

NYCA Renewables 2024

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Agenda

- Overview of NY Wind
- Economic Wind Curtailments
- Overview of NY BTM and FTM Solar
- Coincident Wind and Solar
- Load Ramps
- Questions

Background on Metrics

- Wind and FTM solar data accounts for all units installed in the NYCA. Due to confidentiality concerns, offshore wind is not reported within zonal metrics.
- Unless otherwise stated, Wind and Solar Capacity Factors are inclusive of ALL hours in 2024 and do not adjust for periods of resource outages or derates.
- Behind-the-meter (BTM) Solar production and capacity factors are based on estimates from NYISO's Solar/PV monitoring vendor. They are influenced by the pitch and tilt of the sampled installations being used to scale up production estimates. They are not a direct measurement of total solar production.
- Capacity Factors are calculated as follows:

$$\text{Wind and FTM Solar Capacity Factor} = \frac{\text{Total Generated AC MW Energy}}{(\text{AC MW Nameplate Capacity})(\text{Total Hours})}$$

$$\text{BTM Solar Capacity Factor} = \frac{\text{Total Generated AC MW Energy}}{(\text{DC MW Nameplate Capacity})(\text{Total Hours})}$$

Past Presentations and Datasets

For those interested, Annual Renewable Presentations and hourly data sets from prior years can be found at the locations below.

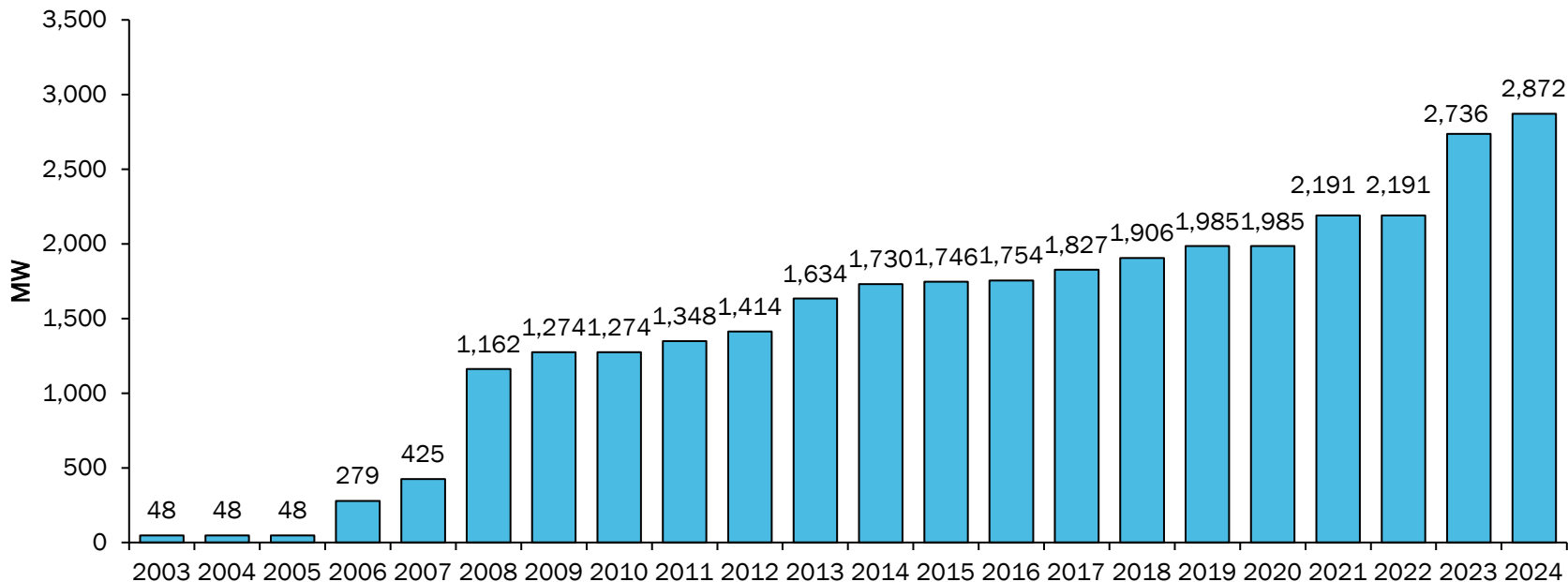
<https://www.nyiso.com/reports-information>

- Under ‘Links’
 - BTM Solar Information
- Under ‘Reports’
 - Annual Wind and Solar Information

NYCA Wind 2024

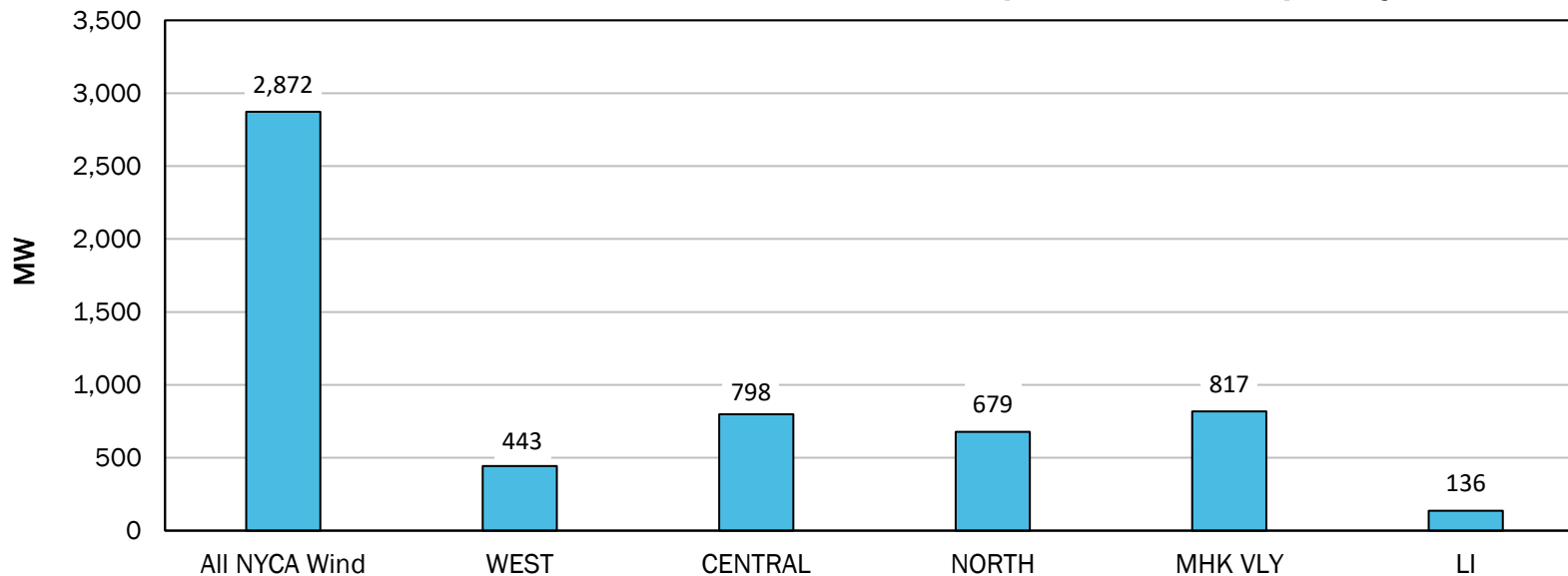
Wind Overview

End of Year NYCA Wind Nameplate Capacity



Zonal Wind Capacity

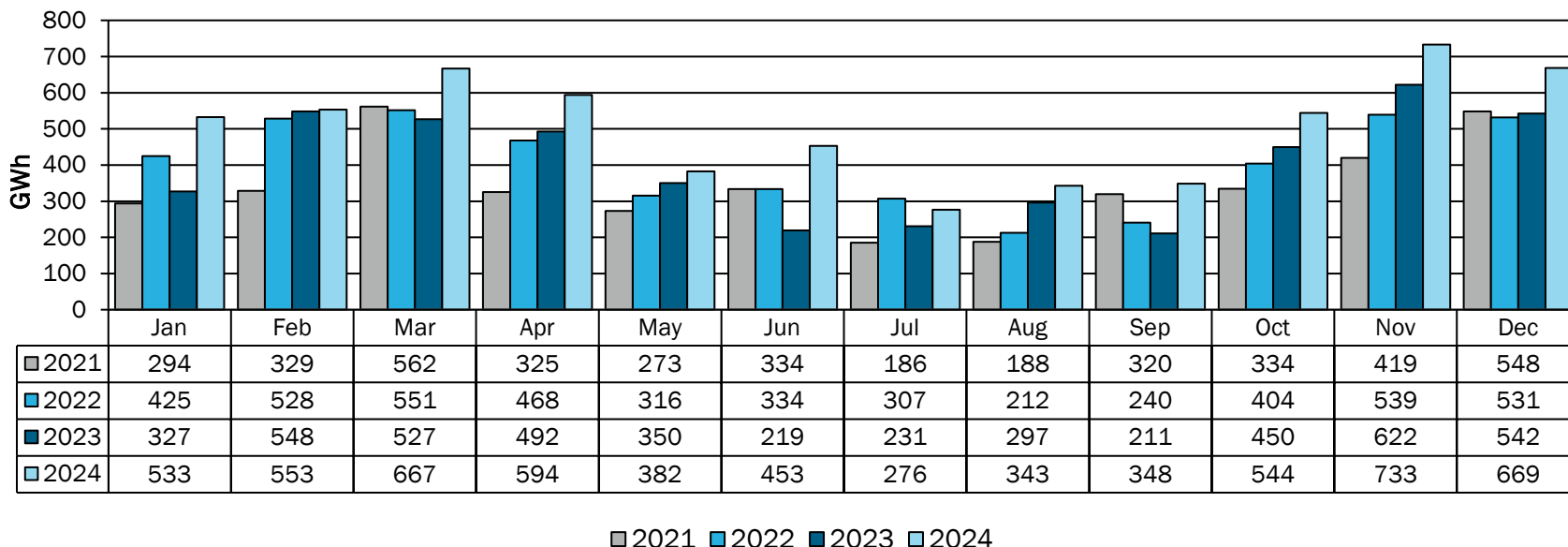
2024 End of Year Installed Nameplate Wind Capacity



NY Wind Generation

Total Annual Wind Production (GWh)			
2021	2022	2023	2024
4,111	4,856	4,815	6,096

