New York ISO
Independent System Operator

2025–2026 IRM PBC
BTM Solar Modeling Sensitivity

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Agenda

- Background
- Methodology and Assumptions
- Impact Assessment
- Next Steps

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Background

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Background

- With the expectation of increasing Behind-the-Meter (BTM) solar penetration over time, monitoring and quantifying the impact of BTM solar resources in the Installed Reserve Margin (IRM) model is of increasing importance
- The purpose of modeling BTM solar as a supply resource is to more clearly capture the evolving magnitude of the impact of BTM solar resources
- Installed Capacity Subcommittee (ICS) expressed interest in a sensitivity analysis of modeling BTM solar as a supply resource in the 2025-2026 IRM Preliminary Base Case (PBC)

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Methodology and Assumptions

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Overview of BTM Solar Modeling

- **To model BTM solar as a supply resource, both supply-side and load-side modeling need adjustments**
- **BTM solar data from the NYISO Load & Capacity Data report (Gold Book) would be utilized to develop the hourly profiles for BTM solar load for each zone. Inputs include:**
  - NYISO's forecasted annual energy reduction by BTM solar PV (2024 Gold Book Baseline Forecast Table I-9b)

BTM Solar Annual Energy Reductions by Zone (2024 Gold Book Table I-9b) – GWh

Year	A	B	C	D	E	F	G	H	I	J	K	NYCA
2025	457	748	1,078	92	795	882	944	133	186	705	1,382	7,402

  - Energy normalized representative hourly values of BTM solar
    - These values are multiplied by the Gold Book forecasted BTM solar production/impact data to produce hourly MW values for the applicable year

- **The modeling changes should not require changes to the calculation method for the IRM**
  - Net demand forecast should continue to be the denominator of the IRM calculation
  - The MW of BTM solar would not be counted in the total ICAP in the numerator of the IRM calculation
  - The derating factor of BTM solar would not be included in the IRM zonal derating factors used in the shifting methodology

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BTM Solar Modeling Methodology

Load-side modeling

- Modeled as negative Demand Side Management (DSM) units
- Modeled using the 2013, 2017, and 2018 BTM solar zonal hourly load profiles
- The BTM solar shapes are aligned with the underlying load shapes
  - LFU bins 1 – 2: 2013
  - LFU bins 3 – 4: 2018
  - LFU bins 5 – 7: 2017
- Not subject to the Load Forecast Uncertainty (LFU) multipliers

Supply-side modeling

- Modeled as positive DSM units
- Modeled using the recent 5 years of hourly profiles
  - The impact assessment presented herein uses 2019 – 2023 shapes
- One of the historical shapes is chosen randomly for each replication during the Multi-Area Reliability Simulation (MARS) analysis
  - The selection will be consistent with the selection of the other DSM resources

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Impact Assessment

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Sensitivity Analysis Results (Tan45)

	IRM	J LCR	K LCR	G-J Locality
2025-2026 IRM PBC	23.60%	75.98%	102.52%	87.54%
Sensitivity #7 - BTM Solar Modeling	24.65%	76.88%	104.14%	88.20%
Delta	*1.05%*	*0.90%*	*1.62%*	*0.66%*

	LOLE (days/yr.)	LOLH (hours/yr.)	EUE (MWh/yr.)	Normalized EUE "Simple Method" (ppm)	Normalized EUE "Bin Method" (ppm)
2025-2026 IRM PBC	0.100	0.388	234.724	1.554	1.386
BTM Solar Modeling	0.100	0.410	260.175	1.723	1.537

- **Modeling BTM solar as a supply resource would have increased the IRM for the 2025-2026 IRM PBC by 1.05%**
  - The increase is due to the probabilistic nature of the BTM solar modeling construct which increases randomness and uncertainty in the model
- **The locational capacity requirements (LCRs) for the 2025-2026 IRM PBC, as determined using the Tan45 methodology, would also have increased**
  - The Load Zone K LCR would have increased by a greater margin because the quantity of BTM solar in Load Zone K is almost double that of Load Zone J
- **Modeling BTM solar as a supply resource in the 2025-2026 IRM PBC database would have increased both the Loss of Load Hours (LOLH) and Expected Unserved Energy (EUE)**
  - The BTM solar modeling construct increases randomness and uncertainty in the model

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Next Steps

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Next Steps

- Consider a potential impact assessment of modeling BTM solar as a supply resource in the 2025-2026 IRM Final Base Case (FBC)
- Provide ongoing updates to the ICS to share progress and solicit feedback

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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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