

# Capacity Accreditation: Updated Preliminary CARCs and Annual Process to Establish CARCs

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**ICAPWG/MIWG**

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# Agenda

- Previous Discussions
- Background
- Capacity Accreditation Factors vs Resource Specific Derating Factors
- Updated Preliminary Capacity Accreditation Resource Classes
- Annual Process to Establish Capacity Accreditation Resource Classes
- Comprehensive Mitigation Review Compliance Filing
- Next Steps

# Previous Discussions

# Previous Discussions

Date	Working Group	Discussion Points and Links to Materials
August 5, 2021	ICAPWG	Review of Existing Capacity Accreditation Rules: <a href="https://www.nyiso.com/documents/20142/23590734/20210805%20NYISO%20-%20Capacity%20Accreditation%20Current%20Rules%20Final.pdf">https://www.nyiso.com/documents/20142/23590734/20210805%20NYISO%20-%20Capacity%20Accreditation%20Current%20Rules%20Final.pdf</a>
August 9, 2021	ICAPWG	Capacity Accreditation Proposal: <a href="https://www.nyiso.com/documents/20142/23645207/20210809%20NYISO%20-%20Capacity%20Accreditation%20Straw%20Proposal.pdf">https://www.nyiso.com/documents/20142/23645207/20210809%20NYISO%20-%20Capacity%20Accreditation%20Straw%20Proposal.pdf</a>
August 30, 2021 & August 31, 2021	ICAPWG	Capacity Accreditation Proposal: <a href="https://www.nyiso.com/documents/20142/24172725/20210830%20NYISO%20-%20Capacity%20Accreditation_v10%20(002).pdf">https://www.nyiso.com/documents/20142/24172725/20210830%20NYISO%20-%20Capacity%20Accreditation_v10%20(002).pdf</a>
September 28, 2021	ICAPWG	Comprehensive Mitigation Review Proposal and Tariff: <a href="https://www.nyiso.com/documents/20142/24925244/20210928_NYISO-CMR_Final.pdf/769828a1-f224-0140-240b-0762ec18efec">https://www.nyiso.com/documents/20142/24925244/20210928_NYISO - CMR Final.pdf/769828a1-f224-0140-240b-0762ec18efec</a>
October 18, 2021	ICAPWG	Comprehensive Mitigation Review Proposal and Tariff Updates: <a href="https://www.nyiso.com/documents/20142/25440628/20211018%20NYISO%20-%20CMR%20v9.pdf/4475e775-159c-75c7-9cf8-7050dad9a363">https://www.nyiso.com/documents/20142/25440628/20211018%20NYISO%20-%20CMR%20v9.pdf/4475e775-159c-75c7-9cf8-7050dad9a363</a>
October 29, 2021	ICAPWG	Comprehensive Mitigation Review Proposal and Tariff Updates: <a href="https://www.nyiso.com/documents/20142/25780701/20211029%20NYISO%20-%20CMR.pdf/ea8494b0-0860-b260-89b6-0c418d28a91d">https://www.nyiso.com/documents/20142/25780701/20211029%20NYISO%20-%20CMR.pdf/ea8494b0-0860-b260-89b6-0c418d28a91d</a>

# Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
November 2, 2021	ICAPWG	<p>NYISO CMR Consumer Impact Analysis:  <a href="https://www.nyiso.com/documents/20142/25835955/CIA%20-%20Comprehensive%20Mitigation%20Review.pdf/36d447d4-5b33-8ab1-2654-90a529ff1dfe">https://www.nyiso.com/documents/20142/25835955/CIA%20-%20Comprehensive%20Mitigation%20Review.pdf/36d447d4-5b33-8ab1-2654-90a529ff1dfe</a></p> <p>Potomac CMR Consumer Impact Analysis:  <a href="https://www.nyiso.com/documents/20142/25835955/MMU%20ICAP%20Accreditation%20Consumer%20Impact%20Analysis%201-02-2021.pdf/637ba21e-db75-a4c1-5b41-f770dd26e529">https://www.nyiso.com/documents/20142/25835955/MMU%20ICAP%20Accreditation%20Consumer%20Impact%20Analysis%201-02-2021.pdf/637ba21e-db75-a4c1-5b41-f770dd26e529</a></p>
November 9, 2021	BIC	<p>Comprehensive Mitigation Review Proposal and Tariff:  <a href="https://www.nyiso.com/documents/20142/25928340/5%2020211109%20NYISO%20-%20CMR%20v3.pdf/84d8b429-126c-68dd-0308-caa50886de92">https://www.nyiso.com/documents/20142/25928340/5%2020211109%20NYISO%20-%20CMR%20v3.pdf/84d8b429-126c-68dd-0308-caa50886de92</a></p> <p>Comprehensive Mitigation Review Approved Motion:  <a href="https://www.nyiso.com/documents/20142/25928340/110921%20bic%20final%20motions.pdf/785d5869-1e04-9f97-e330-e2e632ae7a9c">https://www.nyiso.com/documents/20142/25928340/110921%20bic%20final%20motions.pdf/785d5869-1e04-9f97-e330-e2e632ae7a9c</a></p>
November 17, 2021	MC	<p>Comprehensive Mitigation Review Proposal and Tariff:  <a href="https://www.nyiso.com/documents/20142/26119798/05%20CMR.pdf/11217ade-152a-74a2-d478-6b5ae5e21207">https://www.nyiso.com/documents/20142/26119798/05%20CMR.pdf/11217ade-152a-74a2-d478-6b5ae5e21207</a></p> <p>Comprehensive Mitigation Review Approved Motion:  <a href="https://www.nyiso.com/documents/20142/26119798/111821%20MC_Final_Motions.pdf/bbf15d66-4108-7173-1596-9b20677914e6">https://www.nyiso.com/documents/20142/26119798/111821%20MC_Final_Motions.pdf/bbf15d66-4108-7173-1596-9b20677914e6</a></p>

# Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
January 20, 2022	ICAPWG	2022 Market Projects: <a href="https://www.nyiso.com/documents/20142/27799605/2022%20Projects%20Presentation.pdf/4553eb95-177d-7cbc-f2fe-7754b7c66644">https://www.nyiso.com/documents/20142/27799605/2022%20Projects%20Presentation.pdf/4553eb95-177d-7cbc-f2fe-7754b7c66644</a>
February 3, 2022	ICAPWG	Improving Capacity Accreditation Plan: <a href="https://www.nyiso.com/documents/20142/28227906/Improving%20Capacity%20Accreditation%20Plan.pdf/92560e95-5703-4c57-45cb-7706c36f4656">https://www.nyiso.com/documents/20142/28227906/Improving%20Capacity%20Accreditation%20Plan.pdf/92560e95-5703-4c57-45cb-7706c36f4656</a>
February 24, 2022	ICAPWG	Improving Capacity Accreditation Project Kick Off: <a href="https://www.nyiso.com/documents/20142/28687884/Capacity%20Accreditation%20Kick%20ff%2002-24-22%20v7.pdf/5ab742c4-650b-5094-6a22-d41a2f29da6f">https://www.nyiso.com/documents/20142/28687884/Capacity%20Accreditation%20Kick%20ff%2002-24-22%20v7.pdf/5ab742c4-650b-5094-6a22-d41a2f29da6f</a>  MARS Review (GE Consulting): <a href="https://www.nyiso.com/documents/20142/28687884/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0224-v4.pdf/d302df1c-5607-16a8-ba01-fba700d5bbd1">https://www.nyiso.com/documents/20142/28687884/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0224-v4.pdf/d302df1c-5607-16a8-ba01-fba700d5bbd1</a>
March 3, 2022	ICAPWG	CMR Draft Deficiency Response: <a href="https://www.nyiso.com/documents/20142/28897222/CMR%20Deficiency%20Draft%20Responses%2003-03%20ICAPWG.pdf/0a3c8303-515e-7725-dee5-a9dda1398672">https://www.nyiso.com/documents/20142/28897222/CMR%20Deficiency%20Draft%20Responses%2003-03%20ICAPWG.pdf/0a3c8303-515e-7725-dee5-a9dda1398672</a>

# Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
March 16, 2022	ICAPWG	<p>Capacity Accreditation Resource Class Criteria, Resource-Specific Derating Factors, and Areas of Needed Change:  <a href="https://www.nyiso.com/documents/20142/29177064/Capacity%20Accreditation%2003-16-22%20v7.pdf/b26e6a99-5f4e-29cc-c60c-47608c78c983">https://www.nyiso.com/documents/20142/29177064/Capacity%20Accreditation%2003-16-22%20v7.pdf/b26e6a99-5f4e-29cc-c60c-47608c78c983</a></p>
March 31, 2022	ICAPWG	<p>Capacity Accreditation Representative Unit Modeling:  <a href="https://www.nyiso.com/documents/20142/29607069/2%20CA%20Representative%20Unit%20Modeling%2003-31-22%20ICAPWG.pdf/1c3af8ac-625a-5066-3977-8c3d9ae0ddda">https://www.nyiso.com/documents/20142/29607069/2%20CA%20Representative%20Unit%20Modeling%2003-31-22%20ICAPWG.pdf/1c3af8ac-625a-5066-3977-8c3d9ae0ddda</a></p> <p>ELCC and MRI Overview (GE):  <a href="https://www.nyiso.com/documents/20142/29607069/3%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0331.pdf/08355c9a-d104-e1b6-6b8a-8266c61b74a3">https://www.nyiso.com/documents/20142/29607069/3%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0331.pdf/08355c9a-d104-e1b6-6b8a-8266c61b74a3</a></p>
April 19, 2022	ICAPWG	<p>Capacity Accreditation Adjusted Resource Specific Derating Factors and External Resources:  <a href="https://www.nyiso.com/documents/20142/30025560/04-19-22%20CA%20Adjusted%20Derating%20Factors%20and%20External%20Resources.pdf/5dd1f4b2-092d-6a6a-3b99-4d768ea6c5eb">https://www.nyiso.com/documents/20142/30025560/04-19-22%20CA%20Adjusted%20Derating%20Factors%20and%20External%20Resources.pdf/5dd1f4b2-092d-6a6a-3b99-4d768ea6c5eb</a></p>

# Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
April 28, 2022	ICAPWG	<p>Preliminary Capacity Accreditation Resource Classes: <a href="https://www.nyiso.com/documents/20142/30276257/04-28-22%20Capacity%20Accreditation%20-%20Preliminary%20CARCs.pdf/c82c47c5-28c2-cf19-c602-16bf3cfc4aca">https://www.nyiso.com/documents/20142/30276257/04-28-22%20Capacity%20Accreditation%20-%20Preliminary%20CARCs.pdf/c82c47c5-28c2-cf19-c602-16bf3cfc4aca</a></p> <p>Preliminary ELCC and MRI Results (GE): <a href="https://www.nyiso.com/documents/20142/30276257/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0428.pdf/3c761f16-7bc0-b469-b1e8-c2a69feb58ef">https://www.nyiso.com/documents/20142/30276257/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0428.pdf/3c761f16-7bc0-b469-b1e8-c2a69feb58ef</a></p>



# Background

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- **The NYISO has begun stakeholder discussions to: (1) develop the implementation details and technical specifications for establishing Capacity Accreditation Factors (CAFs) and Capacity Accreditation Resource Classes (CARCs) and (2) propose necessary ICAP Manual revisions**
  - The NYISO has contracted with GE Energy Consulting to support the NYISO and its stakeholders in the development of the implementation details and technical specifications
- **The 2022 Improving Capacity Accreditation project deliverable is a Q3 Market Design Complete**

# CAFs vs Resource Specific Derating Factors

# Capacity Accreditation Factors

- **CAFs will reflect the marginal reliability contribution of the representative unit of each CARC for each location that is evaluated**
- **The impact of the following characteristics would be captured by CAFs:**
  - Energy Duration Limitations
  - Correlated unavailability due to weather and/or fuel supply limitations
  - Synergistic and antagonistic effects
  - Start-up notification time limitations

# Resource Specific Derating Factors

- As discussed previously, resource specific derating factors will capture differences in availability that is specific to an individual resource and not captured in the CAF of the resource's CARC
  - Examples:
    - Forced outages, forced derates, failed starts, etc.
    - Resource output that is different from the modeled production profile of the CARC
- **Generally, a Resource's UCAP will be determined by combining the Resource's ICAP, CAF, and resource specific derating factor as illustrated below**
  - $UCAP = \text{Adjusted ICAP} \times (1 - \text{resource specific derating factor})$ 
    - Where:
      - $\text{Adjusted ICAP} = \text{ICAP} * \text{CAF}$
      - $\text{ICAP} = \min(\text{DMNC}, \text{CRIS})$
    - So,  $UCAP = \min(\text{DMNC}, \text{CRIS}) * \text{CAF} * (1 - \text{resource specific derating factor})$
  - For more information on current resource-specific derating factors, see the [03/16/22 ICAPWG presentation](#)

# Updated Preliminary Capacity Accreditation Resource Classes

# Updated Preliminary Capacity Accreditation Resource Classes

- The NYISO has updated the preliminary CARCs following the discussion at the 04/28/22 ICAPWG
- The updated list includes additional CARCs for conventional resources based on the interaction of resource characteristics that should be investigated and may impact a resource's marginal reliability contribution
- The matrix on the following slide describes the additional preliminary CARCs for conventional resources for the interaction of fuel availability and startup notification requirement characteristics that may impact a resource's marginal reliability contribution
  - The NYISO will return to a future ICAPWG to further discuss the interaction of conventional resources' EFORd and the impacts that may be captured in the preliminary CARCs for conventional resources

