New York ISO
Independent System Operator

Modeling Improvements for Capacity Accreditation

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Business Issues Committee

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Agenda

- Background
- Summary of Proposals
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  - Correlated Derates
- Proposed Tariff Revisions
- Next Steps
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Background

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Background

- As part of the 2022 Improving Capacity Accreditation project, the NYISO identified that the functionality utilized in the current resource adequacy analysis -- used to establish New York State installed reserve margins and used as the basis of determining Capacity Accreditation Factors (CAFs) -- related to the modeling of and accounting for attributes, such as correlated fuel unavailability for non-renewable resources, non-fuel-related correlated outages, etc., may limit the basis for identifying certain Capacity Accreditation Resource Classes (CARCs) and calculating CAFs for some resource types
  - Enhancing the model's functionality will enable more accurate calculations of the Resource Adequacy requirements needed to maintain reliability and the CAFs, which will reflect the marginal reliability contributions of each CARC
- The Modeling Improvements for Capacity Accreditation project deliverable is the development of Functional Requirements due in Q4 2023

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Summary of Proposals

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Summary of Proposals

- The NYISO is proposing tariff revisions to support the Modeling Improvements for Capacity Accreditation Gas Constraints and Correlated Derates tracks
- The NYISO will continue working with the New York State Reliability Council (NYSRC)'s Installed Capacity Subcommittee (ICS) on SCR Modeling in 2024

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Gas Constraints

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Gas Constraints

- **The NYISO has developed a process for units to make a "fuel characteristic election" based on the unit's ability to satisfy, in part or in full, requirements for entry into a firm fuel CARC**
  - Units will inform the NYISO as to the MW level of their unit covered by firm fuel supply with any remaining MWs being covered under the Non-firm CARC
  - Units may use additive arrangements/contracts to satisfy the applicable requirements

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Gas Constraints

- **Firm Requirements:**
  - Gas – Firm transportation contract(s) covering full capacity Value with a contract path from a liquid receipt point to unit burner tip during the months of Dec., Jan., and Feb.,
    - Units may use an illiquid receipt point if they have procured a gas supply contract that satisfies the above requirement
  - On-site Fuel - required to have the on-site storage and if applicable, fuel arrangements/contracts to run at max output for 16 hours/day for 6 days during the months of Dec., Jan., and Feb.,
    - Testing Requirement – DMNC on primary and additional test on alternate fuel demonstrating max output for 1 hour by Dec. 1 deadline
      - Test must occur during the immediately prior Winter DMNC Test Period or with an out-of-period test confirmed in Nov. of the applicable Winter Capability Period
      - Operational data may be used in lieu of either test
    - ICAP values will be set using maximum value of the two tests, with any MW difference between the two test values treated as non-firm

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Gas Constraints

- **The fuel characteristic elections will take place on Aug. 1 of the year prior to the start of the applicable Capability Year, with units required to substantiate their election by Dec. 1 of the Winter Capability Period occurring within the applicable Capability Year**
  - Data submission includes:
    - Relevant contracts and operating plan
    - Documentation of inventory and completed testing for Dual Fuel and Oil-only Units
  - Data can be submitted at any point after the fuel characteristic elections
    - The ISO will undertake reasonable efforts to review an ICAP Supplier's documentation if received prior to August 1 of the applicable Capability year and notify the ICAP Supplier if the documentation does not support the elected level of firm capability
    - **Only submissions received after August 1 of the applicable Capability Year will count towards meeting the December 1 data submission deadline**
      - NYISO will reevaluate contracts and supporting documentation submitted prior to August 1 to verify that the conditions affecting firm fuel supply continue to support the ICAP Supplier's election. For example, that which had previously been determined to be a liquid receipt point continues to be a liquid receipt point for the upcoming winter season

