IMM Reserve Performance Proposal

Reserve Certainty
Senior Task Force

May 21, 2026

Earl Hyatt

Monitoring Analytics

Nonsynchronized Reserve and Offline Secondary Reserve

OFFLINE RESERVE

Reaching Target MW in Required Time

- **The status quo requires offline SecR to reach economic minimum within 30 minutes.**
  - **But, they can clear more than economic minimum.**
  - **Offline SecR shortfall should be calculated based on reaching the directed MW within 30 minutes, not just reaching economic minimum.**
- **NSR, in addition to NSR events, should be judged by reaching the directed MW within 10 minutes.**

ONLINE SECONDARY RESERVE

Tracking Energy Dispatch

- **Secondary Reserve is dispatched via normal energy dispatch.**
- **PJM does not currently check online SecR performance.**
- **Online Secondary Reserve shortfall should be calculated based on reaching the directed MW within 30 minutes when directed to increase output for 6 consecutive 5-minute intervals.**

Decreasing Dependence on Unreliable Reserve MW

SYNCHRONIZED RESERVE

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Context

- **PJM has increased reserve requirements to try to counteract poor resource specific performance.**
  - **Load pays more, but individual resources are ignored.**
- **IMM thinks poor performance should be solved by working with supply, not demand.**
  - **PJM should not have to keep relying on unreliable MW.**

SR Performance Proposal Basics

- Limit how poor performers count towards satisfying reserve requirements.
- Do not change how SCED assigns reserve MW and positions units.
  - Avoids creating divergences between energy and reserves (e.g. LOC).
  - Do not want to endorse bad behavior.
  - Resources are still deployed for the full scheduled amount and judged by outputting the full amount.
- Poor performers are paid for a fraction of what they clear, in line with the fraction they have reliably provided.
  - Better performance means getting paid more.
  - Forward looking, complementing existing day of and retroactive methods
- Performance is based on best of three qualifying checks.

Checking Performance

- Energy offer parameters represent average unit behavior.
- Represented behavior should be attained in at least one of three checks.
- Three kinds of checked events:
  - Spin event lasting at least 10 minutes
  - Spin event of any length in which unit had 100 percent performance
  - Reserve performance test (*to be created*)
- Done in rolling sets of three consecutive checked events.
- If resource performance is repeatedly low, the resource is reviewed.

Effects on Payments

- For simplicity, use simple fraction of payments.
- If best in three performance is 85 percent, then future intervals are paid as
  - 85 percent of day-ahead credit
  - 85 percent of real-time balancing credit (if positive)
  - 85 percent of LOC credit
- The exact structure can change if these payment structures change.
  - E.g., PJM has proposed changes to reserve uplift.

Existing PJM Methods

- Day of shortfall charge applies to scheduled intervals on day of event.
  - Shortfall MW are capped at lower of event shortfall and interval's capped MW.
- Retroactive penalty applies to scheduled intervals on days before event, up to at most previous failure or approximately 20 days.
  - Shortfall MW are capped at lesser of penalty obligation MW and interval's capped MW.
  - Aggregate response can decrease penalty obligation MW.

SOM Recommendations on Retroactive Penalty

- **The MMU recommends not allowing aggregate response from scheduled resources in the same portfolio to decrease the retroactive penalty obligation MW.**
- **The MMU recommends that nonperformers return LOC credits as part of the penalties and charges.**
- **The MMU recommends that the retroactive penalty apply to intervals since the last good performance.**
  - **A good performance can be passing a reserve performance test. Resources can request tests and demonstrate performance to manage risk exposure.**

