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Independent System Operator

2025 - 2026 Capability Year Informational Capacity Accreditation Factors

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Agenda

- Background and Objective of Today's Presentation
- Informational Capacity Accreditation Factors (CAFs)
  - Informational CAFs for the 2025-2026 Capability Year (2025-2026 Informational CAFs)
  - Loss of Load Expectation (LOLE) risk distribution
- Important Concepts for Understanding CAF values
- Comparison of 2024-2025 Final CAFs and 2025-2026 Informational CAFs
- Next Steps
- Appendix

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Background & Objective of Today's Presentation

- On May 10, 2022, the FERC accepted the NYISO's marginal capacity accreditation market design as part of the NYISO's Comprehensive Mitigation Review filing
- In December 2022, the BIC accepted the revisions to the ISO procedures, including implementation details and administrative rules and procedures, for NYISO's marginal capacity accreditation market design
- As accepted by the FERC and detailed in MST sections 2.3 and 5.12.14, CAFs reflect the marginal reliability contribution of the Installed Capacity (ICAP) Suppliers within each Capacity Accreditation Resource Class (CARC) toward meeting New York State Reliability Council (NYSRC) resource adequacy requirements for the upcoming Capability Year
  - On September 30, 2024, the NYISO posted the 2025-2026 Preliminary CARCs on the Capacity Accreditation website
- For detailed information on the market design and the timeline, refer to the presentations below:
  - Capacity Accreditation: Implementation Details
  - Capacity Accreditation Timeline
- Objective of today's presentation: Discuss and explain the 2025-2026 Informational CAFs
  - Review differences between the Final CAFs for the 2024-2025 Capability Year (2024-2025 Final CAFs) and the 2025-2026 Informational CAFs and the drivers for these differences

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2025-2026 Informational CAFs

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2025-2026 Informational CAFs

- CAFs reflect the marginal reliability value of the representative unit over a perfect unit
- The 2025–2026 Informational CAFs were calculated using the Marginal Reliability Improvement (MRI) technique
  - A 100 MW representative unit for each CARC, consistent with the methodology for calculating CAFs as outlined in ICAP Manual section 7.2.1
- The 2025–2026 Informational CAFs are for informational purposes only; they are based upon the information available at the time of calculation
- The 2025–2026 Informational CAFs will not be used to determine the market revenue of ICAP Suppliers in the 2025–2026 the Capability Year that begins on May 1, 2025
- 2025–2026 Final CAFs will be calculated in accordance with ICAP Manual section 7.2 and posted by the date identified in the ICAP Event Calendar (currently scheduled for March 1, 2025)
  - The 2025–2026 Final CAFs and the inputs into the GE MARS model may differ from the 2025-2026 Informational CAFs

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2025-2026 Informational CAFs (cont.)

- NYISO conducted informational calculations of CAFs using the New York State Reliability Council (NYSRC) approved Installed Reserve Margin Study Preliminary Base Case for the upcoming 2025-2026 Capability Year (2025-2026 IRM PBC) developed in its Installed Capacity Subcommittee (ICS)
  - The NYSRC Executive Committee has approved the 2025-2026 IRM PBC
- The 2025-2026 Informational CAFs will be posted on the Capacity Accreditation web page in the “Preliminary CARCs & Informational CAFs” folder

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Base Case for the 2025-2026 Informational CAFs

- **The NYSRC approved 2025–2026 IRM PBC was completed with the Tan45 result at 23.6%**
  - The enhanced Special Case Resource (SCR) modeling was accepted by NYSRC [1] and was included in the 2025-2026 IRM PBC
- **Since the Transmission Security Limit (TSL) floors were not considered in the Tan45 process, 2024-2025 TSL floors were applied to the 2025-2026 IRM PBC and this resulted in the following parameters:**
  - IRM: 23.6%
  - G-J Locality: 81.0%
  - J Locality: 80.4%
  - K Locality: 105.3%
- **This starting point base case for the 2025-2026 Informational CAFs has a LOLE of 0.078**

1. January 30, NYSRC ICS Meeting

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2025 - 2026 Informational CAFs

