



NYISO Summer 2023 Hot Weather Operations

Aaron Markham

VICE PRESIDENT, OPERATIONS

Operating Committee

October 11, 2023, Rensselaer, NY

Agenda

- **Key Observations from Summer Operations**
- **Summer 2023 Hot Weather Operations**
 - Wednesday, July 5 – Friday, July 7 (Warm Stretch)
 - Wednesday, July 26 – Friday, July 28 (Warm Stretch)
 - Tuesday, September 5 – Friday, September 8 (Heat Wave)
- **Summer Ambient Temperatures & Loads**
- **Loads & Peaks**
- **Renewable Forecasting & Actual Generation**

Key Observations from Summer Operations

Summer 2023 Key Observations

- Western NY Public Policy project was effective at reducing Zone A congestion and supply bottling
- The system topology associated with Segment A construction resulted in some congestion into Zone F during the higher load periods
- The system topology associated with Segment B reduced congestion across the UPNY-SENY interface
- Overall it was a cool, wet, summer in NY
- Surplus capacity in real time was lower due to the 2023 peaker unit retirements
- The net load peaks continue to shift later in the afternoon due to BTM solar
- Historic Canadian wildfires impacted solar production in late May and early June

Summer 2023 Hot Weather Operations

July 5-7 Hot Weather Operations

- **Peak load of the period occurred on Thursday (7/6) HB17- 28,051 MW (88% of the 50-50 forecast of 32,048 MW)**
 - Peak load was reduced due to activation of utilities demand response programs
- **The Governor's Office issued an extreme heat warning on Thursday (7/6) due to high heat and humidity expected to impact most of the state and urged customers to conserve electricity.**
 - Forecast highs were mainly in the upper-80s to lower-90s across the state with heat index values more than 95 degrees across most of the state.
- **7/6/23 NYISO issued a supplemental resource evaluation call ("SREd") for Sithe Batavia due to an increase in load forecasts after the Day-Ahead Market (DAM) and DAM interchange schedule uncertainty for statewide capacity**
- **7/7/23 NYISO issued a supplemental resource evaluation call ("SREd") for Empire CC 1, Athens STG 3, Northport 1, and Northport 2 due to generator derates, an increase in load forecasts after the Day-Ahead Market (DAM), and DAM interchange schedule uncertainty for statewide capacity**

July 26-28 Hot Weather Operations

- **Peak load of the period occurred on Friday (7/28) HB17- 28,725 MW (90% of the 50-50 forecast of 32,048 MW)**
 - Peak load was reduced due to activation of utility demand response programs
- **The Governor's Office issued an extreme heat warning on Tuesday (7/25) due to high heat and humidity forecast to impact much of the state later in the week and urged customers to conserve electricity**
 - Forecast highs were 80s statewide on Thursday and rose to mainly lower-90s by Friday with heat index values expected to be above 100 Degrees for lower elevation areas on Thursday and Friday
- **7/27/23 NYISO issued a supplemental resource evaluation call ("SREd") for Roseton 1 due to generator derates and an increase in load forecasts after the Day-Ahead Market (DAM) for statewide capacity**
- **7/28/23 NYISO issued a supplemental resource evaluation call ("SREd") for Oswego 6 due to generator derates and Day-Ahead Market (DAM) interchange schedule uncertainty for statewide capacity**

September 5-8 Hot Weather Operations

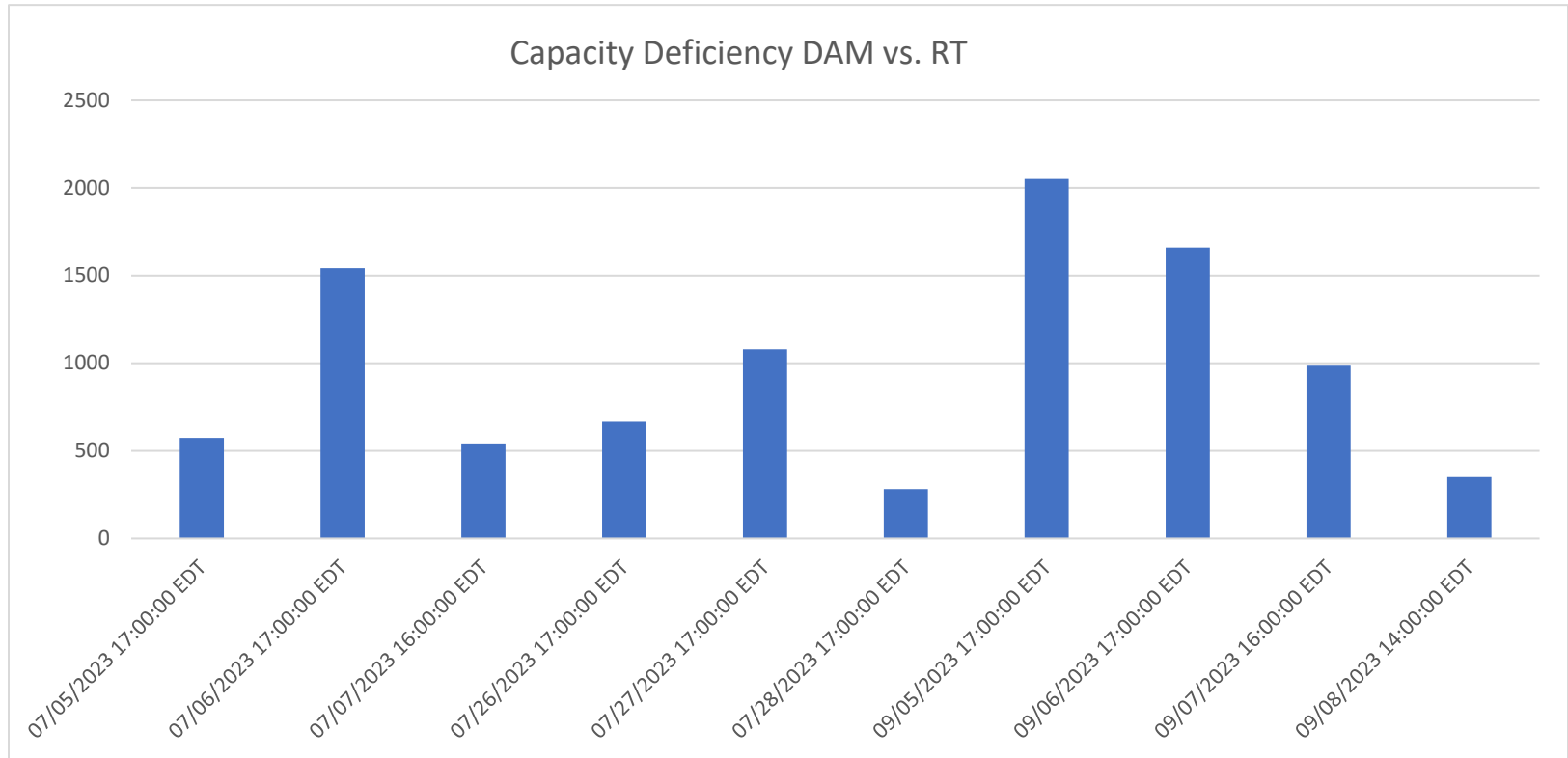
- **Summer Peak load occurred on Wednesday (9/6) HB17- 30,206 MW (94% of the 50-50 forecast of 32,048 MW)**
 - Peak load was reduced due to activation of utility demand response programs
- **Forecast highs were mainly in the upper-80s to lower-90s throughout most of the period.**
- **9/5/23 NYISO issued a supplemental resource evaluation call (“SREd”) for Oswego 6 due to generator derates, an increase in load forecasts after the Day-Ahead Market (DAM), and DAM interchange schedule uncertainty for statewide capacity**
- **9/6/23 NYISO issued a supplemental resource evaluation call (“SREd”) for Oswego 5 & 6 due to generator derates, an increase in load forecasts after the Day-Ahead Market (DAM), and DAM interchange schedule uncertainty for statewide capacity**
- **9/7/23 NYISO issued a supplemental resource evaluation call (“SREd”) for Oswego 6 due to generator derates, an increase in load forecasts after the Day-Ahead Market (DAM), and DAM interchange schedule uncertainty for statewide capacity**

Summer 2023 Hot Weather Operations

(Applicable to prior periods and the entire season)

- Operations participated in regional coordination conference calls
- Worked with Transmission and Generation Owners to restore out of service equipment to support peak loads
- Transmission Owners activated utility (retail) demand response programs
- No need for NYISO-initiated emergency actions such as emergency purchases or statewide voltage reduction
- Pipeline and LDC Operational Flow Orders (OFOs) were observed during high load periods

