

Capacity Accreditation: ICAP Manual Revision Updates

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ICAPWG/MIWG

December 06, 2022

Revised: December 05, 2022

Agenda

- Previous Discussions
- Background
- **CARC and CAF Assignment Timeline**
- ICAP Manual Revision Updates
- Next Steps
- Appendix

Previous Discussions

Previous Discussions

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

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
November 2, 2021	ICAPWG	<p>NYISO CMR Consumer Impact Analysis: https://www.nyiso.com/documents/20142/25835955/CIA%20-%20Comprehensive%20Mitigation%20Review.pdf/36d447d4-5b33-8ab1-2654-90a529ff1dfe</p> <p>Potomac CMR Consumer Impact Analysis: https://www.nyiso.com/documents/20142/25835955/MMU%20ICAP%20Accreditation%20Consumer%20Impact%20Analysis%2011-02-2021.pdf/637ba21e-db75-a4c1-5b41-f770dd26e529</p>
November 9, 2021	BIC	<p>Comprehensive Mitigation Review Proposal and Tariff: https://www.nyiso.com/documents/20142/25928340/5%2020211109%20NYISO%20-%20CMR%20v3.pdf/84d8b429-126c-68dd-0308-caa50886de92</p> <p>Comprehensive Mitigation Review Approved Motion: https://www.nyiso.com/documents/20142/25928340/110921%20bic%20final%20motions.pdf/785d5869-1e04-9f97-e330-e2e632ae7a9c</p>
November 17, 2021	MC	<p>Comprehensive Mitigation Review Proposal and Tariff: https://www.nyiso.com/documents/20142/26119798/05%20CMR.pdf/11217ade-152a-74a2-d478-6b5ae5e21207</p> <p>Comprehensive Mitigation Review Approved Motion: https://www.nyiso.com/documents/20142/26119798/111821%20MC_Final_Motions.pdf/bbf15d66-4108-7173-1596-9b20677914e6</p>
January 20, 2022	ICAPWG	<p>2022 Market Projects: https://www.nyiso.com/documents/20142/27799605/2022%20Projects%20Presentation.pdf/4553eb95-177d-7cbc-f2fe-7754b7c66644</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
February 3, 2022	ICAPWG	<p>Improving Capacity Accreditation Plan: https://www.nyiso.com/documents/20142/28227906/Improving%20Capacity%20Accreditation%20Plan.pdf/92560e95-5703-4c57-45cb-7706c36f4656</p>
February 24, 2022	ICAPWG	<p>Improving Capacity Accreditation Project Kick Off: https://www.nyiso.com/documents/20142/28687884/Capacity%20Accreditation%20Kick%20off%2002-24-22%20v7.pdf/5ab742c4-650b-5094-6a22-d41a2f29da6f</p> <p>MARS Review (GE Consulting): https://www.nyiso.com/documents/20142/28687884/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0224-v4.pdf/d302df1c-5607-16a8-ba01-fba700d5bbd1</p>
March 3, 2022	ICAPWG	<p>CMR Draft Deficiency Response: https://www.nyiso.com/documents/20142/28897222/CMR%20Deficiency%20Draft%20Responses%2003-03%20ICAPWG.pdf/0a3c8303-515e-7725-dee5-a9dda1398672</p>
March 16, 2022	ICAPWG	<p>Capacity Accreditation Resource Class Criteria, Resource-Specific Derating Factors, and Areas of Needed Change: https://www.nyiso.com/documents/20142/29177064/Capacity%20Accreditation%2003-16-22%20v7.pdf/b26e6a99-5f4e-29cc-c60c-47608c78c983</p>
March 31, 2022	ICAPWG	<p>Capacity Accreditation Representative Unit Modeling: https://www.nyiso.com/documents/20142/29607069/2%20CA%20Representative%20Unit%20Modeling%2003-31-22%20ICAPWG.pdf/1c3af8ac-625a-5066-3977-8c3d9ae0ddda</p> <p>ELCC and MRI Overview (GE): https://www.nyiso.com/documents/20142/29607069/3%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0331.pdf/08355c9a-d104-e1b6-6b8a-8266c61b74a3</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
April 19, 2022	ICAPWG	Capacity Accreditation Adjusted Resource Specific Derating Factors and External Resources: https://www.nyiso.com/documents/20142/30025560/04-19-22%20CA%20Adjusted%20Derating%20Factors%20and%20External%20Resources.pdf/5dd1f4b2-092d-6a6a-3b99-4d768ea6c5eb
April 28, 2022	ICAPWG	Preliminary Capacity Accreditation Resource Classes: https://www.nyiso.com/documents/20142/30276257/04-28-22%20Capacity%20Accreditation%20-%20Preliminary%20CARCs.pdf/c82c47c5-28c2-cf19-c602-16bf3cfc4aca Preliminary ELCC and MRI Results (GE): https://www.nyiso.com/documents/20142/30276257/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0428.pdf/3c761f16-7bc0-b469-b1e8-c2a69feb58ef
May 24, 2022	ICAPWG	Updated Preliminary CARCs and Annual Process to Establish CARCs: https://www.nyiso.com/documents/20142/30888946/3%2005-24-22%20Capacity%20Accreditation.pdf/cd61d855-f634-0fe8-6109-7d8c0547beda Additional Preliminary ELCC and MRI Results (GE): https://www.nyiso.com/documents/20142/30888946/2%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0524.pdf/0976330d-f4eb-4db3-2613-c8be9baf452
June 16, 2022	ICAPWG	Sensitivity Scenarios and Seasonal CAFs: https://www.nyiso.com/documents/20142/31532822/2%20Capacity%20Accreditation%20v6.pdf/4ffe4fa9-bdaf-2c23-77be-d49ed04c5ea5