# Updated Preliminary Capacity Accreditation Resource Classes

- Preliminary CARCs based on the interaction of fuel availability and startup notification requirement characteristics that may impact a resource’s marginal reliability contribution:

	Firm Fuel	Non-Firm Fuel
Non-impactful startup notification requirements*	Unlimited Conventional Resource	Conventional Resource with Non-Firm Fuel
Impactful startup notification requirements	Startup Notification Limited Conventional Resource	Startup Notification Limited Conventional Resource with Non-Firm Fuel

- The NYISO expects firm fuel resources to include conventional resources with dual fuel, onsite fuel (e.g., nuclear generation), and firm fuel contracts for gas-only generators
- Future analysis will determine the type and length of startup notification requirements that impact a resource's marginal reliability contribution. Multiple levels of impactful startup notification requirements may be necessary based on future analysis

\*The NYISO anticipates that the startup notification requirements of baseload generation would not result in an impact on a resource’s marginal reliability contribution



# Updated Preliminary Capacity Accreditation Resource Classes

- Solar
- Onshore Wind
- Offshore Wind
- Landfill Gas
- 2-hour Energy Duration Limited<sup>1</sup>
- 4-hour Energy Duration Limited<sup>1</sup>
- 6-hour Energy Duration Limited<sup>1</sup>
- 8-hour Energy Duration Limited<sup>1</sup>
- Special Case Resource
- Limited Control Run-of-River Hydro
- Large Hydro<sup>2</sup>
- Unlimited Conventional Resource
- Conventional Resource with Non-Firm Fuel
- Startup Notification Limited Conventional Resource
- Startup Notification Limited Conventional Resource with Non-Firm Fuel

<sup>1</sup> Energy Duration Limited CARCs will apply to resources with Energy Duration Limitations, such as Energy Storage Resources, Energy Limited Resources, and Distributed Energy Resources that do not belong to another CARC

<sup>2</sup> The Large Hydro CARC will apply to resources powered by hydraulic turbines that are not Limited Control Run-of-River Hydro or standalone pumped storage

# Annual Process to Establish Capacity Accreditation Resource Classes

# Annual Process to Establish CARCs

- The NYISO will annually establish CARCs for the upcoming Capability Year
- The NYISO will establish CARCs such that ICAP Suppliers that could enter the ICAP Market in the upcoming Capability Year would have a CARC to which they could be assigned
- To identify resource types that could enter the ICAP Market in the upcoming Capability Year, the NYISO will leverage and expand upon the review of resource additions for inclusion in the IRM preliminary base case
- Based on the identification of resource types that could enter the ICAP Market, the NYISO proposes to post the preliminary list of CARCs in September of the year preceding the upcoming Capability Year
  - For example, the list posted in September 2025 would be for Capability Year 2026/27
- After receiving stakeholder feedback on the preliminary list of CARCs, the NYISO proposes to publish the final CARCs in November of the year preceding the upcoming Capability Year
- The NYISO will calculate preliminary CAFs for each CARC in December-January, following NYSRC approval of the final IRM model
- Final CAFs for each CARC would be publicly posted in February-March, following the approval of LCRs by the NYISO Operating Committee
- Each ICAP Supplier would be assigned to the applicable CARC and receive the applicable CAF in March for use in the upcoming Capability Year
  - The first auction for the Summer Capability Period begins at the end of March

# CMR Compliance Filing

# CMR Compliance Filing

- On May 10<sup>th</sup>, 2022, the FERC approved the NYISO's CMR filing, subject to a 30-day compliance filing
- The 30-day compliance filing requires the NYISO to file conforming tariff revisions to MST 5.10 and MST 5.11, replacing the use of "Adjusted Installed Capacity" with "Installed Capacity" in the ICAP to UCAP requirement translation calculations
- The redlines of MST 5.10 and MST 5.11 have been posted with today's materials
- The NYISO appreciates any feedback on the attached language by May 31, 2022
  - Please send feedback to [mmohrman@nyiso.com](mailto:mmohrman@nyiso.com)
- The NYISO will file the tariff revisions with the FERC by June 9, 2022

# Next Steps

# Next Steps

- **The NYISO plans to return to the ICAPWG in June with additional CAF results, proposed CAF sensitivity scenarios, and a proposed methodology for annually establishing the Peak Load Window**

# 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