CARCs	Rest of State	GHI Locality	J Locality	K Locality
Special Case Resource (SCR)	78.66%*	79.27%*	68.98%*	78.09%*
2-Hour Energy Duration Limited	76.19%	75.61%	64.99%	59.27%
4-Hour Energy Duration Limited	83.60%	84.15%	80.80%	89.70%
6-Hour Energy Duration Limited	91.53%	91.81%	87.00%	95.60%
8-Hour Energy Duration Limited	98.77%	98.95%	96.90%	99.34%
Landfill Gas	63.84%	64.11%*	63.22%*	62.36%*
Solar	8.64%	8.54%	11.82%	9.36%
Offshore Wind	-	-	-	38.48%
Land-based Wind	21.52%	21.08%*	19.79%*	19.66%*
Limited Control Run of River	46.21%	43.38%	-	-
Large Hydro	100.00%	100.00%	100.00%	100.00%
Large Hydro with partial Pump Storage	100.00%	-	-	-
Generator	100.00%	100.00%	100.00%	100.00%

*These CARCs are new to the 2025-2026 Capability Year and are reflected in the 2025-2026 Preliminary CARC list

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Important Concepts for Understanding CAF values

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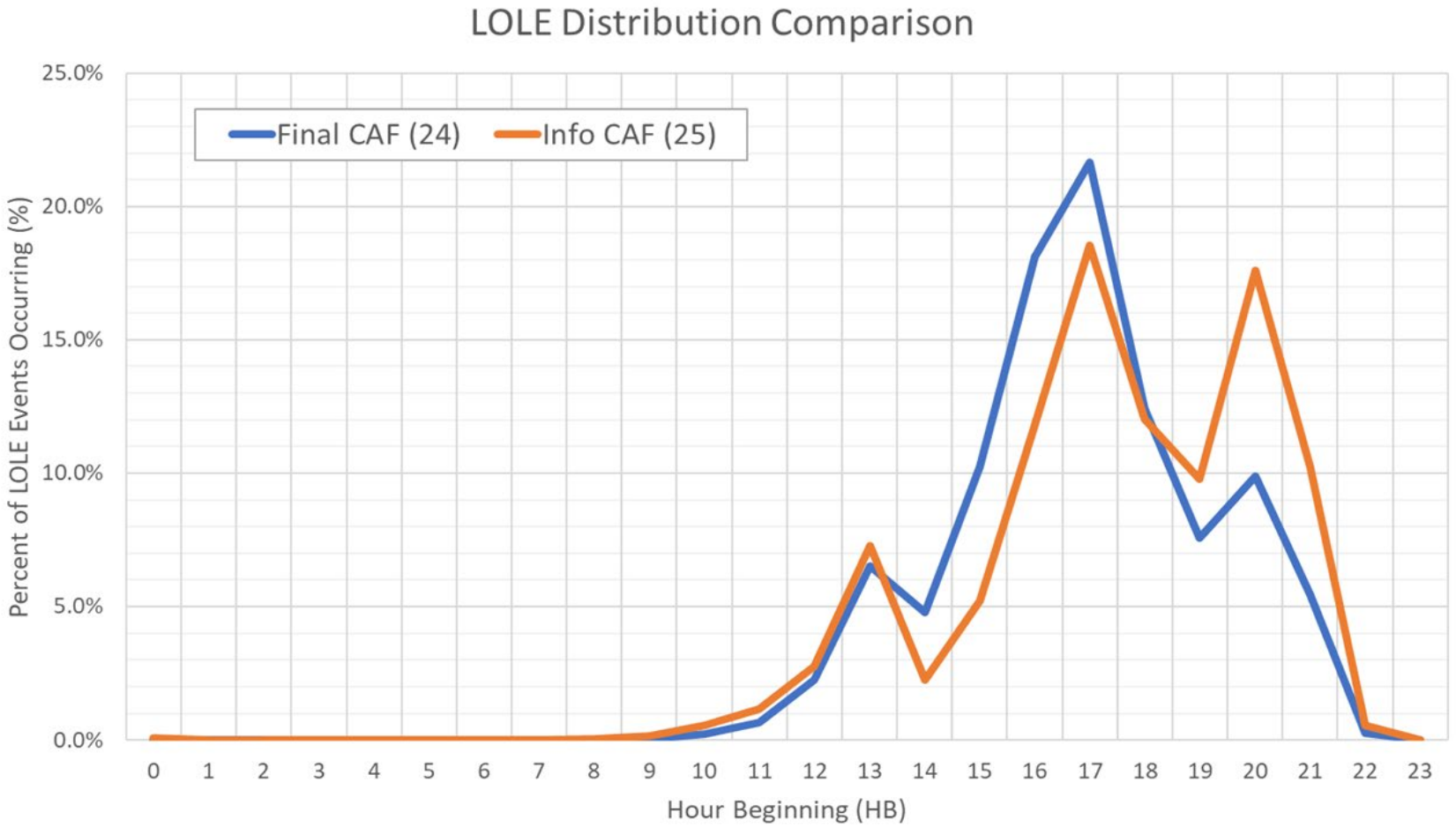
Comparison of LOLE Distribution in 2024-2025 Final CAFs and 2025-2026 Informational CAFs