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Gas Constraints

- **Shortfall Penalty - Units that made an election to demonstrate any amount of firm fuel capability based on having firm supply but were unable to substantiate/validate the level of firm supply by Dec. 1 or were unable to maintain their firm status may be subject to an ICAP Shortfall penalty**
  - The shortfall penalty will be equal to 1.5x the applicable Market-Clearing Price of UCAP times the amount of the shortfall for each month the ICAP Supplier is deemed to have a shortfall
  - If, however, the NYISO determines that the loss of firm status is due to the acts of other parties and not within the unit's control, the shortfall penalty will be equal to 1.0x the applicable Market-Clearing Price of UCAP times the amount of the shortfall for each month the ICAP Supplier is deemed to have a shortfall
  - Units that experience a reduction in firm supply will have their UCAP adjusted based on the new proportion of the applicable requirement that is satisfied

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Correlated Derates

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Summary

- **The "Correlated Derates" project addresses issues identified in Potomac Economics' Q3 2022 State of the Market Report as "functionally unavailable capacity" that Potomac believes may not be properly modeled in the IRM/LCR.**
- **Specifically:**
  1. Ambient water-related deratings for steam units
     - Units with once-through water cooling
  2. Humidity-adjustments for combined and simple cycle combustion turbines
     - Units with inlet cooling systems
  3. Emergency-only capacity that may not be reliably available in real-time
     - Capacity Limited Resource (CLR): An energy supplier that is able to take extraordinary measures to reliably increase output above its UOL_N and has sold UCAP based on taking those extraordinary measures

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Ambient Air and Humidity

- **Combustion Turbines and Combined Cycle units are already required to adjust DMNC tests results based on ambient air temperature**
- **NYISO proposes units with inlet cooling systems adjust DMNC to output curves based on both temperature and humidity**
  - These units can use Dry Bulb temperature and Wet Bulb temperature to obtain Relative Humidity (RH), Specific Humidity (SH) or any other variable they require to obtain the performance of their units at actual and design conditions
- **Ambient Air temperature-dependent units and air temperature and humidity-dependent units to adjust DMNC MW to a reference point based on the temperature and humidity, as applicable, used for the ICAP forecast**
  - Current methodology averages the ambient temperatures recorded at the time of the Transmission District's seasonal peak for four like Capability Periods
  - NYISO to provide Dry Bulb and Wet Bulb values used for the ICAP forecast for each zone

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Ambient Water Adjustment

- DMNC to be based on actual operation data for summer capability season
  - No need to provide output curves, flow rates or inlet water temperatures
- Valid operation may occur from July 1 to August 31, with a start time of 10am (HB 10) or later and the testing end time is 10pm (HB 22) or earlier
- Performance based on the sustained maximum net output over four (4) consecutive hours

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Emergency Only Capacity

- NYISO proposes to sunset the Capacity Limited Resources provision in the Tariff as of May 1, 2025
- Units would no longer be able to test by taking "extraordinary measures" to increase output
- In the energy market these units would be expected to offer their ICAP equivalent of UCAP sold at UOL_N

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Proposed Tariff Revisions

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Proposed Tariff Revisions

- **Natural Gas Constraints:**
  - MST 5.12 changes include:
    - 5.12.1.15 – Establishment of Dual Fuel Testing Requirement
    - 5.12.6.2.2 - UCAP Adjustment for Partial Firm Units
    - 5.12.8 – Detailed Dual Fuel Testing Requirement
    - 5.12.15 – CARC Characteristic Elections
  - MST 5.14 changes include:
    - 5.14.2.3.5 – Shortfall Penalty
  - MST 23.4 changes include:
    - 23.4.5.4 – Exemption from Must Offer Requirements of Pivotal Suppliers
- **Correlated Derates:**
  - MST 2.3:
    - Changes the definition of a Capacity Limited Resource, such that it is no longer applicable after April 30, 2025
  - Sunset Capacity Limited Resources beginning May 1, 2025 in the following sections:
    - MST 4.2 Day-Ahead Markets and Schedules
    - MST 4.3 In-Day Scheduling Changes
    - MST 4.5 Real-Time Market Settlements
    - MST 15.3A.1 Persistent Undergeneration Charges

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Next Steps

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Next Steps

- ICAPWG to finalize tariff language
- Q1 2024 Management Committee
- Board Review and FERC filing
- 2024: Continue working with NYSRC ICS on SCR Modeling

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Appendix

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Previous Discussions

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Previous Discussions on Modeling Improvements for Capacity Accreditation