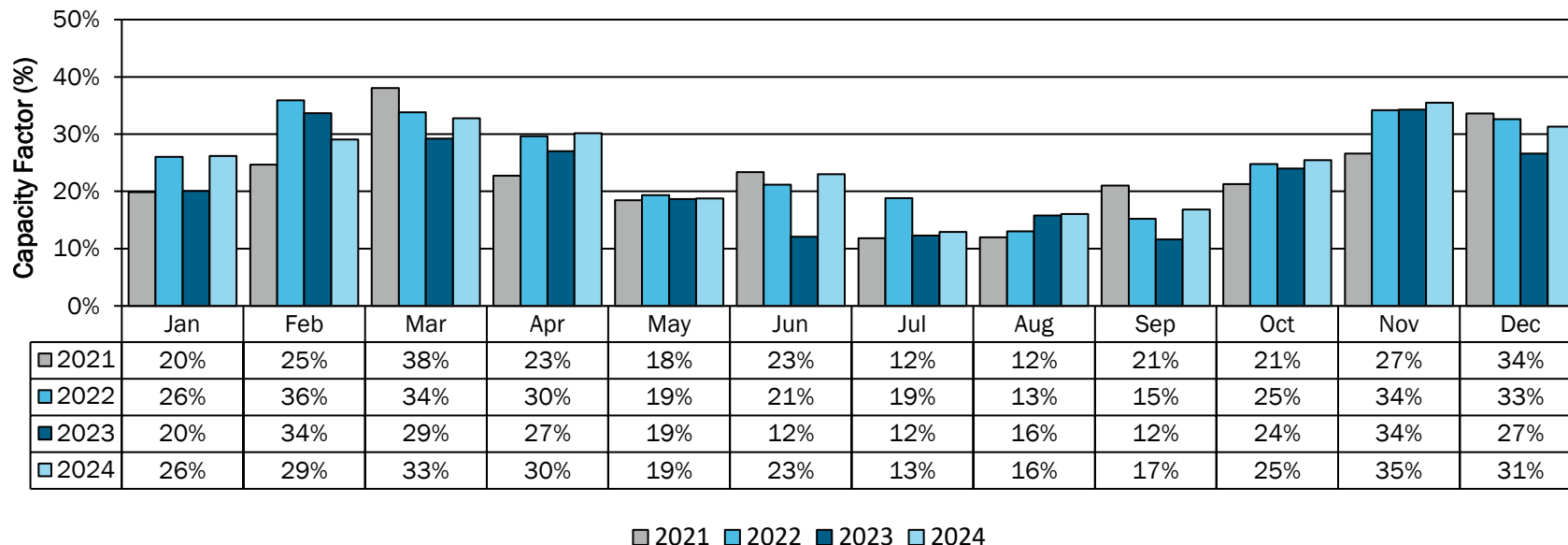
NYCA Wind Plants - Monthly Production



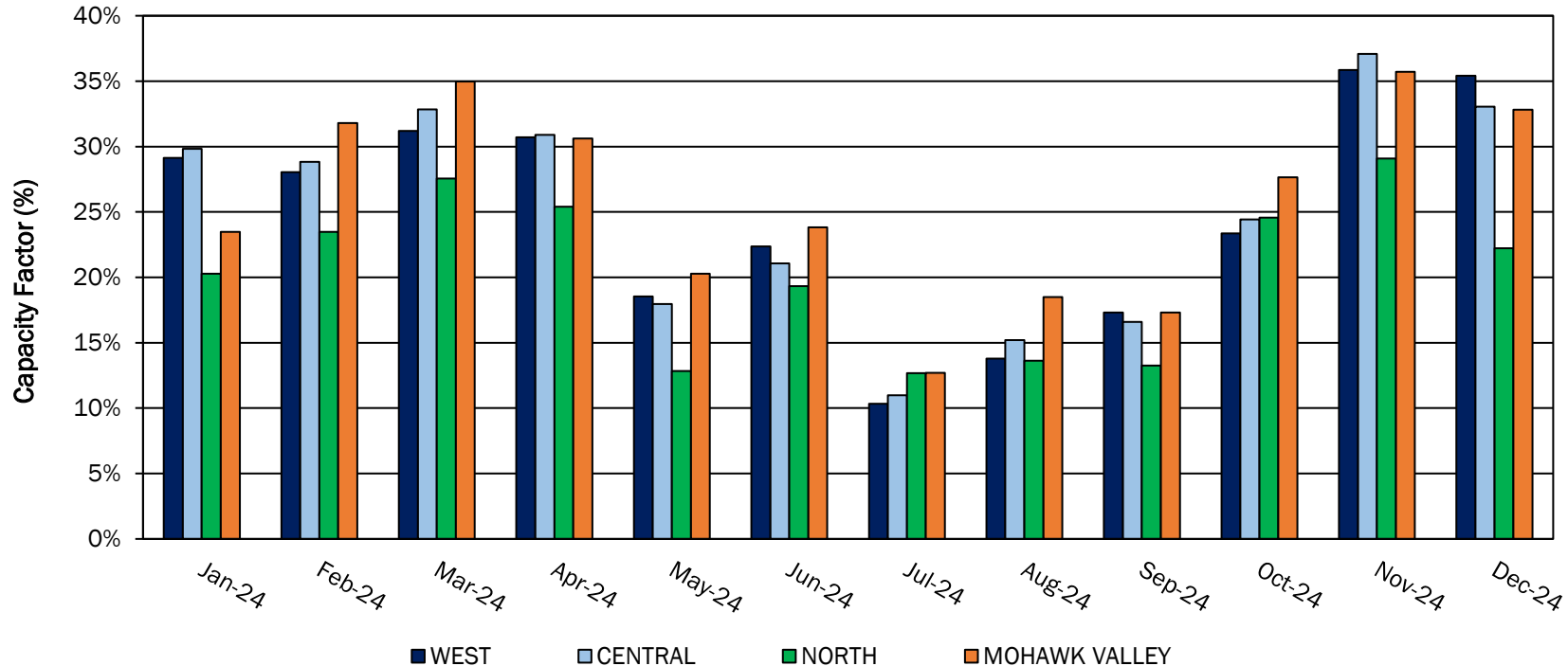
NY Wind Capacity Factors

Annual Wind Capacity Factor			
2021	2022	2023	2024
23%	25%	22%	25%

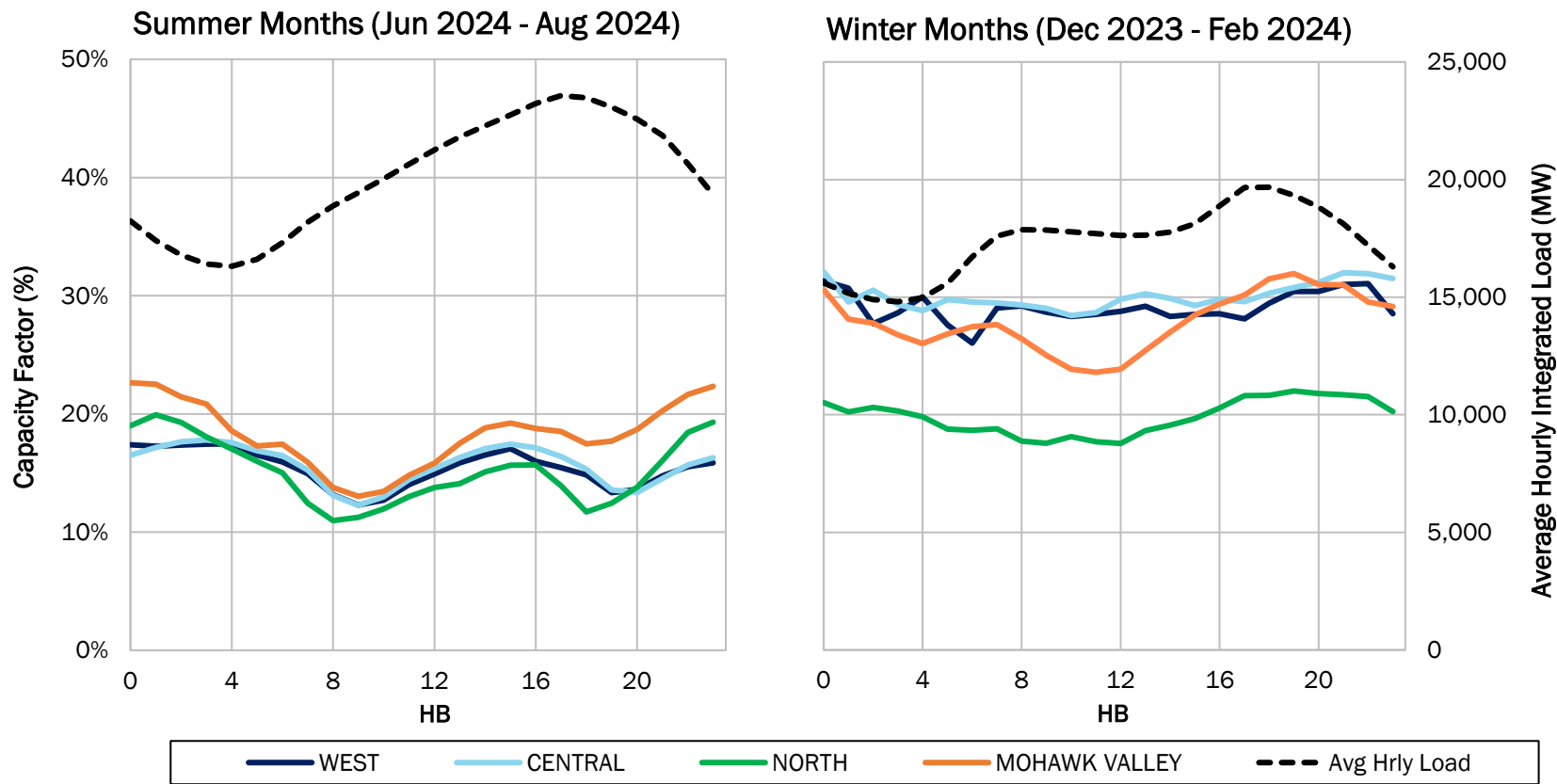
NYCA Wind Generation – Monthly Capacity Factor



Monthly Wind Capacity Factors by Zone

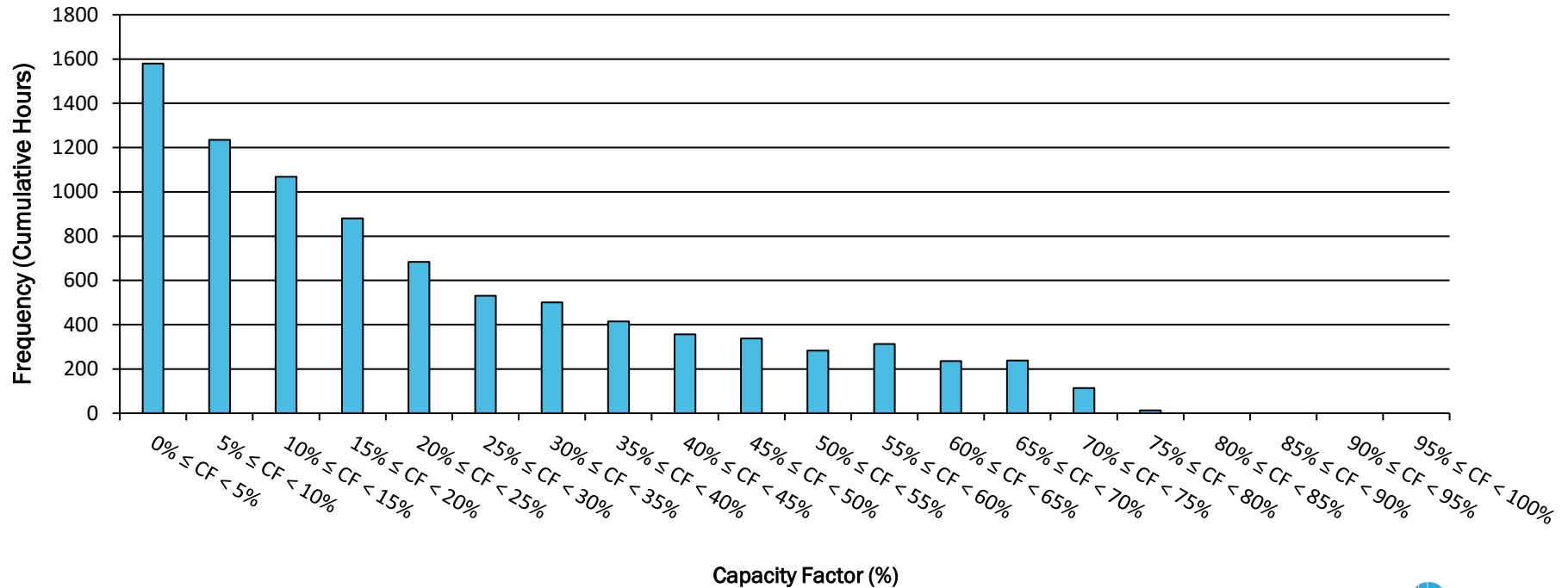


2024 Seasonal Average Hourly Wind Capacity Factors by Zone



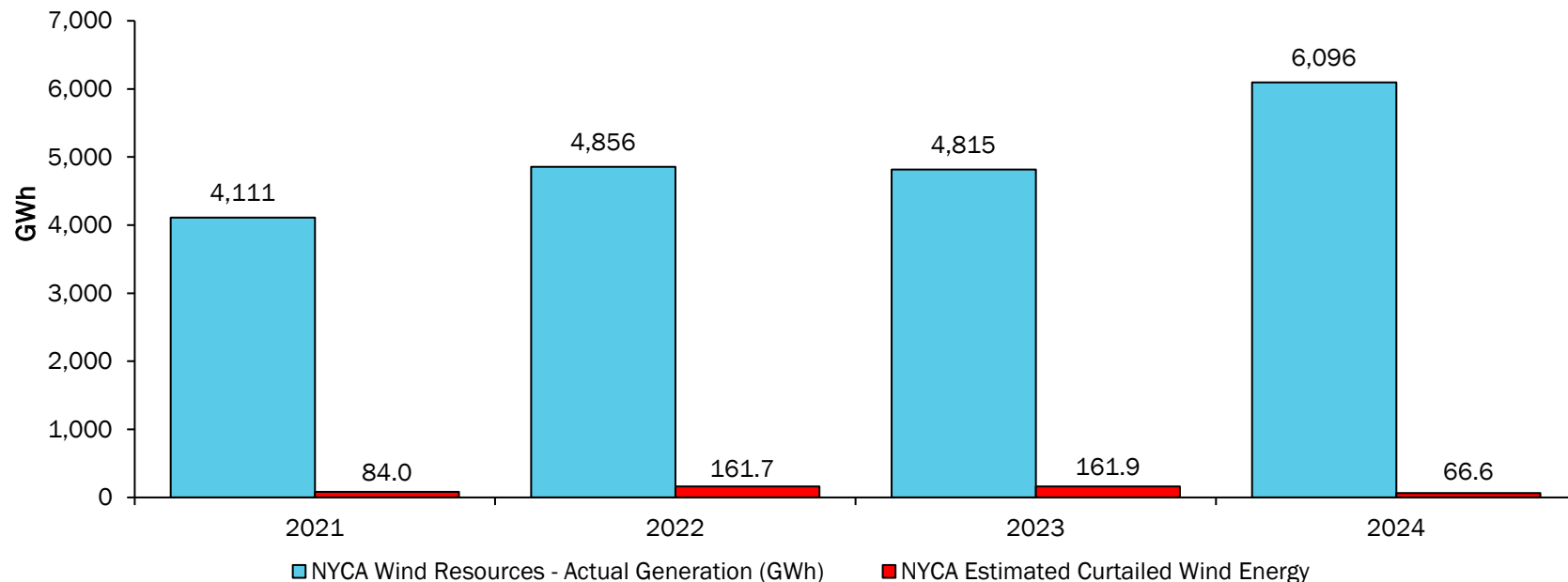
2024 NY Wind Capacity Factor Distribution

Hourly Capacity Factor (CF) Distribution for 2024



Economic Wind Curtailments

NYCA Wind Plants - Annual Production & Economic Curtailments*

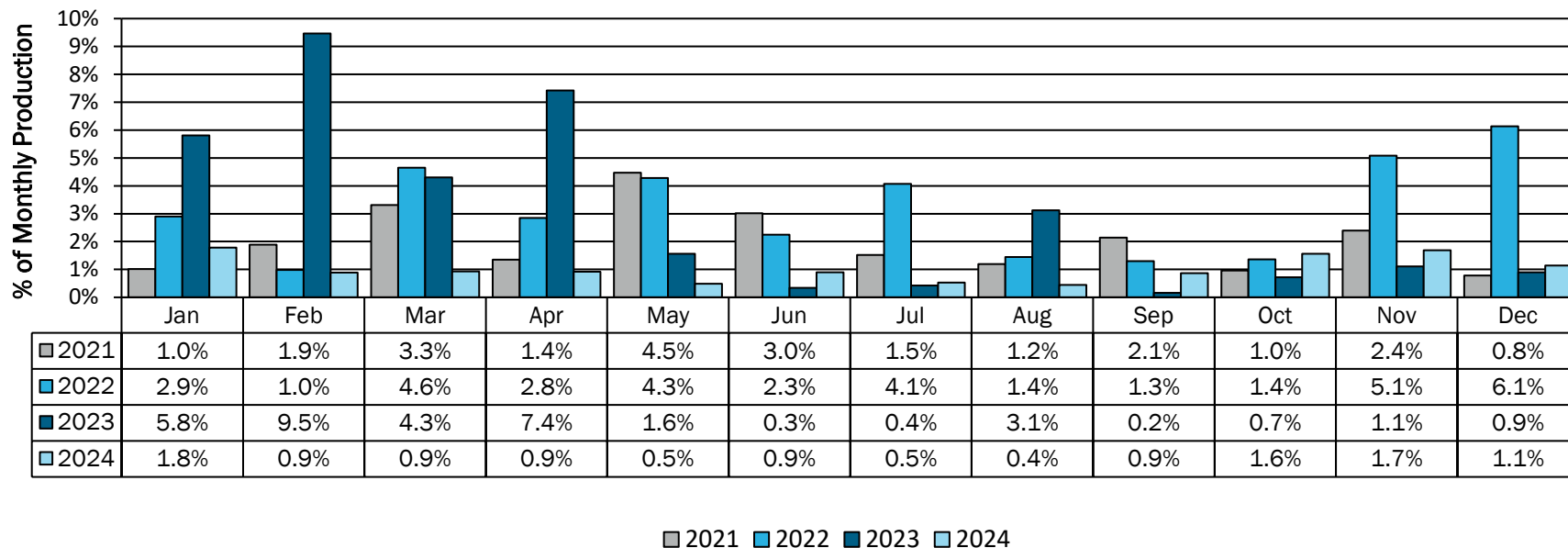


*Economic Curtailments are instructions sent to Wind Units to limit their output. The instructions come from NYISO's real-time dispatch market evaluation and are most often associated with transmission constraints or gen-to-load balancing constraints.

