

Enhanced SCR Modeling: IRM Impact Assessment

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Installed Capacity Subcommittee Meeting #286

January 30, 2024

Agenda

- **Background**
- **IRM Impact Assessment**
- **Supplemental Testing on LCR Case**
- **Recommendation**

Background

Background

- **As part of the NYISO's 2023 Modeling Improvements for Capacity Accreditation project, the NYISO analyzed historical Special Case Resource (SCR) performance and developed enhancements to the current SCR modeling approach for potential use in the NYSRC's installed reserve margin (IRM) study, as well as the NYISO's Locational Minimum Installed Capacity Requirements (LCR) LCR and capacity accreditation studies**
 - The modeling enhancements are intended to better reflect the expected performance and obligations of SCRs and, if adopted in the IRM model, would allow the NYISO to value SCRs in the ICAP market using SCR-specific Capacity Accreditation Factors (CAFs)
 - An overview of the modeling enhancements and a preliminary IRM impact assessment were presented at the [01-03-2024 ICS meeting](#)

IRM Impact Assessment

Test Cases

- **To test the impact of the enhanced SCR modeling, the NYISO applied the enhanced SCR modeling to the 2023-2024 IRM final base case (FBC), 2024-2025 IRM preliminary base case (PBC), and 2024-2025 IRM Technical Study results (i.e., 23.1% IRM)**
 - Testing on the 2023-2024 IRM FBC and 2024-2025 IRM PBC was conducted with and without the new emergency assistance (EA) modeling utilized in the 2024-2025 IRM Technical Study results
- **The Tan45 process was utilized to bring all cases back to at-criteria conditions after the addition of the enhanced SCR modeling**
 - Supplemental testing of the enhanced SCR modeling was conducted on the NYISO's 2024-2025 LCR study case using the LCR optimizer
 - The LCR case reflects the NYSRC Executive Committee (EC) approved IRM of 22% and LCRs fixed at the applicable transmission security limit (TSL) floor values
 - These results are presented in the “Supplemental Testing on LCR Case” section of this presentation

IRM Impacts

- The enhanced SCR modeling lowered the IRM from 0.5% to 2.1% across the five sets of test cases
 - The downward pressure on the IRM is primarily a result of SCRs being available for more days per month and targeting their use during hours with higher loss of load risk

	2023-2024 FBC		Delta	2023-2024 FBC + New EA		Delta	2024-2025 PBC		Delta	2024-2025 PBC + New EA		Delta	2024-2025 Technical Study		Delta
Enhanced SCR Modeling		X			X			X			X			X	
IRM	19.9%	17.8%	-2.1%	21.9%	20.9%	-1.0%	20.8%	19.2%	-1.6%	23.0%	22.5%	-0.5%	23.1%	22.4%	-0.7%
J LCR	78.2%	77.9%	-0.3%	77.9%	77.9%	0.0%	72.7%	72.0%	-0.7%	72.4%	71.9%	-0.5%	72.7%	72.1%	-0.6%
K LCR	107.4%	107.4%	0.0%	107.1%	107.2%	0.1%	109.9%	109.6%	-0.3%	109.5%	109.4%	-0.1%	103.2%	103.1%	-0.1%
G-J LCR	88.6%	88.3%	-0.3%	88.3%	88.3%	0.0%	84.3%	83.7%	-0.6%	84.0%	83.7%	-0.3%	84.6%	84.1%	-0.5%

IRM Impacts with New EA Modeling

- The IRM impacts are smaller (0.5% -1% decreases) in the cases with the new EA modeling
 - With the new duration limitations, SCRs are not as available to solve all loss of load events within a day. Thus, the model uses EA to solve many of the remaining events. Under the new EA modeling, there is less EA available resulting in less of the remaining events being solved and a lower IRM impact from the enhanced SCR modeling

	2023-2024 FBC		Delta	2023-2024 FBC + New EA		Delta	2024-2025 PBC		Delta	2024-2025 PBC + New EA		Delta	2024-2025 Technical Study		Delta
Enhanced SCR Modeling		X			X			X			X			X	
IRM	19.9%	17.8%	-2.1%	21.9%	20.9%	-1.0%	20.8%	19.2%	-1.6%	23.0%	22.5%	-0.5%	23.1%	22.4%	-0.7%
J LCR	78.2%	77.9%	-0.3%	77.9%	77.9%	0.0%	72.7%	72.0%	-0.7%	72.4%	71.9%	-0.5%	72.7%	72.1%	-0.6%
K LCR	107.4%	107.4%	0.0%	107.1%	107.2%	0.1%	109.9%	109.6%	-0.3%	109.5%	109.4%	-0.1%	103.2%	103.1%	-0.1%
G-J LCR	88.6%	88.3%	-0.3%	88.3%	88.3%	0.0%	84.3%	83.7%	-0.6%	84.0%	83.7%	-0.3%	84.6%	84.1%	-0.5%