DAM Capacity not available in Real Time



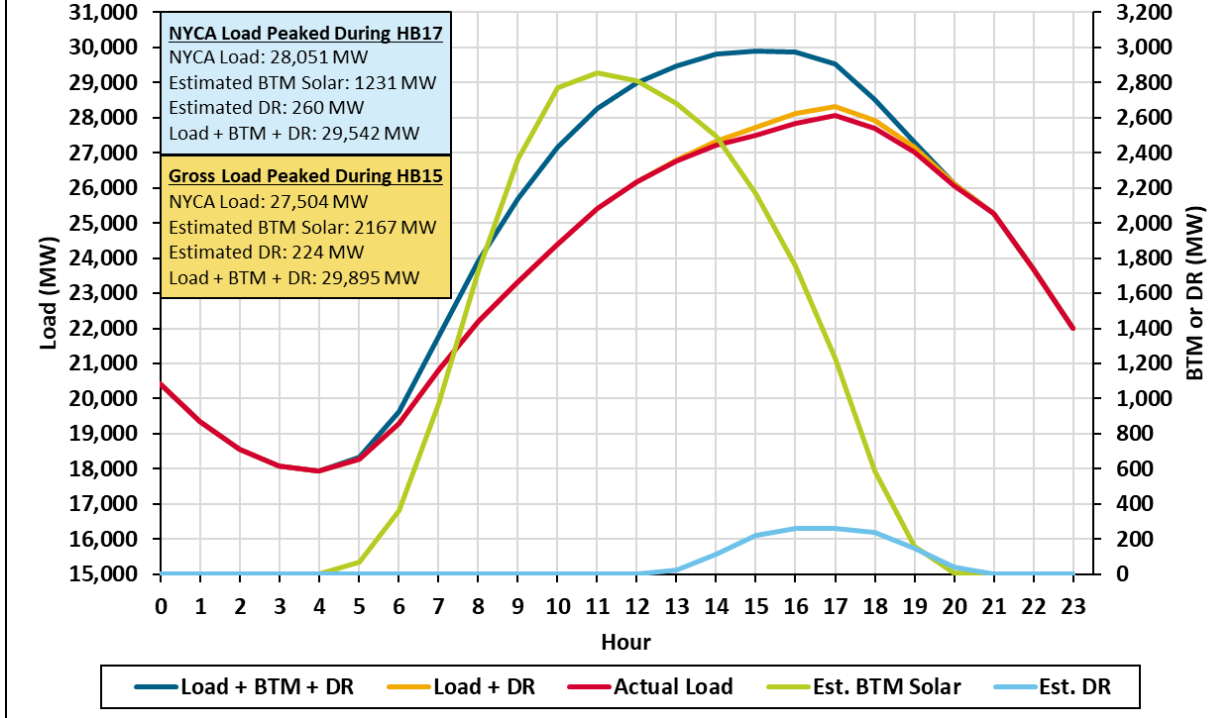
Summer Ambient Temperatures & Loads

Ambient Conditions

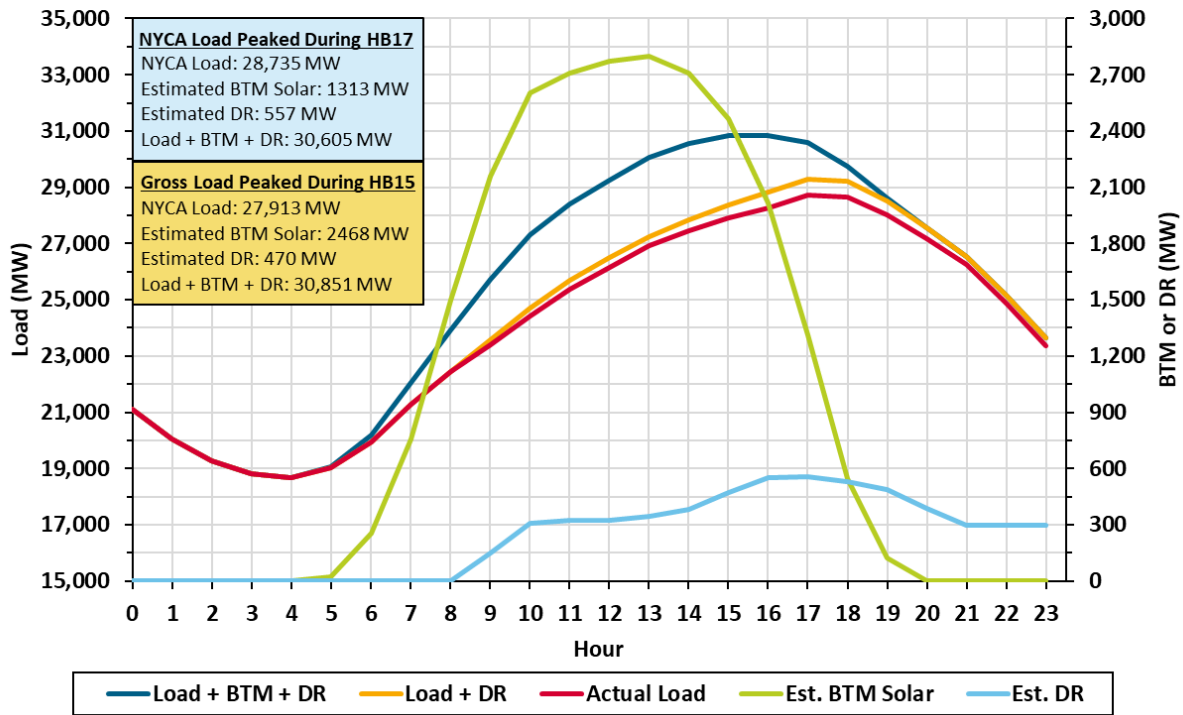
- **Daily mean temperatures were near the 20-year average in May, below average in June and August, and above average in July**
 - Highest Temperatures: 93 °F at NYC - Central Park and 93 °F at Albany
 - 6 days with highs at or above 90 °F at NYC - Central Park (average is 16 days/year from 1991 – 2020)
(Source: National Weather Service – New York City Office)
 - 8 days with highs at or above 90 °F at Albany (average is 9 days/year from 1991 – 2020)
(Source: National Weather Service – Albany Office)
- **Above normal rainfall in July and August**
 - Albany: July record rainfall (10.70 in.); third wettest month since 1826
(Source: National Weather Service – Albany Office)
- **Total net energy (GWh) was below 50/50 projections**
 - May, June, and August were all well below expected load levels
 - July load levels were slightly higher than forecast
- **Peak net load was below the Gold Book Baseline projection**
 - Summer 2023 Gold Book Baseline forecast was 32,048 MW
 - Summer 2023 actual peak load was 30,206 MW* (September 6th)
 - Summer 2022 actual peak load was 30,505 MW
 - Summer 2023 ICAP peak load (28,735 MW) occurred on July 28th
- **One day with peak loads over 30,000 MW**
 - Only other days with peak loads above 29,000 MW occurred during the September Heat Wave