NY Economic Wind Curtailments

Total Estimated Curtailed Energy %			
2021	2022	2023	2024
2.0%	3.3%	3.4%	1.1%

NYCA Wind Plants - Monthly Estimated Curtailed Energy %

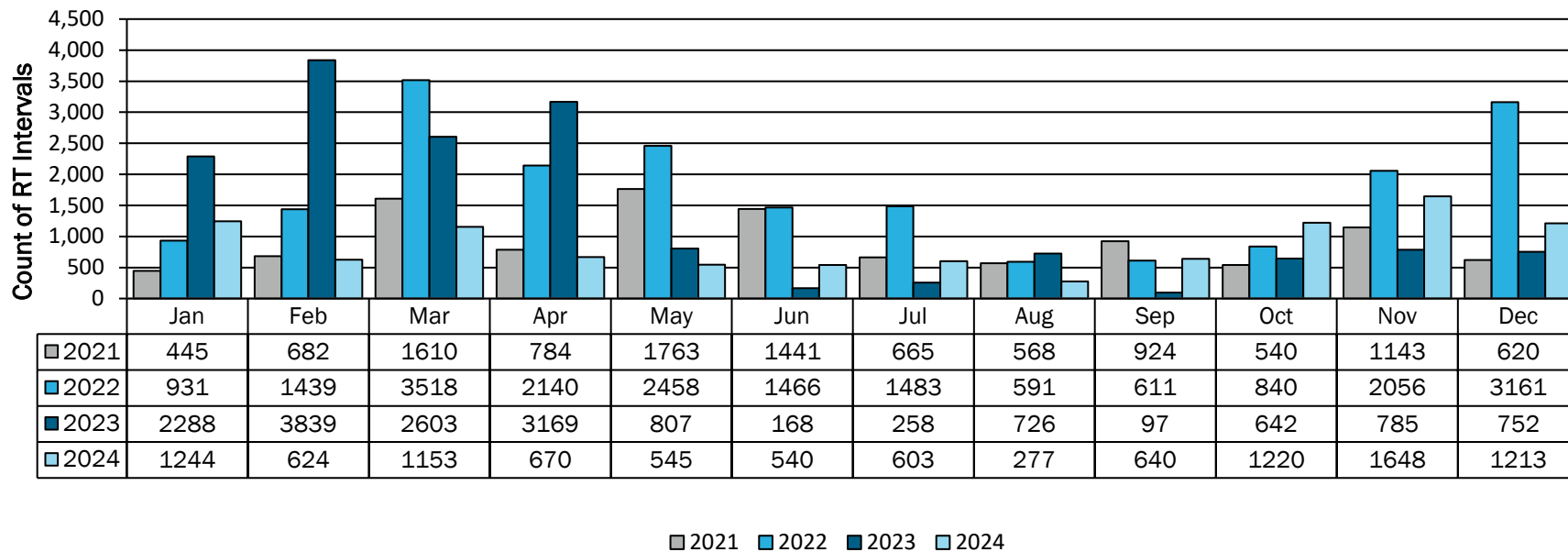


NY Economic Wind Curtailments

Total Estimated Curtailed Interval Count			
2021	2022	2023	2024
11,185	20,694	16,134	10,377

NYCA Wind Plants - Monthly Estimated Curtailed Interval Count

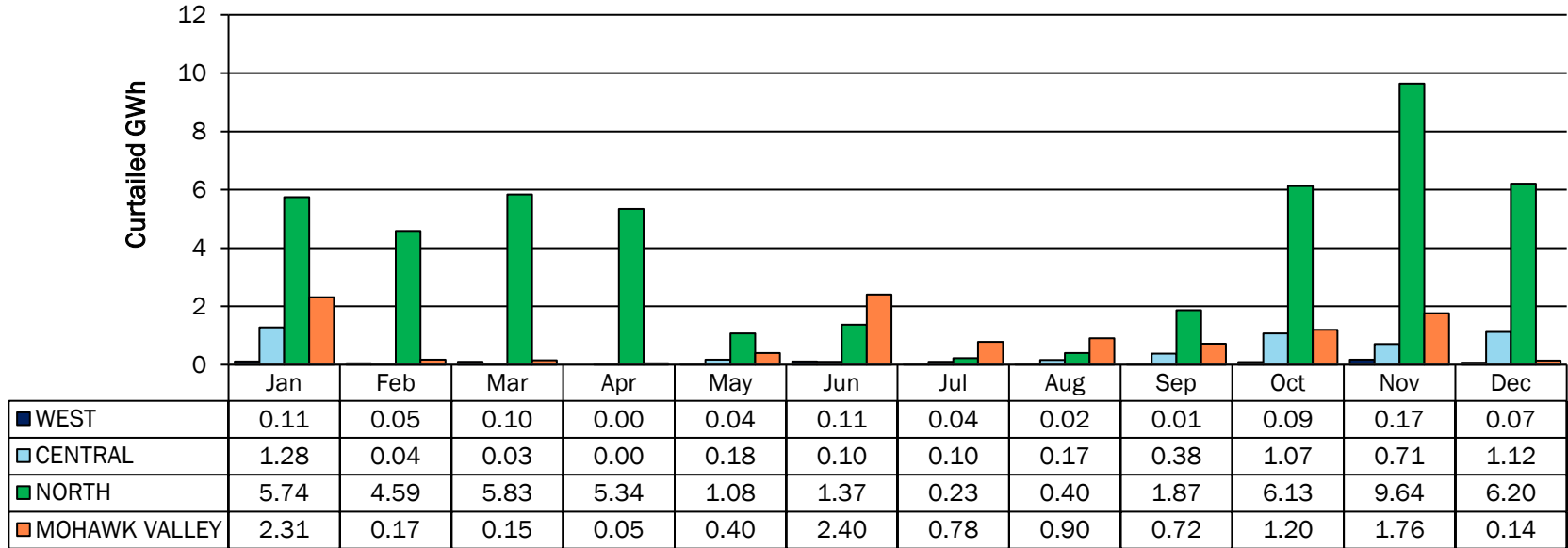
(12 Intervals = 1 Hour)



NY Economic Wind Curtailments

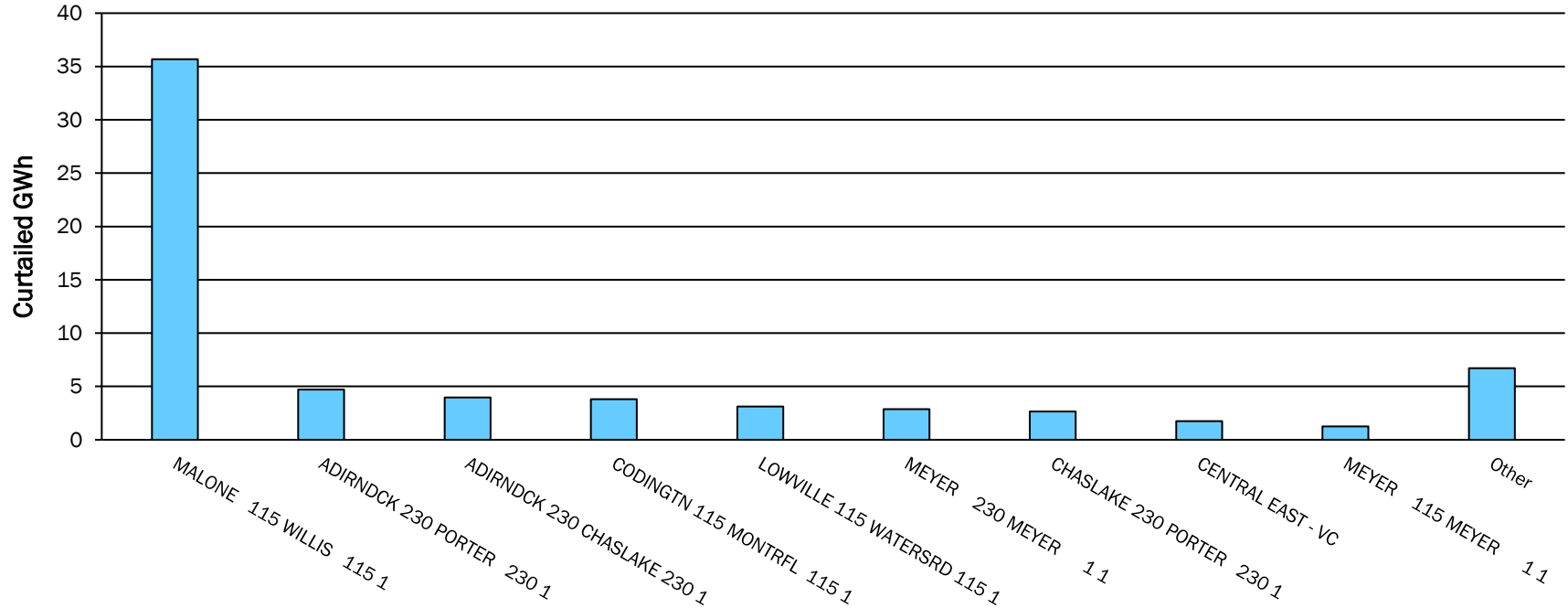
Total Annual Estimated Curtailed Energy (GWh)			
West	Central	North	Mohawk Valley
0.80	5.18	48.42	10.99

NYCA Zones - Monthly Estimated Curtailed Energy for 2024



NY Economic Wind Curtailments

NYCA Wind Plants 2024 - Annual Curtailed Energy by Limiting Facility



Solar 2024

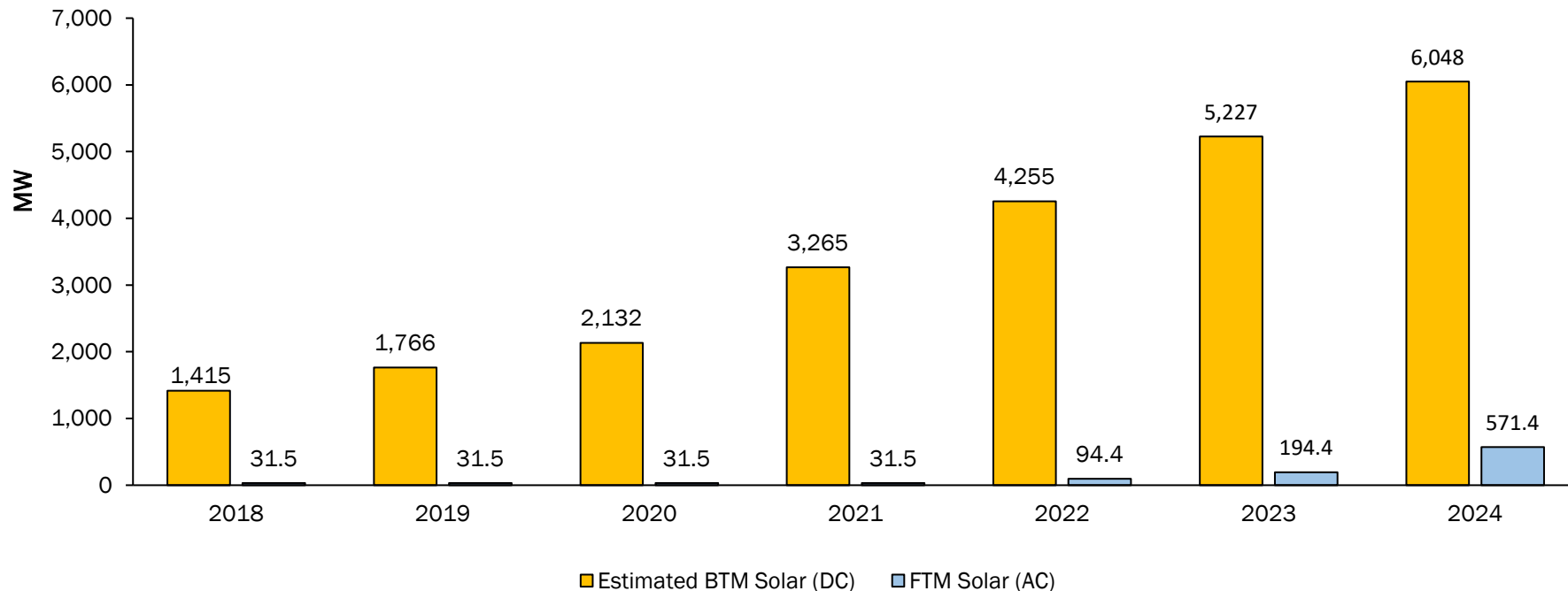
Behind-the-Meter (BTM) & Front-of-the-Meter (FTM)

BTM Solar Data Monitoring

- The NYISO's Solar/PV monitoring vendor automatically tracks the real-time power output of a sampling of solar production sites across NY
- The sampled sites are geographically distributed substantially the same as the total BTM facilities in the state
- BTM solar production, at the zonal level, is calculated by scaling up the vendor's readings to the estimated BTM solar installed capacity
- NYISO closely tracks BTM solar PV installed capacity in the NY SUN (MW DC) and NY DPS Standard Interconnection Request (SIR) databases (MW AC) to develop an accurate estimate of BTM solar installed capacity in MW DC
- Inverter and module information are available from the NYSEDA NY Sun database and California Energy Commission datasets. The latter two datasets are used to estimate the total DC installed capacity in the NYCA.
- At the end of 2024, BTM Solar Capacity was estimated to be 6,048 MW (DC)

