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Independent System Operator

# Parametric Process Improvements


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# Background and Agenda

**Background:**

- Currently, a parametric study is conducted during the development of the installed reserve margin (IRM) base case (preliminary and final). The parametric analysis is intended to provide timely assessment of major assumption updates that have an impact on the IRM and an early indication of the potential IRM Tan45 results.
- Over the past few years, divergence between parametric results and the Tan45 results has been observed and the 2026-2027 IRM Preliminary Base Case (PBC) showed ~2% gap between the IRM identified by the parametric and Tan45 results.
- Therefore, ICS prioritized the investigation (and, if warranted, implementation) of potential enhancements to the parametric process.

**Agenda:**

1. Current parametric process
2. Proposed Design Principles and Potential Enhancements
3. Next Steps

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# Current Parametric Process



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# Current Methodology

## Methodology:

1) **Run Parametric Case**

   After each assumption input change, bring New York Control Area (NYCA) back to 0.1 loss of load expectation (LOLE).

2) **Compare Outputs**

   Report IRM/locational requirement change vs. prior case; aggregate similar changes when possible.

3) **Classify Changes**

   Material or non-material for ICS review.

## Intended Purpose:

- **Show Impact**

  Directionality and relative size of impact on IRM/locational requirement for each input change.

- **Highlight Materiality**

  Helps ICS identify/assess changes with significant impacts.

- **Tan45 Indicator**

  Early signal of where Tan45 IRM results may land.

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# Current Limitations

### 1) Methodology Misalignment:

- Parametric and Tan45 methodologies have different designs which can adversely impact interpreting the relationship of the respective results.

### 2) Limited Predictive Value:

- Recent divergence of parametric outcomes from Tan45 results reduces confidence in the predicative quality of the parametric outputs.

### 3) Expectation Gaps:

- Parametric results may identify changes that appear potentially significantly with subsequent Tan45 results producing differing impacts.

### 4) Interactive Effects Obscured:

- Sequential approach to parametric analysis can mask interactive effects of assumption input changes.

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# Proposed Design Principles and Potential Enhancements



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# Proposed Design Principles

1. **Transparency**
   Clearly stated assumptions and model changes for each update/assessment.
2. **Simplicity**
   Use interpretable visuals and readily understandable descriptions.
3. **Consistency**
   For each study have an anchor point and a consistent process for comparability.
4. **Enable Research**
   Leverage the parametric process as means to conduct testing of potential design changes. Share baseline and test results side-by-side.
5. **Stability**
   Strive for results that remain stable; acknowledging the grid is highly dynamic and perfect stability is not practicable.

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# Potential Enhancements

## Considerations:

- **Align methodology closer to Tan45**

  Anchor parametric shifting to Tan45 J/K shifting ratio

- **Maintain Distinction**

  Parametric analysis remains separate from Tan45; use improved parametric methodology as a test environment for potential future changes

## Potential Impact:

- ✅ **Defragments Methodologies**
  Reduces divergence but not expected to produce full alignment.

- ✅ **Improves Predictive Value**
  Reducing divergence from Tan45 results → more confidence in parametric outputs.

- ✅ **Reduces Stakeholder Confusion**
  Improved alignment of early signals with final outcomes.

- ⚠️ **Interactive Effects**
  Linear/sequential process still potentially obscures interactions between changes.

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# Next Steps



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# Next Steps

**Implement and Back-Test Potential Design Changes:**

- Using a subset of parametric cases from the 2026-2027 IRM PBC to compare potential changes with current methodology and Tan45.

| Case | Old Parametric | New Parametric | Tan45 |
|---|---|---|---|
| Initial IRM | 24.4 | 24.4 | 25.6 |
| 1 | 0.37 | | x |
| 4 | 0.24 | | x |
| … | … | … | … |
| Total IRM | 23.82 | 26.1 | 26.3 |

**Additional Activities:**

- Identify stable stopping criteria for Monte Carlo.
- Research alternative methodologies for capturing interactive effects.
- Investigate various shifting methodologies.
- Draft whitepaper summarizing findings and recommendations.

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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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