Interactions between Proposed and Existing Methods

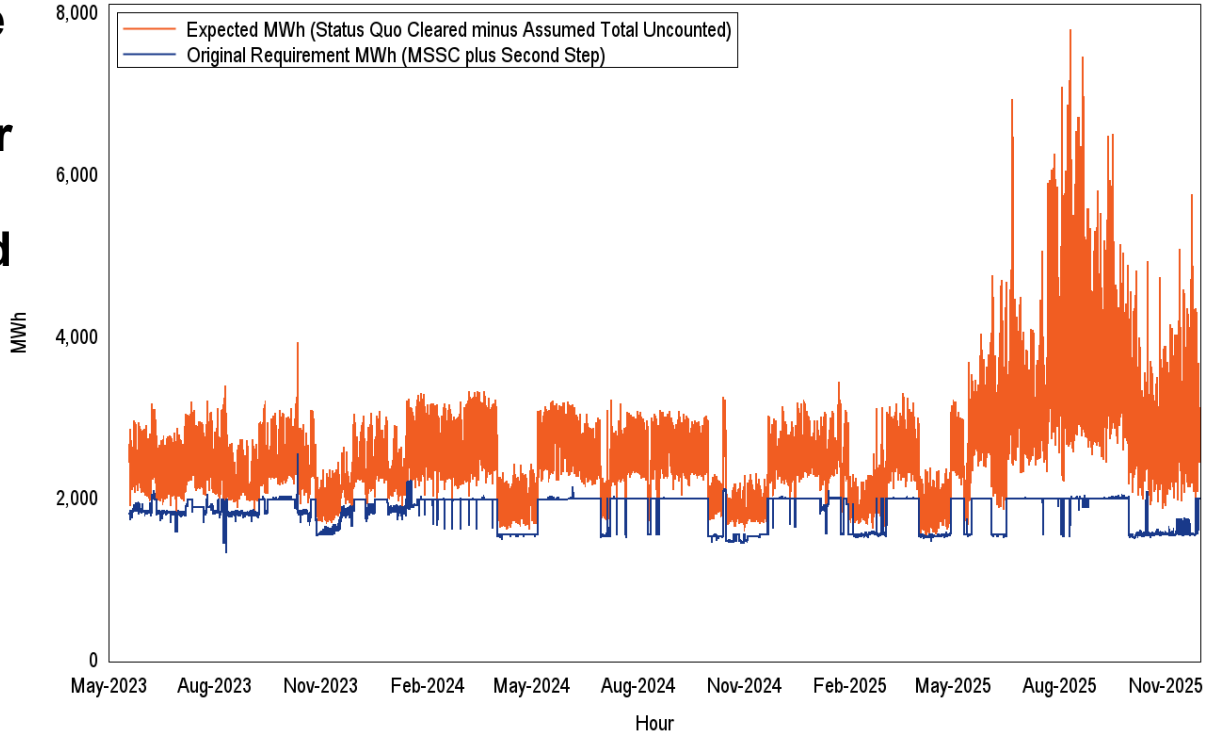
- **For interval affected by both the forward-looking reduction in payments and the retroactive penalty or the day of charge, the sum of the reduction in payments and the charge/penalty will not exceed the total original payments for the interval.**

Assumptions for the Following Examples

- The performance values used are the historic performance values.
- The historic performance values come from being scheduled under PJM's status quo with the adder.
- If the proposed method was used instead of the adder, then
  - Fewer units would be scheduled
  - Fewer uncounted MW would clear (and so fewer additional units would be scheduled)
  - The reserve performance values would be different
- The total uncounted MW in the displayed intervals is the total for all resources cleared under PJM's status quo with the adder.
  - In practice, it would likely be lower.

Expected MWh vs. Original SR Requirement MWh

- **Shows what would have been covered if all resources cleared under the status quo requirement had cleared under the proposal.**
- **Shows that the original requirement could be covered by fewer resources than cleared under status quo, even with uncounted MW.**