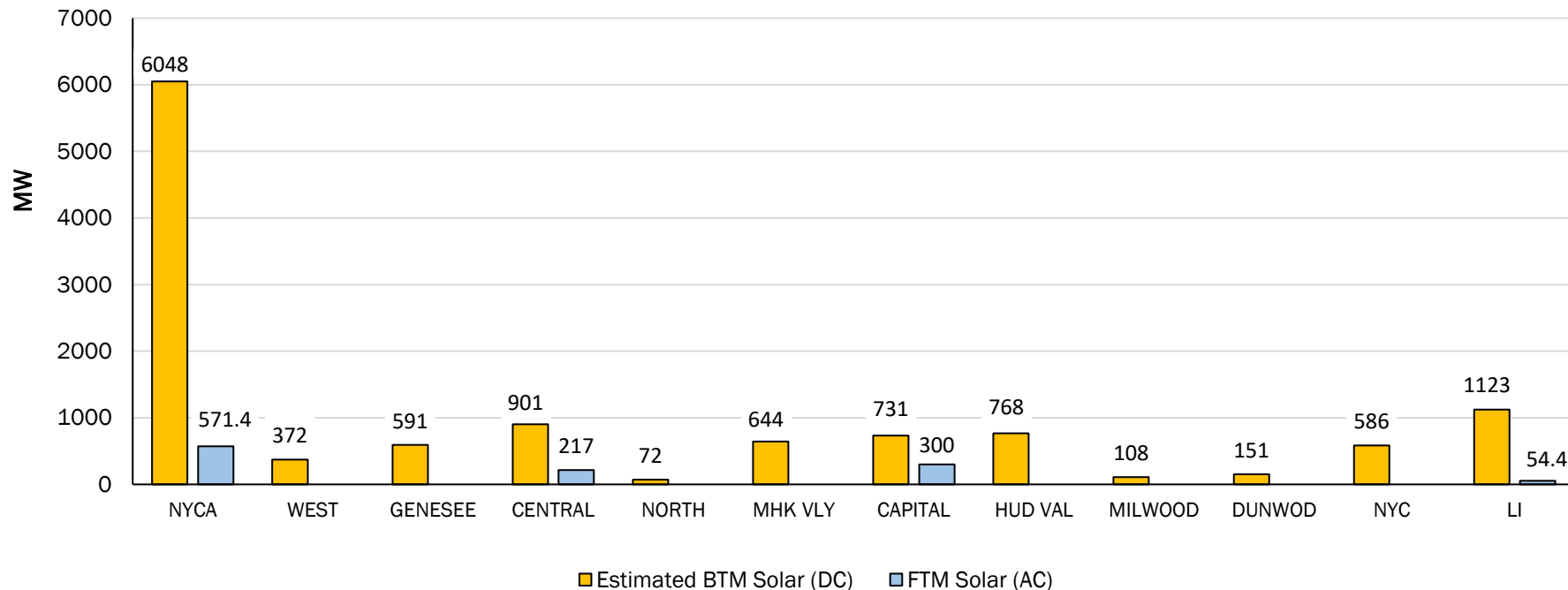
Solar Overview

End of Year NYCA Solar Nameplate Capacity



Zonal Solar Capacity

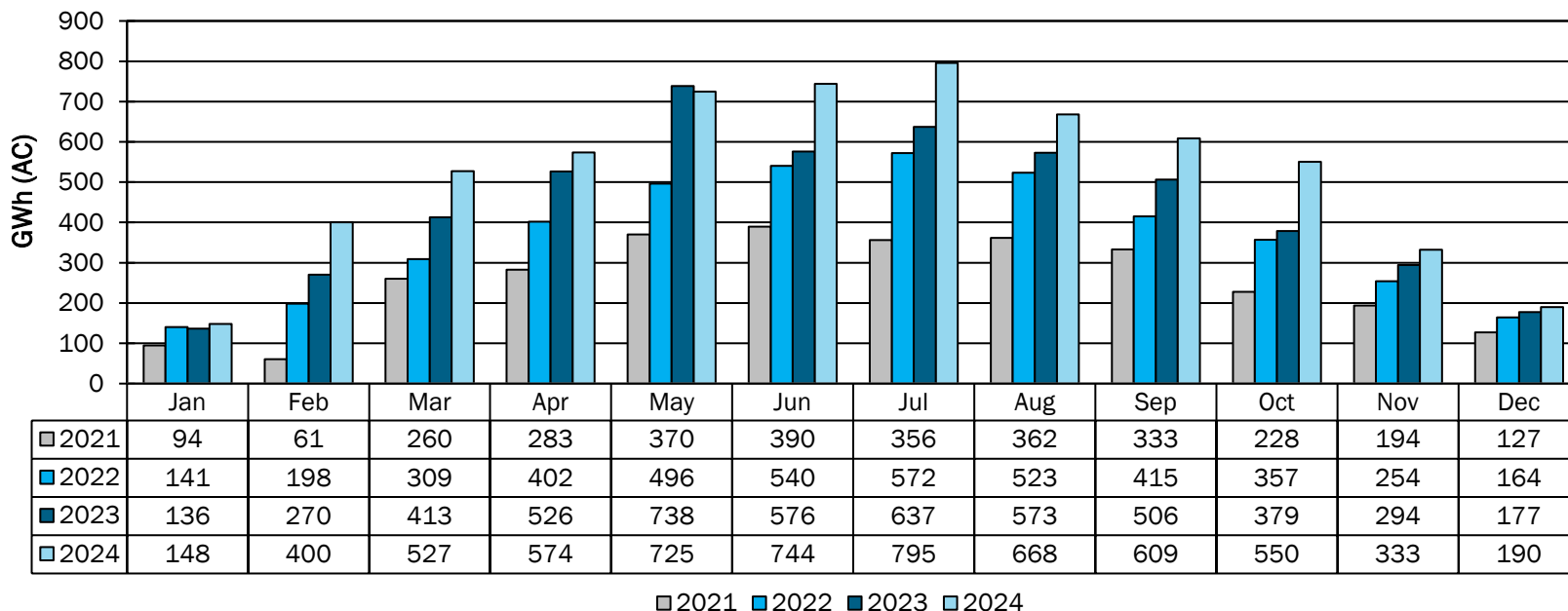
Estimated 2024 End Of Year Solar Capacity



NY BTM Solar Generation

Total Annual BTM Solar Production (GWh)			
2021	2022	2023	2024
3,057	4,372	5,228	6,263

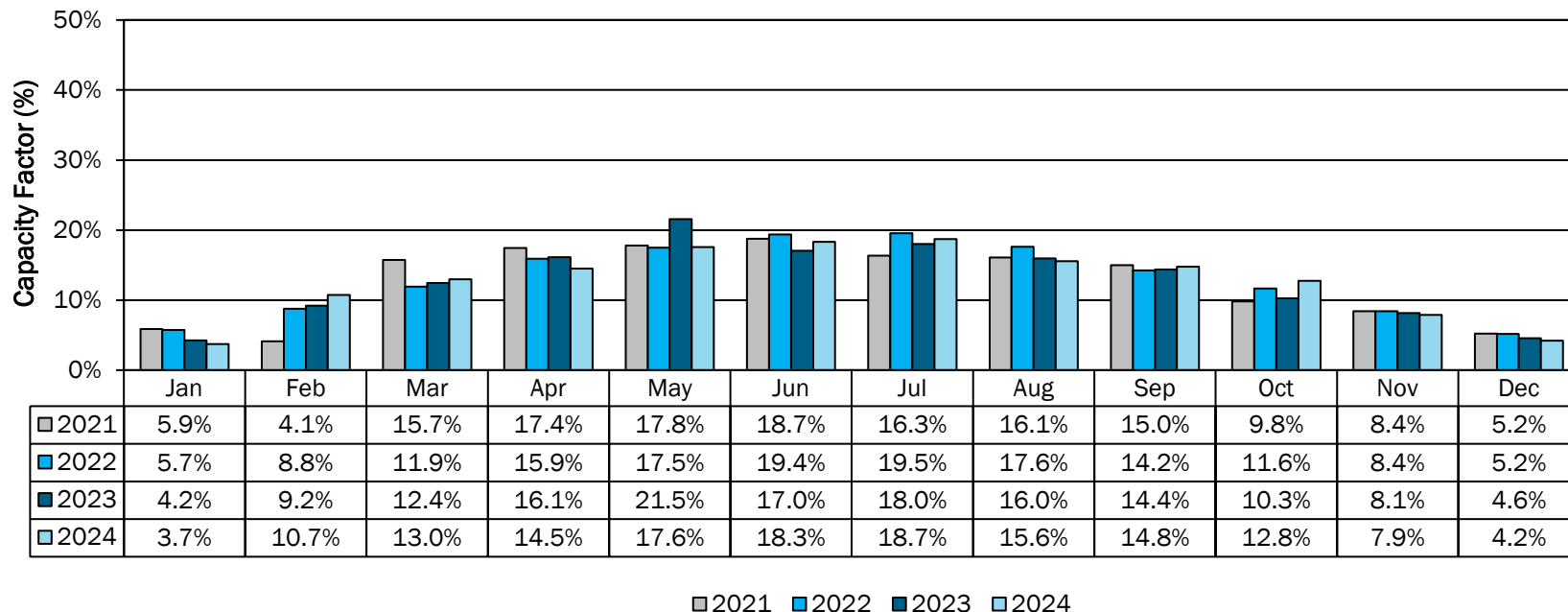
NYCA BTM Solar - Estimated Monthly Production



NY BTM Solar Capacity Factors

Annual BTM Solar Capacity Factor			
2021	2022	2023	2024
12.5%	13.0%	12.7%	12.6%

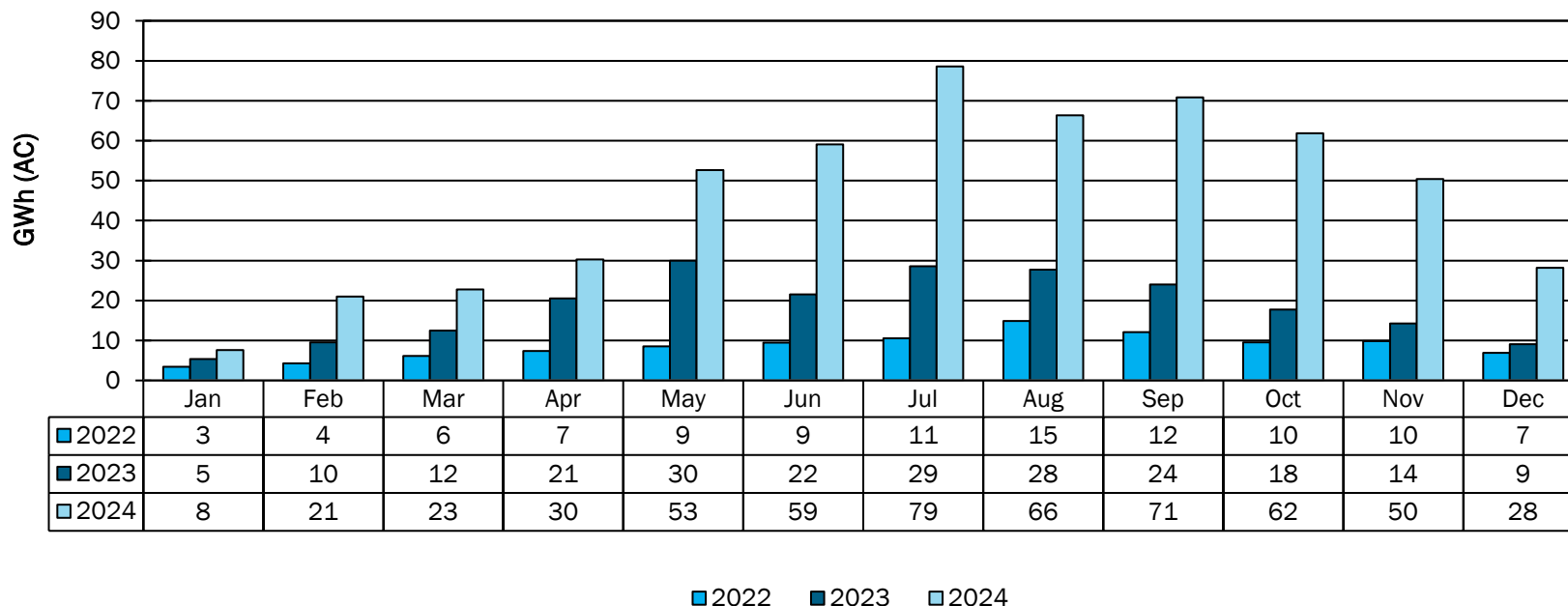
NYCA BTM Solar Generation - Estimated Capacity Factor