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
June 28, 2022	ICAPWG	<p>Annual Peak Load Window (PLW) Review and Energy Duration Limitation Proposals: https://www.nyiso.com/documents/20142/31790818/06-28-22%20PLW%20and%20EDL%20Proposal.pdf/ffca7c8a-767e-3de1-9b46-404f661351b3</p> <p>Revised Shape-based Resource Results and ELR Modeling Functionality in MARS (GE): https://www.nyiso.com/documents/20142/31790818/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0628.pdf/999c7dfa-0b5d-a6bc-a57a-b35a1cda5aa4</p>
July 21, 2022	ICAPWG	<p>Capacity Accreditation: Project Schedule Update: https://www.nyiso.com/documents/20142/32356084/7-21-2022%20ICAPWG%20Project%20Schedule.pdf/958ef86a-12de-32a1-c115-5c1af39abb54</p>
July 28, 2022	ICAPWG	<p>Capacity Accreditation: SCR CAF Results and Proposal: https://www.nyiso.com/documents/20142/32491922/2%207282022%20ICAPWG%20Capacity%20Accreditation.pdf/3f991228-5011-7cc2-cfd3-a7762fa8c8f6</p> <p>Sensitivity Scenario Methodologies (GE): https://www.nyiso.com/documents/20142/32491922/3%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0728.pdf/9fd89cbc-2baa-3c54-dc74-17c2e8cf588a</p>
August 9, 2022	ICAPWG	<p>Modeling Discussion and ICAP Manual Revision Process Options: https://www.nyiso.com/documents/20142/32687686/08-09-22%20Capacity%20Accreditation.pdf/1009a4dc-bb9f-1f3b-bb34-908fd8d5704d</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
August 29, 2022	ICAPWG	<p>Annual CAF Proposal, Winter PLW Assessment, and CAF Interaction with the ICAP Demand Curves: https://www.nyiso.com/documents/20142/32977661/Capacity%20Accreditation%2008292022%20ICAPWG.pdf/13c04d12-f77f-3184-15c4-8f0b22897f3d</p> <p>Compiled Preliminary CAF Results: https://www.nyiso.com/documents/20142/32977661/GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_LCR-results.pdf/e9fdeb01-1ee0-7651-6a3f-0823aedcef1d</p>
September 30, 2022	ICAPWG	<p>Resource Specific Derating Factor Proposal for Performance-based Resources, CAF Interaction with ICAP Demand Curves, ISO Review of Peak Load Windows, and Modeling CAFs At Criteria vs Level of Excess: https://www.nyiso.com/documents/20142/33520089/9-30-2022%20ICAPWG%20Capacity%20Accreditation%20v3.pdf/0178b3b4-4398-ce4a-3197-224e24086c51</p> <p>Capacity Value Results for 2022 LCR at LOE and 2022 RNA 2030 Base Case (GE): https://www.nyiso.com/documents/20142/33520089/GECCapacityAccreditation-LOEandBaseRNA-results%20v5%20-%20clean.pdf/4e05032a-91c3-ff78-08a2-9202efead08a</p> <p>Consumer Impact Analysis Methodology: https://www.nyiso.com/documents/20142/33520089/CIA%20Methodology%20-%20Capacity%20Accreditation_Final.pdf/37c9b5f5-ab29-8eb0-afd2-fdc369f097f5</p>
October 19, 2022	ICAPWG	<p>Translation Factors for IRM/LCR Studies and Deliverability Testing, Sensitivity Scenario Update, and ICAP Market Resource Adequacy 5 Year Plan: https://www.nyiso.com/documents/20142/33857891/02a_10-19-22%20ICAPWG%20Capacity%20Accreditation.pdf/cae2063d-76d6-b4d3-25d5-fadd0c5e1f50</p> <p>Compiled CAF Results (Excel file): https://www.nyiso.com/documents/20142/33857891/02b_10-19-22%20ICAPWG%20Compiled%20CAF%20Results.xlsx/cf5ad8f9-b4fb-9f44-9df2-672f9a190331</p> <p>Capacity Accreditation - Consumer Impact Analysis: https://www.nyiso.com/documents/20142/33857891/03_Consumer%20Impact%20-%20Capacity%20Accreditation.pdf/1e9097c6-c0ae-b137-dd44-15ce1f5a7841</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
October 27, 2022	ICAPWG	<p>Proposed Modeling Technique for Calculating CAFs and Summary of Initial ICAP Manual and Tariff Revisions - Reposted: https://www.nyiso.com/documents/20142/34087499/10-27-22%20ICAPWG%20Capacity%20Accreditation%20v2%20-%20repost.pdf/23474d78-642b-c476-8f4d-26953fe57bd5</p> <p>ICAP Manual Revisions – First Set: https://www.nyiso.com/documents/20142/34087499/ICAP%20Manual%20Revisions%20for%20Discussion%20v3.pdf/f69334aa-da69-54dd-a805-9f2148439561</p> <p>ICAP Manual Attachment Revisions – First Set: https://www.nyiso.com/documents/20142/34087499/ICAP%20Manual%20Attachments%20v2.pdf/e1e2ec96-4cfc-fb78-01de-c8a97e2ed449</p> <p>Updated Compiled CAF Results (Excel file): https://www.nyiso.com/documents/20142/34087499/10-27-22%20ICAPWG%20Compiled%20CAF%20Results%20v3.xlsx/46982a75-2fac-fcc6-01a8-ae9161edb742</p> <p>Capacity Value Results for 2022 RNA 2030 Cases and IRM 2023 PBC Cases – Reposted (GE): https://www.nyiso.com/documents/20142/34087499/GEEC-CapacityAccreditation-RNA-and-2023-PBC-results%20v4%20-%20repost.pdf/2ecbb723-7a84-cd0f-b8a5-ae385a80214b</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
November 8, 2022	ICAPWG	<p>Capacity Accreditation ICAP Manual & Tariff Revisions: https://www.nyiso.com/documents/20142/34285499/7b%20ICAPWG%20Capacity%20Accreditation%20-%20ICAP%20Manual%20and%20Tariff%20Revisions.pdf/4591f7ee-d6a6-8559-01ca-a066bcc559a1</p> <p>ICAP Manual Revisions - Full Set: https://www.nyiso.com/documents/20142/34285499/7d%20ICAP%20Manual%20Revisions%20-%20Full%20Set%20v2.pdf/aaeb115e-de81-0411-76b3-9a4f0c0302fc</p> <p>ICAP Manual Attachments - Full Set: https://www.nyiso.com/documents/20142/34285499/7c%20ICAP%20Manual%20Attachments%20-%20Full%20Set%20v2.pdf/3cb7f313-1064-dfc7-1da5-88eb152865eb</p> <p>Tariff Revisions to MST 5.12.7: https://www.nyiso.com/documents/20142/34285499/7e%20MST%205.12.pdf/b030d99a-54b4-f52a-9b61-e51c585065a2</p> <p>Capacity Accreditation - Updated CIA – Reposted: https://www.nyiso.com/documents/20142/34285499/11-08-22%20ICAPWG%20Capacity%20Accreditation%20-%20Updated%20CIA%20-%20repost.pdf/0e08be26-8bd5-76da-92a3-45867136f3d0</p> <p>Capacity Accreditation Market Design Summary: https://www.nyiso.com/documents/20142/34285499/7%20ICAPWG%20Capacity%20Accreditation%20-%20Market%20Design%20Summary.pdf/aa364bb3-766b-19fd-d5b3-dfc6af730e89</p>

Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
November 21, 2022	ICAPWG	<p>Capacity Accreditation: Updated ICAP Manual & Tariff Revisions and 2023 IRM PBC CAF Results Overview: https://www.nyiso.com/documents/20142/34549258/11-21-22%20ICAPWG%20Capacity%20Accreditation%20Presentation.pdf/5abfd875-d76e-27e9-d7a3-3b73393d2c13</p> <p>ICAP Manual Revisions - Updated: https://www.nyiso.com/documents/20142/34549258/ICAP%20Manual%20Revisions%20-%2011-21-22%20ICAPWG%20v3.pdf/abe07efd-5b64-8285-7d9e-a85e5de2e858</p> <p>ICAP Manual Attachments - Updated: https://www.nyiso.com/documents/20142/34549258/ICAP%20Manual%20Appendix%20-%2011-21-22%20ICAPWG.pdf/95c84259-6ceb-522a-da00-79441f8422a1</p> <p>Updated Tariff Revisions to MST 5.12.7: https://www.nyiso.com/documents/20142/34549258/MST%205.12%2011-21-22%20ICAPWG%20v2.pdf/f538e679-2af3-c007-cf72-1700e14df542</p> <p>ICAP Manual Attachment N: https://www.nyiso.com/documents/20142/34549258/ICAP%20Manual%20Attachment%20N.pdf/4299055a-0d2c-a0c3-b423-50d555e46baf</p>

