

2024 Whitepaper Scopes

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Purpose

- **This presentation aims to provide the Executive Committee (EC) a high level overview of the whitepaper scopes discussed at the Installed Capacity Subcommittee (ICS), and solicit feedback and inputs from EC**
 - Distributed Energy Resources (DER) Modeling – Research Focus
 - Managing Uncertainty – Research Focus
 - Behind-the-meter (BTM) Solar Modeling
 - Tan45 Methodology Review

DER Modeling

- Research Focus

Whitepaper Research Objective

- **The objective of this whitepaper is to develop a set of general guidelines and principles for modeling DER prior to market entry, based on comprehensive background research**
- **This whitepaper will aim to answer the following questions:**
 - What are the operating characteristics of DER?
 - This will include definition of DER, technology types, potential location, and other qualifying characteristics.
 - How are DER expected to participate in the ICAP market?
 - Should specific modeling approaches be considered for DERs in the IRM study, based on their characteristics and their expected market behavior?

Timeline and Deliverables

Milestone	Date
Present Scope to ICS	01/30/2024
Finalize Scope	02/27/2024
Initial research on DER Characteristics and Expected Market Behavior	March/April 2024 (pending final scope)
Discussion and Conclusion on Modeling Considerations	April/May 2024 (pending final scope)
Conclusion and Recommendation for NYSRC Approval	May/June 2024 (pending final scope)

Managing Uncertainty

- Research Focus

Whitepaper Research Objectives

- **This whitepaper will focus primarily on the initial research on new resource (i.e., transmission, generation, and large loads) entry and aim to answer the following questions:**
 - How have projects reached commercial operation date (COD) in the past?
 - How do we expect future projects to reach commercial operation?
 - What project characteristics such as size, fuel type, and technology impact the timing of milestones, and how the project would declare COD?
 - Based on research findings, should changes to IRM study process be considered? If so, how should we evaluate the potential changes?
 - Potential changes for consideration may include refining the inclusion criteria, more granular modeling for new projects, sensitivity analysis, etc.
 - Other complications or unintended consequences may be introduced by changing the IRM study process and should be identified and evaluated as part of the assessment.

Proposed Timeline and Deliverables

Milestone	Date
Initial Discussion of Topic	01/03/2024
Discussion of Research Objectives	01/30/2024
Finalize Scope	February/March 2024
Background research on how projects enter the market	May/June 2024 (pending final scope)
Consider and evaluate necessary changes to the IRM process	June/July 2024 (pending final scope)
Conclusion and Recommendation of process improvements	July/August 2024 (pending final scope)

BTM Solar Modeling

Background and Research to-date

- **Currently, the estimated BTM solar impact is embedded on the load side and ICS had expressed interest to explore potential ways to model BTM solar explicitly as generators in the IRM study**
- **The NYISO conducted preliminary research to review two options to model BTM solar as generators in the IRM study**
 - Option 1 is to randomly select BTM solar shapes among the past 5-year historical production profiles
 - Option 2 is to align BTM solar shapes with the load shapes for each load forecast uncertainty (LFU) bin (i.e., 2013, 2017 and 2018 historical production profiles)
 - Both option requires modeling the load at the gross level, in both peak forecast and load shapes
- **Based on preliminary assessment, the combination of modeling BTM solar as generators and load side adjustment produced a larger-than-anticipated impact on the IRM. Initial review shows that the exhibited IRM impact appears to largely result from the load side adjustment:**
 - Misalignment between the net load basis for the LFU multipliers (i.e., based on net load) and applying the LFU multipliers on gross load
 - The current IRM load shape adjustment procedure when combining with modeling BTM solar as generators results in overstating the modeled energy during the high load and high loss of load expectation (LOLE) risk period

ICS Discussion and Next Steps

- The ICS had requested additional analysis to demonstrate the impact from the two identified factors described on the prior slide
- The ICS also expressed the desire for a complete solution for BTM solar modeling, to address the modeling on both the generator side and the load side
- The current RA Modeling Improvement Strategic Plan has prioritized the load modeling improvement to reflect both summer and winter peak forecast, as well as annual energy forecast in 2025
- The NYISO will continue working with the ICS to refine the scope and milestone(s) for 2024