NY FTM Solar Generation

Total Annual FTM Solar Production (GWh)		
2022	2023	2024
103	221	550

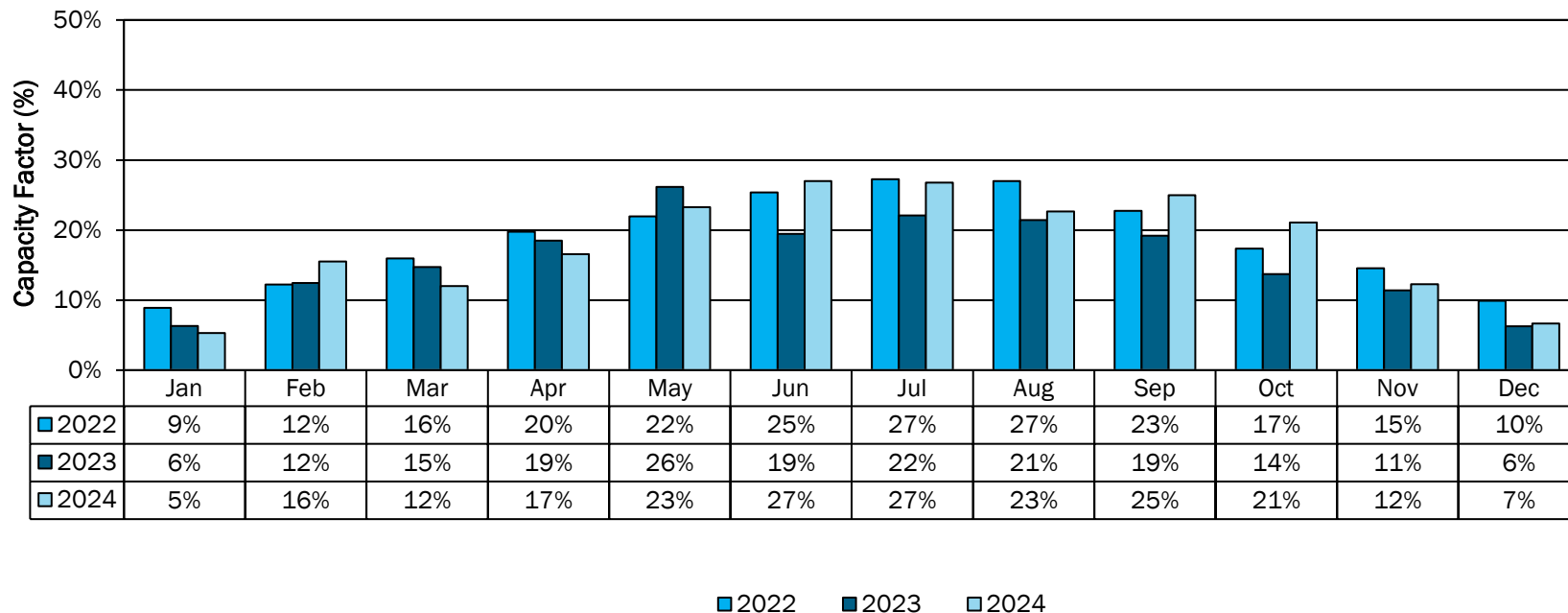
NYCA FTM Solar - Monthly Production



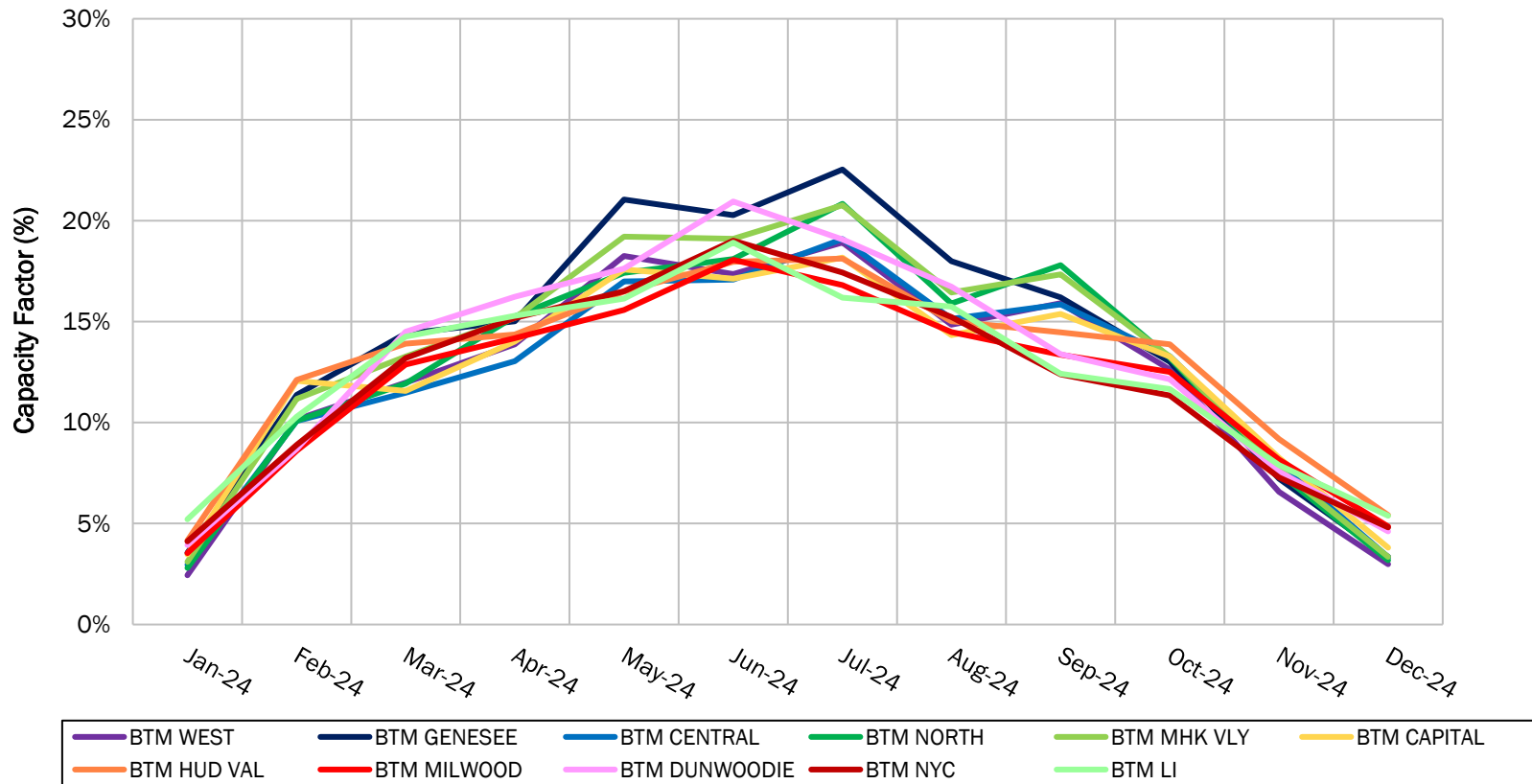
NY FTM Solar Capacity Factors

Annual FTM Solar Capacity Factor		
2022	2023	2024
19%	16%	18%

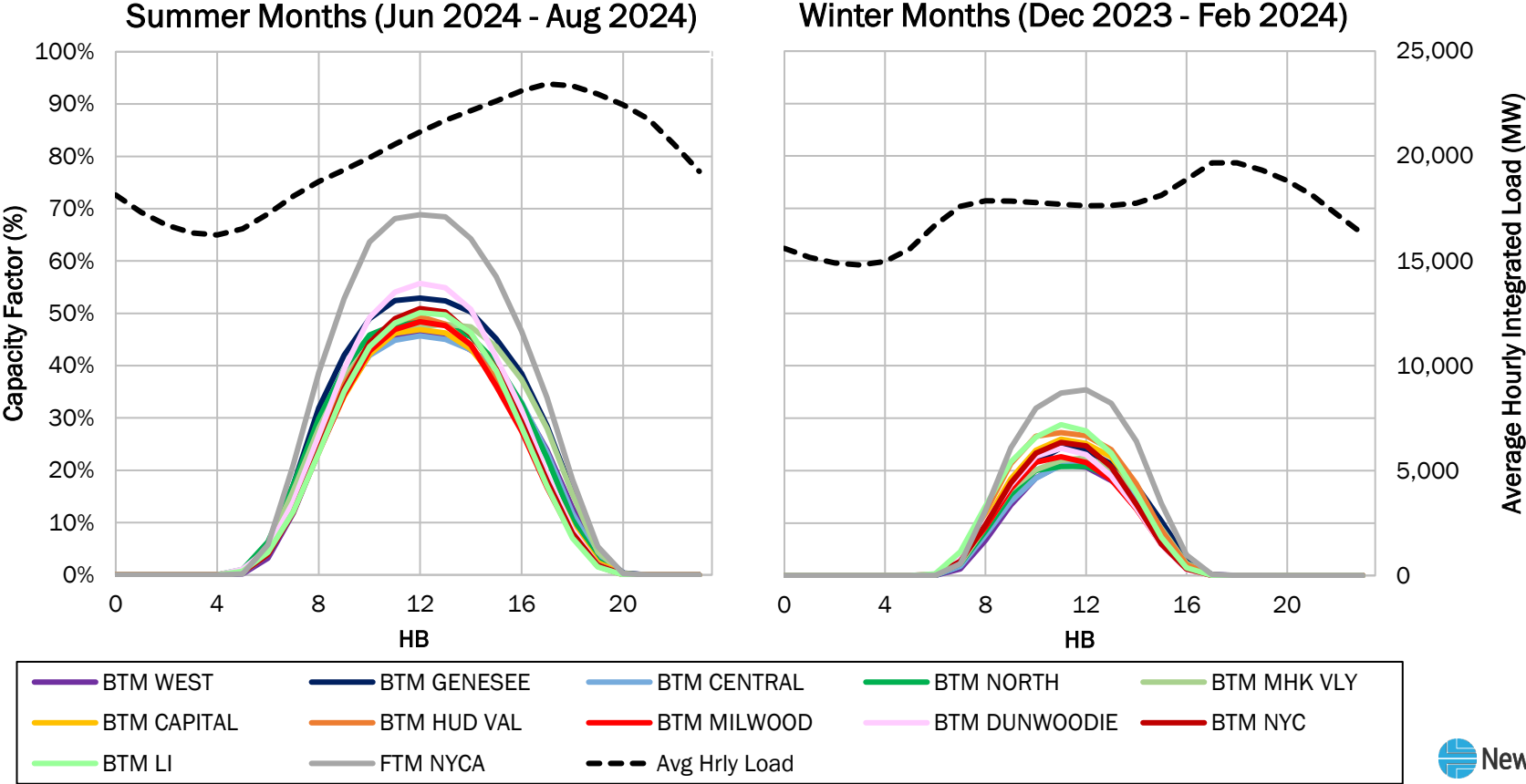
NYCA FTM Solar Generation - Capacity Factor



Monthly BTM Solar Capacity Factors by Zone

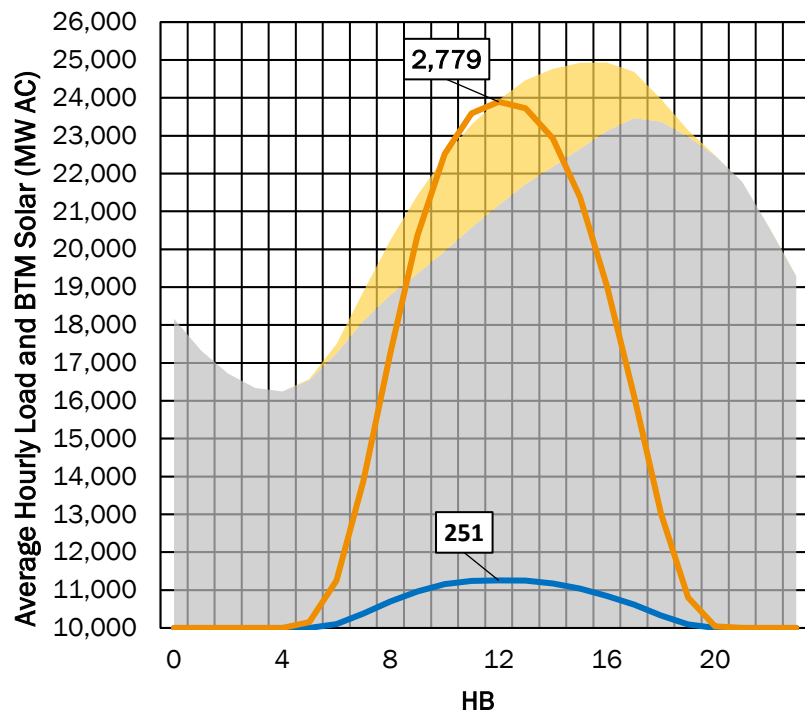


2024 Seasonal Average Hourly Solar Capacity Factors by Zone

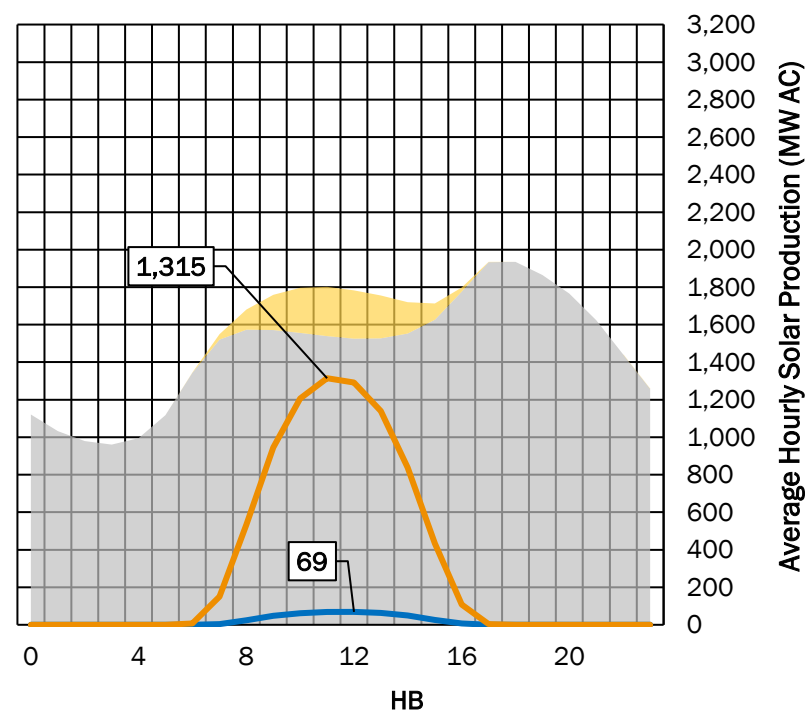


2024 Seasonal Average Hourly Load with Solar Production

Summer Months (Jun 2024 - Aug 2024)



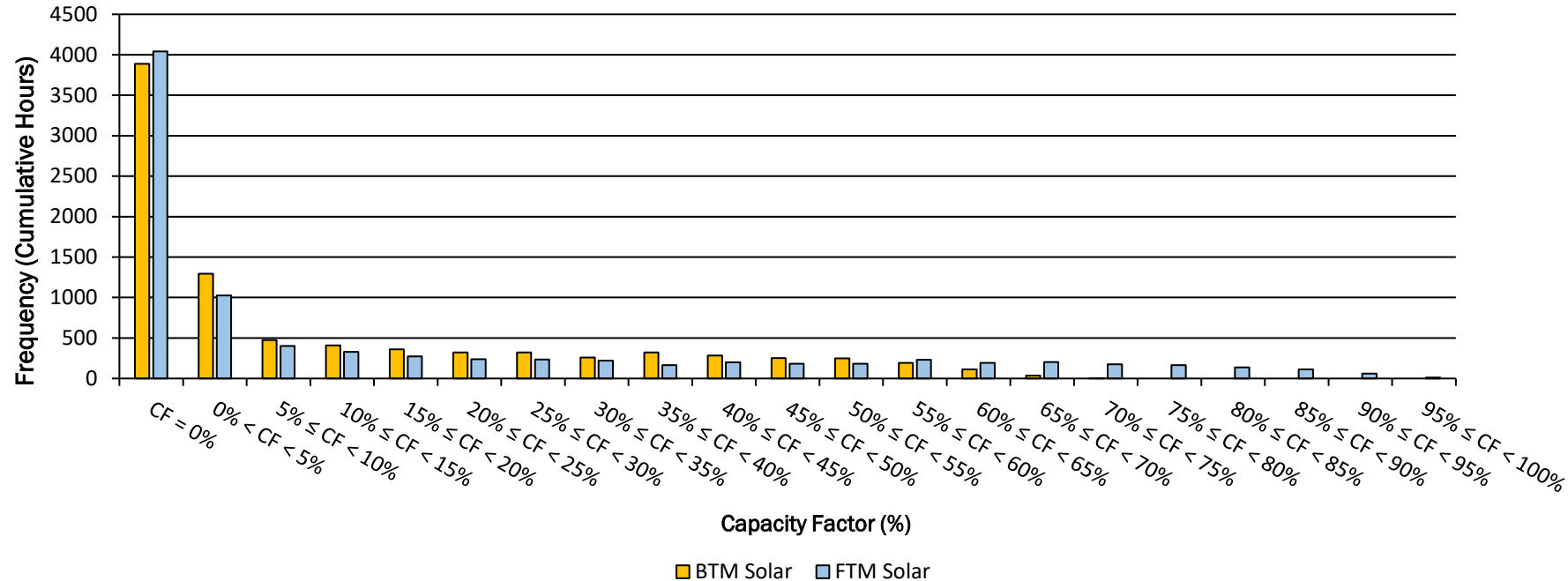
Winter Months (Dec 2023 - Feb 2024)



