Polar Vortex 2014

Mike Kormos
Executive Vice President – Operations
PJM Interconnection
FERC Technical Conference
April 1, 2014
Minimum Temperature for each day in January 2014
Columbus, Philadelphia, Chicago and Richmond

Shortage Pricing was triggered by the Voltage Reduction ACTION on the evening of Jan. 6 and by a reserve shortage on the morning of Jan. 7.
Slide 2: January 7 – Peak Load vs. Typical Load

January 7: Hourly MW Load (Preliminary)

- **138,733** Morning Peak
- **141,312** Evening Peak

Typical January Demand Curve

- **100,801** Morning Peak
- **106,182** Evening Peak
Primary Reserve Requirement and MW

Megawatts

Primary Reserve Requirement
Primary Reserves

Polar Vortex

Voltage Reduction Warning Issued
2014 Morning Peak Outaged ICAP%

PJM saw 22% forced outage rate on Jan. 7, 2014.

-7% Historical Winter Average
Jan 7 - Gas Interruption/Forced Outage – 7 p.m.

- Total Forced Outages: 40,200 MW (22% Total PJM Capacity)
- Gas Plant Outages: 9,700 MW
- Natural Gas Interruption: 9,300 MW
- Coal: 13,700 MW
- Other: 7,500 MW
Net Scheduled & Projected Interchange - Jan. 7

- Net Scheduled Interchange: 8,604 MW
- Projected Interchange: 5,655 MW
- $/MWh Real-Time LMP: 2,949 MW
January 2014 Total Balancing Operating Reserve Credits January 2014

$ Millions

- Total Deviation Credit
- Total Reliability Credit

Winter Storm
Polar Vortex Advance Preparation

**PJM**

- **Fri. Jan. 17**: 130,000 MW expected peak
- **Sat. Jan. 18**: 127,270 MW expected peak
- **Sun. Jan. 19**: 125,610 MW expected peak
- **Mon. Jan. 20**: 131,000 MW expected peak (MLK Holiday)
- **Tue. Jan. 21**: 129,213 MW actual peak

**GAS**

- **Generators purchasing gas commodity**

**Gas Day**

- **10 a.m. Monday**
- **10 a.m. Tuesday**

Buying for delivery on Jan. 20 & 21
Future Capacity

Megawatts

- Procured Reserve Level
- Target Reserve Level

Legend:
- Blue: Retirements
- Pink: Expected New Generation*
- Green: Imports
- Grey: Demand Response
- Orange: Cumulative Net Generation Reduction

*Numbers adjusted based on actual expected in service dates.
Gas – Electric Coordination

- Continue Increased Coordination and Transparency
- Align Business Rules
- Discuss changes to PJM’s capacity/energy structure

Winter Operations Preparation

- Address Unit Performance & Start Failure Rate
- Improve Dual Fuel & Fuel Limited Resource Tracking
- Continue Improved Communications & Enhancements to Emergency Procedures