Electric-Gas Coordination

Wes Yeomans
Vice President – Operations
New York Independent System Operator

Federal Energy Regulatory Commission
Washington, DC
May 16, 2013
Topics

- Winter 2012-13 Cold Snap
  - January 21-26

- Status of Electric-Gas Coordination Initiatives
Winter 2013 Cold Snap
January 21-26, 2013

- Low temperatures were forecast as early as Thursday, January 17 for the week of January 21-26
- The NYISO worked with Transmission Owners to re-schedule transmission maintenance work in anticipation of the “Cold Snap”
General Operating Actions and Observations

- This was not an “extreme” cold snap from a Natural Gas system “design day” perspective.
- Reserve requirements were met over the peak.
- Transmission security requirements were met throughout the week.
- No Demand Response notifications or deployments were required.
- Imports to NYISO were reduced, in part, due to the result of de-rated gas supplies or lack of oil inventory.
- In light of forecasted, continued significant import curtailments and other internal generator de-rates, the NYISO did schedule two reliability dual-fuel steam unit commitments, and one oil steam unit commitment, during the week of January 21.
Cold Snap - January 22, 2013

- Projected Capacity Margins
  - Sufficient capacity was committed for January 22

- NY Generation Performance
  - Internal generator commitments 23,738 MW
  - Actual generation capacity over the peak 21,938 MW
    - 1,800 MW of De-rates over the peak
      - 60% Non-Fuel Related
      - 40% Fuel Related – Lack of gas/oil or problems switching

- Load Forecast Performance
  - ISO Day ahead peak load forecast for Tuesday was 23,749 MW
  - Actual peak load on Tuesday was 24,363 MW
  - Actual load exceeded day ahead forecast by 614 MW
    - Actual minimum temperatures were 2 degrees lower than forecast

- Import Schedule Performance
  - While 3,330 MW of imports were scheduled in the day ahead market, only 2,679 MW of actual imports were scheduled into NY over the peak
Cold Snap - January 23, 2013

- **Projected Capacity Margins**
  - *Sufficient capacity was committed for January 23*

- **NY Generation Performance**
  - *Internal generator commitments 25,888 MW*
  - *Actual generation capacity over the peak 24,071 MW*
    - 1,817 MW of De-rates
      - 70% Non-Fuel Related
      - 30% Fuel Related - Lack of gas/oil or problems switching

- **Load Forecast Performance**
  - *ISO Day ahead peak load forecast for Wednesday was 24,101 MW*
  - *Actual peak load on Wednesday was 24,589 MW*
  - *Actual load exceeded day ahead forecast by 488 MW*
    - Actual minimum temperatures were 5 degrees lower than forecast

- **Import Schedule Performance**
  - *While 2,784 MW of imports were scheduled in the day ahead market, only 1,854 MW Actual imports flowed into NY over the peak*
Cold Snap - January 24, 2013

- Projected Capacity Margins
  - Sufficient capacity was committed for Thursday, January 24

- NY Generation Performance
  - Internal generator commitments 25,748 MW
  - Actual generation capacity over the peak 24,621 MW
    - 1,127 MW of De-rates
      - 80% Non-Fuel Related
      - 20% Fuel Related - Lack of gas/oil or problems switching

- Load Forecast Performance
  - ISO Day ahead peak load forecast for Thursday was 24,520 MW
  - Actual peak load on Thursday was 24,658 MW
  - Actual load exceeded day ahead forecast by 139 MW
    - Actual minimum temperatures were 1 degree lower than forecast

- Import Schedule Performance
  - While 3,150 MW of imports were scheduled in the day ahead market, only 1,573 MW Actual imports flowed into NY over the peak
Operating Actions and Observations

- NYISO Operations made calls to internal generators soliciting updated gas, oil, and hydro supplies for peak hour generation.
- There were no known significant NY gas pipeline physical outages. There were several gas variance/balance alerts and OFOs.

<table>
<thead>
<tr>
<th>Date</th>
<th>Fuel Type</th>
<th>DA Commitment</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 22</td>
<td>Dual Fuel</td>
<td>5,619 MW</td>
<td>4,523 MW</td>
</tr>
<tr>
<td>Jan 22</td>
<td>Gas Only</td>
<td>2,637 MW</td>
<td>2,297 MW</td>
</tr>
<tr>
<td>Jan 23</td>
<td>Dual Fuel</td>
<td>6,642 MW</td>
<td>5,619 MW</td>
</tr>
<tr>
<td>Jan 23</td>
<td>Gas Fuel</td>
<td>2,221 MW</td>
<td>2,096 MW</td>
</tr>
<tr>
<td>Jan 24</td>
<td>Dual Fuel</td>
<td>7494 MW</td>
<td>6718 MW</td>
</tr>
<tr>
<td>Jan 24</td>
<td>Gas Fuel</td>
<td>1817 MW</td>
<td>1810 MW</td>
</tr>
</tbody>
</table>
**Fuel Related De-rates Across January – April 2013**

- *Percentage of fuel related de-rates each month, as reported by generators*

<table>
<thead>
<tr>
<th>Month</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>January Cold Snap (Jan. 21-26)</td>
<td>74%</td>
</tr>
<tr>
<td>Rest of January</td>
<td>26%</td>
</tr>
<tr>
<td>February</td>
<td>20%</td>
</tr>
<tr>
<td>March</td>
<td>9%</td>
</tr>
<tr>
<td>April</td>
<td>6%</td>
</tr>
</tbody>
</table>
Gas Electric Coordination

- Continued Electric Gas Coordination Working Group Meetings

  - Open discussions includes Gas Pipelines, LDCs, Generators, Gas Suppliers
    - Timing processes – Price certainty versus volume certainty
    - Scheduling (Supply) – Holiday issues, off peak
    - Nomination (Transportation) – NAESB schedules & gas tariff flexibility
    - Balancing
    - Gas Operating Day Timing
    - Cost Recovery Discussions
    - Actual implications of Operational Flow Orders
    - Actual peak performance of both gas and electric systems
    - Seasonal Assessments
    - Input to Regional Study Scope & Objectives
Gas Electric Coordination

- During specific system conditions (e.g. Anticipated Extreme Cold Weather, etc.) the NYISO is monitoring the following:
  - Day ahead gas nominations for gas-fired units with day ahead commitments
  - Alternate fuel on-site and schedules to restore inventories
  - The certainty of non-installed capacity backed electric import transactions flowing on cold days
  - Consideration of non gas-fired generator reliability commitments as needed
Gas Electric Coordination

- **Infrastructure Maintenance**
  - *NYISO has initiated a process to review and monitor pipeline, transmission, and generation outages.*

- **NYISO Control Center Visualization**
  - **Gas Pipeline System**
    - OFOs and status of pipeline alerts
    - During cold snaps - gas nominations, gas burned, and alternate fuel capability & inventory

- **Underway:** Means to improve several hour ahead generator operating capacity
  - *Reality is a generator may not know whether or not they will be able to secure gas supplies over next several hours*
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