— Avg Hrly Load — Avg Hrly Load + Avg Hrly BTM Solar — Avg Hrly FTM Solar Production — Avg Hrly BTM Solar Production

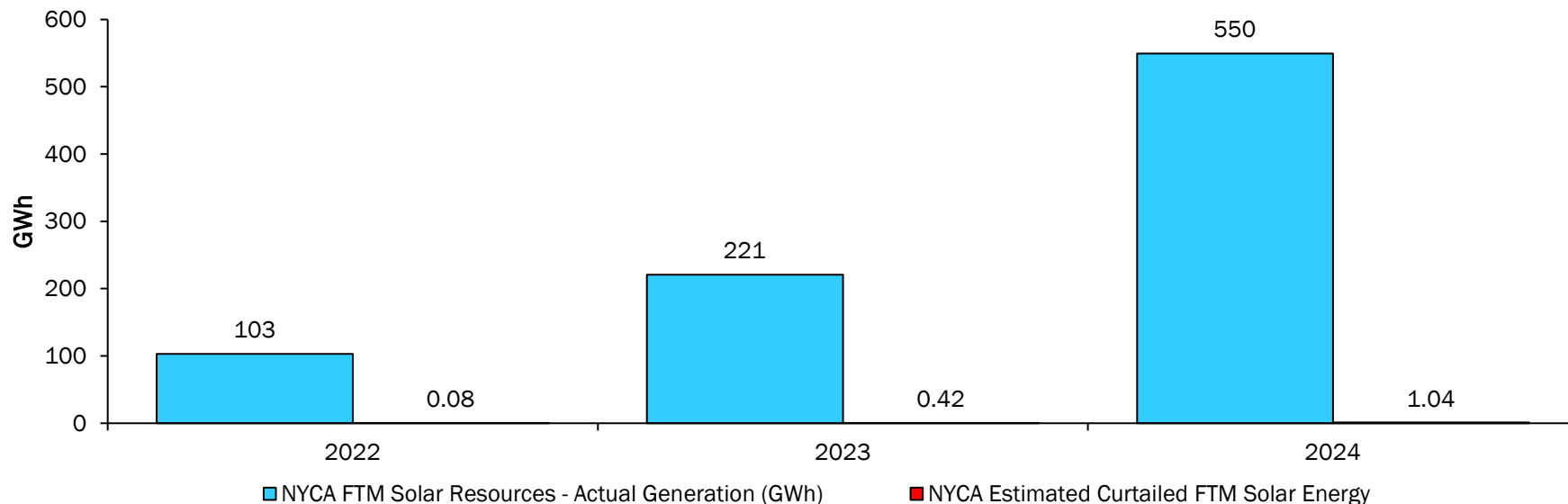
Solar Capacity Factor Distribution

Hourly Capacity Factor (CF) Distribution for 2024



Economic FTM Solar Curtailments

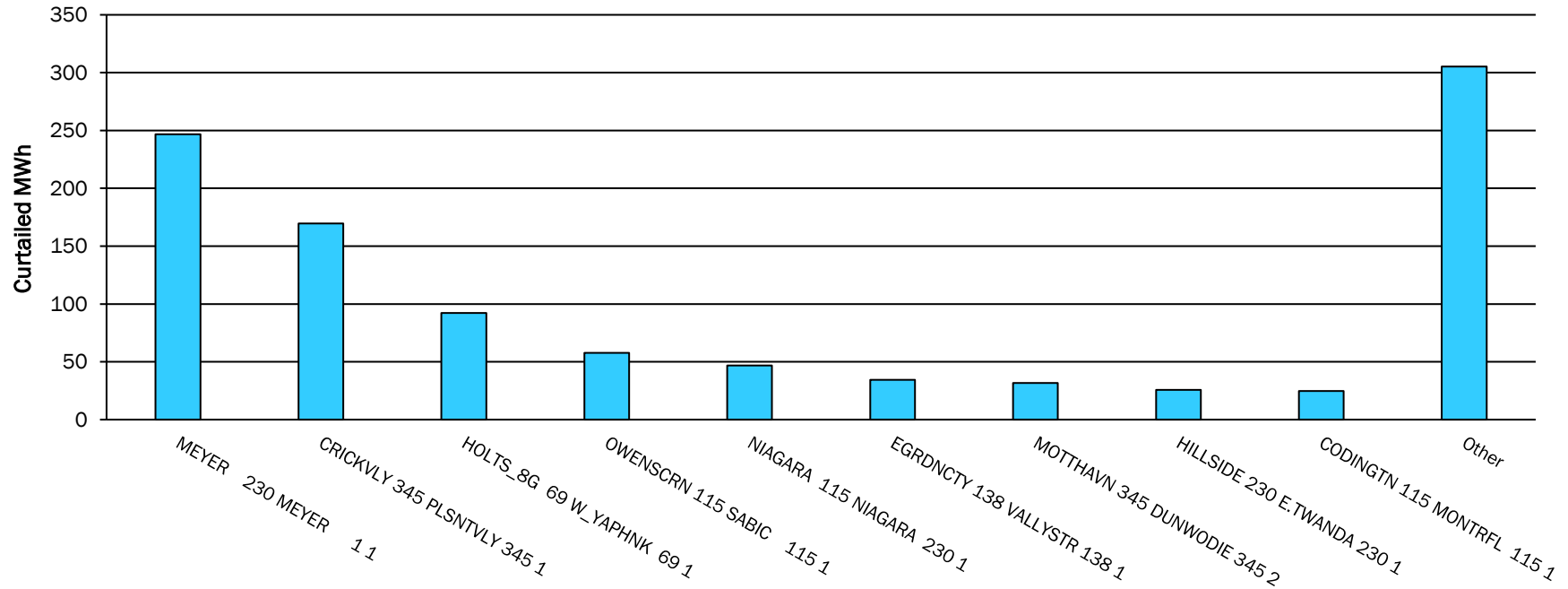
NYCA FTM Solar Plants - Annual Production & Economic Curtailments*



*Economic Curtailments are instructions sent to FTM Solar units to limit their output. The instructions come from NYISO's real-time dispatch market evaluation and are most often associated with transmission constraints or gen-to-load balancing constraints.

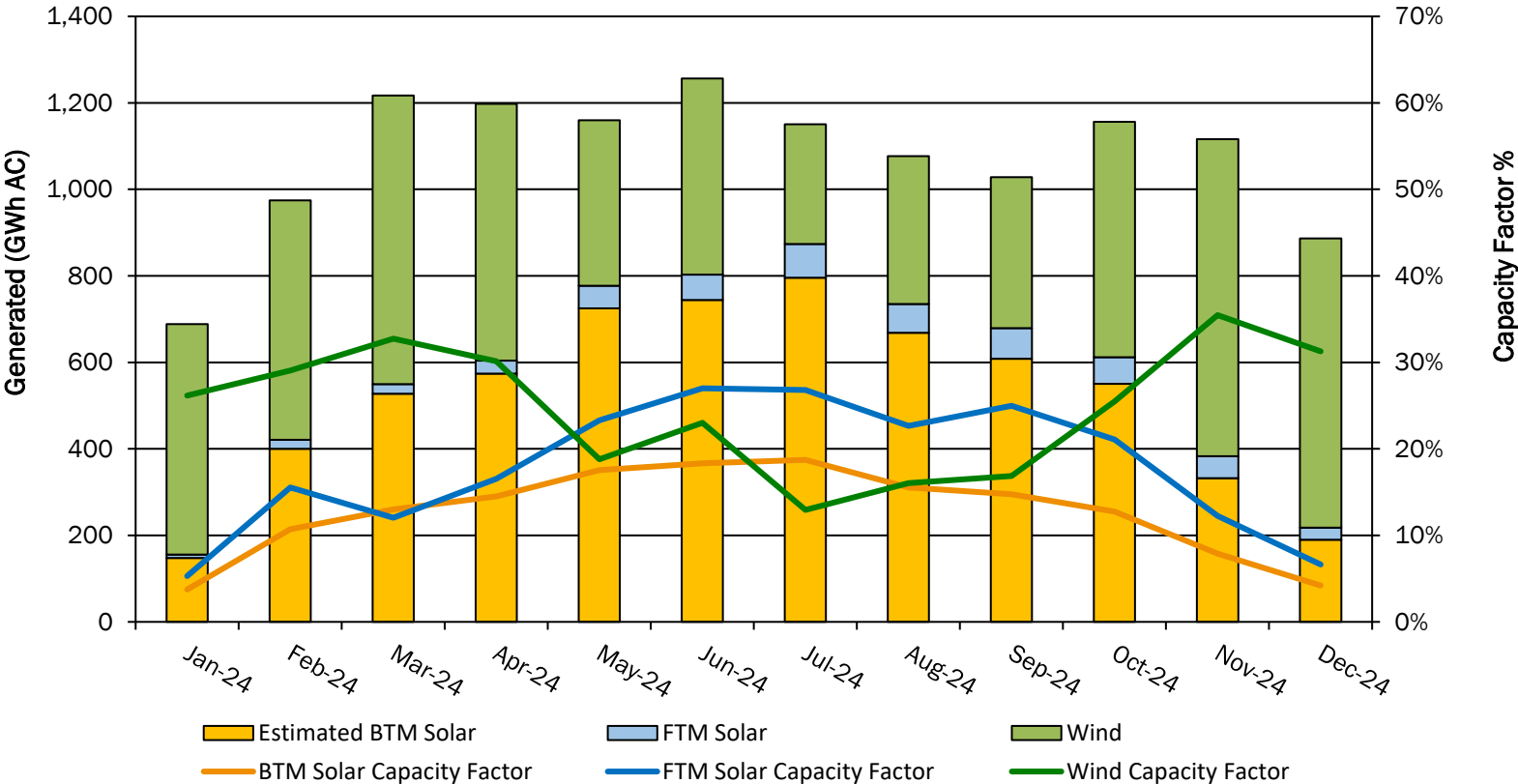
Economic FTM Solar Curtailments

NYCA FTM Solar Plants 2024 - Annual Curtailed Energy by Constraint

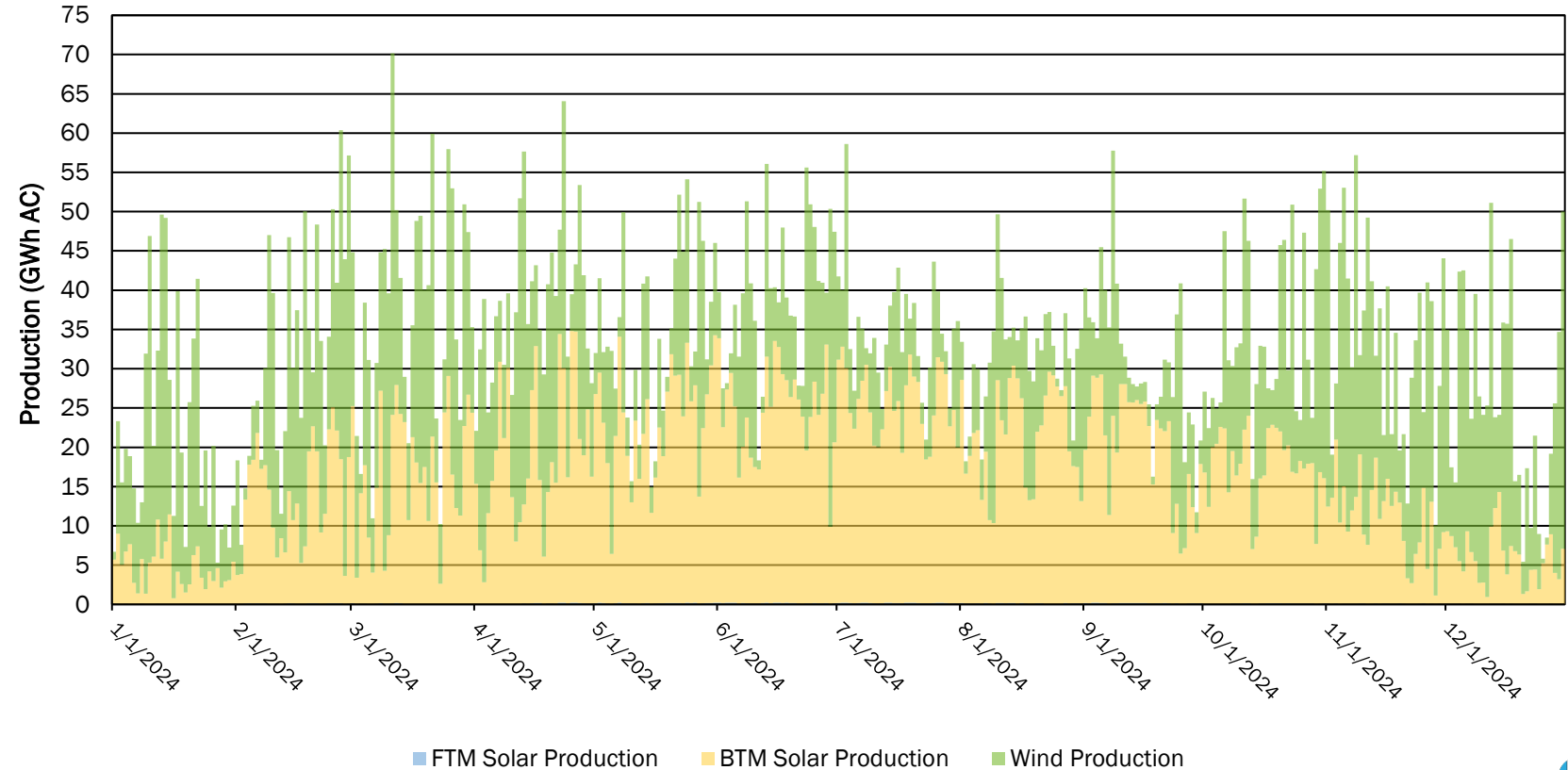


Coincident Wind and Solar

Monthly Wind and Solar Performance (2024)