Background

Background

- **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**
 - Completion of the project is delayed. The NYISO is now targeting a Q4 Market Design Complete

CARC and CAF Assignment Timeline

CARC and CAF Assignment Timeline¹

- **By August 1st**
 - A Resource can elect to change its Energy Duration Limitation and/or participation model for the upcoming Capability Year
 - The August 1 deadline for electing a different Energy Duration Limitation and/or participation model for the upcoming Capability Year exists in the ICAP Manual today
- **By November 30th**
 - The NYISO will post the final CARC list for the upcoming Capability Year to the NYISO's website
- **Approximately November 30th – March 1st**
 - The NYISO will assign each Resource to the applicable CARC for the upcoming Capability Year based on its Energy Duration Limitation, participation model, and resource characteristics for the upcoming Capability Year
 - During this window, each Resource will have the opportunity to review its CARC assignment before it is finalized by a date that will be identified in the ICAP Event Calendar
- **By March 1st**
 - The NYISO will post the CAFs for each CARC for the upcoming Capability Year to the NYISO's website
- **By Mid-March**
 - The corresponding CAF will automatically be assigned to each Resource based on the Resource's assigned CARC for the upcoming Capability Year and capacity zone in which the Resource is qualified to supply Unforced Capacity to the NYCA
 - Each Resource will have the opportunity to review its assigned CAF before it is finalized by a date that will be identified in the ICAP Event Calendar
- **End of March**
 - The first auction for the upcoming Capability Year begins

¹This annual timeline would begin August 2023 for implementation of Capacity Accreditation in the Capability Year starting May 2024  New York ISO

ICAP Manual Revision Updates

ICAP Manual Revision Updates

- **Based on stakeholder feedback, the NYISO has made clarifying edits to the ICAP Manual and ICAP Manual Appendix revisions that were presented at the 11/21/2022 ICAPWG**
- **The edits to the ICAP Manual and ICAP Manual Appendix revisions can be found in:**
 - ICAP Manual
 - Section 4.1.3 and 4.5
 - Section 4.15.3
 - Section 7.1.1
 - Section 7.2
 - Section 7.3
 - ICAP Manual Appendix
 - Attachment J
 - Sections 3.1.2(a), 3.2.2(a), and 3.7.2(a)
 - Sections 6.1.2(a), 6.2.2(a), and 6.7.2(a)
- **The following slide summarizes the edits to the above sections**
 - Edits are highlighted in blue in today's meeting materials

ICAP Manual and Tariff Revisions

- **ICAP Manual – Section 4.1.3 and 4.5**
 - Removed the empty bullet on page 30 and the empty table on page 63
- **ICAP Manual – Section 4.15.3**
 - Specified that a BTM:NG Resource’s assigned CAF would be applied to the BTM:NG Resource’s Gen UCAP
- **ICAP Manual – Section 7.1.1**
 - Added a reference to the August 1 deadline for ICAP Suppliers to request a change in Energy Duration Limitation election for the upcoming Capability Year
 - Added a provision that CARC assignments will be provided to each ICAP Supplier by the deadline identified in the ICAP Event Calendar
 - Added a provision that requires the NYISO to finalize CARC assignments prior to the posting of the CAFs for the upcoming Capability Year
 - Clarifying edits

ICAP Manual and Tariff Revisions

■ ICAP Manual – Section 7.2

- Added a provision that CAF assignments will be provided to each Resource by the deadline in the ICAP Event Calendar
- Removed the provision requiring the NYISO to use a Resource-provided CAF assignment
 - CAF assignments will be automatically determined based on the Resource's CARC assignment and capacity zone
 - If the automatically assigned CAF is incorrect, the Resource still has the opportunity to notify the NYISO of the error
- Added specification that CAFs will be calculated to the second decimal place (e.g., 90.99%)
- Clarifying edits

■ ICAP Manual – Section 7.3

- Clarifying edits

■ ICAP Manual – Attachment J Sections

- Clarifying edits
- Added a reference to ICAP Manual Section 4.1.1 to the UCAP calculations for Resources with an Energy Duration Limitation
 - Section 4.1.1 details the existing process by which the NYISO may shift the Peak Load Window for an upcoming day, impacting the hours used from that day in the Resource's UCAP calculation

Next Steps

Next Steps

- **December 14th - Business Issues Committee**
 - Vote on ICAP Manual revisions
- **December 21st - Management Committee**
 - Vote on revisions to MST 5.12.7

Questions?