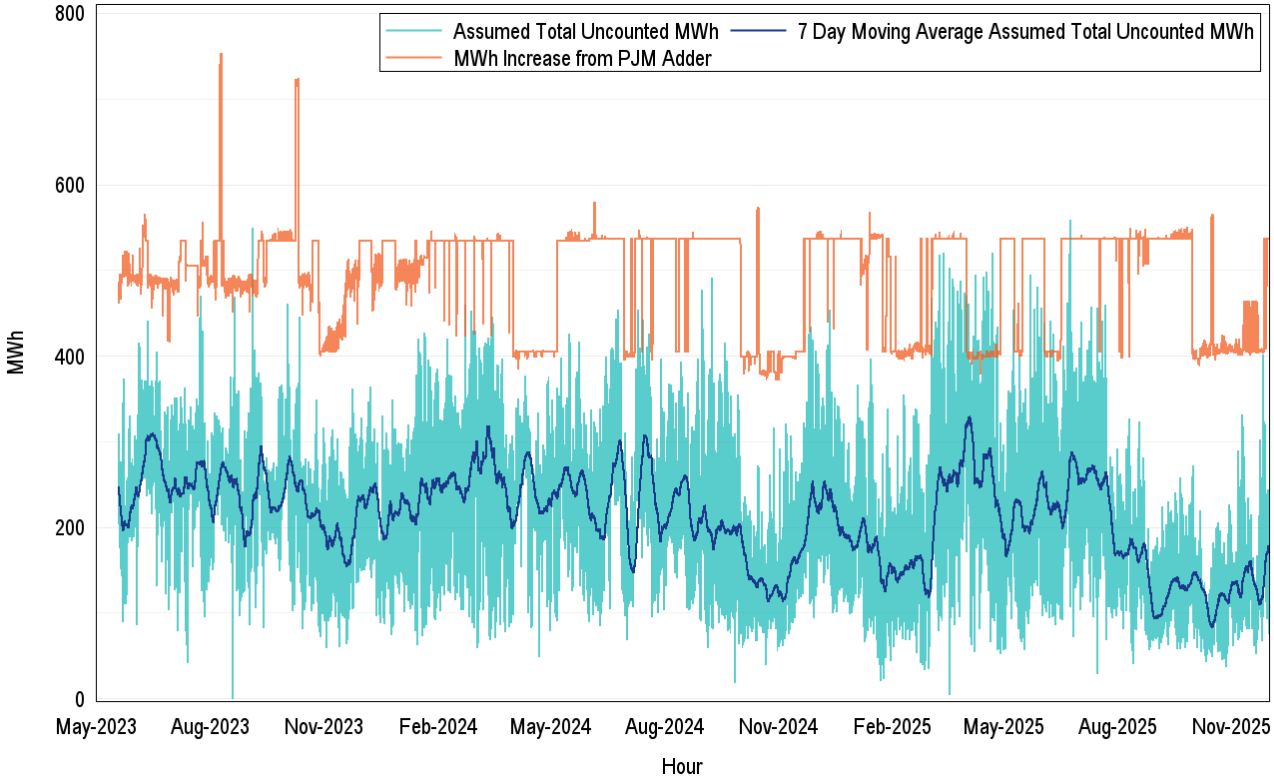


Increase in August 2025 is due to consistent increase in cleared SR MW and decrease in Uncounted MW.

IMM Proposal vs. Status Quo SR Requirement MWh (1)

For May 2023 through December 2025:

- **Average increase from 30 percent adder is 493 MW.**
- **Average assumed total uncounted MW equal 210 MW.**



IMM Proposal vs. Status Quo SR Requirement MWh (2)

- Comparing intervals from May 19, 2023, through December 31, 2025
- For almost all intervals, the assumed total uncounted MW are less than the increase from PJM's 2025 adder.
- The assumed total uncounted MW can be larger than the increase from PJM's 2025 adder when the MSSC is smaller.

Proposed Effective Requirement vs Status Quo	Interval Count	Percent of Total
Total	275,916	
Greater Than	1,048	0.380%
Equal To	5	0.002%
Less Than	274,863	99.618%

Comparison of Proposal and Cleared Reserve MW

- **Of the 27 intervals from May 19, 2023, through December 31, 2025, that were short of RTO SR in RT SCED, 11 still would have been short under the IMM proposal.**
- **The IMM proposal will not eliminate all shortages seen under PJM's adder.**
  - **The proposal would increase the MW needed to satisfy the reserve requirements, but a smaller increase and a more targeted increase.**

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403
(610) 271-8050

MA@monitoringanalytics.com
www.MonitoringAnalytics.com