Tan45 Methodology Review

Background and ICS Discussion

- **Reviewing the Tan45 methodology has been identified as a high priority for 2024 under the Resource Adequacy (RA) Modeling Improvement Strategic Plan. Therefore, this whitepaper will assess the methodology for establishing the installed reserve margin (IRM), starting with reviewing the current Tan45 process**
 - The ICS also recommended including whether and how to consider/account for transmission security limit (TSL) floor values used in the NYISO's Locational Minimum Installed Capacity Requirement (LCR) study in establishing the IRM
- **During last year's IRM study, the impact of TSL floor values led to the late development of considering TSL floor values in establishing the IRM. Therefore, seeking to develop process improvements to provide an early indication of the potential impact from TSL floor values is also desired in the near term and will be included in the scope of this whitepaper**
- **Therefore, this whitepaper will cover both perspectives mentioned above via two tracks of studies as detailed in following slides**
- **The ICS also discussed the transmission security analysis methodology during the 1/30 meeting. It was agreed that reviewing the transmission security analysis methodology will not be part of the scope of this whitepaper**
 - Such discussion should occur within the NYISO stakeholder process

Tan45 Review – 2024 Phase Scope

- **The NYISO plans to develop test cases based on the last year’s Final Base Case (FBC) to reflect certain expected major system changes over the coming years**
 - Transmission system changes (e.g., Champlain Hudson Power Express (CHPE), Northern New York Priority Transmission Project, LI Public Policy Transmission Need (PPTN) upgrades, etc.)
 - Supply mix changes – renewable assumptions focused on increased offshore wind penetration
 - This assessment is intended to replace the Phase4 High Renewable Whitepaper previously planned by the ICS
- **By conducting the Tan45 process on the test cases, the NYISO aims to answer the following questions:**
 - Can the Tan 45 methodology successfully establish the IRM on these test cases?
 - If the Tan45 methodology fails with these test cases, are there any obvious improvements that can remedy the situation?
 - If alternative methodologies need to be considered, what are the guiding principles from the current Tan45 methodology that need to be maintained in alternative solutions?
 - Based on the interim solution research occurring in the near-term for this whitepaper, do TSL floors values need to be considered when evaluating guiding principles for alternative solutions?

Proposed Timeline for 2024 Phase

Milestone	Timeline
Present draft scope to the ICS for approval	01/30/2024
Finalize assumptions for test cases	February/March 2024
Development of test cases	April 2024
Conduct Tan45 process and present results and insights	July 2024
Explore methodology improvements and identify guiding principles	Q3 – Q4 2024
Develop draft scope for 2025 Phase	December 2024

- **As this project proceeds, the NYISO will provide ongoing updates to the ICS to share progress and solicit feedback**

Interim Process Development Scope

- **The objective of this component of the scope is to identify and assess potential process improvements for the consideration of TSL floor values as part of the 2025–2026 IRM study cycle**
 - Prior analyses ([2021 analysis](#), [2023 analysis](#)) were conducted to incorporate TSL floor values in the current Tan45 methodology. These analyses, and additional considerations (*e.g.*, implementing TSL floor values on the Tan45 curves or using the NYISO’s LCR optimizer), can inform the assessment of the potential near-term process improvements
 - Additionally, improvements that aim to timely collect necessary inputs to provide information regarding the potential implications of the TSL floor values on the IRM will also be considered with a desire to inform the ICS prior to finalizing the Tan45 results
 - Sensitivity case for the 2025-2026 IRM Preliminary Base Case can also be considered

Proposed Timeline for Interim Process Development

Milestone	Timeline
Present draft scope to the ICS for approval	01/30/2024
Solicit inputs for potential technical study process improvements	February/March 2024
Assessment of potential technical study process improvements	April/May 2024
Develop recommendations for process improvements to implement for the 2025-2026 IRM study cycle	May/June 2024
Subject to NYSRC's approval, implement recommended process improvements in the 2025-2026 IRM study cycle	June/July 2024 (implementation pending NYSRC's approval)

- **As this project proceeds, the NYISO will provide ongoing updates to the ICS to share progress and solicit feedback**

Our Mission & 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

Questions?