Appendix

ICAP Manual and Tariff Revisions Summary

ICAP Manual and Tariff Revisions - Summary

- Comprehensive list of existing sections revised, and new sections proposed:

First Subset (10/27)

Document	Section	Section Title	
ICAP Manual	2.5	The NYCA Minimum Unforced Capacity Requirement	
	2.6	Locational Minimum Installed Capacity Requirements	
	4.1.1	Energy Duration Limitations and Duration Adjustment Factors for Installed Capacity Suppliers	
	4.2.1	DMNC Test Periods	
	4.2.2.2	Installed Capacity Suppliers with an Energy Duration Limitation	
	4.8.2	Energy Limited and Capacity Limited Resources	
	4.12	Special Case Resources	
	5.5	Demand Curve and Adjustments	
ICAP Manual Appendix	Attachment M	7.3	Peak Load Window and Annual Review Process
		Procedure to Apply for a Capacity Limited Resource (CLR), Energy Limited Resource (ELR), Ambient Condition-Dependent Classification and/or for an Energy Duration Limitation	
MST	5.12.7	Availability Requirements	

Second Subset (11/08)

Document	Section	Section Title
ICAP Manual	4.5	Calculation of the Amount of Unforced Capacity each Resource may Supply to the NYCA
	4.8.1	Generators and System Resources
	7.1-7.2	Capacity Accreditation Resource Classes and Capacity Accreditation Factors
ICAP Manual Appendix	Attachment N	Procedure to Calculate Translation Factors for an Intermittent Power Resource or Limited Control Run of River Hydro Resource
		Attachment J

- The NYISO does not anticipate revisions to additional sections of the ICAP Manual, Appendix, or Tariff as part of the 2022 Capacity Accreditation Project

ICAP Manual and Tariff Revisions (10/27)

■ ICAP Manual - Section 2.5-2.6

- Revised for clarity and to reflect the replacement of “Adjusted Installed Capacity” with “Installed Capacity” in the translation of ICAP requirements to UCAP, beginning with the 2024 Capability Year
 - This revision reflects the update to MST 5.10 and MST 5.11 accepted by FERC on August 10th, 2022
- Sunsets the current calculation of Adjusted Installed Capacity with the 2024 Capability Year
 - The current calculation also sunsets with the 2024 Capability Year in MST 5.12.14.2
 - The updated calculation will be included in Section 4.5 of the ICAP Manual as part of the next set of ICAP Manual revisions for the Capacity Accreditation project

ICAP Manual and Tariff Revisions (10/27)

■ ICAP Manual - Section 4.1.1

- Revised to reflect the sunseting of the Duration Adjustment Factors for ICAP Suppliers with Energy Duration Limitations and existing Peak Load Windows with the 2024 Capability Year
 - Capacity Accreditation Factors will replace Duration Adjustment Factors for all resources beginning with the 2024 Capability Year
 - The annual review process for establishing the Peak Load Windows beginning with the 2024 Capability Year will be included in a new section of the ICAP Manual
 - New section included as Section XX in today's materials and discussed on slide 31

■ ICAP Manual - Section 4.12

- Revised to replace the Duration Adjustment Factor with the applicable Capacity Accreditation Factor for SCRs beginning with the 2024 Capability Year

ICAP Manual and Tariff Revisions (10/27)

- **ICAP Manual - Section 4.2.1 and Section 4.2.2.2**
 - Revised to reflect the DMNC test period requirements for ICAP Suppliers with Energy Duration Limitations longer than the Peak Load Window
- **ICAP Manual - Section 4.8.2**
 - Revised to reflect the bidding, scheduling, and notification requirements for ICAP Suppliers with Energy Duration Limitations longer than the Peak Load Window
- **ICAP Manual - Attachment M**
 - Revised to reflect the registration requirements and bidding and scheduling, details for ICAP Suppliers with Energy Duration Limitations longer than the Peak Load Window
- **MST 5.12.7**
 - Revised to reflect the bidding, scheduling, and notification requirements for ICAP Suppliers with Energy Duration Limitations longer than the Peak Load Window
 - Revisions shown on the following slides

ICAP Manual and Tariff Revisions (10/27)

- **MST 5.12.7 Revision for Installed Capacity Suppliers with Energy Duration Limitations that are not Energy Storage Resources**
 - Until the Capability Year that begins in May 2024, Installed Capacity Suppliers with Energy Duration Limitations corresponding to a Duration Adjustment Factor, as described in Section 5.12.14 below, must on a daily basis during the Peak Load Window and for the number of consecutive hours that correspond to its Energy Duration Limitation, or for the entirety of the Peak Load Window for an Energy Storage Resource : (i) schedule a Bilateral Transaction; (ii) Bid Energy in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (iii) notify the ISO of any outages.
 - Starting with the Capability Year that begins in May 2024, Installed Capacity Suppliers with Energy Duration Limitations less than or equal in length to the number of hours inside the Peak Load Window, must on a daily basis during the Peak Load Window and for at least the number of consecutive hours that correspond to its Energy Duration Limitation, or for the entirety of the Peak Load Window for an Energy Storage Resource: (i) schedule a Bilateral Transaction; (ii) Bid Energy in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (iii) notify the ISO of any outages. Installed Capacity Suppliers with Energy Duration Limitations greater in length than the number of hours inside the Peak Load Window, must on a daily basis during the entirety of the Peak Load Window and for each hour immediately preceding and following the Peak Load Window, for the remaining hours of the Installed Capacity Supplier’s Energy Duration Limitation that are not captured in the Peak Load Window: (i) schedule a Bilateral Transaction; (ii) Bid Energy in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (iii) notify the ISO of any outages.

