

# Firm/Non-Firm Capacity Accreditation Factors Methodology

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# Agenda

- **Objective of today's presentation**
- **Background**
  - Modeling of fuel availability constraints in the Installed Reserve Margin study
- **Proposed Non-firm CARC modeling approach**
- **Proposed Firm CARC modeling and application**
- **Proposed CARCs for Firm/Non-firm MWs**
- **Next Steps**

# Objective of Today's Presentation

- Provide an overview of the previously discussed Non-Firm Capacity Accreditation Factor (CAF) methodology<sup>1</sup> for modeling the representative (100 MW) unit for the Non-Firm Capacity Accreditation Resource Class (CARC) used to calculate the Non-Firm CAFs
- Present CARCs for Firm/Non-Firm MW

1. [Non-Firm CAFs Methodology](#); see also [Informational Non-Firm CAF Results](#).

# Background

# Background

- **As part of the 2022 Improving Capacity Accreditation project, the NYISO identified that the modeling/functionality utilized in the current resource adequacy (RA) analysis for modeling and accounting for capacity attributes, such as correlated fuel unavailability for non-renewable resources and non-fuel related correlated outages, may impact how the NYISO identifies CARCs and calculates CAFs for some resource types**
  - The NYISO uses the model utilized by the New York State Reliability Council (NYSRC) in the Installed Reverse Margin (IRM) study to calculate CAFs
  - Enhancing the model's functionality over time will enable more accurate calculation of the RA requirements needed to maintain reliability and the CAFs that reflect the marginal reliability contribution of each CARC
- **On April 11, 2025, the NYSRC Executive Committee (EC) approved the use of historical fuel estimates to model winter fuel availability constraints in the IRM study for the 2026-2027 Capability Year<sup>1</sup>**
- **Because fuel availability constraints modeling will be included in preliminary and final base cases for the 2026-2027 IRM study, the NYISO will be able to calculate Non-Firm and Firm CARCs and CAFs, beginning with the 2026-2027 Capability Year**

1. NYSRC EC Meeting 4/11/2025 Meeting Minutes; see also Fuel Availability Constraints Modeling Phase 2

# Modeling of Fuel Availability Constraints in the 2026-2027 IRM Study

- Fuel availability constraints will be applied in Load Zones F-K for the months of December, January, and February of the applicable Capability Year
- In its April 11, 2025, vote, the NYSRC EC approved the use of the following 6-tiered fuel availability assumptions for the 2026-2027 IRM study. These tiers reflect the different levels of fuel availability constraints under different load conditions<sup>1</sup>
  - The “Available Gas” limits the historical production data to peak loads above 22,000 MW
  - The “Available Oil” was informed by reported available non-gas fuel storage (in MWh) from generator weekly fuel surveys, an energy duration production assumption of 56 hours, potential limitations imposed by certain air permits, and historical operating experience under tight winter operating conditions
    - 56 hours is the proposed duration requirement for firm fuel based on the assessed reliability needs and potential winter reliability risks using the model developed as part of the 2023 Fuel and Energy Security study<sup>2</sup>

| Tier | NYCA Load Conditions (MW) | Available Gas (MW) | Available Oil (MW) | Total Available Fuel (MW) (Gas + Oil)** | Illustrative Modeled Derate (Rounded MW)*** |
|------|---------------------------|--------------------|--------------------|---|---|
| 1    | >26,000                   | 275                | 11,750             | 12,025                                  | 7,975                                       |
| 2    | 25,000 - 26,000           | 550                |                    | 12,300                                  | 7,700                                       |
| 3    | 24,000 - 25,000           | 2,550              |                    | 14,300                                  | 5,700                                       |
| 4    | 23,000 - 24,000           | 4,225              |                    | 15,975                                  | 4,025                                       |
| 5    | 22,000 - 23,000           | 5,625              |                    | 17,375                                  | 2,625                                       |
| 6    | <22,000                   | No Constraint      |                    |   | 0   |

1. Fuel Availability Constraints Modeling Phase 2

2. Modeling Improvements for Capacity Accreditation: Firm Fuel Requirements. See also 4/30/2025 MC Presentation

# Proposed Non-Firm CARC Modeling Approach

# Proposed Non-Firm CARC Modeling Approach

- Based on the description of the fuel availability constraints modeling for the 2026-2027 IRM study (see Slide 6), the NYISO proposes to model the representative (100 MW) unit for the Non-Firm CARC as not adding fuel when a fuel constraint is triggered in the IRM model
- Therefore, the representative unit for the Non-Firm CARC is assumed to be unavailable at loads above 22,000 MW during December, January and February of the applicable Capability Year.

