# RCSTF Reserve Requirements Solution Package

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# Introduction

- The package proposed here is focused on a set of reforms to PJM's Reserve Requirements that are implementable before Winter 2024/2025.
- This package does not reflect the full set of solution's PJM sees as necessary to full address the immediate term key work activities under the RCSTF issue charge, but provides incremental improvement on the status quo.

# Reserve Requirements: Challenges to Address

- The 30-minute reserve requirement does not currently reflect the operational risks that dispatch must account for on a day-to-day basis
- Extending one of the extended reserve requirements to address operational uncertainty would cascade into all three, and could force the over-procurement of unneeded reserves.
  - For example, if PJM needed to procure additional 30-minute reserves to address operational uncertainty, that would require also procuring the same amount of additional SR and PR.

# 30-Minute Minimum Reserve Requirement Proposed Solution

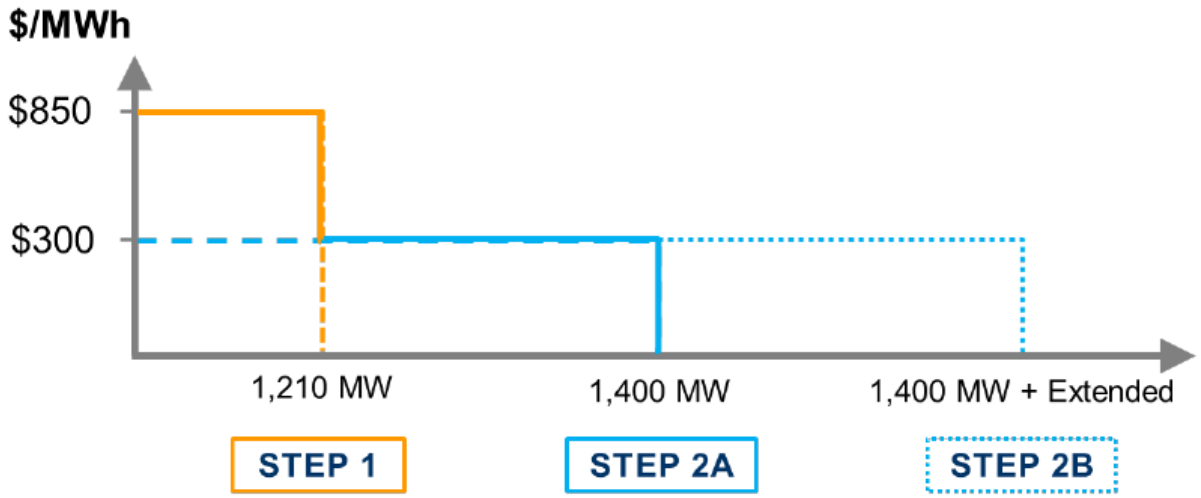
- Change the 3,000 MW quantity in the 30-Minute Reliability Requirement to better capture day-to-day operational risks, similar to the previously used methodology in the Day Ahead Scheduling Reserve (DASR) and aligned with current operational practice
- Methodology for setting the 30-Minute Reliability Requirement:

**30-Min Requirement = MAX(Load Forecast Peak*(Avg. Load Forecast Error + Avg. Forced Outage Rate), Primary Reserve Requirement, Active Gas Contingency)**

*Similar to how it was done for DASR, the average load forecast error and average forced outage rates would be calculated annually, based on data from a three year rolling average.*

# Proposed Solution for the Extended Reserve Requirements

- Update PJM Manuals to clarify that each extended reserve requirement can be extended independently. Product substitution and nesting rules would still apply as they do in status quo.
  - For example, if PJM extended Step 2B of the 30-minute reserve requirement by 1,000 MW, that would not require that the SR and PR reserve requirements also extended by 1,000 MW.



# Summary of Proposed Changes to Reserve Requirements

- Revise the 30-minute Reliability Requirement to better capture day-to-day operational risks, similar to the previously used methodology in the Day Ahead Scheduling Reserve (DASR)
  - 30-Min Requirement = MAX(Load Forecast Peak*(Avg. Load Forecast Error + Avg. Forced Outage Rate), Primary Reserve Requirement, Active Gas Contingency)
- Update PJM Manuals to clarify that each extended reserve requirement can be extended independently. Product substitution and nesting rules would still apply as they do in status quo.

# Contact

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# Acronyms

| Acronym | Term & Definition |
|---|---|
| LMP | **Locational Marginal Price** is defined as the marginal price for energy at the location where the energy is delivered or received. For accounting purposes, LMP is expressed in dollars per megawatt-hour ($/MWh). LMP is a pricing approach that addresses Transmission System congestion and loss costs, as well as energy costs. |
| AGC | **Automatic Generation Control** is equipment that automatically adjusts generation. |
| SCED | **Security Constrained Economic Dispatch** is the optimization engine used to calculate dispatch and reserve assignments and to set prices. |
| MW | A **Megawatt** is a unit of power equaling one million watts (1 MW = 1,000,000 watts) or one thousand kilowatts (1 MW = 1,000 KW). To put it in perspective, under non-severe weather conditions, one MW could power roughly 800 to 1,000 average-sized American homes. |

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# Acronyms

| Acronym | Term & Definition |
|---|---|
| SR | **Synchronized Reserves** is a reserve capability that can be converted fully into energy within 10 minutes following the request of PJM. Equipment providing Synchronized Reserve must be electrically synchronized to the power system. |
| NSR | **Non-Synchronized Reserves** is a reserve capability that can be converted fully into energy within 10 minutes following the request of PJM. Equipment providing Non-Synchronized Reserve need not be electrically synchronized to the power system. |
| PR | **Primary Reserves** is a reserves capability that can be converted into energy within 10 minutes following the request of PJM. The Primary Reserves service can be provided by Synchronized Reserves or Non-Synchronized Reserves. |
| SECR | **Secondary Reserves** is a reserve capability that can be converted fully into energy within 30 minutes following the request of PJM. Equipment providing Secondary Reserve need not be electrically synchronized to the power system. |

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