New York ISO
Independent System Operator

Evolving Resource Adequacy Models: Project Kick Off

Brendan Long

Market Design Specialist

Installed Capacity Subcommittee Meeting #287

February 27, 2024

Agenda

- Background
- Scope
- Schedule
- Next steps

Today's Objective

- Today’s objective is to discuss the scope, deliverables and high-level timeline for the NYISO's Evolving Resource Adequacy Models project
- Discussions on specific topic areas related to this project will be reserved for future ICAPWG/ICS meetings

New York ISO

Background

Background

- Continuing the work started with the NYISO's Improving Capacity Accreditation and Modeling Improvements for Capacity Accreditation projects, this project will research the need for other potential changes to the assumptions, inputs, and modeling used in the Resource Adequacy (RA) (or installed reserve margin [IRM] study) model
- By identifying areas of potential enhancement and proposing any necessary recommendations, this project will help ensure the IRM and Capacity Accreditation Factors (CAFs) applicable to the NYISO capacity market account for system reliability risks of the evolving grid
- NYISO Project Deliverable: Q4 Study Complete
  - The completed study will be presented to the ICAPWG and NYSRC's Installed Capacity Subcommittee (ICS) for consideration of any recommendations/next steps

New York ISO

Scope

Scope

- **The NYISO will research three areas for potential enhancements as part of this project:**
  - Correlated outages
  - Min/max operating temperatures
  - Unit size

New York ISO

Correlated Outages

- **Individual unit outages are currently modeled as uncorrelated in the IRM model. However, there may be times when multiple outages can occur simultaneously, due to weather and/or common mode failures, which may not be captured by the current modeling of individual unit outages**
  - A 2019 analysis of historical outages in PJM found a correlation between outages and temperature[1]
- **This project component will investigate the potential for correlated outages in the New York Control Area due to weather and/or common mode failures**
  - The NYISO will analyze historical outage data to identify any correlating factors and identify potential modeling and/or accreditation changes, if necessary

[1] See Murphy, Sinnott, et. Al. "A time-dependent model of generator failures and recoveries captures correlated events and quantifies temperature dependence." November 2019.

New York ISO

Min/Max Operating Temperature

- In compliance with requirement R7.3 of NERC standard EOP-011-2 (effective April 1, 2023), generation owners are required to submit cold weather operating data including the generating unit(s) minimum:
  - Design temperature; or
  - Historical operating temperature; or
  - Temperature determined by an engineering analysis
- Several units are reporting historical minimum operating temperatures that are not as low as the temperatures likely associated with the high winter load assumptions for Bin 1 of the IRM model

New York ISO

Historical NYCA Peak Day Weather Distributions

Winter NYCA Peak Day Temperature - Daily Minimum (deg F)

Weather	A	B	C	D	E	F	G	H	I	J	K	NYCA
10th	15	14	13	6	10	14	18	19	21	24	23	19
Baseline	5	5	3	-5	-1	2	6	8	8	11	14	8
90th	-4	-5	-8	-16	-12	-9	-3	0	1	4	4	0
99th	-12	-12	-16	-25	-21	-18	-11	-8	-7	-4	-4	-8

Summer NYCA Peak Day Temperature - Daily Maximum (deg F)

Weather	A	B	C	D	E	F	G	H	I	J	K	NYCA
10th	82	85	85	82	85	87	89	89	88	89	87	87
Baseline	87	89	90	88	89	91	94	94	95	95	92	91
90th	91	94	95	94	93	96	97	98	98	98	98	95
99th	95	97	98	98	96	99	100	102	102	102	103	99

* Tables shown are from Table I-20 of the 2023 Gold Book
** IRM Model Bin 1 probability = 0.62% in Table A.7 2024 IRM Model Appendix

New York ISO

Min/Max Operating Temperature

- Additionally, the NYISO collects data on maximum design temperatures through its Generator Fuel and Emissions Reporting survey
  - Some units are reporting maximum design temperatures that are not as high as the temperatures likely associated with the high summer load assumptions for Bin 1 of the IRM model
- Therefore, there may be insufficient data to support that these units can operate under certain conditions reflected in the IRM model
- The NYISO will explore potential impacts of (and, if necessary, options for addressing) this issue within the framework of the IRM model

New York ISO

Unit Size

- Unit size may impact a resource's marginal reliability contribution because outages of individual large resources could potentially cause a greater impact on system reliability compared to the outages of multiple small resources
- The NYISO plans to test the impact of unit size on marginal reliability contributions to determine if unit size should be considered in the determination of Capacity Accreditation Resource Classes (CARCs) and CAFs

New York ISO

Schedule

Schedule

- **Q1-Q2**
  - Evaluate identified areas of potential enhancement and discuss with ICS/stakeholders
  - Begin conducting modeling tests and data analysis
- **Q2-Q3**
  - Continue modeling tests and data analysis
  - Discuss results of modeling tests and data analysis with ICS/stakeholders
  - Develop preliminary recommendations
- **Q3-Q4**
  - Assess ICS/stakeholder feedback and finalize any recommendations

New York ISO

Next Steps

Next Steps

- The NYISO is beginning data analysis for each area of potential enhancement and plans to further discuss the potential issues with stakeholders at an ICAPWG in March 2024

New York ISO

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

New York ISO

Questions?