

# Annual Peak Load Window Review and Energy Duration Limitation Proposals

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**ICAPWG/MIWG**

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# Agenda

- Previous Discussions
- Background
- Capacity Accreditation Factors vs Resource Specific Derating Factors
- Proposal Background
- Annual Peak Load Window Review
- Energy Duration Limitation Proposal
- 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/Capa%20city%20Accreditation%20Kick%20ff%2002-24-22%20v7.pdf/5ab742c4-650b-5094-6a22-d41a2f29da6f">https://www.nyiso.com/documents/20142/28687884/Capa%20city%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>
May 24, 2022	ICAPWG	<p>Updated Preliminary CARCs and Annual Process to Establish CARCs:  <a href="https://www.nyiso.com/documents/20142/30888946/3%2005-24-22%20Capacity%20Accreditation.pdf/cd61d855-f634-0fe8-6109-7d8c0547beda">https://www.nyiso.com/documents/20142/30888946/3%2005-24-22%20Capacity%20Accreditation.pdf/cd61d855-f634-0fe8-6109-7d8c0547beda</a></p> <p>Additional Preliminary ELCC and MRI Results (GE):  <a href="https://www.nyiso.com/documents/20142/30888946/2%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0524.pdf/0976330d-f4eb-4db3-2613-c8be9baf6452">https://www.nyiso.com/documents/20142/30888946/2%20GE-Support%20for%20NYISO%20Capacity%20Accreditation%20Project_0524.pdf/0976330d-f4eb-4db3-2613-c8be9baf6452</a></p>
June 16, 2022	ICAPWG	<p>Sensitivity Scenarios and Seasonal CAFs:  <a href="https://www.nyiso.com/documents/20142/31532822/2%20Capacity%20Accreditation%20v6.pdf/4ffe4fa9-bdaf-2c23-77be-d49ed04c5ea5">https://www.nyiso.com/documents/20142/31532822/2%20Capacity%20Accreditation%20v6.pdf/4ffe4fa9-bdaf-2c23-77be-d49ed04c5ea5</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](#)

# Proposal Background

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- With the FERC's acceptance of the CMR Filing, the tariff prescribed 2-, 4-, 6-, and 8-hour Energy Duration Limitations (EDLs) and current Peak Load Windows (PLWs) sunset with the implementation of capacity accreditation (*i.e.*, 2024-2025 Capability Year)
- As part of the Improving Capacity Accreditation project, the NYISO must determine the rules for the annual review and modification of the PLWs, allowable EDL elections, and related bidding requirements that will become effective for the 2024-2025 Capability Year
- The following slides outline the PLW and EDL proposals

# Annual Peak Load Window Review



# Peak Load Window Background

- **The NYISO developed the Peak Load Windows (PLWs) as part of the 2019 Expanding Capacity Eligibility project**
- **The PLWs were established to capture the hours of the day with the highest probability of experiencing a loss of load event**
  - In developing the PLWs, the NYISO evaluated the expected number of loss of load events by hour from the 2018 IRM models. Additionally, the NYISO evaluated the peak load hours from the peak winter days, peak summer days, cold snap periods, and heat wave periods from Capability Year 2013-2014 through the 2018 Summer Capability Year
  - See the Appendix to the [03/07/2019 Expanding Capacity Eligibility presentation](#) for additional details regarding the analysis
- **Obligations for Resources with Energy Duration Limitations (EDLs) are tied to the Peak Load Windows**
  - Bid, Schedule, and Notify obligations (B/S/N), DMNC testing, derating factor calculations, etc.

# Proposal for Annual Peak Load Window Review

- In developing the proposal for the annual PLW review, the NYISO evaluated the hourly Loss of Load Expectation (LOLE) from the Final Base Cases of the 2018-2022 IRM studies
- As shown on the next slide, the current Summer Capability Period PLW captures at least 90% of hourly LOLE in the Summer Capability Period in each of the 2018-2021 IRM studies