- Notable changes in the LOLE risk profile
  - The main peak is smaller
  - The daily profile contains one small peak early in the afternoon and two main peaks later in the late afternoon
- This change is driven by the adoption of enhanced SCR modeling
  - The resultant risk profile aligns with the real-time operational experience and expectations by Grid Operations following SCR deployment.

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Relationship between the LOLE Risk Profile and CAFs

- **The LOLE risk profile impacts CAF values**
  - CAF values are calculated based on how effective a resource class is at addressing LOLE risk compared to a perfect generator
- **As the LOLE risk profile changes, a CARC's ability to address LOLE risk can also change, leading to changes in CAF values**
  - For example, if the LOLE risk profile shifts to later in the day, a solar resource is less effective at addressing such later occurring LOLE risk; therefore, the CAF for solar is likely to be lower

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Modeling Resources with Energy Duration Limitations (EDLs)

- **EDLs are modeled in GE MARS using the Energy Limited Resource (ELR) functionality**
  - The ELR functionality allows for modeling units with energy and/or duration limitations; therefore, the simulation has flexibility to determine energy usage according to the system's need
- **However, the ELR functionality only optimizes for the current hour and does not have a 'look ahead' feature**
  - Therefore, without intervention, GE MARS would use energy from the unit prior to the critical system risk period which would deplete the available energy before the critical system risk period
    - This NYSRC ELR Whitepaper discusses the ELR functionality [1]
- **To address this limitation, the EDL modeling approach uses the ELR functionality with an output window to delay the use of the EDL until the critical system risk period**
  - The output window is implemented for EDLs and the enhanced SCR modeling
  - For example, the enhanced SCR model includes an output window starting at HB14
- **This output window is a means of optimizing the use of the EDLs during the GE MARS simulation; it reflects the operational expectation that EDLs will be deployed at the most critical system risk periods in real-time operations under tight system conditions**

1. NYSRC Energy Limited Resources Modeling Whitepaper

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EDL Representative Unit Modeling

- **For the EDL CAF calculations, the output window of the representative unit is dynamically optimized to reflect its reliability contribution**
  - This treatment is applied not only to all EDL CAFs but also to SCR CAFs since the enhanced SCR modeling also uses the ELR functionality [1]
- **With the changing LOLE distribution (*i.e.*, two distinct peaks) observed in the base case for the 2025-2026 Informational CAFs, the highest risk hours are not consecutive. Therefore, the optimal output window selected for the representative EDL may reflect the unit being used for non-consecutive hours**
  - For example: The highest risk hours are HB 17 and HB 20 in the 2025-2026 base case for Informational CAFs. To meet these risk hours, a 2-hour EDL discharges in hour 17, is not deployed in hours 18 and 19, and then discharges again in hour 20
    - See Appendix for an illustration of this example
- **The avoidance of consecutive hours does not apply to SCRs due to the structure of the SCR program and associated modeling in GE MARS that operates the resources over consecutive hours**
  - The representative SCR unit that is used for the CAF calculations is modeled as a 4-hour duration limited resource with 100% availability (*i.e.*, 100% hourly response rates across four consecutive hours)

1. For details, refer to Slides 22-24 of the November 17, 2023, ICAPWG

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Comparison of 2024-2025 Final CAFs and 2025-2026 Informational CAFs