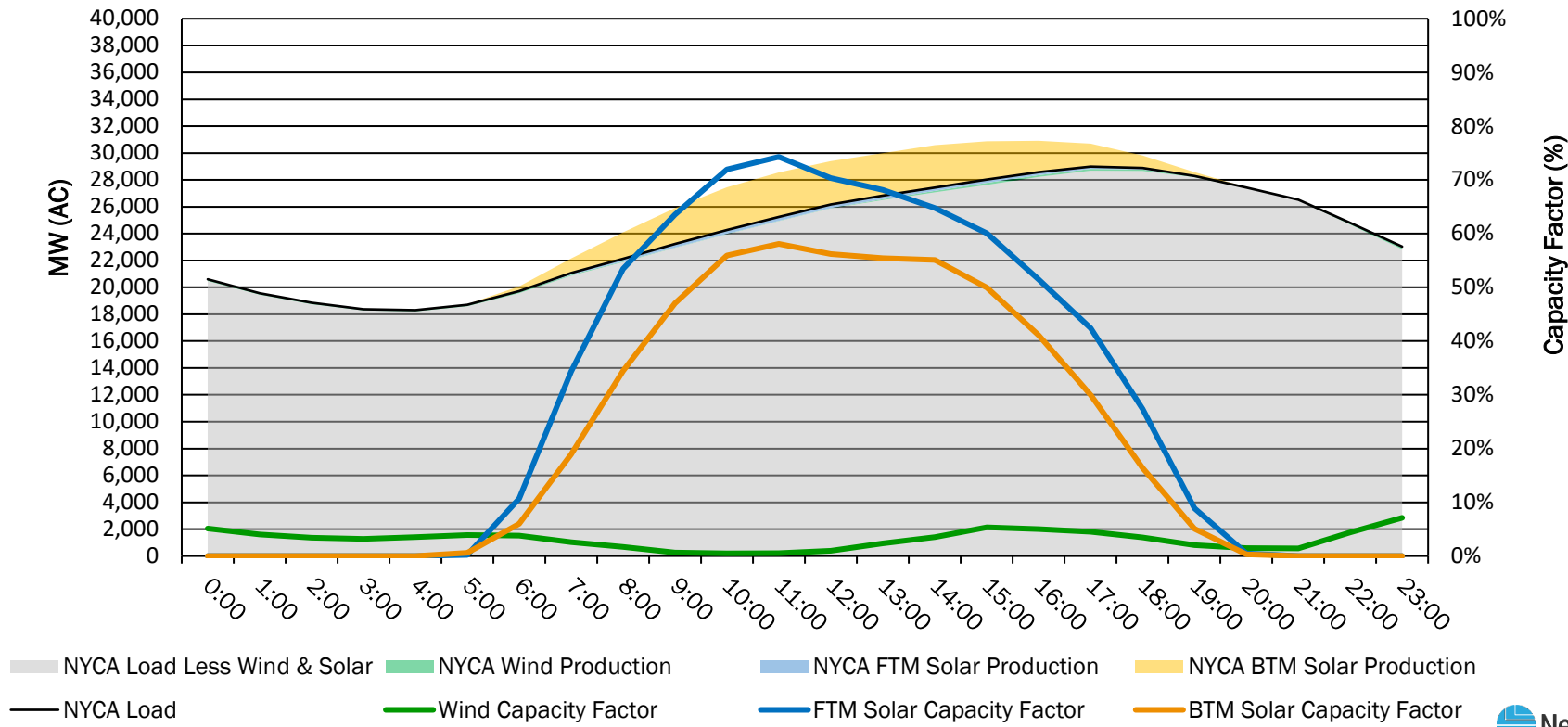


Daily Wind and Solar Performance (2024)



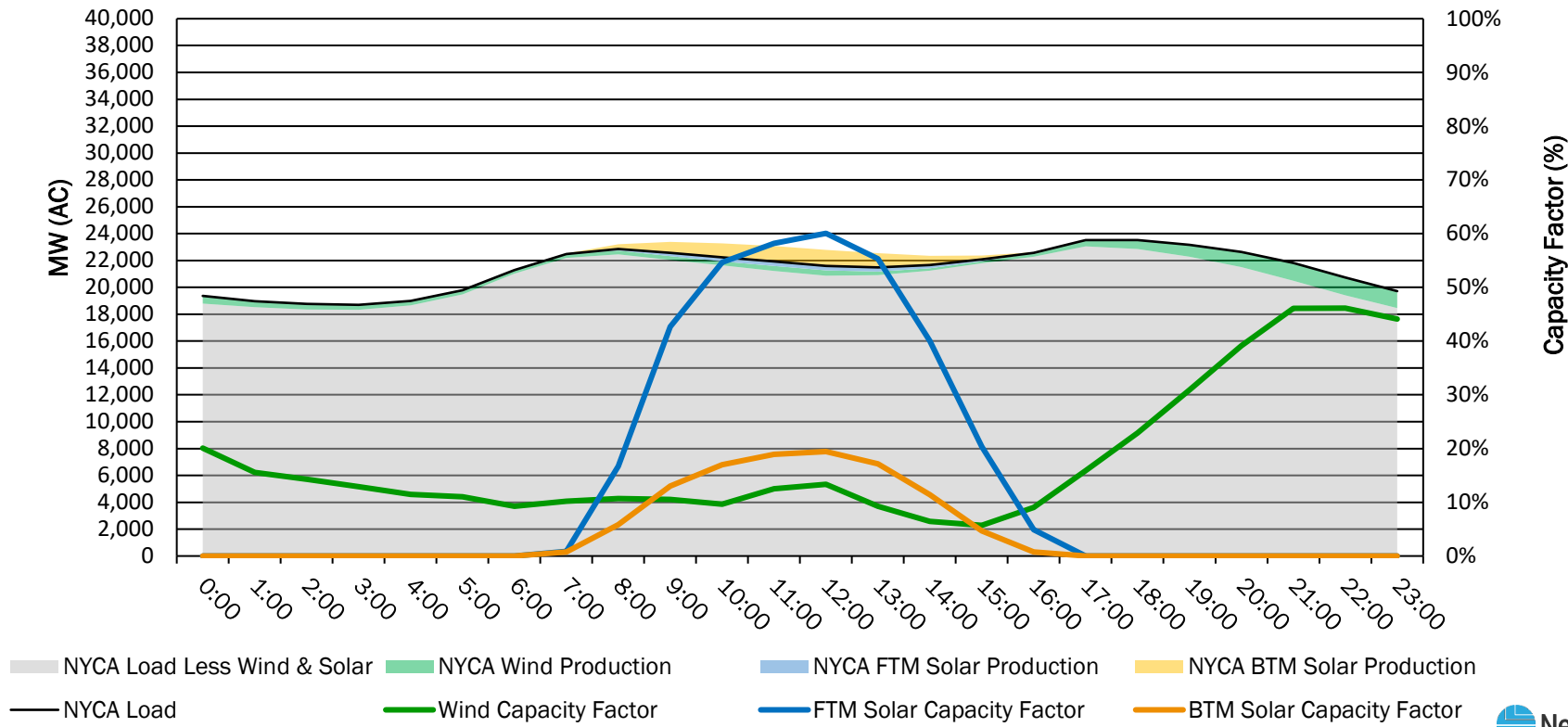
Wind and Solar Performance During Summer Peak Load

7/8/2024



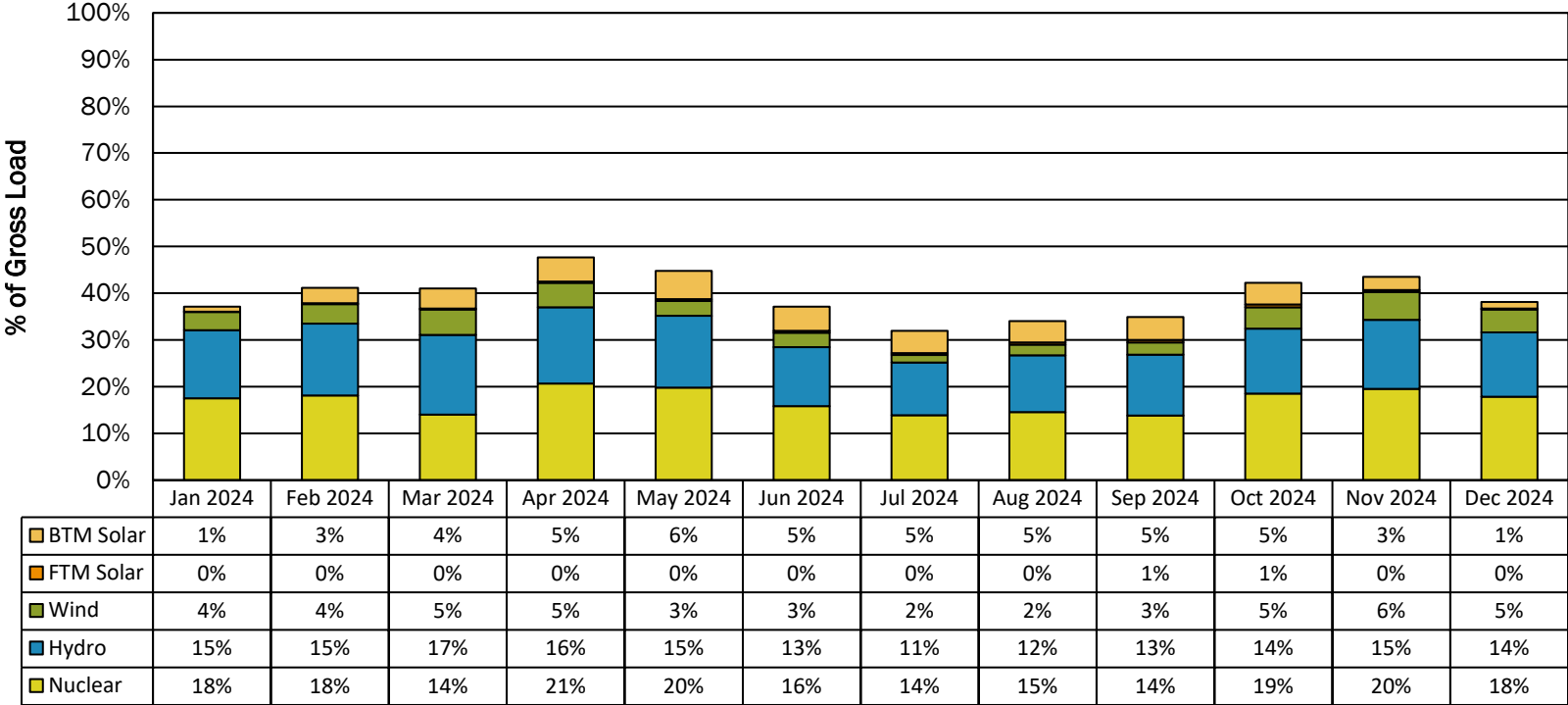
Wind and Solar Performance During Winter Peak Load

1/22/2025



NYCA Emissions-Free Generation

Annual Contribution to Gross Load (38.89%)				
Nuclear	Hydro	Wind	FTM Solar	BTM Solar
16.79%	13.97%	3.80%	0.35%	3.99%