Expected EOP Implementation Days per Year¹

	2023-2024 FBC			2023-2024 FBC + New EA			2024-2025 PBC			2024-2025 PBC + New EA			2024-2025 Technical Study		
		X	Delta		X	Delta		X	Delta		X	Delta		X	Delta
Enhanced SCR Modeling		X			X			X			X			X	
EOP Step 1	6.9	8.9	+ 2.0	5.4	6.1	+ 0.7	7.6	9.1	+ 1.5	6.2	6.6	+ 0.5	8.1	8.7	+ 0.6
EOP Step 2	4.6	6.6	+ 2.0	3.6	4.3	+ 0.8	5.2	6.7	+ 1.5	4.3	4.9	+ 0.6	6.1	6.9	+ 0.8
EOP Step 3	4.4	6.3	+ 1.9	3.4	4.1	+ 0.7	5.0	6.5	+ 1.4	4.1	4.7	+ 0.6	5.9	6.7	+ 0.8
EOP Step 4	2.8	4.6	+ 1.8	2.0	2.6	+ 0.6	3.2	4.5	+ 1.3	2.4	2.9	+ 0.5	2.8	3.4	+ 0.6
EOP Step 5	2.1	3.6	+ 1.5	1.4	2.0	+ 0.5	2.4	3.5	+ 1.1	1.7	2.1	+ 0.4	2.2	2.7	+ 0.5
EOP Step 6	1.7	3.1	+ 1.4	1.2	1.6	+ 0.5	2.0	3.0	+ 1.0	1.4	1.8	+ 0.4	2.0	2.5	+ 0.5
EOP Step 7	1.6	3.0	+ 1.4	1.1	1.6	+ 0.5	1.9	2.9	+ 1.0	1.3	1.7	+ 0.4	1.4	1.9	+ 0.5
EOP Step 8	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.2	0.0
EOP Step 9	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0
EOP Step 10	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0

¹The expected implementation days per year reported in each emergency operating procedures (EOP) step are the expected number of days that MARS calls for that EOP step. If a EOP step has a limitation on the number of days that it can provide load relief, such as the 5 days per month limit for SCRs in the cases without the enhanced SCR modeling, it will provide no load relief after the 5th day.

Supplemental Testing on LCR Case

Supplemental Testing Approach

- The NYISO tested the IRM impact of the enhanced SCR modeling on the 2024-2025 LCR case using the LCR optimizer
 - The impact was tested in 2 ways:
 - Letting the LCR optimizer solve to the target 0.089 loss of load expectation (LOLE) from the 22% IRM approved by the NYSRC EC
 - Resolving the case to 0.100 LOLE
 - These results are compared to the 21.5% IRM case with TSLs binding presented at the [November 1, 2023 ICS meeting](#), which also has a 0.100 LOLE
 - In both cases, the LCRs were set as fixed at the applicable TSL floor values (i.e., 81.0% for the G-J Locality, 81.7% for New York City, and 105.3% for Long Island)
 - Additional testing was conducted without the LCRs set as fixed to the TSL floor values (i.e., the LCR optimizer could set an LCR above the applicable TSL floor values), which showed a tradeoff between a lower IRM and higher Long Island LCR driven by the lower net cost of new entry (CONE) curve used for Long Island compared to NYCA in the LCR optimizer

IRM Impacts

- The enhanced SCR modeling lowered the IRM from 0.8% to 1% across the two cases

	2024-2025 LCR (0.089 LOLE)		Delta	2024-2025 LCR (0.100 LOLE)		Delta
Enhanced SCR Modeling		X			X	
IRM	22.0%	21.2%	-0.8%	21.5%	20.5%	-1.0%

Expected EOP Implementation Days per Year¹

	2024-2025 LCR (0.89 LOLE)		Delta	2024-2025 LCR (1.00 LOLE)		Delta
Enhanced SCR Modeling		X			X	
EOP Step 1	7.0	7.7	+ 0.7	7.5	8.3	+ 0.7
EOP Step 2	4.8	5.7	+ 0.9	5.1	6.2	+ 1.1
EOP Step 3	4.6	5.4	+ 0.9	4.9	5.9	+ 1.0
EOP Step 4	2.4	3.1	+ 0.7	2.6	3.5	+ 0.8
EOP Step 5	1.9	2.5	+ 0.6	2.1	2.9	+ 0.8
EOP Step 6	1.8	2.4	+ 0.6	2.0	2.7	+ 0.8
EOP Step 7	1.3	1.8	+ 0.5	1.5	2.1	+ 0.6
EOP Step 8	0.2	0.2	0.0	0.2	0.2	0.0
EOP Step 9	0.1	0.1	0.0	0.1	0.1	0.0
EOP Step 10	0.1	0.1	0.0	0.1	0.1	0.0

¹The expected implementation days per year reported in each EOP step are the expected number of days that MARS calls for that EOP step. If a EOP step has a limitation on the number of days that it can provide load relief, such as the 5 days per month limit for SCRs in the cases without the enhanced SCR modeling, it will provide no load relief after the 5th day.

Recommendation

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- **The NYISO recommends ICS propose adoption of the enhanced SCR modeling for the 2025-2026 IRM study**

Questions?

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