Differences between 2024-2025 Final CAFs and 2025-2026 Informational CAFs

CARC	Rest of State			GHI Locality			NYC Locality			LI Locality		
	Final 24-25	Info 25-26	Delta	Final 24-25	Info 25-26	Delta	Final 24-25	Info 25-26	Delta	Final 24-25	Info 25-26	Delta
Special Case Resource (SCR)	-	78.66%	-	-	79.27%	-	-	68.98%	-	-	78.09%	-
2-Hour Energy Duration Limited	55.20%	76.19%	+20.99%	55.33%	75.61%	+20.28%	55.27%	64.99%	+9.72%	52.91%	59.27%	+6.36%
4-Hour Energy Duration Limited	66.80%	83.60%	+16.80%	66.80%	84.15%	+17.35%	67.49%	80.80%	+13.31%	79.19%	89.70%	+10.51%
6-Hour Energy Duration Limited	91.36%	91.53%	+0.17%	90.96%	91.81%	+0.85%	89.34%	87.00%	-2.34%	92.15%	95.60%	+3.45%
8-Hour Energy Duration Limited	99.33%	98.77%	-0.56%	99.33%	98.95%	-0.38%	98.70%	96.90%	-1.80%	99.79%	99.34%	-0.45%
Landfill Gas	61.27%	63.84%	2.57%	-	64.11%	-	-	63.22%	-	-	62.36%	-
Solar	13.63%	8.64%	-4.99%	13.36%	8.54%	-4.82%	13.65%	11.82%	-1.83%	11.98%	9.36%	-2.62%
Offshore Wind	-	-	-	-	-	-	-	-	-	32.31%	38.48%	+6.17%
Land-based Wind	12.28%	21.52%	+9.24%	-	21.08%	-	-	19.79%	-	-	19.66%	-
Limited Control Run of River	35.76%	46.21%	+10.45%	39.14%	43.38%	+4.24%	-	-	-	-	-	-
Large Hydro	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%
Large Hydro with partial Pump Storage	100.00%	100.00%	0.00%	-	-	-	-	-	-	-	-	-
Generator	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%

Updated 2024-2025 CAFs are the CAFs in effect for the Winter 2024-2025 Capability Period as calculated with an 80.4% Zone J TSL

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CAF Observations – SCRs

- **With the LOLE risk distribution observed in the base case for the 2025-2026 Informational CAFs, the optimal output window for SCRs is hours 17, 18, 19, 20**
  - These hours allow the SCR to capture the two highest peaks in hour 17 and hour 20
  - This four-hour period (*i.e.*, HB 17 – HB 20) is within the response window of the enhanced SCR modeling construct, which is between HB 14 and HB 20

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CAF Observations - EDLs

- **The optimal output window for EDLs depends heavily on the LOLE risk profile shape**
- **The optimal hours identified were:**
  - 2 hr. EDLs : HB 17 and HB 20
  - 4 hr. EDLs: HB 16 – HB 18 and HB 20
  - 6 hr. EDLs: HB 16 – HB 21
  - 8 hr. EDLs: HB 13, HB 15 – HB 21

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CAF Observations – Shape-Based Units

- **Shape-based units: Landfill gas (LFGE), Solar, Land-Based Wind, and Limited Control Run of River(LCRoR)**
- **Intermittent resources like Solar have a CAF calculated using five-year hourly production shapes that are updated annually**
  - These production shapes are the weighted average of all historical production data for similar CARCs for the most recent five-year period (except Offshore wind, which currently uses synthetic data developed by Det Norske Veritas (DNV) due to the lack of sufficient operating history in New York)
  - As the historical data is updated (*i.e.*, rolling five-year history), the average production shapes are also updated to reflect changes in the historical performance
- **In addition, when the LOLE risk profile changes, some production shapes become more effective or less effective at reducing risk**
  - For example, the LOLE distribution observed for the base case for the 2025-2026 Informational CAFs shows a risk spike in HB 20 after the sun has set. Solar resources cannot reduce this risk, even if there are changes in their historical performance. As a result, the solar CAF decreases