ICAP Manual and Tariff Revisions (10/27)

- **MST 5.12.7 Revision for Installed Capacity Suppliers with Energy Duration Limitations that are Energy Storage Resources**
 - Until the Capability Year that begins in May 2024, Energy Storage Resources with an Energy Duration Limitation must, on a daily basis, and for each hour outside of the Peak Load Window: (i) Bid in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (ii) notify the ISO of any outages, the maximum of the Energy Storage Resource's (a) negative Installed Capacity Equivalent, or (b) Lower Operating Limit. The amount scheduled, Bid, and/or declared to be unavailable must reflect the Energy Storage Resource's entire withdrawal operating range.
 - Starting with the Capability Year that begins in May 2024, Energy Storage Resources with an Energy Duration Limitation less than or equal in length to the number of hours inside the Peak Load Window must, on a daily basis, and for each hour outside of the Peak Load Window: (i) Bid in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (ii) notify the ISO of any outages, the maximum of the Energy Storage Resource's (a) negative Installed Capacity Equivalent, or (b) Lower Operating Limit. Energy Storage Resources with an Energy Duration Limitation greater in length than the number of hours inside the Peak Load Window must, on a daily basis, and for each hour outside of the hours that the Energy Storage Resources must schedule, bid, or declare to be unavailable in accordance with paragraph three of Section 5.12.7 of this Tariff: (i) Bid in the Day-Ahead Market in accordance with the applicable provisions of Section 5.12.1 of this Tariff; or (ii) notify the ISO of any outages, the maximum of the Energy Storage Resource's (a) negative Installed Capacity Equivalent, or (b) Lower Operating Limit.

ICAP Manual and Tariff Revisions (10/27)

■ ICAP Manual - Section 5.5

- Revised to:
 - Remove the Duration Adjustment Factor of the peaking unit from the calculation of the monthly reference point prices for the ICAP Demand Curves
 - Clarify the translation of the quantities on the ICAP Demand Curve to UCAP terms
 - Update the translation of the ICAP Demand Curve prices to UCAP terms to include the Capacity Accreditation Factor and applicable derating factor of the peaking unit for the respective ICAP Demand Curve beginning with the 2024 Capability Year

ICAP Manual and Tariff Revisions (10/27)

- **ICAP Manual - Section 7.3**

- This is a new section describing the annual review process to establish the Peak Load Windows beginning with the 2024 Capability Year

ICAP Manual and Tariff Revisions (11/08)

■ ICAP Manual - Section 4.5

- Revised to:
 - Include the updated calculation of Adjusted Installed Capacity beginning with the 2024 Capability Year
 - Adjusted ICAP = ICAP * CAF
 - Require that the NYISO assign CARCs and CAFs to Resources by the deadline identified in the ICAP Event Calendar
 - Detail the dispute resolution process for an ICAP Supplier assigned the incorrect CARC and/or CAF
 - Update the calculation of UCAP for IPRs and LCROR Hydro to reflect the new resource specific derating factor methodology beginning with the 2024 Capability Year
 - Update the initial UCAP calculation for new generating Resources to reflect the use of CAFs

ICAP Manual and Tariff Revisions (11/08)

- **ICAP Manual - Section 4.8.1**
 - Revised to reflect the bidding, scheduling, and notification requirements for Generators and System Resources with Energy Duration Limitations longer than the Peak Load Window

ICAP Manual and Tariff Revisions (11/08)

■ ICAP Manual – Section 7.1 – 7.2

- This is a new section describing the annual process for establishing CARCs, calculating CAFs, and assigning CARCs and CAFs to ICAP Suppliers beginning with the 2024 Capability Year
 - Section 7.1 covers the annual process for establishing CARCs and the considerations for assigning each ICAP Supplier to a CARC
 - Section 7.2 covers the annual process for calculating CAFs and assigning CAFs to ICAP Suppliers
 - Section 7.2.1 details the MRI technique for calculating CAFs and the representative unit modeling for each type of CARC

ICAP Manual and Tariff Revisions (11/08)

■ ICAP Manual – Attachment N

- This is a new Attachment describing the procedure for calculating translation factors for IPRs and LCROR Hydro for use in the shifting methodology in the IRM and LCR studies and for studying resources in deliverability testing
- For more details on the procedure, see the presentation at the October 19th ICAPWG meeting

ICAP Manual and Tariff Revisions (11/08)

