

Standard Error Analysis

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NYISO

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Current Standard Error

- Under the Policy 5, Section 3.8, the standard error of the IRM study should be 0.025 of the mean LOLE.
- Based on the standard error analysis, the 2024-2025 IRM Final Base Case (FBC) with 2750 replications yields the standard error of 0.0276, which is not compliant with the Policy 5 requirement.
- The NYISO followed the Policy 5 instruction and increased the number of iterations in increments of 250. The standard error of 0.025 is achieved with 3250 replications, with no impact to the study results.
 - The higher replications increases the LOLE by 0.00012. The FBC still meets 0.100 LOLE criterion. Therefore, this has no impact on the IRM.
 - Only one EOP step (#7: Emergency Purchases) increased from 1.4 to 1.5 calls per year
 - An updated EOP table is provided in the reposting of the Tan45 points

Standard Error Over Time & Key Drivers

- **With increased modeling changes in recent years of the IRM study, the number of replications to achieve targeted standard error has been increasing**
 - In the 2023-2024 study, the energy limited resource (ELR) functionality was adopted and withholding operating reserves was implemented
 - In the 2024-2025 study, new offshore wind modeling and new emergency assistance (EA) modeling have been included, as well as increased LOLE in the external areas
- **Moving forward, additional Resource Adequacy modeling changes are expected**
 - Gas constraints, as well as other modeling improvements covered in the Strategic Plan, are expected to add to the complexity of the IRM model

Table 1: Number of Replications to Achieve 0.025 Standard Error

Study Year	Replications
2020-2021	1,185
2021-2022	1,517
2022-2023	1,140
2023-2024	2,577
2024-2025	3,237

Recommendation & Next Steps

- Use 3250 replications for the 2024-2025 IRM FBC
- Assess standard error and required replications under the Gas Constraint whitepaper and recommend updated replications for the 2025-2026 IRM Study if necessary
- Continue to review the number of replications to achieve a 0.025 standard error and, if warranted, increase replications as the model evolves

Questions?

Policy 5, Section 3.8

3.8 Standard Error

Another step in assuring a quality result is to determine whether the standard error is acceptable. To this end, the MARS model is run for 1,000 iterations. If at the 1,000th iteration the desired standard error of 0.025 of the mean LOLE for calculating the 95% confidence level is not achieved, then increase the number of iterations in increments of 250 until the desired standard error is met or exceeded. If the 0.025 mark is met, the number of iterations for all MARS runs in the current year study is maintained. If the number of iterations has changed from the previous year, the ICS will be notified.