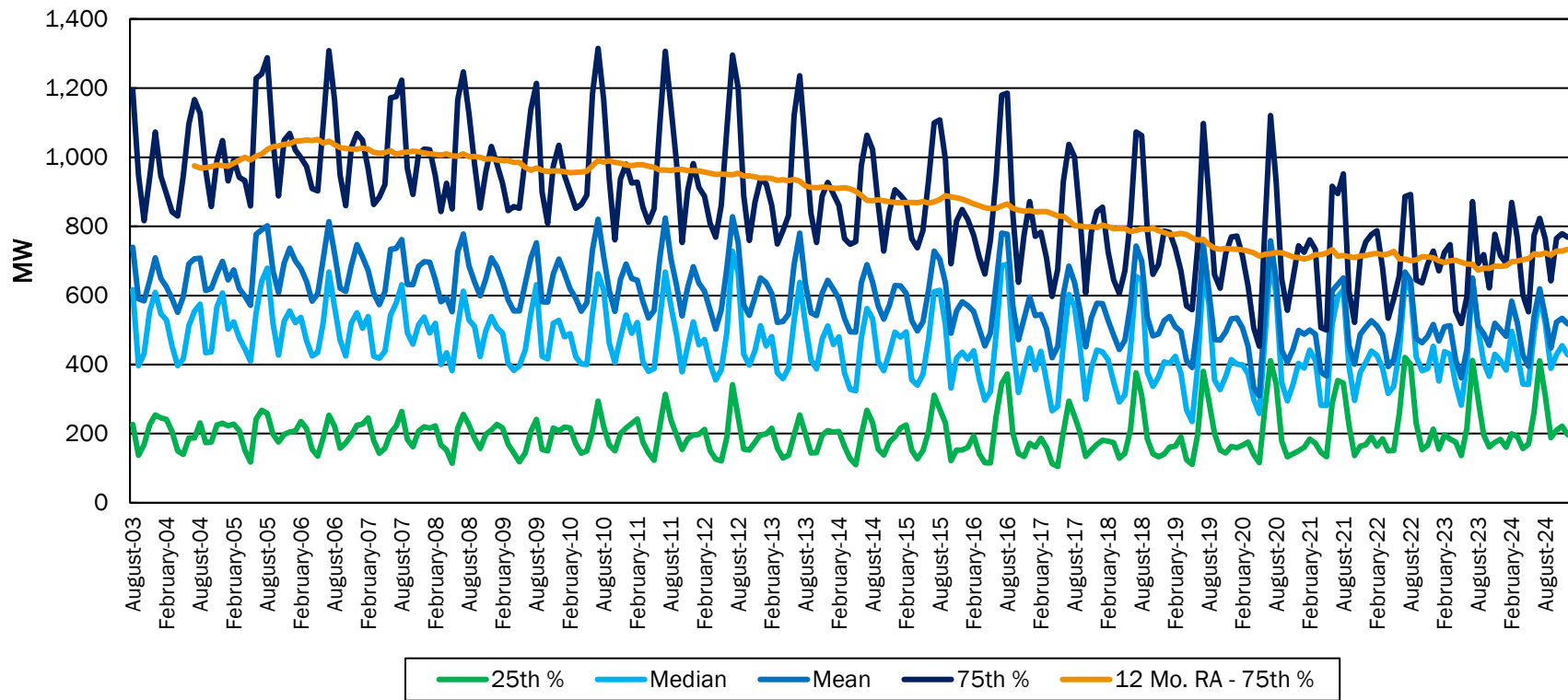


Nuclear Hydro Wind FTM Solar BTM Solar

Load Ramps

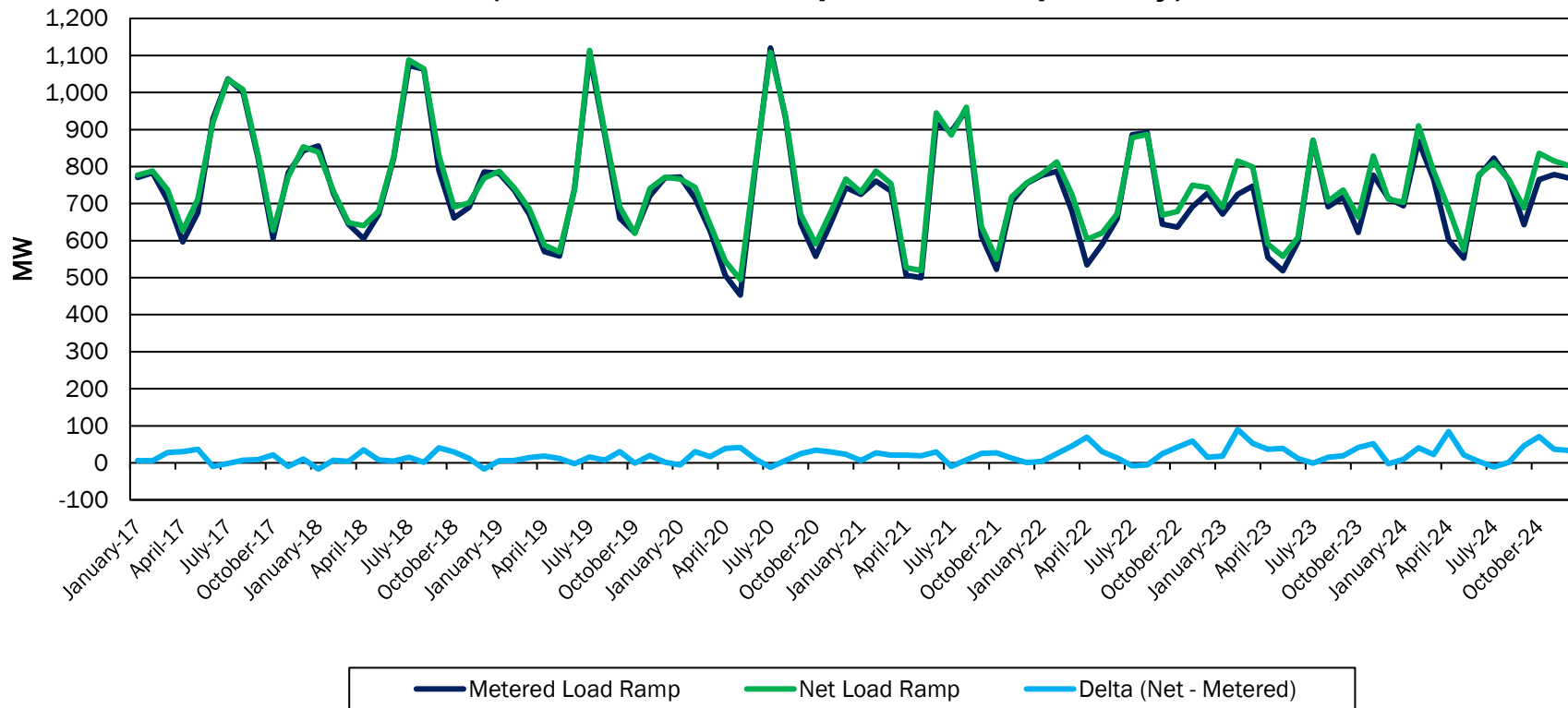
Hourly Metered Load Ramps

(Gross Load less BTM Solar - Upward Ramps Only)



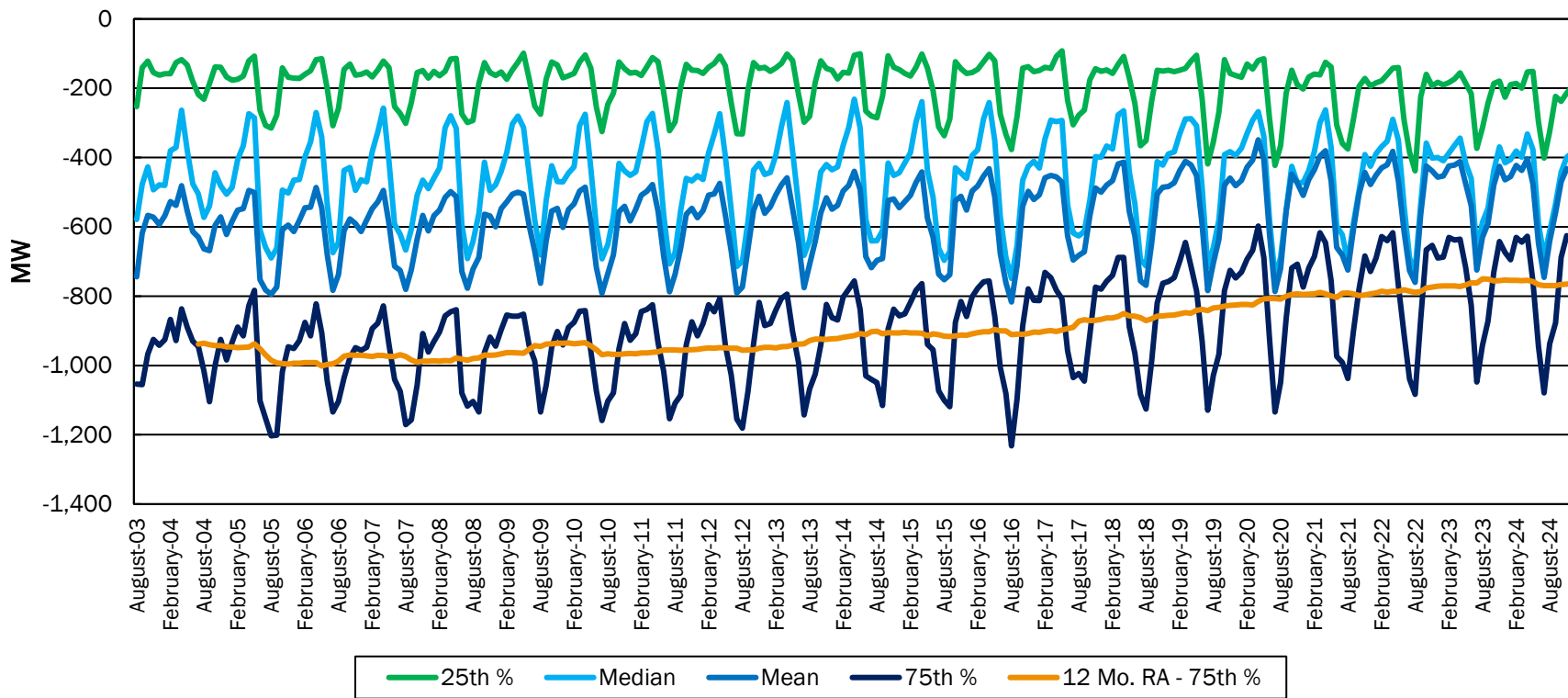
Metered Load vs Net Load Hourly Ramps

(75th Percentile Upward Ramps Only)



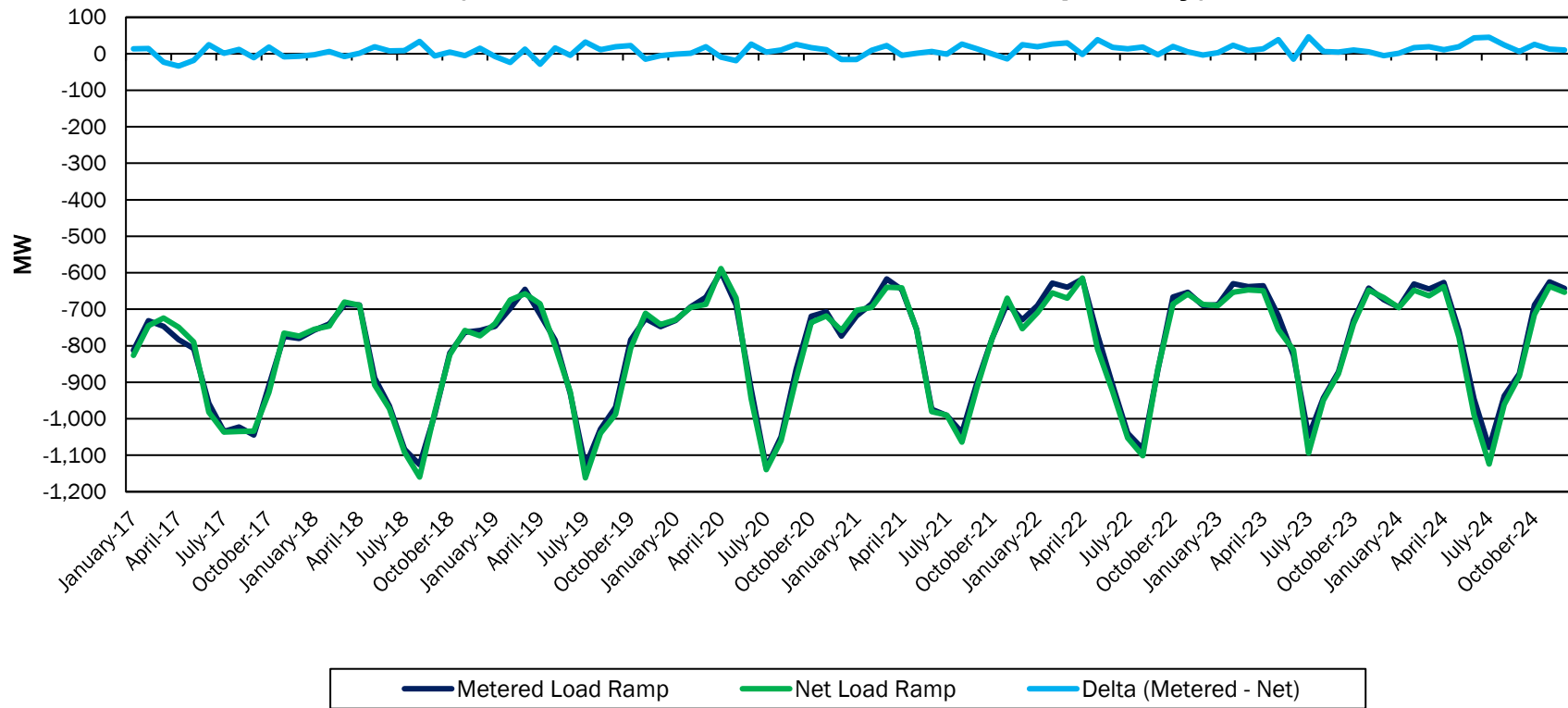
Hourly Metered Load Ramps

(Gross Load less BTM Solar - Downward Ramps Only)

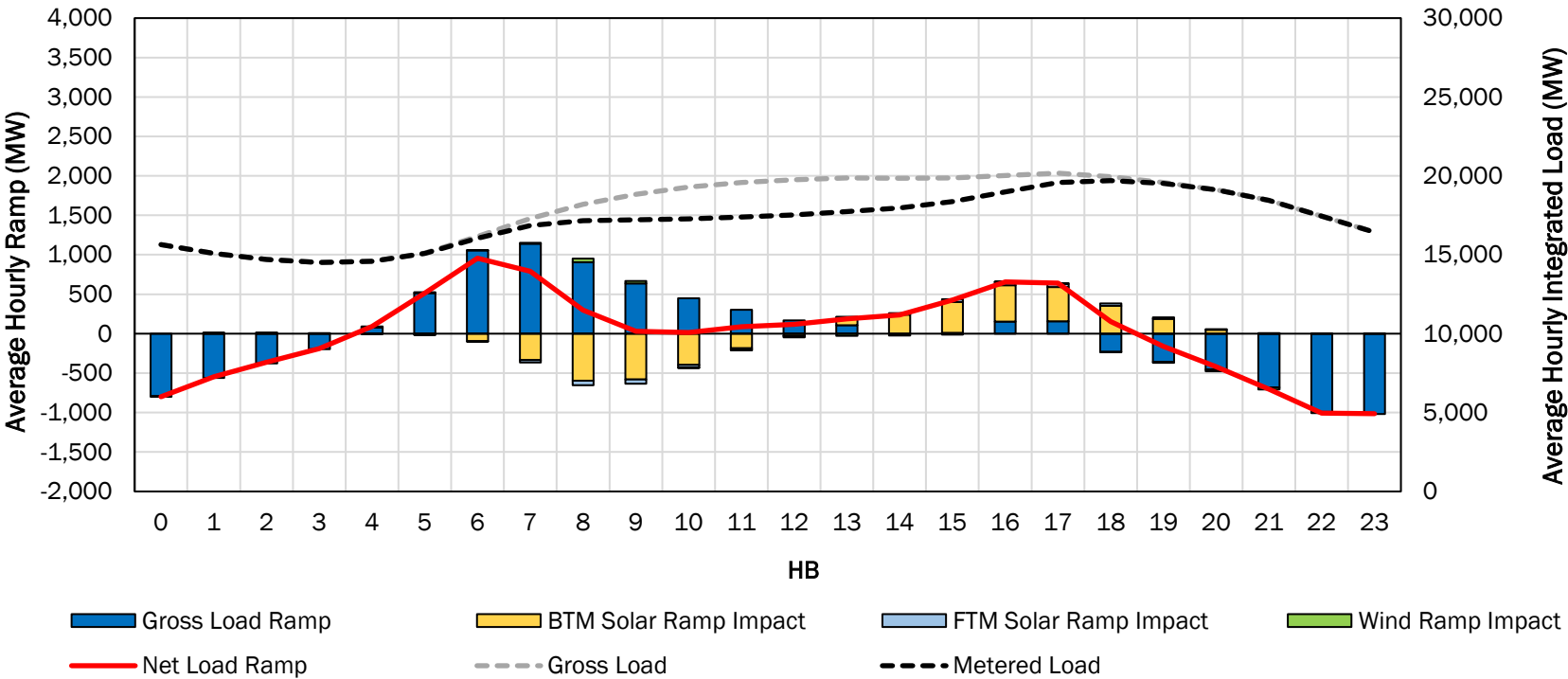


Metered Load vs Net Load Hourly Ramps

(75th Percentile Downward Ramps Only)



Average Hourly Net Load Ramps (2024)



Ramps are calculated as the difference between the previous and current hour (HB)
Net Load is defined as Gross Load less Wind and Solar Generation
Wind and Solar ramps are negated to indicate their impact on Net Load Ramp

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