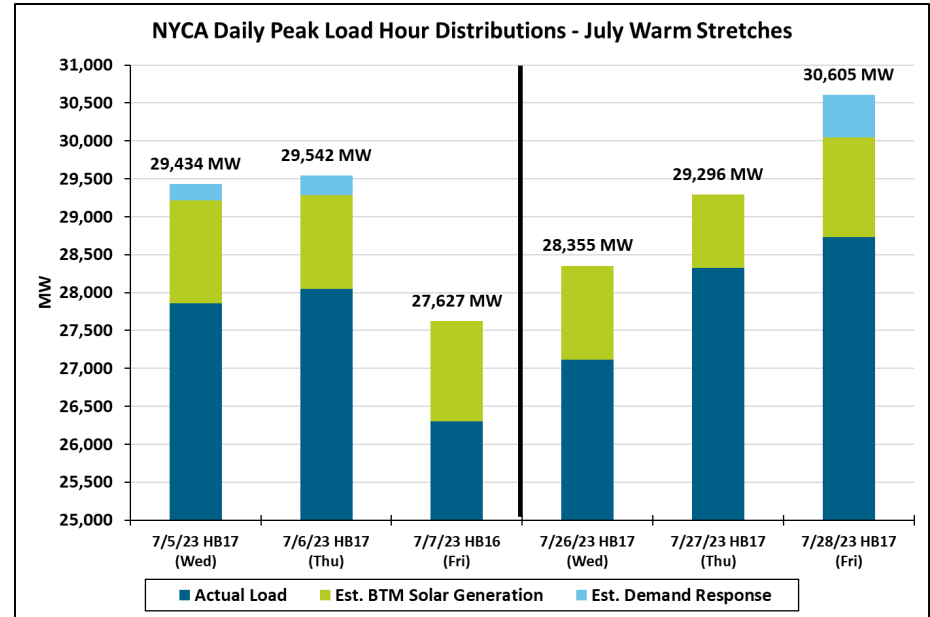
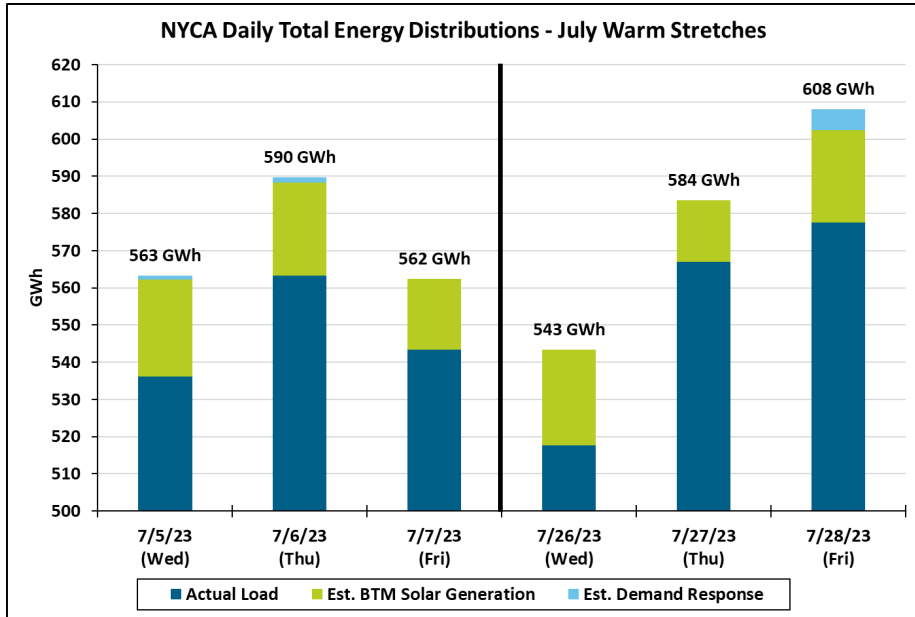
Loads & Peaks

NYCA Load, Demand Response (NYISO- & TO-Initiated), and BTM Solar Generation July 6, 2023



NYCA Load, Demand Response (NYISO- & TO-Initiated), and BTM Solar Generation July 28, 2023

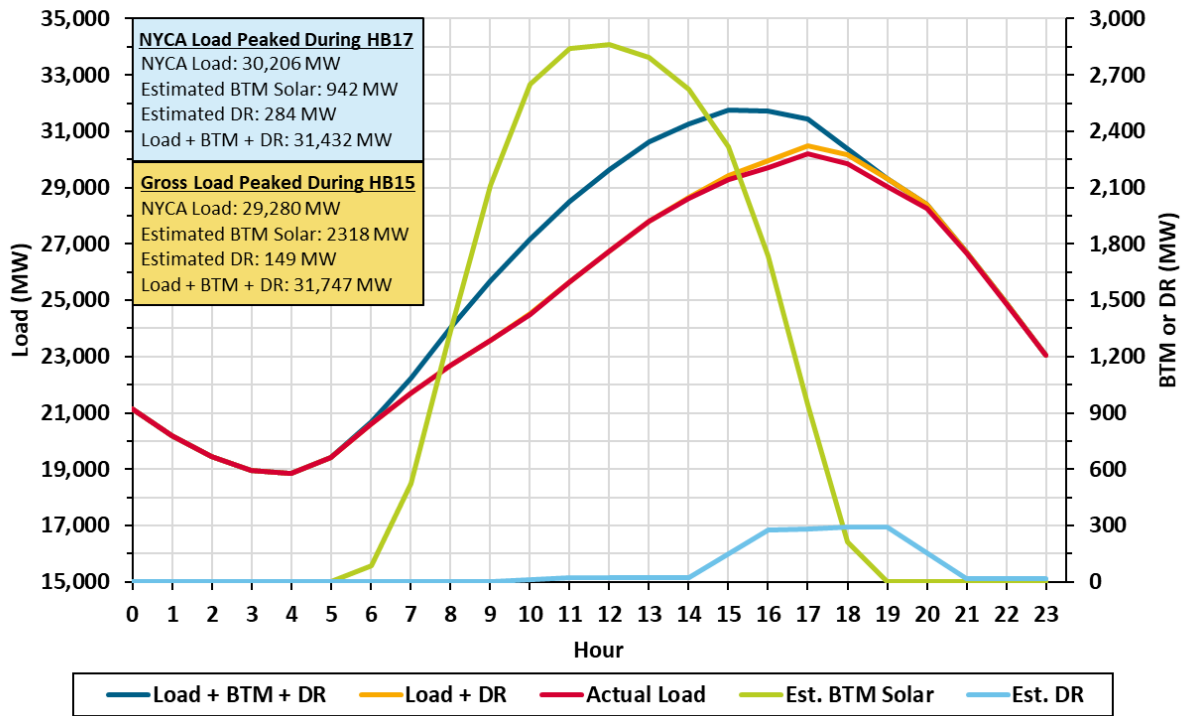


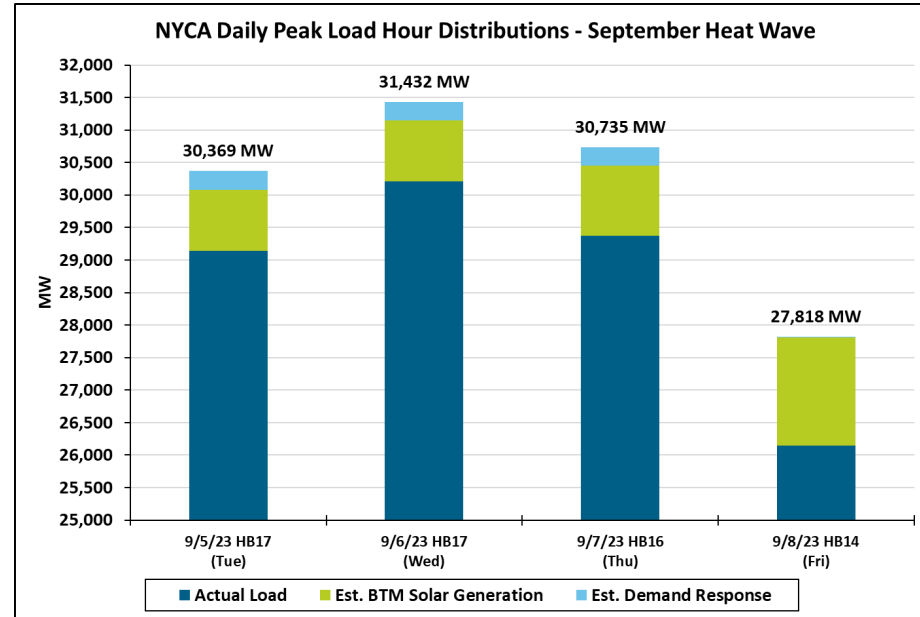
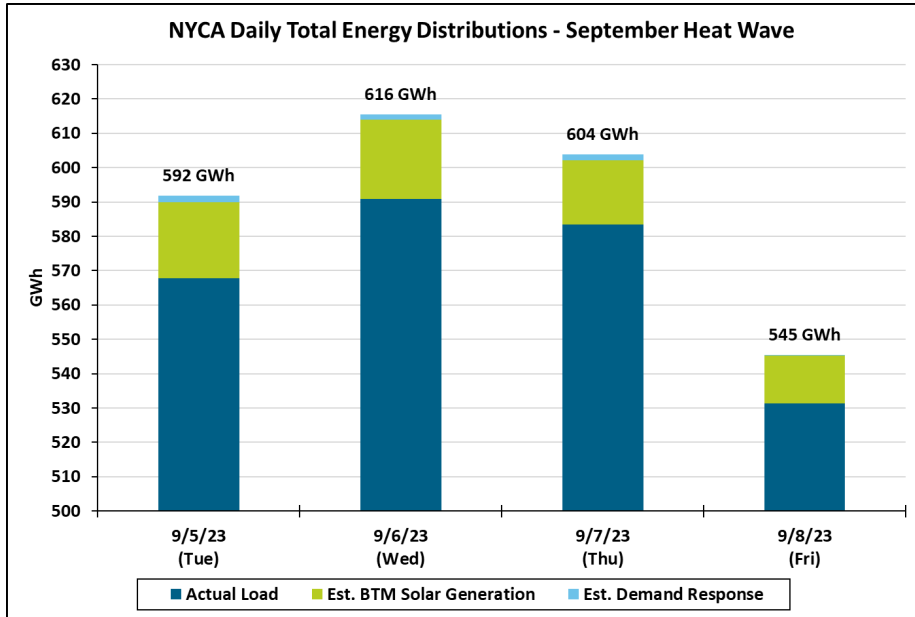


