks) – as well as procuring fuels that met permit requirements*
- ◆ *NYISO Supplemental Resource Commitments due to the uncertainty of oil deliveries and the uncertainty of nominating gas*
- ◆ *DR on notice for NYC zone January 27 for possible need on January 28 (Was not activated on January 28)*
- ◆ *TVA Transmission Loading Relief (TLR) impacted some Northeast transactions*

Operating Performance

Date	Total Derates	% Fuel/Cold	% Non-Weather or Fuel
Dec. 17, 2013	489 MW	58% (286 MW)	42% (203 MW)
Jan. 3, 2014	2,549 MW	32% (807 MW)	68% (1,743 MW)
Jan. 7, 2014	4,135 MW	54% (2,236 MW)	46% (1,900 MW)
Jan. 21, 2014	900 MW	26% (241 MW)	74% (660 MW)
Jan. 22, 2014	1,162 MW	45% (519 MW)	55% (643 MW)
Jan. 28, 2014	272 MW	15% (39 MW)	86% (233 MW)
Feb. 6, 2014	440 MW	17% (74 MW)	83% (366 MW)
Feb. 7, 2014	493 MW	34% (170 MW)	66% (323 MW)

Winter 2013-14 Observations

- ◆ **Winter 2013-2014**
 - *Characterized by many days of gas prices exceeding oil prices*
 - *Resulting in high levels of economic scheduling and dispatch of oil-fired generation*
- ◆ **Load weighted electric LBMP for January was \$183/MWh**
 - *176% increase over December 2013*
- ◆ **Natural gas prices (as indexed at Transco Zone 6 for NYC area) averaged \$27.43/MMBTU**
 - *nearly 400% increase over December 2013*
- ◆ **LBMP energy increases at less than half the natural gas price increases is indicative of NYISO market systems selecting lower-cost resources – primarily dual-fuel units capable of operating on oil**

Winter 2013-14 Observations

- ♦ **Majority of oil-fired generation was capable of being replenished by either barge or truck deliveries at rates close to their oil-burn rates -- which worked well for short duration cold snaps. This became extremely challenging by middle to late January because the cold weather conditions had extended beyond seven consecutive days.**

Pipeline-related Observations...

- ♦ **The majority of gas-only generation connected to interstate pipelines east of the Central East interface were not economically scheduled during these five cold snaps due to the extremely high gas prices, but were capable of securing gas in response to the ISOs supplemental requests for generation.**

Winter 2013-14 Observations

Pipeline-related Observations...

- ◆ **Generally, the generators connected directly to the interstate pipelines with confirmed gas nominations were successful generating on gas to their schedules, including during times of declared Operational Flow Orders (OFOs) or System Alerts.**
 - *If the generator did not have a day ahead confirmed nomination, often times they were still successful arranging and receiving a confirmation for intra-day gas purchases.*

- ◆ **OFOs on the Interstate Pipelines**
 - *During Winter 2013-14 cold snaps, the interstate pipelines often declared OFOs, which required daily balancing of nominated schedules. If this was on a gas-day basis rather than an hourly basis, there was still some generator operational flexibility.*

Winter 2013-14 Observations

LDC Pipeline-related Observations

- ◆ **While it is the NYISO's understanding that all gas LDCs reserve the right to interrupt gas schedules with confirmed nominations to gas customers with interruptible service, in most instances the gas delivery to generators with confirmed nominations with interruptible service was excellent during the various cold snaps, including during times of declared OFOs or System Alerts.**
 - *If the generator did not have a day ahead confirmed purchase, during times of hourly OFOs, not surprisingly, it was difficult for the generator to purchase intraday gas on the LDC systems.*

- ◆ **OFOs on the Gas LDCs**
 - *During Winter 2013-14 cold snaps, there were many instances where the Gas LDCs declared OFOs which reduced daily balancing and required hourly burn limitations. At times this limited flexibility in electric operations.*

Next Steps

Market

- ◆ **Explore fuel assurance market rule changes to help assure fuel availability during cold weather conditions**
- ◆ **Present to stakeholders at March 25 MIWG on the upcoming FERC filing regarding the waiver on minimum generation and variable generation cost recovery in excess to \$999/MW**

Next Steps

Improved Coordination

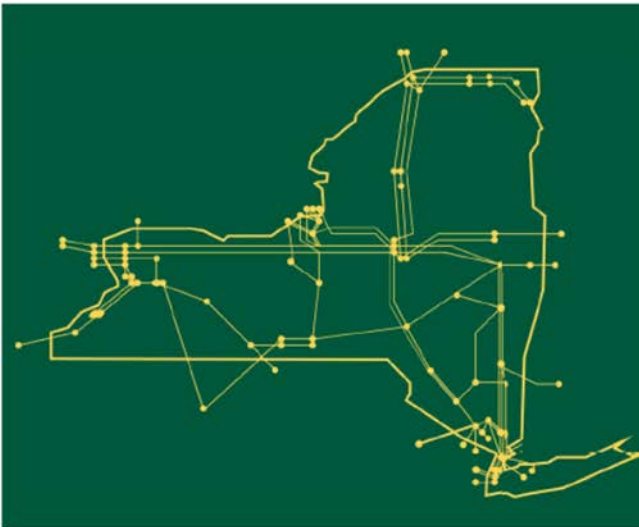
- ◆ **Continue to work with Stakeholders in the areas of improvements to the seasonal generation fuel inventory reporting requirements, as well as daily replenishment schedules during cold snaps.**
- ◆ **Work with NY State regulatory agencies to develop a formal process for the NYISO to identify reliability needs that would be mitigated by generator requests for certain waivers (transportation or emissions).**
- ◆ **Continued coordination with interstate pipelines and LDCs.**

Next Steps

Recent FERC Dockets

- ◆ **FERC has issued a Notice of Proposed Rulemaking (NOPR) to gather public comments in the following areas:**
 - *Modify the gas-day from 10 AM Eastern - 10 AM Eastern to 5 AM Eastern to 5 AM Eastern*
 - *Modify the day-ahead gas nomination deadline from 12:30 PM Eastern to 2:00 PM Eastern.*
 - *Increase the number of intra-day gas nomination cycles to four*
 - *For RTOs to post day-ahead electric results by 2 PM Eastern (later for reliability pass schedules)*

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



www.nyiso.com