Adjustments to ORDC for Operator Actions

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EPFSTF June 25, 2018
• Goal is to allow system operators flexibility in managing and maintaining system reliability but capture these actions in the market pricing

• PJM initially discussed the use of a “extreme day” ORDC curve
  – Curve utilized on days where operators take action due to greater than normal uncertainty (specifically, forced outage uncertainty)
Updated Approach

- Current thinking is adjustments should be made on a case by case basis instead of using a pre-defined curve
- Adjustments would be made to the base requirement portion of the curve
  - Operator adjusts the Minimum Reserve Requirement (MRR) not the slope of the curve
- For purposes of discussion we will focus on adjustments to the real time 10 minute SR and PR requirements
  - The methodology discussed can be applied to a 30 minute DA and 30 minute RT ORDC curves if/when they are developed
Types of Adjustments

- Adjustments to the MRR portion of the curve can be classified as either a Market Adjustment or Out of Market Adjustment.

- **Market Adjustments** - Operator identifies need for additional reserves and adds desired MW to the MRR.
  - No specific resource is identified. The market will select the least cost set of resources to provide the reserves.
  - Operator defines the hours the MRR is adjusted based on the operating condition driving the need for additional reserves.
Types of Adjustments

- Examples of Market Adjustments
  - Changes in system topology that effect the largest contingency
  - Extreme load pick up
  - Extreme weather event
    - Hurricane Sandy – Covering Nuclear units potentially taken offline due to high winds
    - Tail end of a hot weather event - Increased uncertainty in forced outages and weather forecast
Types of Adjustments

- **Out of Market Adjustments** - Dispatch commits a unit outside of the market clearing engines based on reliability needs not modeled in the software
  - MRR is updated to reflect the additional reserves created by that action
    - Reflects operator actions in prices
  - Examples of Out of Market Adjustments
    - Unit committed for a non-market facility at the request of the Transmission Operator (TO)
    - Reactive Issues
      - Add $X$ (MW) to the MRR
        - $X = \text{EcoMin} \times \frac{1}{3} + ((\text{Ramp Rate} \times \text{Degree Of Generator Performance}) \times 10 \text{ min})$
    - Operator defines the hours the MRR is adjusted based on the operating condition driving the need for additional reserves.
• Notification to Market Participants
  – Provided as far in advance of the effective time of the adjustment as possible
  – Provide the following information:
    • Reason for the change
    • Impacted hours
    • MW amount added
  – Method TBD – considering real-time posting through Data Miner 2 or informational Emergency Procedures message