September Heat Wave

- **Only official Heat Wave of the summer occurred from September 5th to 7th**
 - Temperatures exceeded 90 °F at NYC – Central Park and Albany each day, peaking at 93 °F in both locations
- **High humidity levels combined with the temperatures resulted in the three highest load days of the year**
 - Dew Points were in the upper-60s to lower-70s throughout the state
- **Daily peak load levels**
 - September 5th: 29,141 MW
 - September 6th: 30,206 MW (Season Peak)
 - September 7th: 29,373 MW
- **Highest September load levels since the same week in 2018**

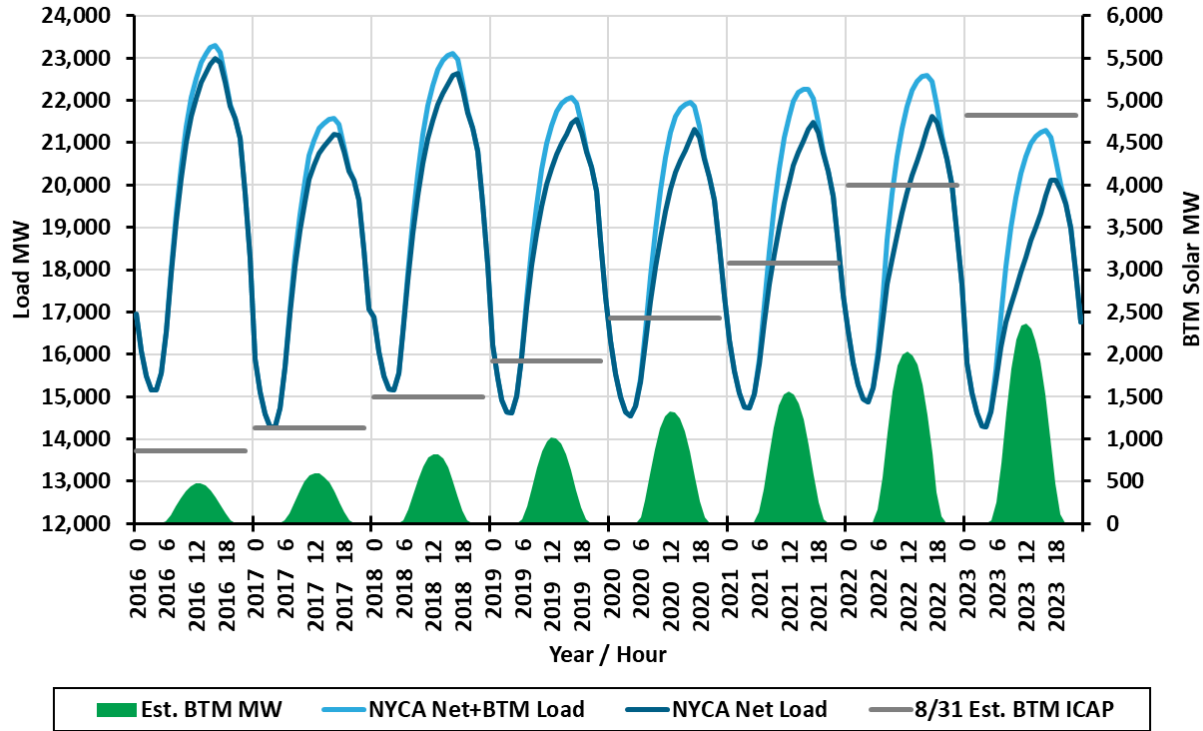
NYCA Load, Demand Response (NYISO- & TO-Initiated), and BTM Solar Generation September 6, 2023





Renewable Forecasting & Actual Generation

May to August BTM Solar Growth and System Load Impacts Since 2016

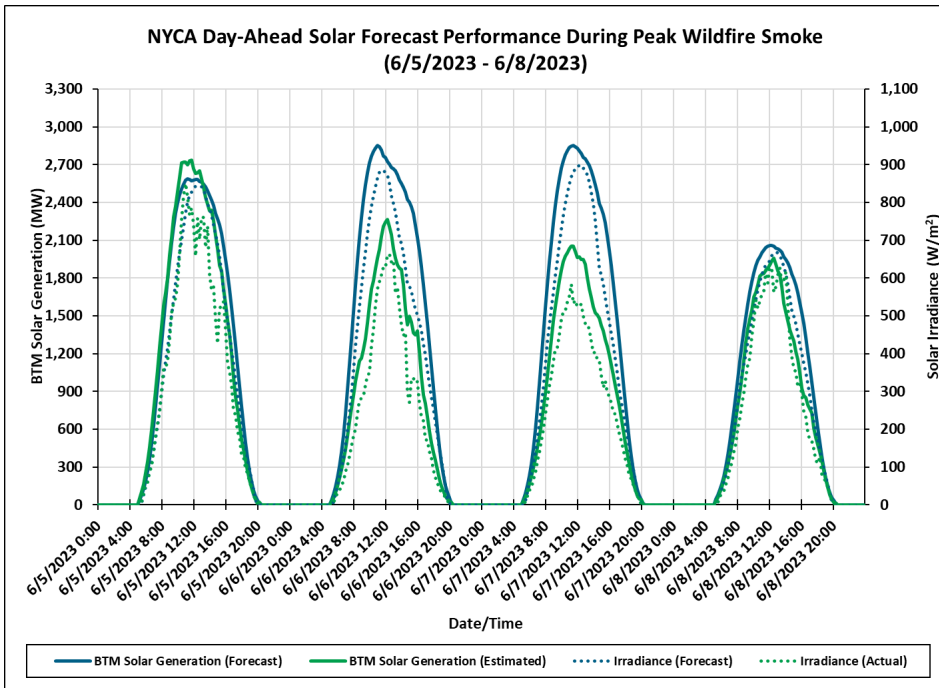


Wildfire Smoke Impacts – June 2023

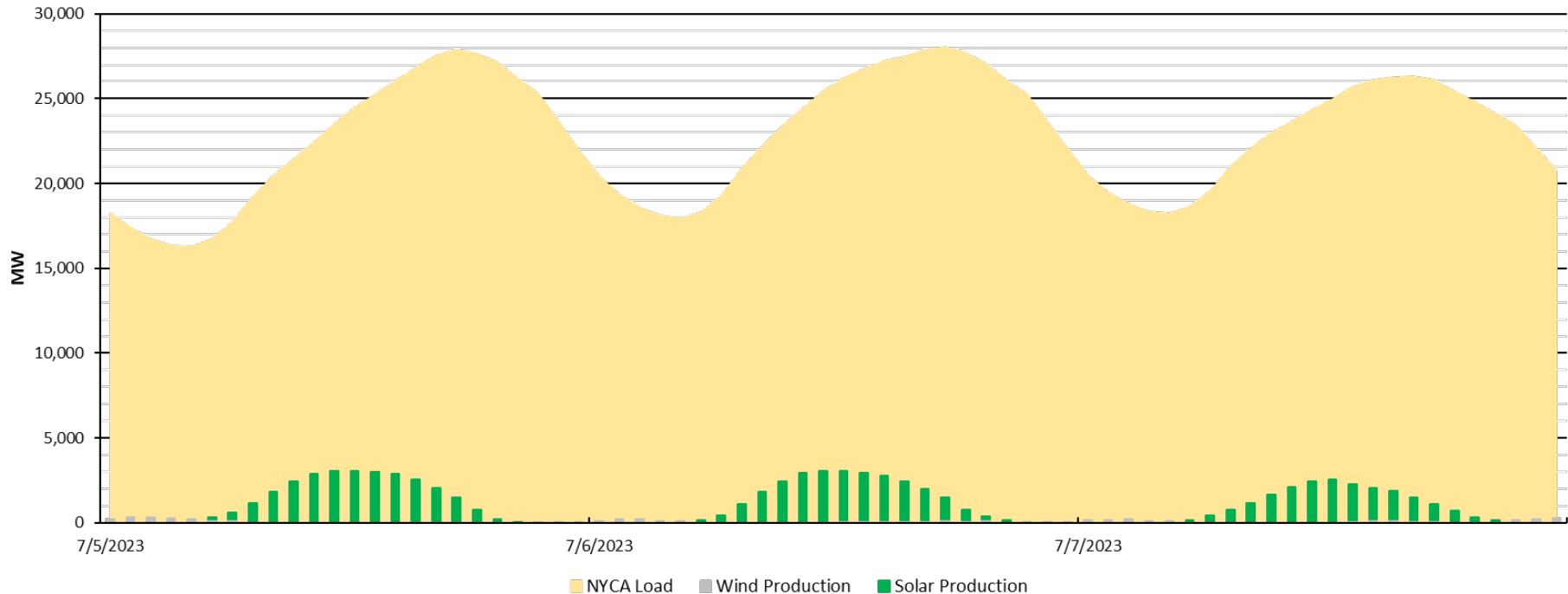
- Largest solar generation reductions occurred on June 6th and 7th
- BTM Solar generation was reduced by approximately 800 MW on Wednesday, June 6th during the midday (10 AM to 2 PM) hours
- Combined peak generation reduction was about 1,466 MW over the two days, resulting in combined peak generation of about 4,405 MW
- Temperatures were also suppressed as actual values were a few degrees lower than forecast, contributing to some Day-Ahead load over-forecasts