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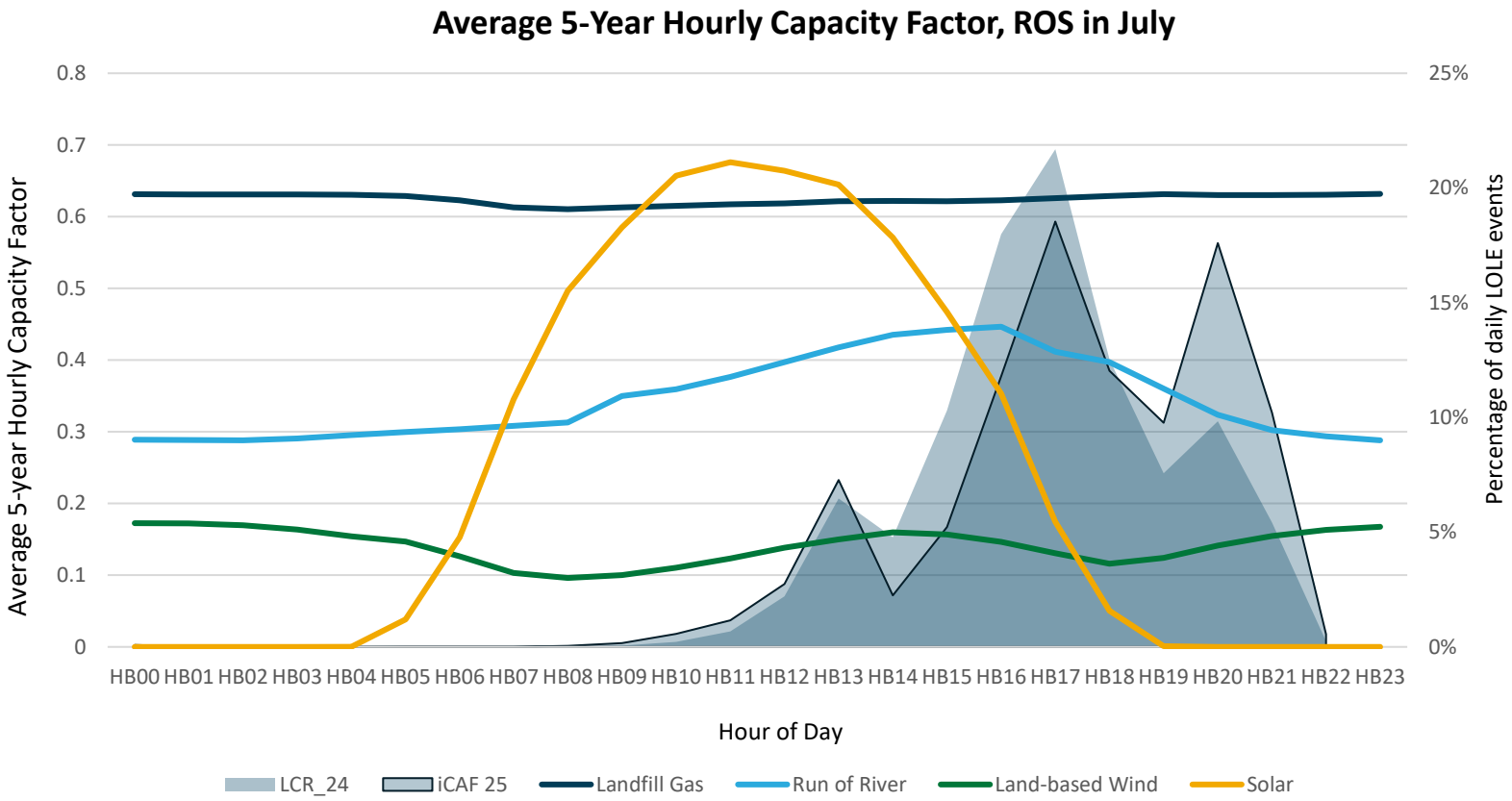
Illustration: Average Profile vs. LOLE in Rest of State (ROS) in July



- The figure is for illustrative purposes, comparing the average hourly profiles of shape-based units with hourly LOLE distribution
  - It represents an average situation only for the month of July and specific circumstances during the simulation may be different
- The resource's hourly profile is the average of the five years of data for the month of July (July 2019 –July 2023)
- A resource is expected to contribute to reliability based on the area of the LOLE distribution under the hourly profile curve

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CAF Observations – Shape-Based units (cont.)

- The changes in CAF values for Solar and LFGE are largely due to change in the LOLE risk profile observed for the base case for the 2025-2026 Informational CAFs
  - Solar CAF decreased because of the reduction in the covered area of the LOLE risk profile
  - LFGE CAF increased slightly because of the addition in the covered area of the LOLE risk profile
- Land-Based Wind, LCRoR, and LFGE also had improved historical performance in the production data; therefore, their respective CAF values increased

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CAF Observations – Other CARCs

- The CAF values for Generator, Large Hydro, and Large Hydro with Partial Pumped Storage have not changed; they are still valued at 100%