■ ICAP Manual – Attachment J

- Sunsets the existing UCAP calculations with the 2024 Capability Year
- Beginning with the 2024 Capability Year:
 - The Duration Adjustment Factor term in each UCAP formula is replaced with the Installed Capacity Supplier's assigned CAF
 - The UCAP calculation for IPRs and LCRORs is revised to reflect the new resource specific derating factor methodology
 - The Peak Load Window term is replaced with the newly defined ICAP Obligation Hours term for use in measuring the availability of resources with Energy Duration Limitations
 - ICAP Obligation Hours: “The hours that an Installed Capacity Supplier must bid their ICAP obligation (ICAP Equivalent of UCAP Sold or Certified in the most recent ICAP Spot Market Auction) into the DAM. The ICAP obligation hours for Installed Capacity Suppliers with Energy Duration Limitations are described in Section 5.12.7 of the NYISO Services Tariff.”
- Since most components of the existing UCAP calculations remain the same beginning with the 2024 Capability Year, changes from the existing UCAP calculations are highlighted in yellow in today's meeting materials

ICAP Manual and Tariff Revision Updates (11/21)

■ ICAP Manual – Section 7.1.1

- Clarification added on how the combination of an ICAP Supplier’s participation model, elected Energy Duration Limitation, and resource characteristics will determine the CARC to which the ICAP Supplier will be assigned
 - Participation models and CARCs are not synonymous. Participation models exist today and define a Resource’s participation in the ICAP Market
 - Resources using the same participation model could be assigned to different CARCs based on differing elected Energy Duration Limitations or resources characteristics. Additionally, Resources using different participation models could be assigned the same CARC due to having the same elected Energy Duration Limitation or other resource characteristics
- Opportunity added for ICAP Suppliers to review and notify the NYISO of an incorrect CARC assignment
 - If an ICAP Supplier and the NYISO are unable to resolve a disputed CARC assignment, the ICAP Supplier can provide, and the NYISO shall use, a CARC assignment for the Installed Capacity Supplier for the upcoming Capability Year. The ICAP Supplier-provided CARC assignment would be subject to potential audit by the NYISO’s Market Mitigation and Analysis department and applicable shortfall penalties if the ICAP Supplier-provided assignment is deemed inaccurate
- Reference to deadlines to elect a new participation model and Energy Duration Limitation were removed as those deadlines are listed elsewhere in the ICAP Manual and/or Market Services Tariff
- Clarified that an ICAP Supplier’s CARC is applicable for the entire Capability Year

ICAP Manual and Tariff Revisions Updates (11/21)

■ ICAP Manual – Section 7

- Section 7.2
 - Replaced the “evaluated area” term with “capacity zone” for clarity
 - Opportunity added for ICAP Suppliers to review and notify the NYISO of an incorrect CAF assignment
 - If an ICAP Supplier and the NYISO are unable to resolve a disputed CAF assignment, the ICAP Supplier can provide, and the NYISO shall use, a CAF assignment for the Installed Capacity Supplier for the upcoming Capability Year. The ICAP Supplier-provided CAF assignment would be subject to potential audit by the NYISO’s Market Mitigation and Analysis department and applicable shortfall penalties if the ICAP Supplier-provided assignment is deemed inaccurate
 - Added clarity regarding which years would be used to calculate the representative unit historic hourly production profiles for IPRs and LCROR Hydro Resources for CAF modeling purposes
- Section 7.3
 - Added subsection heading
 - Clarifying edits added
 - Added requirement for the NYISO to advise the Business Issues Committee if it determines a new Peak Load Window is required under ICAP Manual Section 7.3.3

ICAP Manual and Tariff Revision Updates (11/21)

- **ICAP Manual - Section 4.5**
 - Removed the inclusion of CARC and CAF assignments in the derating factor dispute process
 - Clarifying edits added
- **MST 5.12.7, ICAP Manual Sections 4.2.2.2, 4.8.1, 4.8.2, and Attachment M**
 - Clarification added regarding the applicable hours for the bidding, scheduling, and notification requirements and DMNC testing requirements for Resources with Energy Duration Limitations longer than the Peak Load Window
- **ICAP Manual – Attachment J**
 - Revised the new UCAP calculation for IPRs and LCROR for clarity
 - Replaced the Market Services Tariff section reference with the ICAP Manual section reference in the ICAP Obligation Hours descriptions

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](#)

Draft 5 Year ICAP Market Resource Adequacy Plan



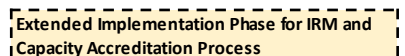

Draft 5 Year ICAP Market Resource Adequacy Plan

- **The NYISO has been coordinating with the NYSRC Executive Committee on the needs for updating the Resource Adequacy model and methods for use with the ICAP Market**
 - These needs encompass the changing electricity system and the need to refine the calculations of both Resource Adequacy Reliability Targets and the Capacity Accreditation value of resources
 - The following slides are a draft of a 5-year plan to enhance the Resource Adequacy model and methods for use with the ICAP Market