Wildfire Smoke Impacts to BTM Solar Generation – June 2023

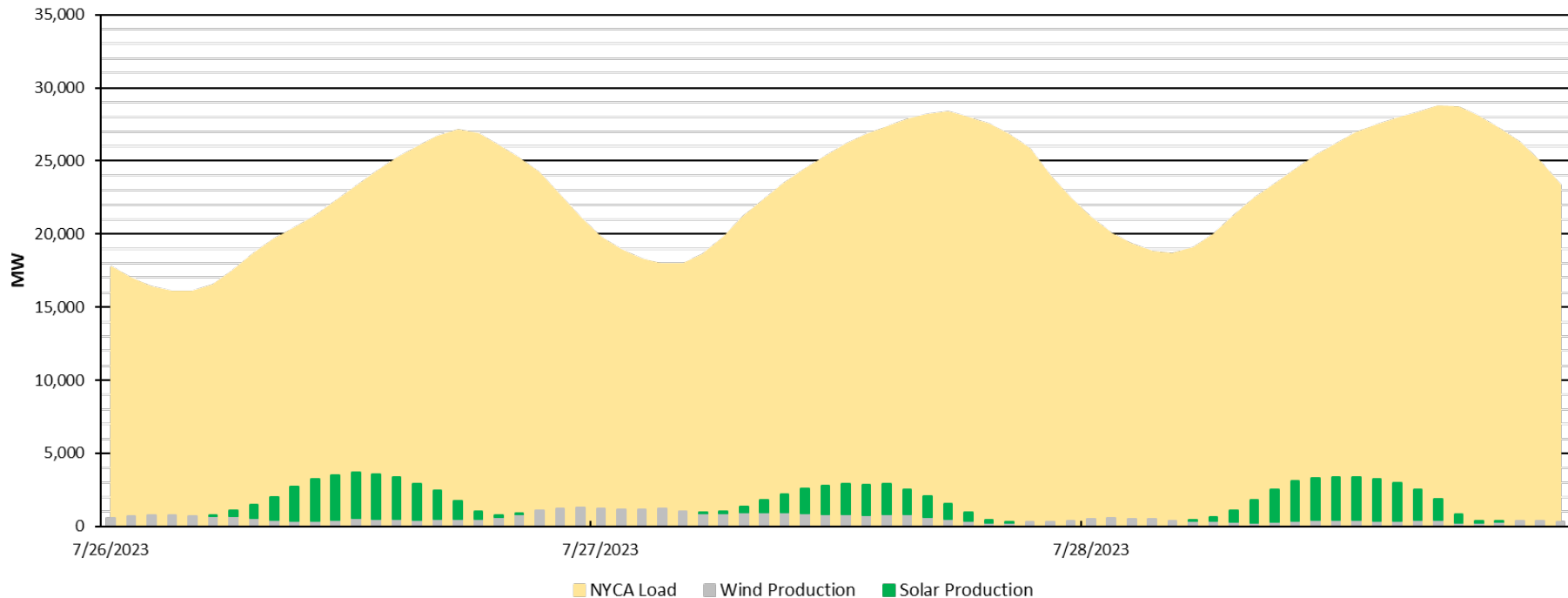
Satellite image from noon (ET) on 6/7



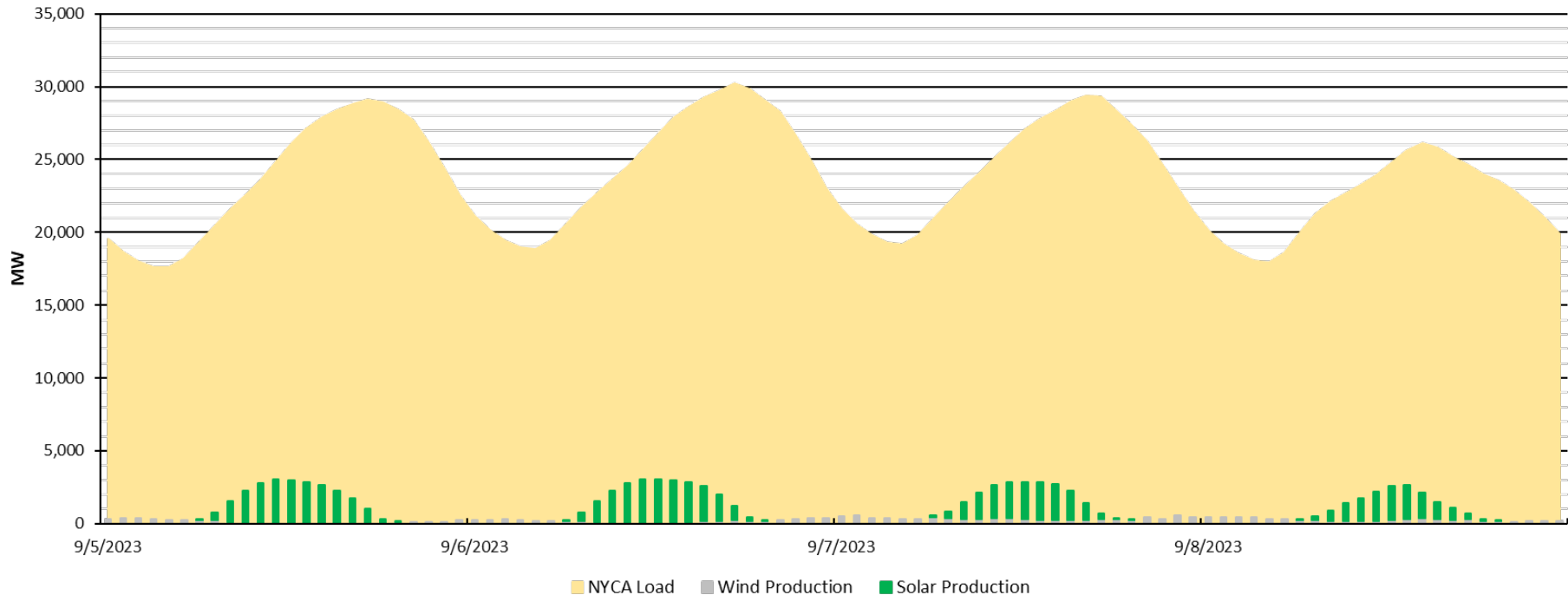
Hourly Wind & Solar Production 7/5 - 7/7



Hourly Wind & Solar Production 7/26 - 7/28



Hourly Wind & Solar Production 9/5 - 9/8



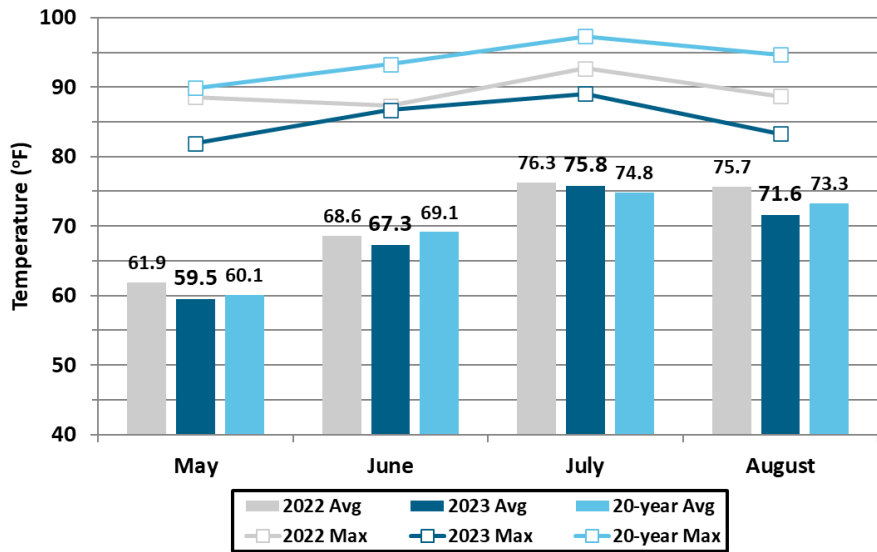
Retail Demand Response Program Activations