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Key Takeaways

- The 2025-2026 Informational CAF values are preliminary and intended for informational purposes only
  - These CAF values may change after the implementation of the IRM/LCR Study Final Base Case (FBC) for the upcoming 2025-2026 Capability Year
- The differences between the 2024-2025 Final CAF values and the 2025-2026 Informational CAF values can be understood by examining the underlying LOLE risk profiles
- The variability in the CAFs makes it challenging to predict future CAFs because they are highly sensitive to any updates to the base case in the future base case including modeling changes as well as the resulting LOLE risk profile
- To enhance transparency and clarity, the NYISO's Capacity Accreditation team will analyze CAF results whenever new modeling changes are introduced in the ICAP Market and will communicate our findings to stakeholders

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Next Steps

- 2025-2026 Final CAFs will be presented in early 2025
- Final 2025-2026 CARCs and CAFs will be posted as described in the ICAP Manual and ICAP Event Calendar

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Questions?

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Appendix

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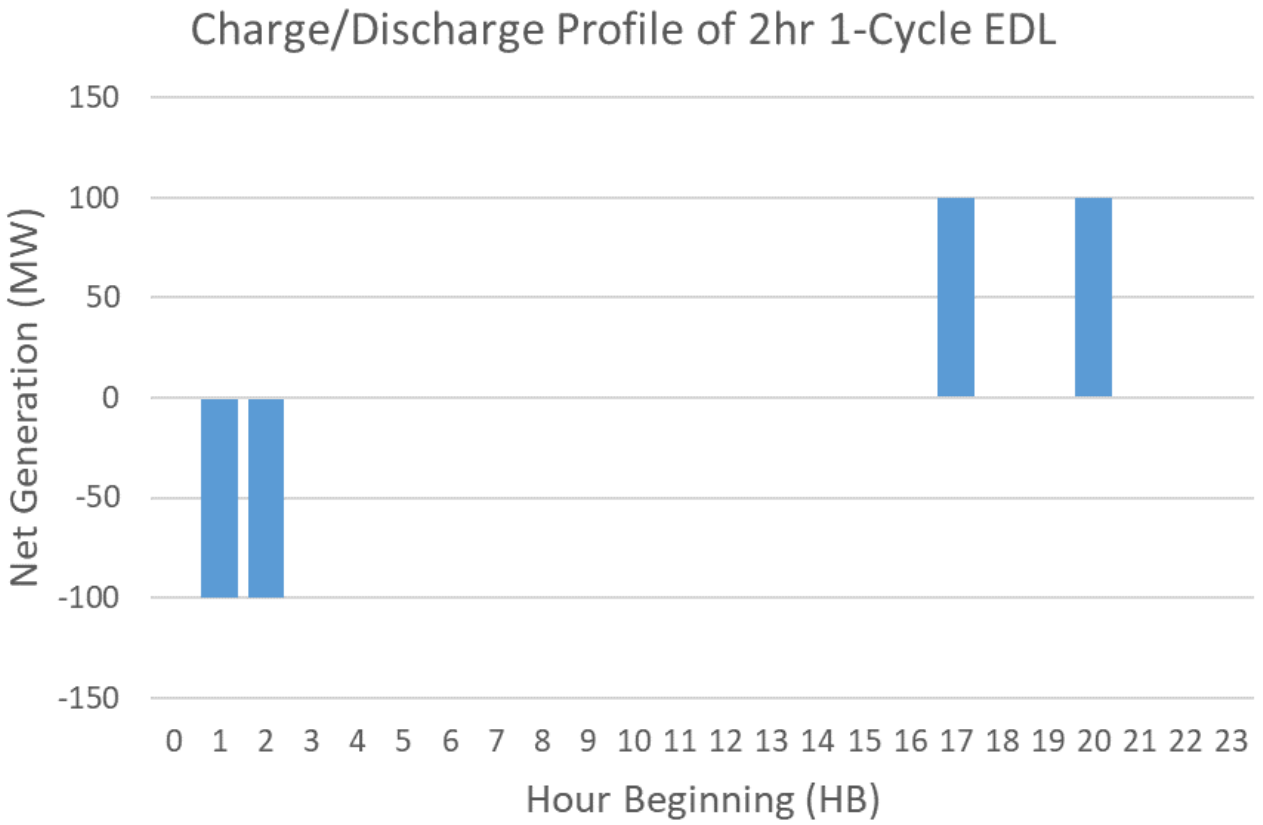
Illustration: Rest of State – 2-hour EDL Cycle Profile



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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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