Year in Review - Markets

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Executive Vice President – Markets
2014 PJM Annual Meeting
May 13, 2014
Significant Accomplishments / Challenges

- **Enhanced Credit Rules**
- **Market Settlements Quality Assurance Reviews**
- **Capacity Market Enhancements**
- **Demand Response Operational Enhancements**
- **Interregional Coordination**
  - PJM/NYISO Cooperation
  - PJM/MISO JCM Discussions
- **Winter Operations**
  - Gas-Electric Coordination
  - Resource Performance
  - Information/Price Transparency
- **Customer Service**
  - PJM CTC - Increased Satisfaction
  - Improved Communications
- **Cost Allocation Challenges**
  - FTR Underfunding
  - Operating Reserves
PJM Market Evolution of Fuel Mix for Annual Electricity Production

percent

2005 2006 2007 2008 2009 2010 2011 2012 2013

- Nuclear
- Renewables
- Oil
- Gas
- Coal

PJM©2014
PJM Market – Average Power Generation Emissions
Pounds Per MWh of Electricity Produced

PJM Average Emissions (lbs/MWh)

- Carbon Dioxide
- Sulfur Dioxides
- Nitrogen Oxides


- CO2
- SO2 and NOx
Future Capacity

![Graph showing capacity levels and retirement trends](image)

- **Procured Reserve Level**: 30,956
- **Target Reserve Level**: 25,520
- **2014/2015**:
  - Retirements: -5,000
  - Expected New Generation*: +2,000
  - Demand Response: -1,000
  - Cumm. Net Capacity Resource Change: +2,000
  - Cumm. Net Internal Generation Change: -1,000

- **2015/2016**:
  - Retirements: -3,000
  - Expected New Generation*: +3,000
  - Demand Response: -2,000
  - Cumm. Net Capacity Resource Change: +1,000
  - Cumm. Net Internal Generation Change: -1,000

- **2016/2017**:
  - Retirements: -2,000
  - Expected New Generation*: +2,000
  - Demand Response: -1,000
  - Cumm. Net Capacity Resource Change: +1,000
  - Cumm. Net Internal Generation Change: -1,000

*Numbers adjusted based on actual expected in service dates.

As of March 2014
2013 Monthly Average "Unconstrained" Prices by RTO
Henry Hub and PJM Market and Marcellus Production Area Prices

- **Henry**
- **Market East**
- **Market Central**
- **Market West**

$/mmBtu

Natural Gas Price

- $120
- $100
- $80
- $60
- $40
- $20
- $-

Dates:
- Nov. 1, 2013
- Nov. 15, 2013
- Nov. 29, 2013
- Dec. 13, 2013
- Dec. 27, 2013
- Jan. 10, 2014
- Jan. 24, 2014
- Feb. 7, 2014
- Feb. 21, 2014
- Mar. 7, 2014
- Mar. 21, 2014
PJM Wholesale Cost
Full Year 2013 ($/MWh)

Total $52.97/MWh

- Energy, 38.67
- Reliability (Capacity), 7.10
- Transmission, 5.00
- Regulation, 0.24
- Operating Reserve, 1.02
- PJM Cost, 0.32
- Reactive, 0.35
- Trans. Owners Control, 0.08
- Synchronized Reserve, 0.04
- Black Start, 0.14

* Values are PJM averages and do not reflect potential locational cost differences.
Average PJM Energy Prices - January 2014

- Average of Real-Time LMP
- Average of Day-Ahead LMP
Member Satisfaction is Strong

PJM listens and responds to feedback

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Improving data access

Improving internal coordination and issue management
State & Member Training Statistics

59,454 CE hours issued in 2013

Other significant activities

• Delivered new Train-the-Trainer course to Member Company training staff
• Assisting Member Companies with compliance during TO Audits

3.33% from 2012

24% from 2012

3.33% from 2012

24% from 2012

Customer Satisfaction

State/Government Sessions*

*Including use of simulation technology