Date	Transmission Owner
July 5, 2023	Con Ed, National Grid
July 6, 2023	Con Ed, National Grid, NYSEG
July 27, 2023	Con Ed, LIPA
July 28, 2023	Central Hudson, Con Ed, LIPA, National Grid, NYSEG, O&R
September 5, 2023	Con Ed, National Grid
September 6, 2023	Con Ed, National Grid
September 7, 2023	Con Ed, National Grid, O&R
September 8, 2023	Con Ed

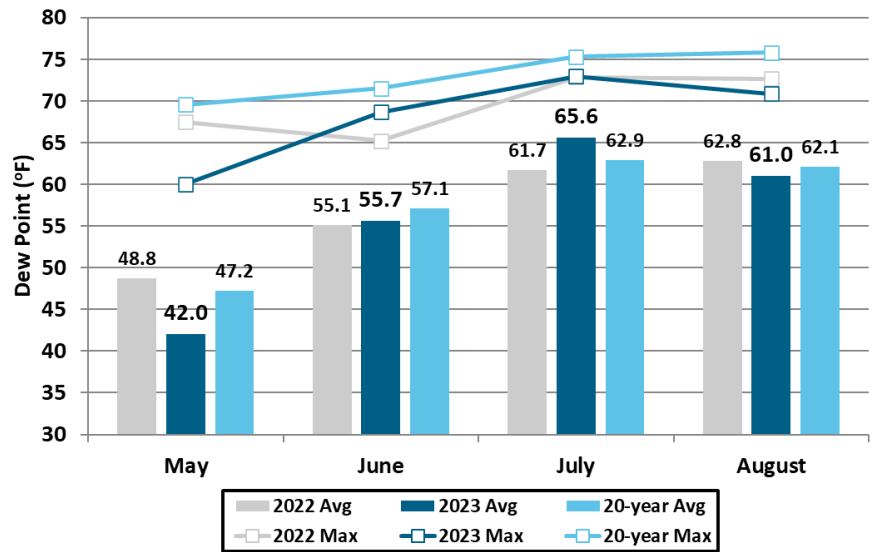
Questions?