| NYCA Load Conditions (MW) | Dec, Jan, Feb: Representative Unit (MW) | All other months: Representative Unit (MW) |
|---------------------------|---|--|
| >26,000                   | 0                                       | 100  |
| 25,000 - 26,000           |   |  |
| 24,000 - 25,000           |   |  |
| 23,000 - 24,000           |   |  |
| 22,000 - 23,000           |   |  |
| <22,000                   | 100                                     |  |

- This modeling approach is consistent with the methodology presented at the [June 4, 2024, ICAPWG](#)

# Proposed Firm CARC Modeling and Application

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- **The representative (100 MW) unit for the Firm CARC will use the existing “Generator” CARC modeling, which models the unit as available at all times with a 0% forced outage rate**
- **The Installed Capacity (ICAP) Suppliers in Load Zones F through K that elect firm fuel MW will receive the Generator CARC and CAF for the elected MW value**
  - The fuel constraints in the IRM model currently only apply to Load Zones F through K
  - Thus, based on the NYSRC’s current IRM modeling methodology, there will be no distinction in CAF values between firm and non-firm fuel in areas that are not subject to the fuel constraints in the IRM model (i.e., Load Zones A-E)
- **Since fuel constraints in External Control Areas are not reflected in the IRM model, there will be no distinction in CAF values between firm and non-firm fuel for External Resources (i.e., Resources that are not modeled as part of the NYCA)**
  - External Resources will receive the applicable CAF for the location in which they are electrically located (e.g., an External Resource that sells capacity in Load Zone K will receive a CAF value that is equal to the Generator CAF value for Load Zone K)
- **All ICAP Suppliers who elect to provide firm fuel capacity will need to submit a Firm Fuel Characteristic Election, regardless of whether their geographic location is subject to the fuel constraints in the IRM model**
- **ICAP Suppliers will not need to submit a fuel election if they will provide non-firm fuel capacity; their Unforced Capacity will be considered non-firm, unless they submit a Firm Fuel Characteristic Election.**

# Proposed CARCs for Firm/Non-Firm MW

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- **Proposed CARC for MW not elected to be Firm: the NYISO proposes to add a ‘Non-Firm CARC’ to the 2026-2027 Capability Year that would apply to resources in Zone F-K (i.e., subject to fuel availability constraints)**
  - In Rest of State (ROS), the Non-Firm CARC would only apply to resources in Zone F, because the fuel constraints in the IRM model currently only apply to Load Zones F through K
- **Proposed CARC for Elected Firm MW: the NYISO proposes to update the list of “Characteristics” of the existing Generator CARC to include the following:**
  - Firm MW election portion of resources
  - Resources not subject to fuel availability constraints
  - External Resources

# Proposed CARCs for Firm/Non-Firm MW (Cont.)

The proposed revisions to the CARC list would be as follows:

| CARC                | Characteristics   | Rest of State  | GHI | NYC Locality | LI Locality |
|---------------------|---|--|-----|--------------|-------------|
| Non-Firm (New)      | Generator - in Load Zone F-K and has not made firm fuel election  | <p style="text-align: center;">✓</p> <p>(Only applies to non-firm elected MW portion for resources in Zone F)</p>                    | ✓   | ✓            | ✓           |
| Generator (Updated) | <p>Generator - in Load Zone A-E, Generator- in Load Zone F-K that has made firm fuel election, External Resource, Behind-the-Meter Net Generation Resource (BTM:NG), Distributed Energy Resource (DER) Aggregation, Single Resource Type Aggregation – Generator, or Control Area System Resource</p> | <p style="text-align: center;">✓</p> <p>(Applies to generators in Zones A-E and firm elected MW portion for resources in Zone F)</p> | ✓   | ✓            | ✓           |

