Day-Ahead Reserve Market Implementation Issues

EPFSTF
January 11, 2019

Joe Bowring
Catherine Tyler
Day-Ahead Reserve Market Issues

- PJM has not given sufficient consideration to issues that arise with implementing day-ahead reserve markets.
- Issues worthy of extended discussion:
  - Day-ahead and real-time modelling differences affect reserve clearing
  - Settlement calculations
  - Negative balancing reserve costs, causes and allocation
  - Interaction with virtuals
Day-Ahead Modelling Differences

• Only 20 percent of real-time constraints modelled day ahead
• PJM modifies real-time ramp rates, called Degree of Generator Performance (DGP)
• Regulation not included in day-ahead model
• Imports and exports
Balancing Settlement Calculations

- **Reserve payment**
  - Energy paid metered MW, not dispatch MW
  - Reserves paid dispatch MW, not metered MW
  - A resource can produce energy in real time instead of providing reserves and receive compensation for both.

- **Eligibility for day-ahead reserve uplift payment**
  - Resource provides less reserves in real time than day ahead
  - Under what conditions? What if resource is no longer available for reserves?
  - Estimated impact?
Allocation of Balancing Reserves

- PJM proposes to allocate all balancing reserve costs to load.
- Generators and virtuals also cause balancing reserve costs.
  - Generator unable to provide reserves in real time
    - Outages, derates, not following dispatch
    - Many resources do not receive an automated dispatch signal.
- Virtuals change day-ahead reserve clearing and cause different congestion patterns in the day-ahead market.
Virtuals

- IMM does not support virtuals directly participating in the reserve markets.
- Energy virtuals, currently INCs, DECks, and UTCs, can change the reserve clearing in the day-ahead market.
- Virtuals cause different constraints to bind.
- Virtuals affect the dispatch MW of resources and resource commitment.