Date	Working Group	Discussion Points and Links to Materials
January 26, 2023	ICAPWG	Modeling Improvements for Capacity Accreditation: Project Kick Off: https://www.nyiso.com/documents/20142/35880057/2023-01-26%20ICAPWG%20Modeling%20Improvements%20-%20Kick%20Off.pdf/c7ac6b6e-c90b-54b4-832d-ec6ecfc8f7ff
February 28, 2023	ICAPWG	Correlated Derates - Overview: https://www.nyiso.com/documents/20142/36499713/Correlated_Derates_MIWG_022823_FINAL.pdf/35eaab46-740e-aed0-9e2d-2207c06a0659 Natural Gas Constraints - Overview: https://www.nyiso.com/documents/20142/36499713/Gas%20Constraints%2002_28_2023%20ICAPWG_Final.pdf/e258d867-12f9-8453-c93b-49bc94b8e803 SCR Modeling - Overview: https://www.nyiso.com/documents/20142/36499713/2023-02-28%20ICAPWG%20Modeling%20Improvements%20-%20SCR%20Modeling.pdf/c1a52495-bc30-3e7c-f5c1-61c38f30fbe4
April 27, 2023	ICAPWG	Natural Gas Constraints - Gas Availability Estimates and Classification: https://www.nyiso.com/documents/20142/37254128/Natural%20Gas%20Constraints%202023_04_27_Final.pdf/0821aba8-bdcd-b1ce-96f3-2d8a740e1356 SCR Modeling - Exploratory Testing Methodology for Existing SCRs: https://www.nyiso.com/documents/20142/37254128/2023-04%20ICAPWG%20Modeling%20Improvements%20-%20SCR%20Modeling.pdf/30382824-7468-24d2-e567-56c770d6a185 Start up Notifications - Project Overview: https://www.nyiso.com/documents/20142/37254128/Start-up%20notification%20time%20-%20ICAPWG%204.27.2023%20v0.2%20clean.pdf/b44eb773-6f7d-e895-e202-a12f2fb6e24e
May 8, 2023	ICAPWG	Correlated Derates - Ambient Adjustments and Emergency Capacity: https://www.nyiso.com/documents/20142/37431277/5%20Correlated_Derates_ICAPWG_050823.pdf/a1e9a0f4-d922-503d-06d0-682b49c46c4c

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Previous Discussions on Modeling Improvements for Capacity Accreditation

Date	Working Group	Discussion Points and Links to Materials
June 1, 2023	ICAPWG	Natural Gas Constraints – Potential methods for quantifying firm capacity, CARC designation, and fuel election timelines: https://www.nyiso.com/documents/20142/37883690/Natural%20Gas%20Constraints%2006_01_2023_ICAPWG_Final.pdf/d479ea64-a0d0-86d1-388a-f93d01ff1e10
June 7, 2023	ICAPWG	SCR Modeling – Exploratory Testing Methodology (Continued): https://www.nyiso.com/documents/20142/38023757/2023-06-07%20ICAPWG%20Modeling%20Improvements%20-%20SCR%20Modeling.pdf/250f8f1d-9dfe-5756-640b-c1e31f3a6328
June 27, 2023	ICAPWG	Natural Gas Constraints – Addressing Stakeholder feedback and discussion on simpler framework for classifying units: https://www.nyiso.com/documents/20142/38423065/2%20Natural%20Gas%20Constraints_06_23_2023_ICAPWG_Final.pdf/177ad95e-1fa3-5c57-a626-d06182b55c9b
July 11, 2023	ICAPWG	SCR Modeling – Exploratory Testing Methodology Initial Results: https://www.nyiso.com/documents/20142/38699263/2023-07-11%20ICAPWG%20Modeling%20Improvements%20-%20SCR%20Modeling%20v2%20-%20clean.pdf/2f27473b-2292-31d4-ecb7-5d30d6b860f0
July 27, 2023	ICAPWG	Correlated Derates - Ambient Adjustments and Emergency Capacity: https://www.nyiso.com/documents/20142/39044934/Correlated_Derates_ICAPWG_072723_final.pdf/0f80f8f2-8100-b8f7-0c65-0098242634e1 Start-up Time – Long Start-up Time and Considerations: https://www.nyiso.com/documents/20142/39044934/Startup%20time%20-%20ICAPWG%207.27.2023_v2.pdf/bbf6fa0d-b45e-6b7f-1697-2c002442b1de
August 9, 2023	ICAPWG	Gas Constraints – Classification Proposal, Requirements for Firm Units, and Data Submittal Timeline: https://www.nyiso.com/documents/20142/39257338/Natural%20Gas%20Constraints_08_09_2023%20ICAPWGv4%20(002).pdf/de6053e0-030d-5520-ed59-18f2225f0f92