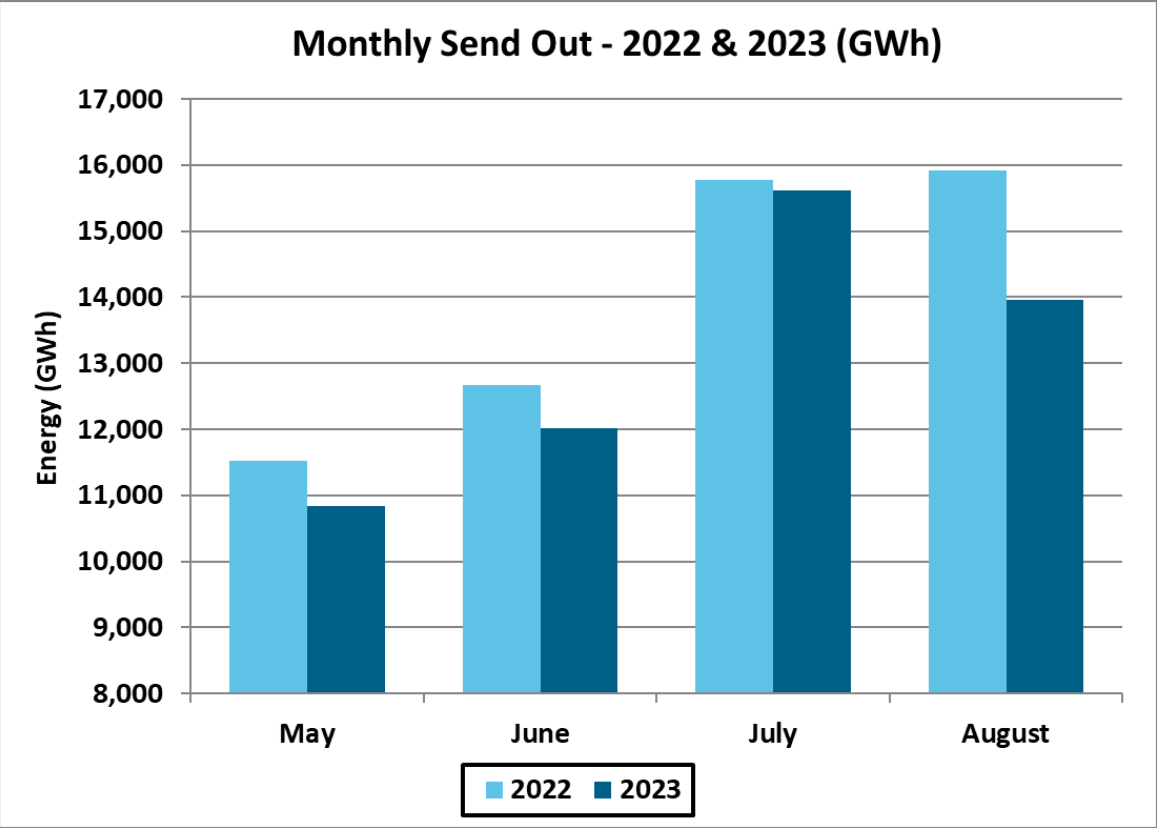
Appendix

**Monthly Average and Max Temperatures
2022, 2023, and 20-year (2003 - 2022)**

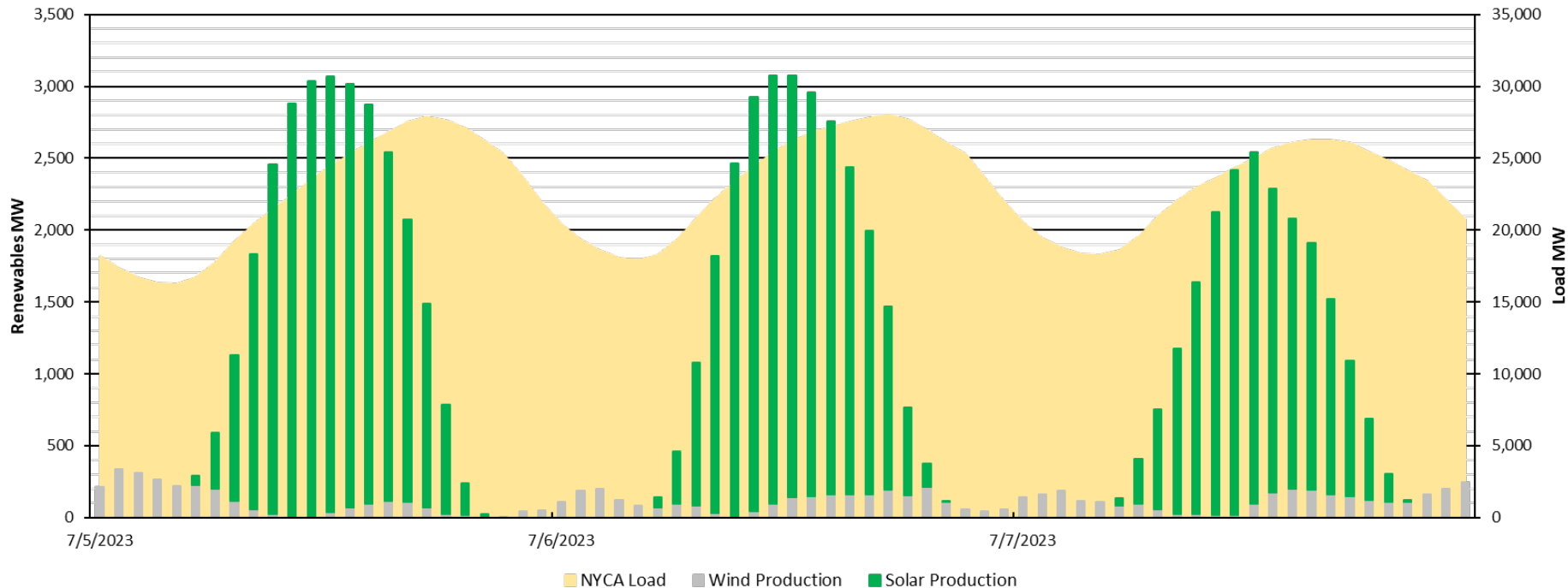


**Monthly Average and Max Dew Points
2022, 2023, and 20-year (2003 - 2022)**

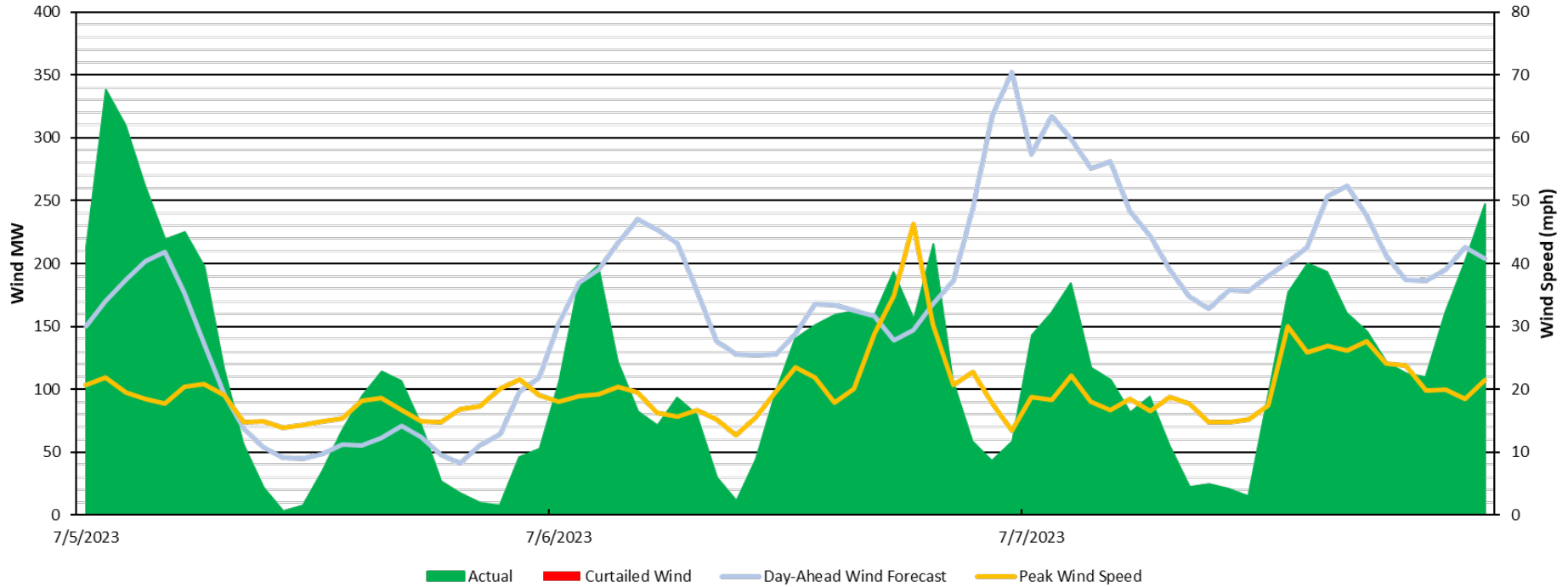




Hourly Wind & Solar Production 7/5 - 7/7

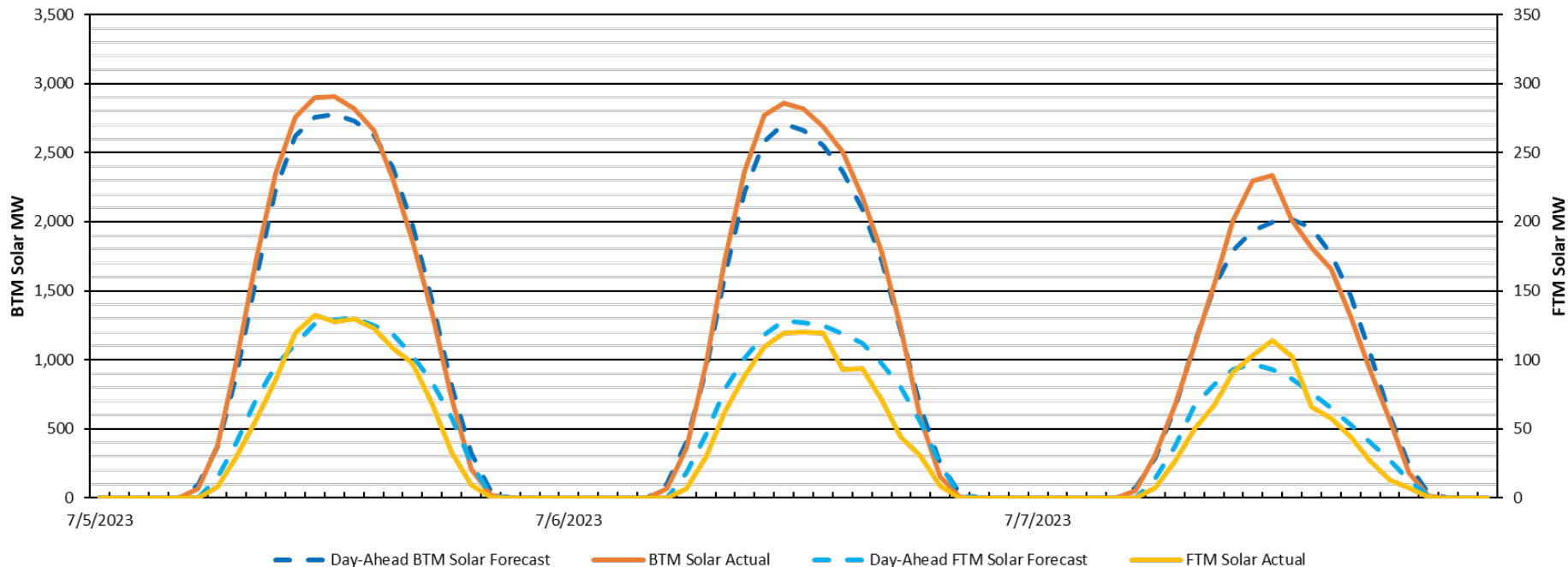