# Proposal for Annual Peak Load Window Review

- Based on the Summer PLW historically capturing at least 90% of Summer hourly LOLE, the NYISO proposes to use 90% as the minimum hourly LOLE threshold to annually determine the Summer PLW
- The NYISO proposes the following annual process to determine the Summer PLW:
  - Following the approval of the final LCRs by the NYISO Operating Committee, the Resource Adequacy team would calculate the hourly LOLEs from the final LCR model
  - If the existing Summer PLW does not capture at least 90% of the Summer hourly LOLE, the new Summer PLW would start with the two consecutive hours with the highest percentage of LOLE in the Summer Capability Period
  - Additional consecutive hours would be added in even increments, starting with the hours that capture the next highest concentration of LOLE, until the PLW captures at least 90% of the total hourly LOLE in the Summer Capability Period

Summer Hourly LOLE Distribution					
HB	2018	2019	2020	2021	2022
10	0%	0%	0%	0%	1%
11	0%	2%	2%	2%	4%
12	1%	4%	4%	4%	9%
13	4%	11%	12%	11%	9%
14	11%	19%	19%	19%	16%
15	19%	23%	22%	23%	20%
16	24%	23%	22%	23%	20%
17	24%	13%	11%	13%	11%
18	13%	5%	4%	5%	4%
19	4%	1%	2%	1%	3%
20	1%	0%	0%	0%	2%
21	0%	0%	0%	0%	1%
<b>LOLE within Current 6 HR PLW</b>	<b>93%</b>	<b>92%</b>	<b>91%</b>	<b>92%</b>	<b>79%</b>

# Proposal for Annual Peak Load Window Review

- The proposed annual process would result in the Summer PLWs indicated in blue on the right when applied to past years' IRM results
- Due to the low Winter LOLE in the past IRM/LCR results, the NYISO plans to either a) keep the existing 6 HR Winter PLW (HB 16-21) until a minimum Winter LOLE threshold is reached or b) utilize the Summer PLW process with an adjusted LCR model
  - The NYISO plans to evaluate the later option as it works through other elements of the market design
- The final PLWs would be publicly posted with the final CAFs by March 1<sup>st</sup> for the upcoming Capability Year

Summer Hourly LOLE Distribution					
HB	2018	2019	2020	2021	2022
10	0%	0%	0%	0%	1%
11	0%	2%	2%	2%	4%
12	1%	4%	4%	4%	9%
13	4%	11%	12%	11%	9%
14	11%	19%	19%	19%	16%
15	19%	23%	22%	23%	20%
16	24%	23%	22%	23%	20%
17	24%	13%	11%	13%	11%
18	13%	5%	4%	5%	4%
19	4%	1%	2%	1%	3%
20	1%	0%	0%	0%	2%
21	0%	0%	0%	0%	1%
LOLE Captured by Proposal	93%	92%	91%	92%	92%

# Energy Duration Limitation Proposal

# EDL Proposal for Capacity Accreditation

- **The NYISO is proposing to continue with the allowable 2-, 4-, 6-, and 8-hour EDL elections**
  - If the NYISO observes reliability needs extending past 8 hours, the NYISO will consider adding a 10-hour EDL election option
- **Because the annually determined PLW may be shorter than the maximum allowable EDL, the NYISO is proposing the B/S/N requirements on the following slide for Resources with EDLs longer than the PLW**
- **The B/S/N requirements for Resources with EDLs less than or equal to the length of the annually determined PLWs will remain unchanged**
- **Derating factors for Resources with EDLs will continue to be calculated over the hours corresponding to each Resource's B/S/N obligation**

# EDL Proposal for Capacity Accreditation

- A Resource with an EDL longer than the PLW will be required to bid to produce or inject energy, schedule a Bilateral Transaction, and/or notify the ISO of any outages for at least the Installed Capacity Equivalent (ICE) of UCAP Sold for all hours within the PLW and for each hour immediately preceding and following the PLW for the remaining hours of the Resource's EDL
  - An Energy Storage Resource with an EDL longer than the PLW will be required to B/S/N the Resource's full withdrawal capability for all hours outside the B/S/N hours for energy injection
  - Ex. B/S/N requirement for energy production/injection for a Resource with an 8-hour EDL and 6-hour PLW

	PLW						
12	13	14	15	16	17	18	19
B/S/N							

# Next Steps



# Next Steps

- **The NYISO plans to return to the ICAPWG in July to discuss additional sensitivity scenario requests received, an updated resource specific derating factor proposal for performance-based resources, and an updated project schedule**

# 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