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Date	Working Group	Discussion Points and Links to Materials
September 5, 2023	ICAPWG	Correlated Derates – Ambient Adjustments: https://www.nyiso.com/documents/20142/39768278/5%20Correlated_Derates_ICAPWG_090523_final.pdf/5aa71990-e873-166b-a520-e8e6c44b42e1
September 18, 2023	ICAPWG	Startup Notification - Recommendation and Draft Tariff Revisions: https://www.nyiso.com/documents/20142/40044890/7%20Start-up%20Time%20Proposed%20Capacity%20Tariff%20Revision%20-%20ICAPWG%2009-18.pdf/9d6e8c5e-b7cd-384c-b713-be93507912ed
September 20, 2023	ICAPWG	Gas Constraints – Updated Requirement, Data Verification Timeline and Shortfall Penalty: https://www.nyiso.com/documents/20142/40085480/Natural%20Gas%20Constraints_9_20_2023_v4.pdf/8c76a250-d1e0-d30a-2c24-115f10268c65
October 3, 2023	ICAPWG	SCR Modeling – Project Update: https://www.nyiso.com/documents/20142/40342797/2023-10-03%20Modeling%20Improvements%20-%20SCR%20Modeling.pdf/e5b6faa3-7865-c92a-dbf2-39e1ea6c65e8
October 10, 2023	ICAPWG	Gas Constraints – Response to Stakeholder Feedback, Liquid Receipt Point Guidance, Additive Arrangements: https://www.nyiso.com/documents/20142/40481418/2%20Natural%20Gas%20Constraints_10_10_v3.pdf/7f39851d-f477-6a12-d7d2-52f52af87fcb Correlated Derates – Ambient Adjustment Procedures and CLR Tariff: https://www.nyiso.com/documents/20142/40481418/3%20Correlated_Derates_ICAPWG_101023_final.pdf/76326e11-e97f-cb93-2ca4-902d11365bda
October 19, 2023	ICAPWG	Startup Notification – Proposed Capacity Tariff Revisions: https://www.nyiso.com/documents/20142/40696384/Start-up%20Time%20Capacity%20Tariff%20Discussion-%20ICAPWG%2010-19.pdf/247ea46c-9bc3-60c5-9363-69d787bb78c9

Previous Discussions on Modeling Improvements for Capacity Accreditation

Date	Working Group	Discussion Points and Links to Materials
October 26, 2023	ICAPWG	SCR Modeling– Enhanced SCR Modeling Results: https://www.nyiso.com/documents/20142/40834869/2023-10-26%20Modeling%20Improvements%20-%20SCR%20Modeling.pdf/7d81b04c-e08a-0298-eaa6-cf99d92aa88c
November 8, 2023	ICAPWG	Gas Constraints – Response to Stakeholder Feedback and Market Design Summary + Tariff: https://www.nyiso.com/documents/20142/41049783/Natural%20Gas%20Constraints_11_8_w_Tariff_v5.pdf/8badbfff-06cd-3db3-46f9-c7de5107e993
November 17, 2023	ICAPWG	Gas Constraints – Response to Stakeholder Feedback: https://www.nyiso.com/documents/20142/41273741/Natural%20Gas%20Constraints_11_17_ICAPWG_v3.pdf/9e3b921a-0161-3a21-4874-21811077efb5
November 27, 2023	ICAPWG	Modeling Improvements for Capacity Accreditation – Summary: https://www.nyiso.com/documents/20142/41393553/2023-11-27%20ICAPWG%20-%20Modeling%20Improvements%20Summary.pdf/9c383992-bebf-6a4a-e660-4cb96f842ef2

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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

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