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Winter 2018-2019 Operations and Market Performance

Federal Energy Regulatory Commission

Peter Brandien
VICE PRESIDENT, SYSTEM OPERATIONS

Background

- Industry and policy trends are changing the makeup of New England's power system
- ISO-NE is meeting its regional resource adequacy requirement for *capacity* based on expected summer peak demand, but is concerned about the region's ability to overcome emerging *energy* security problems in the winter
- The challenge is assuring that the region's resources, regardless of fuel or technology, are able to meet the demand for electricity and required operating reserves throughout the winter, i.e. *energy* security

Background (cont'd)

- The concern is whether there will be sufficient energy available during extended cold winter weather to satisfy electricity demand, given the system's evolving resource mix and fuel delivery infrastructure
  - While there has been no loss of load to date on the bulk power system attributable to these conditions, ISO-NE is concerned this emerging issue will worsen over time due to observed industry trends

Contributing Factors to Energy Security Concern

- Increase in natural-gas fired generation relying on just-in-time fuel
- Challenges with fuel delivery logistics during cold weather conditions
- Significant retirements of large, non-gas-fired generation (nuclear, oil, coal)
  - Uncertain regulatory and economic future of remaining aging oil and nuclear units
- Limited dual-fuel storage and tightening emission limits on (most) oil-fired generation

Winter Reliability Programs

- During the last five winters the ISO mitigated the risk associated with inadequate fuel supplies with winter reliability programs
  - Incentivized oil-fired generators to firm-up fuel
  - Included a demand response (DR) component
  - Incentives for investment in dual-fuel capability
- 2017/2018 was the last winter reliability program

“Pay for Performance” (PFP) Market Enhancement

- Winter reliability programs were a stop-gap measure until “PFP” in the Forward Capacity Market (FCM) became effective
- On 6/1/18 the Tariff provisions for “PFP” became effective to be implemented
- “PFP” has strong incentives for resources to perform under scarcity conditions
  - The ISO has limited data to assess the extent to which this design addresses winter energy security concerns

Energy Security Concerns for 2018/2019 Winter

- The experience during last winter's cold spell (12/26/17 to 1/8/18) underscored some of the challenges to reliability
- Importance for fuel inventories to be sufficiently replenished in the winter
- Gas and oil fuel price inversion led to oil being in economic merit and base loaded, leading to rapid depletion of the region's oil supply

Energy Security Concerns for 2018/2019 Winter (cont'd)

- Fuel logistics became a concern
  - Heating customers get priority for oil and gas
  - Storms can delay trucked oil and LNG tankers
  - Truck drivers face restrictions on driving times
- With oil being base loaded, emissions limitations became a concern for several oil-fired generators

Enhancements to Forecast Information Provided to Market Participants

- Provide Market Participants with a three-week look ahead of the system
  - Based on actual fuel inventories
- Generators will have the opportunity to take action in advance of an Energy Emergency declaration
  - Replenish fuel when needed
  - Mitigate environmental limitations

Opportunity Cost Enhancements

- Provide market signals for incentivizing resource preparedness
- New methodology enhances treatment of opportunity costs, which are included in energy supply offers
  - Help manage fuel through price when it is on short supply
  - Switch to more economic fuel

Practical Implications/Challenges

- With the PFP, opportunity costs, and operating procedure enhancements, ISO-NE expects to have adequate electricity supplies this winter
- Fuel availability and replenishment logistics (for both oil and gas) will continue to be a concern

Practical Implications/Challenges (cont'd)

- LNG shipments are unknown and will be closely monitored
- Non-gas resources will continue to play a vital role in maintaining reliability

Practical Implications/Challenges (cont'd)

- Biggest challenges this winter:
  - Extended cold weather when fuel inventories are depleted and prompt replenishment is hindered
  - Large contingency on a day when gas supplies are constrained

Practical Implications/Challenges (cont'd)

- Region has adequate generating capacity to serve load under those conditions but the ability to meet energy needs is at risk if resources don't make adequate arrangements for fuel
- System operators may have to rely on emergency actions to maintain operating reserves and meet energy needs reliably