2023 Reserve Requirement Study (RRS) Assumptions

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Description

- The 2023 RRS will re-set the Forecast Pool Requirement (and the Installed Reserve Margin) for delivery years (DY) 2024/25, 2025/26, 2026/27 and establish the initial FPR value for 2027/28.
  - The study will also set the Winter Weekly Reserve Target (WWRT) for Winter 2023/2024
- The 2023 RRS will be conducted using two software tools
  - PRISM, the tool that PJM has used historically to conduct the RRS
  - The hourly loss of load model used to perform the ELCC study
  - PJM is proposing to run the 2023 RRS with the two software tools as part of the transition to permanently use the hourly loss of load model.
  - Two sets of results will be reported to stakeholders. Following review and discussion with stakeholders, PJM will recommend for endorsement a single set of results
- Given the different characteristics of the two software tools, two sets of assumptions are required: Set #1 for PRISM, Set #2 for the hourly model. The full list of assumptions in both sets is posted alongside this presentation

Assumptions Highlights – Capacity Model

- ELCC resources are excluded from the study (in both assumptions' sets)
  - These resources are excluded because PRISM cannot properly model the limitations of these resources namely, the intermittency in output of variable resources and the energy constraints of storage-type resources.
  - Performance limitations and uncertainty of such resources are captured in their accreditation and therefore, should not increase the FPR (which is the main objective of the RRS, mainly driven by load uncertainty)
- Resource performance metrics (EFORd, Equivalent Planned Outage Factor, Mean time to Failure, etc) are estimated using eGADS data from period 2018-2022
- The capacity model for all weeks of the year except the winter peak week is built assuming that forced outages are independent
  - For the winter peak week, historical actual RTO-aggregate outage winter peak week data from period delivery year 2007/08 – delivery year 2022/23 is used
  - Given the resource performance during winter storm Elliott, this year PJM will not exclude and replace performance data from delivery year 2013/14 (i.e. first polar vortex)

Assumptions Highlights – Load Model

- For Set #1, PJM will perform the Load Model Selection process, as performed in previous years
- For Set #2, the above Load Model Selection process is not needed. PJM models the monthly peak load uncertainty in the 2023 PJM Load Forecast by:
  - Deriving load scenarios for each year in the period DY 2012 – DY 2021
  - Deriving a frequency weight for each year in the period DY 2012 – DY 2021
  - This methodology was used in the most recent ELCC study in December 2022

Assumptions Highlights – Capacity Benefit of Ties (CBOT)

- The Capacity Benefit of Ties (CBOT) used to reduce the single-area FPR values calculated in the 2023 RRS will be determined by averaging the most recent historical CBOT values since the 2017 RRS (including the value calculated this year with PRISM; a total of 7 CBOT values)
  - The 2017 RRS was the first RRS that did not include ISO-NE as part of the “World”
  - The CBOT, produced by the average calculation described above, will then be converted to UCAP and subtracted from the single-area FPR calculated with PRISM and the single-area FPR calculated with the hourly loss of load model.
  - This is a departure from previous years’ studies triggered by observed volatility in historical CBOT values from year to year due to load model changes (see slide in Appendix)

Note about the Critical Issue Fast Path – Resource Adequacy

- PJM staff will perform 2023 RRS-related analysis at the request of the Critical Issue Fast Path – Resource Adequacy (CIFP-RA) stakeholder group.
  - This additional analysis will not be subject to the 2023 RRS approval process
  - The set of reforms to the PJM resource adequacy construct that the CIFP-RA process may produce, may require the recalculation of the FPR values in the 2023 RRS

Next Steps

- June, PC: vote on 2023 RRS Assumptions

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2023 Reserve Requirement Study (RRS) Assumptions

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Appendix

Historical CBOT Values

RRS	CBOT
2017	1.6%
2018	1.5%
2019	1.6%
2020	1.5%
2021	1.4%
2022	1.0%
2023	?

These seven values will be averaged. The average values will be converted to UCAP and subtracted from i) the single-area FPR calculated with PRISM and ii) the single-area FPR calculated with the hourly loss of load model