



Manual 15 Reserve Price Formation and Biennial Review Changes

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- Manual 15, Version 41:
 - Impacted Manual Sections: 4.7, 5.7, 6.7, 7.7, 8.1 and 11.7
 - Removed references to Tier 1 and Tier 2 due to the Tier 1/Tier 2 consolidation
 - The Variable Operations and Maintenance component was removed from Synchronized Reserve offers
 - The existing \$7.50/MWh offer margin was reduced to the expected value of the penalty
 - Added the expected value of the penalty calculations
 - Removed Exhibit 10: Steam Unit Synchronized Reserve Example

The Expected Value of Penalty will be calculated and posted on PJM's Website
Markets and Operations>Ancillary Services>Synchronized Reserve

*Expected Value of Penalty ($\frac{\$}{MWh}$) = Average Penalty * Average Rate of Nonperformance * Probability an event will occur*

Where:

Average Penalty is expressed in \$/MWh and calculated as

$$\text{Average Penalty } \left(\frac{\$}{MWh} \right) = \frac{\text{Total Penalty } (\$)}{\text{Total Shortfall } (MWh)}$$

Average Rate of Nonperformance during Synchronized Reserve events is calculated as

$$\text{Average Rate of Nonperformance} = 1 - \text{Average Synchronized Reserve Response Rate}$$

Probability an event will occur is the probability a Synchronized Reserve event that will qualify for nonperformance assessments will occur and calculated as

$$\text{Probability an event will occur} = \frac{\text{Total Hours of Synchronized Reserve Events } \geq 10 \text{ Minutes}}{\text{Total Hours in the Period}}$$

- Manual 15, Version 42:
 - Corrected the CDS mission statement to reflect MIC, not MRC, as the parent committee in Section 1.5
 - Corrected the Incremental Heat Rate equation in Section 2.1
 - Corrected section titles in Section 9.7 and Section 13.3 Exhibit 28
 - Added missing chart and removed outdated no-load calculation in Attachment B
 - Corrected the equation for Basic Nuclear Fuel Cost in Section 3.3.1
 - Replaced “other Fuel-Related Costs” with “Operating Costs” in Sections 4.2 & 6.3.1
 - Removed reference to annual Fuel Cost Policy submission in Section 9.2

- 7.6.2022 CDS
- 7.13.2022 MIC (First Read)
- 8.10.2022 MIC (Vote). The changes were endorsed by MIC.
- 8.24.2022 MRC (First Read)
- **9.21.2022 MRC (Vote)**
- **9.21.2022 MC (Vote)**
- Implementation date for Reserve Price Formation is October 1, 2022. FERC approved PJM's compliance filing in Docket No. EL19-58-012.
- Implementation date for Biennial Review is November 1, 2022

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