# Proposed CARCs for Firm/Non-Firm MW (Cont.)

- **A thermal resource could have multiple CARCs**
  - Any non-firm MW would be assigned a CAF value consistent with either the (1) non-firm CARC (for Zones F-K) or (2) Generator CARC (for Zones A-E)
  - Any firm elected MW would be assigned a CAF value consistent with the Generator CARC in its geographical location
- **Example 1: A 100 MW resource in Load Zone F elects to be 90 MW firm**
  - 90 MW will be assigned the Generator CAF value in ROS
  - 10 MW portion will be assigned the non-firm CAF value in ROS
- **Example 2 : A 100 MW resource in Load Zone A elects to be 70 MW firm**
  - The entire 100 MW will be assigned the Generator CAF value in ROS because Zones A-E are not subject to the fuel constraints in the IRM model
- **The proposed calculation methodology is designed to be stable and flexible enough to evolve if the firm availability constraints model in the IRM study is expanded to include additional load zones.**

# Next Steps

# Base Case(s) for Informational Non-Firm CAFs

- Stakeholders have requested that the NYISO provide Informational Non-Firm CAF values prior to making elections.
- A Tan45 test case was performed that added the fuel availability constraints modeling construct (with the updated fuel availability assumptions) to a case consisting of the 2025-2026 IRM Final Base Case plus the proposed behind-the-meter solar and enhanced load modeling improvements
- Since the Transmission Security Limit Floors (TSL Floors) were not considered during the Tan45 process, 2025-2026 TSL Floors were then applied to the Tan45 test case with the following results:
  - IRM: 25.7%
  - G-J Locality: 78.9%
  - J Locality: 78.5%
  - K Locality: 108.4%
  - LOLE : 0.0998
- **The NYISO intends to use this data as the starting point base case for the calculation of the Informational Non-Firm CAF**
  - It is important to note that this starting point base case does not include the modeling of the Champlain Hudson Power Express (CHPE) line

# Next Steps

- **NYISO plans to present Informational Non-Firm CAFs at a future ICAPWG based on the starting point base case outlined on Slide 16.**
- **The NYISO is continuing to monitor the progress of CHPE and the modeling discussion at the NYSRC Installed Capacity Subcommittee**

# 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

# Appendix

# 2025-2026 Final CARC List

| CARC   | Characteristics: Participation Election, Fuel Type, and other attributes   | Rest of State | GHI | NYC Locality | LI Locality |
|--|--|---------------|-----|--------------|-------------|
| <b>Special Case Resource (SCR)</b>           | Special Case Resource (SCR)  | ✓             | ✓   | ✓            | ✓           |
| <b>2-Hour Energy Duration Limited</b>        | 2-Hour Energy Duration Limited Generator or Aggregation  | ✓             | ✓   | ✓            | ✓           |
| <b>4-Hour Energy Duration Limited</b>        | 4-Hour Energy Duration Limited Generator or Aggregation  | ✓             | ✓   | ✓            | ✓           |
| <b>6-Hour Energy Duration Limited</b>        | 6-Hour Energy Duration Limited Generator or Aggregation  | ✓             | ✓   | ✓            | ✓           |
| <b>8-Hour Energy Duration Limited</b>        | 8-Hour Energy Duration Limited Generator or Aggregation  | ✓             | ✓   | ✓            | ✓           |
| <b>Landfill Gas</b>                          | Intermittent Power Resource (IPR) – Fuel Type: Methane (Bio Gas) or Single Resource Type Aggregation – Landfill Gas  | ✓             | ✓   | ✓            | ✓           |
| <b>Solar</b>                                 | IPR – Fuel Type: Sunlight or Single Resource Type Aggregation – Solar  | ✓             | ✓   | ✓            | ✓           |
| <b>Offshore Wind</b>                         | IPR – Fuel Type: Wind or Single Resource Type Aggregation – Wind   |               |     |              | ✓           |
| <b>Land-based Wind</b>                       | IPR – Fuel Type: Wind or Single Resource Type Aggregation – Wind   | ✓             | ✓   | ✓            | ✓           |
| <b>Limited Control Run of River</b>          | Limited Control Run-of-River Hydro (LCRoR) – Fuel Type: Water  | ✓             | ✓   |              |             |
| <b>Large Hydro</b>                           | Generator – Fuel Type: Water and greater than 100 MW nameplate   | ✓             |     |              |             |
| <b>Large Hydro with partial Pump Storage</b> | Generator – Fuel Type: Water, greater than 100 MW nameplate, and Gen Type: Partial Pump Storage  | ✓             |     |              |             |
| <b>Generator</b>                             | Generator, Behind-the-Meter Net Generation Resource (BTM:NG), Distributed Energy Resource (DER) Aggregation, Single Resource Type Aggregation – Generator, or Control Area System Resource | ✓             | ✓   | ✓            | ✓           |

# Questions?