The Proposed RA Model Improvements & Strategic Priorities

Modeling Themes	2022	2023	2024	2025	2026
1. LCR Optimizer/Tan45 Methodology		LCR/TSL Improvement			
			Tan45 Methodology (pending estimated impact from BTM Solar treatment)		
				Comprehensive LCR/Tan45 Review	
					Stability of IRM/LCR
2. Winter Reliability and Modeling	Winter Modeling Initial Assessment	Winter Modeling Fuel Limitation Modeling			
			Tie and Seasonal Specific Emergency Assistance		
				Seasonal Specific Load And Topology	
					Winter Reliability & Outage Correlation
3. Energy Limited Modeling (ESR, SCR, DER, and ELR etc.)	ELR Model Adoption	EOP Structure Review (sequence of SCR/EA)			
			Modeling of DER		
				Continuous Improvement to the ELR Modeling	
4. Load Modeling	New Load Shape				
		New Load Shape + Updated LFU			
				Seasonal Specific Load Modeling	
5. Extreme Weather	Incorporate modeling improvements pending on progress and outcome from Extreme Weather working group				

LEGEND:

-  NYISO Proposed Prioritized Modeling Improvements
-  Expected Implementation Phase for IRM and Capacity Accreditation Process
-  Extended Implementation Phase for IRM and Capacity Accreditation Process
-  Specific model improvements are to be determined



NYSRC Modeling Priorities for 2023

- **Theme 1: Improvement to the LCR optimizer tool**
 - Consider inputs from MMU to ensure intuitive LCR outcome and stability of model results
- **Theme 2: Winter Reliability Modeling**
 - Fuel limited modeling with the focus on gas constraints during winter season
- **Theme 3: Investigate and improve the sequence within EOP steps, particularly Emergency Assistance and SCRs**
 - Improvement in this area will have an impact on the ELR modeling and set up for winter reliability modeling improvement for 2024
- **Theme 4: Adopt the new load shapes and improve LFU scaling in the IRM study**
 - LFU modeling improvement (LFU Phase 3 Whitepaper)
 - New load shapes combining with improved scaling from the LFU phase whitepaper
- **Additional items may be desired:**
 - (by RA team) Testing of the impact of BTM solar to inform prioritization for 2024 Tan45/LCR/TSL improvement
 - (by NYSRC) **Theme 5** - Extreme weather event modeling, improve ESR modeling and offshore wind impact

NYSRC Modeling Priorities for 2024

- **Theme 1: Comprehensive review of the IRM setting process, particularly the Tan45 methodology**
 - The current Tan45 methodology will require improvement in shifting capacity between upstate and downstate
 - The improved LCR optimizer may offer an alternative methodology to the Tan45 process
 - Pending on estimated impact, incorporate the BTM solar methodology in the comprehensive Tan45/LCR review
- **Theme 2: Winter Reliability Modeling**
 - Improve the modeling for emergency assistance from individual inertia and seasonal assumptions (summer and winter)
 - Effort to improve and simplify the external area modeling may also be included
- **Theme 3: Modeling for emerging resources/participation modes, i.e. DER, CSR and Hybrid resources**
 - Improvement to the ELR model may be required
- **Additional Items that may be desired:**
 - (by RA team) Investigate impacts on LCRs post peaker retirement
 - (by NYSRC) **Theme 5** - Extreme weather event modeling, improve ESR modeling
 - (by NYISO) Support the Capacity Demand Curve reset process

NYSRC Potential Focus for 2025-2026

- **Theme 1**: Continue the enhancement of Tan45 and LCR processes
 - Shifting methodology in Tan45 process may start to fail after significant resource and topology changes between upstate and downstate
 - Impact from changes to southeast reliability due to combination of peaker retirement and offshore wind entry
 - Methodology review between the Tan45 and the LCR optimizer, with the potential of optimizing the IRM
 - Ensure the stability of IRM and LCR outcomes amid significant system changes and modeling enhancements
- **Theme 2**: Continue to refine assumptions during winter season and assess the reliability during winter
 - Winter assumptions include incorporating winter peak in load modeling (Theme 4), seasonal topology limits, as well as weather correlated outages
- **Theme 3**: Continue the modeling improvement for energy limited resources, particularly the modeling for DER, SCR and large penetration of ESRs
- Additional Items that may be desired by the NYSRC includes
 - Theme 5 - Extreme weather event modeling and additional reliability standards

Capacity Accreditation (5-Year Plan)

- **The Capacity Accreditation project is expected to involve continuous model improvement and implementation for the next 5 years. The anticipated work scope includes:**
 - 2023
 - Implementation of Capacity Accreditation process and software
 - Research on Gas Constraints, Start up time, and SCR modeling
 - 2024
 - Implementation of Gas Constraints, Start up time, and SCR modeling
 - Research on Winter Reliability issues
 - 2025
 - Implementation of Winter Reliability Issues
 - Research on Correlated outages and unit size
 - 2026
 - Implementation of Correlated outages and unit size
 - Research on alignment of load and resource output profiles

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