New York ISO
Independent System Operator

Capacity Accreditation: Adjusted Resource Specific Derating Factors and External Resources

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ICAPWG/MIWG

April 19, 2022

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- Capacity Accreditation Factors vs Resource Specific Derating Factors
- Resource Specific Derating Factors: Proposed Adjustments
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Previous Discussions

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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

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Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
November 2, 2021	ICAPWG	NYISO CMR Consumer Impact Analysis: https://www.nyiso.com/documents/20142/25835955/CIA%20-%20Comprehensive%20Mitigation%20Review.pdf/36d447d4-5b33-8ab1-2654-90a529ff1dfe Potomac CMR Consumer Impact Analysis: https://www.nyiso.com/documents/20142/25835955/MMU%20ICAP%20Accreditation%20Consumer%20Impact%20Analysis%201-02-2021.pdf/637ba21e-db75-a4c1-5b41-f770dd26e529
November 9, 2021	BIC	Comprehensive Mitigation Review Proposal and Tariff: https://www.nyiso.com/documents/20142/25928340/5%20202111109%20NYISO%20-%20CMR%20v3.pdf/84d8b429-126c-68dd-0308-caa50886de92 Comprehensive Mitigation Review Approved Motion: https://www.nyiso.com/documents/20142/25928340/110921%20bic%20final%20motions.pdf/785d5869-1e04-9f97-e330-e2e632ae7a9c
November 17, 2021	MC	Comprehensive Mitigation Review Proposal and Tariff: https://www.nyiso.com/documents/20142/26119798/05%20CMR.pdf/11217ade-152a-74a2-d478-6b5ae5e21207 Comprehensive Mitigation Review Approved Motion: https://www.nyiso.com/documents/20142/26119798/111821%20MC_Final_Motions.pdf/bbf15d66-4108-7173-1596-9b20677914e6

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Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
January 20, 2022	ICAPWG	2022 Market Projects: https://www.nyiso.com/documents/20142/27799605/2022%20Projects%20Presentation.pdf/4553eb95-177d-7cbc-f2fe-7754b7c66644
February 3, 2022	ICAPWG	Improving Capacity Accreditation Plan: https://www.nyiso.com/documents/20142/28227906/Improving%20Capacity%20Accreditation%20Plan.pdf/92560e95-5703-4c57-45cb-7706c36f4656
February 24, 2022	ICAPWG	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 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
March 3, 2022	ICAPWG	CMR Draft Deficiency Response: https://www.nyiso.com/documents/20142/28897222/CMR%20Deficiency%20Draft%20Responses%2003-03%20ICAPWG.pdf/0a3c8303-515e-7725-dee5-a9dda1398672

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Previous Discussions (cont.)

Date	Working Group	Discussion Points and Links to Materials
March 16, 2022	ICAPWG	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
March 31, 2022	ICAPWG	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 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

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Background

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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**

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CAFs vs Resource Specific Derating Factors

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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

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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 = Adjusted ICAP x (1 – resource specific derating factor)
    - Where:
      - Adjusted ICAP = ICAP * CAF
      - ICAP = min(DMNC, CRIS)
    - So, UCAP = min(DMNC, CRIS) * CAF * (1 – resource specific derating factor)
  - For more information on current resource-specific derating factors, see the 03/16/22 ICAPWG presentation

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Resource Specific Derating Factors: Proposed Adjustments

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Intermittent Power Resources and Limited Control Run-of-River Hydro

- Upon CAF implementation, the current resource specific derating factor calculations for Intermittent Power Resources (IPRs) and Limited Control Run-of-River Hydro (LCRoR) require adjustments to: (1) avoid double counting of unavailability and (2) capture differences in availability that are specific to an individual resource and not captured in the CAF of the resource's CARC
- The NYISO proposes to use 1 minus an "Average Capacity Factor Ratio" (further discussed on the following slides) as the resource specific derating factor for IPRs and LCRoRs
  - Resource specific derating factor = 1 – Average Capacity Factor Ratio
- By using the Average Capacity Factor Ratio, the resource specific derating factor for IPRs and LCRoRs will avoid double counting of unavailability and account for differences in individual resource performance compared to the production profile of the representative unit used for CAF modeling

