New York ISO
Independent System Operator

Tan45 Methodology Review (Phase 2) Update

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NYISO

ICS Meeting #309

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Agenda

- Updates on Research Efforts
- Tan45 Methodology: Founding Principles
- Tan45 Methodology Considerations
- Next Steps

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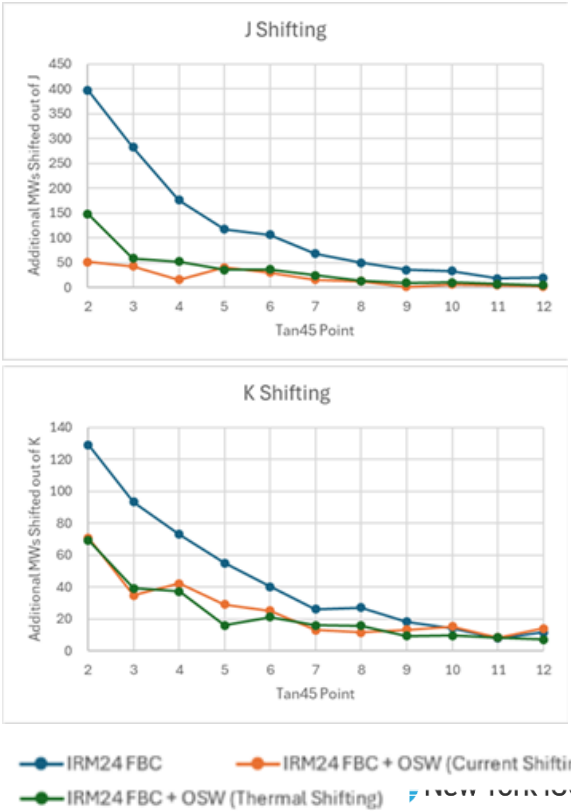
Updates on Research Efforts

Recap on Background

- At the February 5, 2025 ICS meeting, the NYISO presented research on the use of an alternative thermal shifting methodology.
- The proposed alternative methodology was able to calculate an installed reserve margin (IRM). However, it does not necessarily shift average system capacity based on zonal availability of the modeled fleet, particularly in a potential future system with high levels of offshore wind (OSW).
- ICS agreed the alternative thermal shifting would not constitute a long-term solution but may represent a feasible alternative in the near-term.
    - Fluctuations in the Load Zone J and Load Zone K curve “shift” curves remained present.
- ICS also suggested reviewing the equivalent demand forced outage rate (EFORd) values assumed for the OSW facilities in the "IRM24 + 9000 MW OSW" test case as the potential cause of the Tan45 failure in that case.
    - The EFORd values for OSW were based on the NYISO's 2023-2024 Locational Minimum Installed Capacity Requirements (LCR) study and the resulting hourly loss of load expectation (LOLE) distribution of such study.

Update on OSW EFORd Assumptions

- The NYISO calculated the EFORd values at two separate points on the Tan45 curve, and confirmed that OSW EFORd value assumptions were not materially different between the shifting assumption and the actual unavailability in the GE Multi-Area Reliability Simulation software program (GE-MARS) simulation.



Founding Principles of Tan45 Methodology

Compliance with Reliability Rules

Physical Considerations

- Feasible

- Reflective of Current System Configuration

- Compatible with Zonal LOLE results

Stability of Anchor Point

- Avoid small changes in IRM resulting in large changes to LCR

- Importance of computing IRM/LCR relationship as accurately as possible

Economic Considerations

- Minimizes the delivered cost to the New York consumer at an acceptable level of reliability

- Price signals

- https://www.nyiso.com/documents/20142/1398547/RAITF_tan45_vs_FFE_080106.pdf/49a8db5c-0cce-7aaa-7dc8-ad1abcf5eae8
- "Tan 45" Anchor versus Free Flowing Equivalent for Establishing Statewide IRM", Resource Adequacy Issues Task Force Meeting, August 3, 2006

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Tan45 Methodology Considerations

Physical Considerations

- **The current methodology may become misaligned with future system conditions**
  - The IRM low point being defined as removing MW from upstate while keeping downstate "as-found" may not continue to be appropriate as system conditions evolve (e.g., changes in load patterns and potential additional of new capacity downstate may result in shifts of additional reliability risks to upstate)
  - The binding transmission interface(s) may change over time as system topology and network upgrades are made. In the 2026-2027 IRM study, for example, the Central East + Marcy South interface is no longer a binding constraint

Stability of the Anchor Point

- **The IRM/locational requirement relationship may not represent evolving system conditions**
  - The potential misalignment between the current methodology and the evolving system configuration raises questions regarding whether the current relationship between these parameters, as computed with the current methodology, remains appropriate/representative
  - As demonstrated in the Tan45 curves for Load Zone K in the 2026-2027 IRM study (preliminary base case vs. final base case), stability in the relationship between IRM and locational requirements is becoming strained

Economic Considerations

- **As the system and reliability risk profile continues to evolve, seeking to minimize the total delivered costs of reliability to consumers may not be fully achievable using current considerations**
  - The current methodology assesses upstate vs. downstate trade-offs as a means for seeking to minimize the cost of maintaining resource adequacy
  - Explicitly considering capacity costs could potentially provide an alternative means for addressing this objective

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Next Steps

- **Review the compatibility of the evolving system configuration and the current Tan45 methodology:**
  - Review the zonal LOLE values in the high OSW test cases
  - Review the impact of capacity at different locations on LOLE and explore impacts thereof on the current "low point" definition
    - Specifically, review the Tan45 LCR curve of Load Zone K in the 2026-2027 IRM Preliminary Base Case to identify drivers for the steep decline observed from the low point to the first Tan45 point
  - Review the binding transmission interfaces and identify potential alternative shifting methodologies
- **Review the impact of the Long Island Offshore Wind Export Public Policy Transmission Need (Long Island PPTN) upgrades on the Tan45 methodology as it relates to compatibility with future system configurations.**
- **Continue to explore the potential need for changes/refinements to the key principles for use in evaluating alternatives and/or enhancements to the current Tan45 methodology.**

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Timeline

Milestone	Anticipated Timeline
Present draft scope to the ICS for approval	January 8, 2025
Review alternative thermal shifting methodology test results	February 5, 2025
Identify and establish core principles for calculating the IRM	Q2 2025
Identify potential alternative shifting methodologies based on core principles	Q2 – Q3 2025
Identify potential test cases for testing alternative shifting methodologies Prepare and finalize interim progress report	Q3 - Q4 2025
Conduct testing of alternative shifting methodologies, enhancements, present results and insights	Q1 - Q2 2026
Finalize findings and formulate preliminary recommendations	Q3 2026
Prepare and finalize whitepaper report	Q4 2026

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Questions?

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Our Mission and Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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