

Shortage Pricing Update

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- Explanation of differences between Data Viewer reserves and reserves calculated by RT SCED
- Comparison of the actual real-time reserves and reserve requirement displayed in Data Viewer vs. the real-time reserves and reserve requirement used to determine shortages

Note: Data Viewer reserves = EMS reserve estimate

- **RT SCED Reserve Solution:**
 - Dispatches energy and reserves looking ahead 10 minutes
 - Prices the system to incent resources to respond
- **EMS Reserve Estimate:**
 - Provides real-time instantaneous estimate of available reserves for situational awareness (not a dispatch signal)
 - Potential trigger to initiate Emergency Procedures

- **2% “Back-off”** – EMS assumes resources will only achieve 98% of their stated capability when calculating EMS reserves
(Most significant; Removed on 7/11)
- **Spin Max vs. Eco Max** - RT SCED uses spin max when assigning and estimating reserves. EMS uses lesser of eco max or spin max.
(Possible enhancements being investigated)
- **Look-Ahead vs Real Time Differences**
 - Forecasted data and historical response data changes
 - Resources respond to energy dispatch signals in real-time
(Shortened look-ahead time from 15 minutes to 10 minutes on 7/17)

Why is the EMS estimate more conservative?

- 2% back-off was implemented prior to 2007
 - Represented historic response during peak conditions.
- Eco/Spin Max adjustments implemented after a Synchronized Reserve event in September 2013 where resource response was inadequate (“hour long spin event”)

NOTE: The 2% back-off was removed from the EMS July 11. The impact was an immediate 300MW increase in the EMS Synch Reserve estimate following the change.

- 435 instances of 5-minute reserve deficits were shown in Data Viewer (EMS) since transient shortage pricing was implemented
- RT SCED procured sufficient reserves in all of the above intervals
- EMS 2% back-off was the primary contributor to the EMS deficits
 - **433** deficits from 5/11 to 7/11
 - **2** deficits since 7/11 (following removal of EMS 2% back-off)
- Complete data set is posted with the OC materials

- The RT SCED look-ahead interval was reduced from 15 minutes to 10 minutes on July 17
 - Aimed to better align EMS and RT SCED reserve values
- Average RT SCED to EMS Delta for RTO reserve zone (following removal of EMS 2% back off)
 - 7/11 thru 7/17: **191 MW**
 - 7/17 thru 7/31: **168 MW** (12% improvement)
- No adverse reliability impacts observed thus far
- Given small sample size, PJM intends to leave the look-ahead at 10 minutes for further evaluation