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Intermittent Power Resources and Limited Control Run-of-River Hydro

- **The Average Capacity Factor Ratio would be calculated as the ratio of the individual resource's average capacity factor to the average capacity factor of the representative unit of the resource's CARC for the resource's applicable location**
  - The measurement window for calculating an individual resource's average capacity factor would be all Peak Load Window hours over the two previous like-Capability Periods
  - The measurement window for calculating the representative unit's average capacity factor would be all Peak Load Window hours over the like-Capability Periods of the representative unit's production profile used for CAF modeling
  - Average Capacity Factor Ratio = $\frac{Average\ Capacity\ Factor\ of\ Resource}{Average\ Capacity\ Factor\ of\ Representative\ Unit}$
  - Illustrative examples will be discussed on slides 17 and 18

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Intermittent Power Resources and Limited Control Run-of-River Hydro

- The Peak Load Window will be reviewed and modified, if necessary, as part of the annual review of Capacity Accreditation Factors, as detailed in MST 5.12.14.3 of the tariff revisions filed as part of the CMR proposal
- The methodology for the review and modification of the Peak Load Window will be discussed at a future ICAPWG meeting(s)

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Intermittent Power Resources and Limited Control Run-of-River Hydro: Example 1

- **Average Capacity Factor Ratio Example 1 – Resource with better performance than the representative unit**
  - Hypothetical assumptions for illustrative purposes:
    - ICAP of resource: 100 MW
    - CAF: 20%
    - Average capacity factor of resource: 30%
    - Average capacity factor of representative unit: 25%
  - Average Capacity Factor Ratio = $\frac{30\%}{25\%}$ = 1.2
  - Adjusted ICAP = ICAP * CAF = 100 * 20% = 20 MW
  - UCAP = Adjusted ICAP * (1 – resource specific derating factor) = 20 * (1 – (1 - 1.2)) = 24 MW

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Intermittent Power Resources and Limited Control Run-of-River Hydro: Example 2

- **Average Capacity Factor Ratio Example 2 – Resource with poorer performance than the representative unit**
  - Hypothetical assumptions for illustrative purposes:
    - ICAP of resource: 100 MW
    - CAF: 20%
    - Average capacity factor of resource: 20%
    - Average capacity factor of representative unit: 25%
  - Average Capacity Factor Ratio = $\frac{20\%}{25\%}$ = 0.8
  - Adjusted ICAP = ICAP * CAF = 100 * 20% = 20 MW
  - UCAP = Adjusted ICAP * (1 – resource specific derating factor) = 20 * (1 - (1 - 0.8)) = 16 MW

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Special Case Resources

- The NYISO will return to a future ICAPWG meeting to discuss possible adjustments to the resource specific derating factor calculation for Special Case Resources

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External Resources

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External Resources

- External resources include Imports, Control Area System Resources, External-to-ROS Deliverability Rights (EDRs), and Unforced Capacity Deliverability Rights (UDRs)
- Imports, EDRs, and UDRs can only be supported by availability-based resources without Energy Duration Limitations. Additionally, Control Area System Resources are pooled capacity and participate as availability-based resources without Energy Duration Limitations
- Therefore, the NYISO proposes to treat Imports, EDRs, UDRs, and Control Area System Resources as unlimited availability-based resources (i.e., not subject to any Energy Duration Limitations) in the locations in which the external capacity sinks into the NYCA for purposes of CARC assignment and CAF determinations

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Next Steps

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Next Steps

- The NYISO plans to return to the April 28th ICAPWG meeting to discuss preliminary CARCs and CAF results for a subset of technology types

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Questions?

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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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