NYCA Wind Profile 7/5 - 7/7

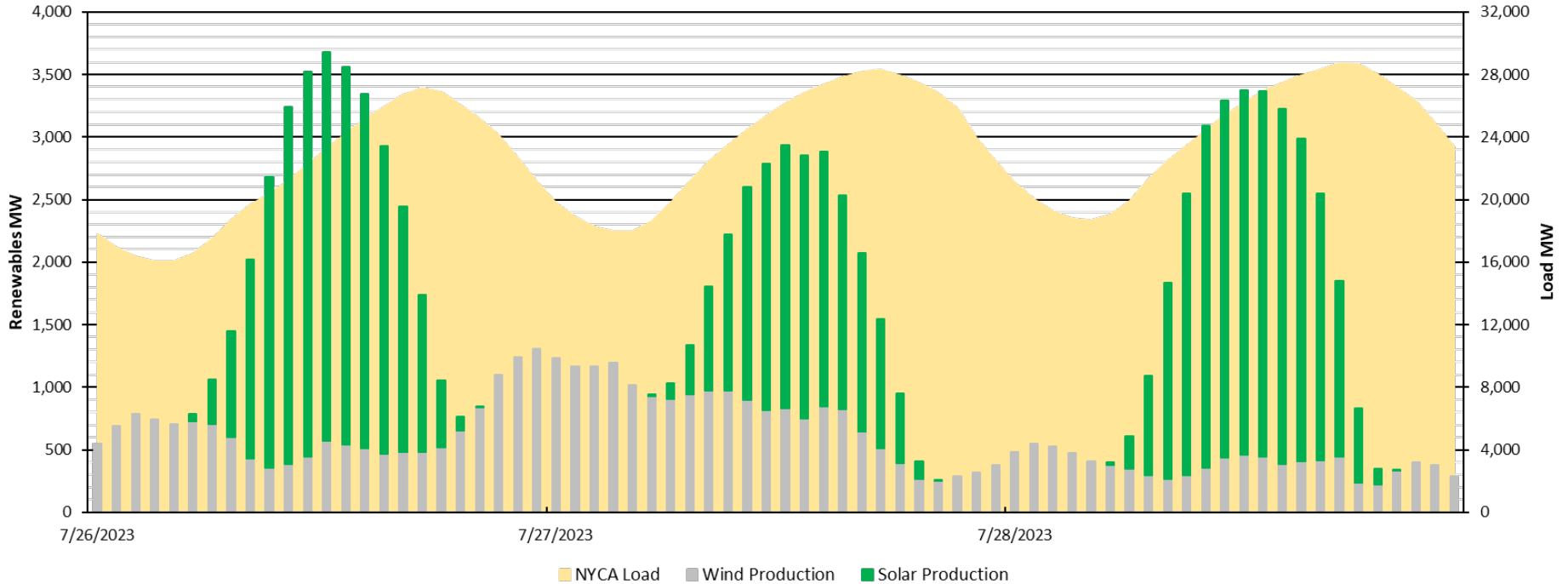


NYCA Solar Profile 7/5 - 7/7

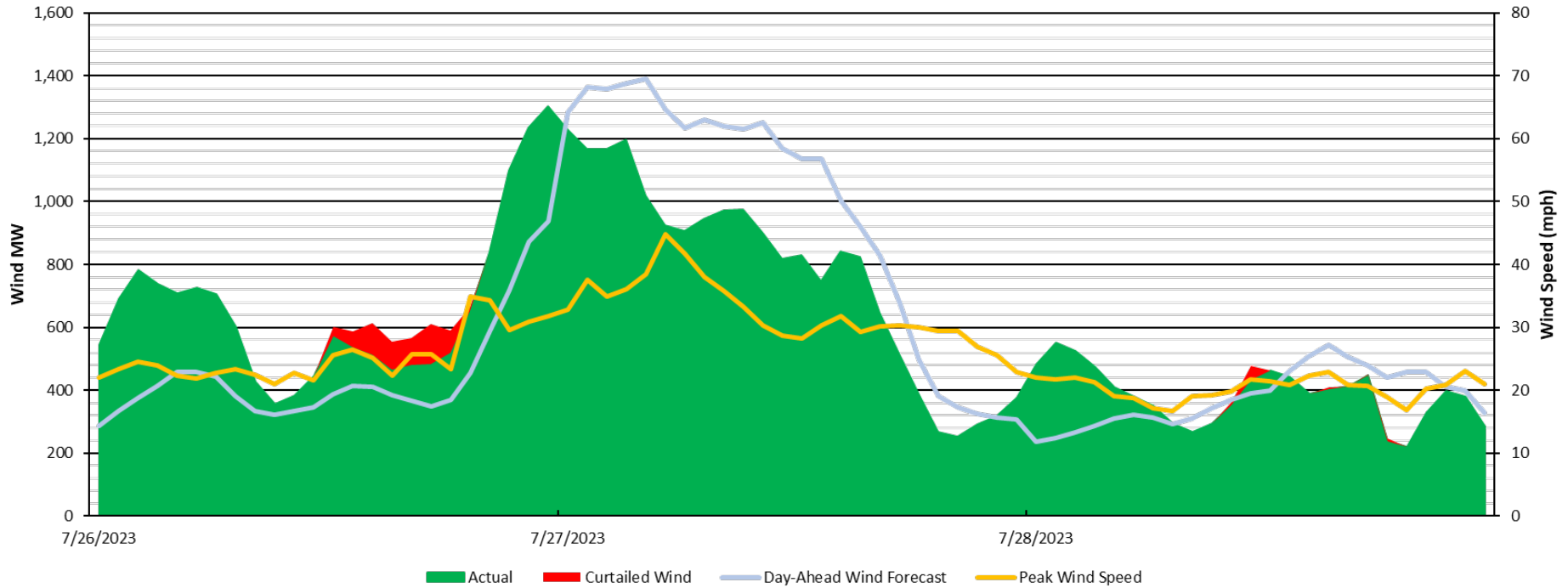
Installed Capacities - Est BTM: ~4,760 MW FTM: 174 MW



Hourly Wind & Solar Production 7/26 - 7/28

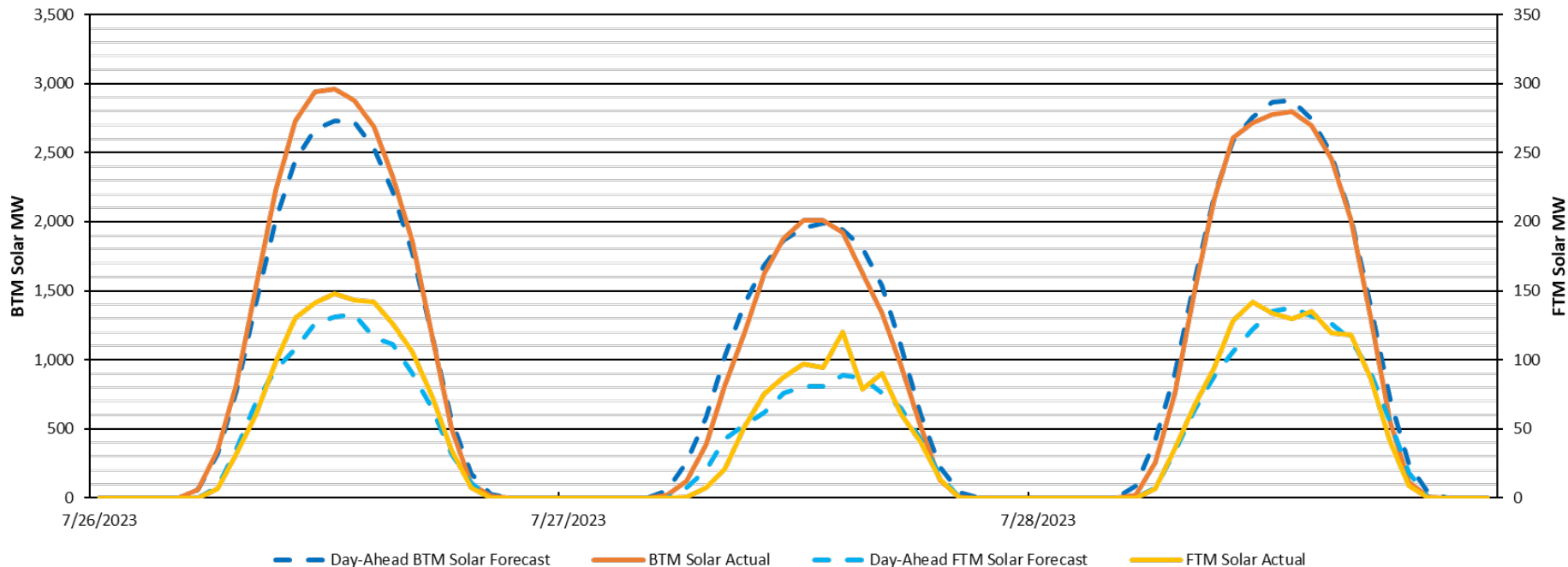


NYCA Wind Profile 7/26 - 7/28

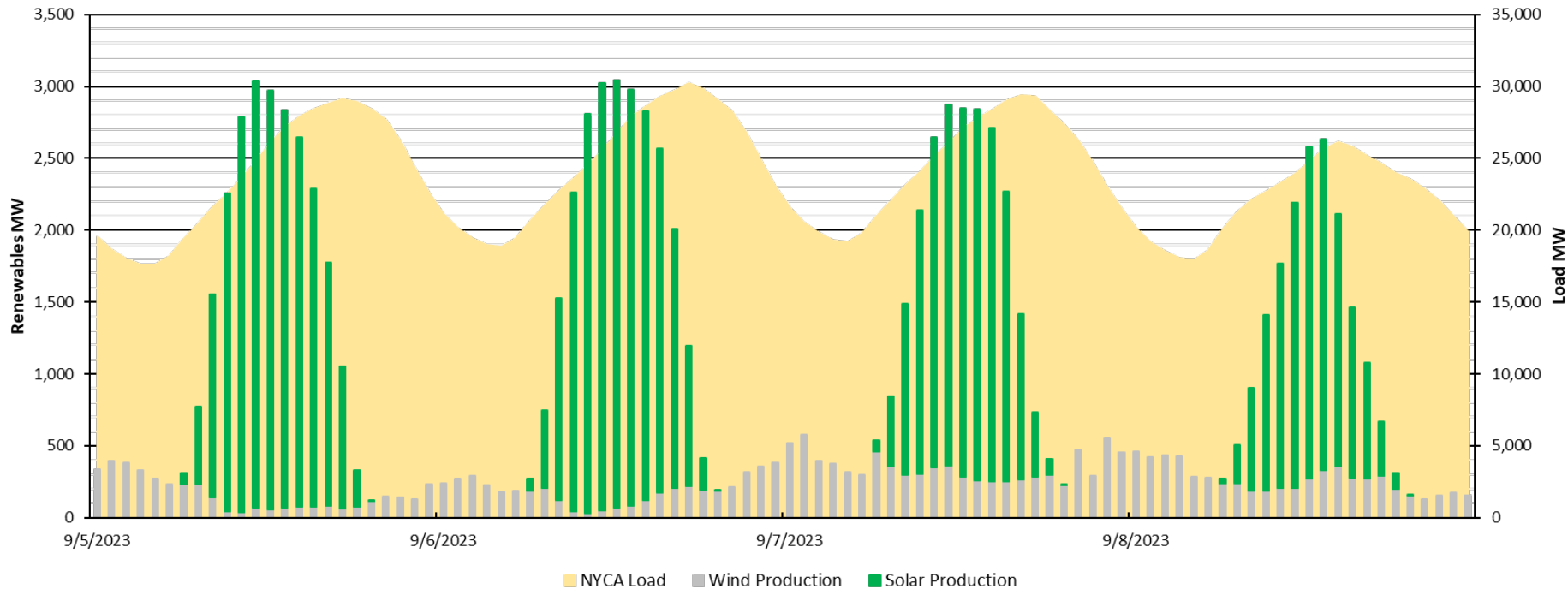


NYCA Solar Profile 7/26 - 7/28

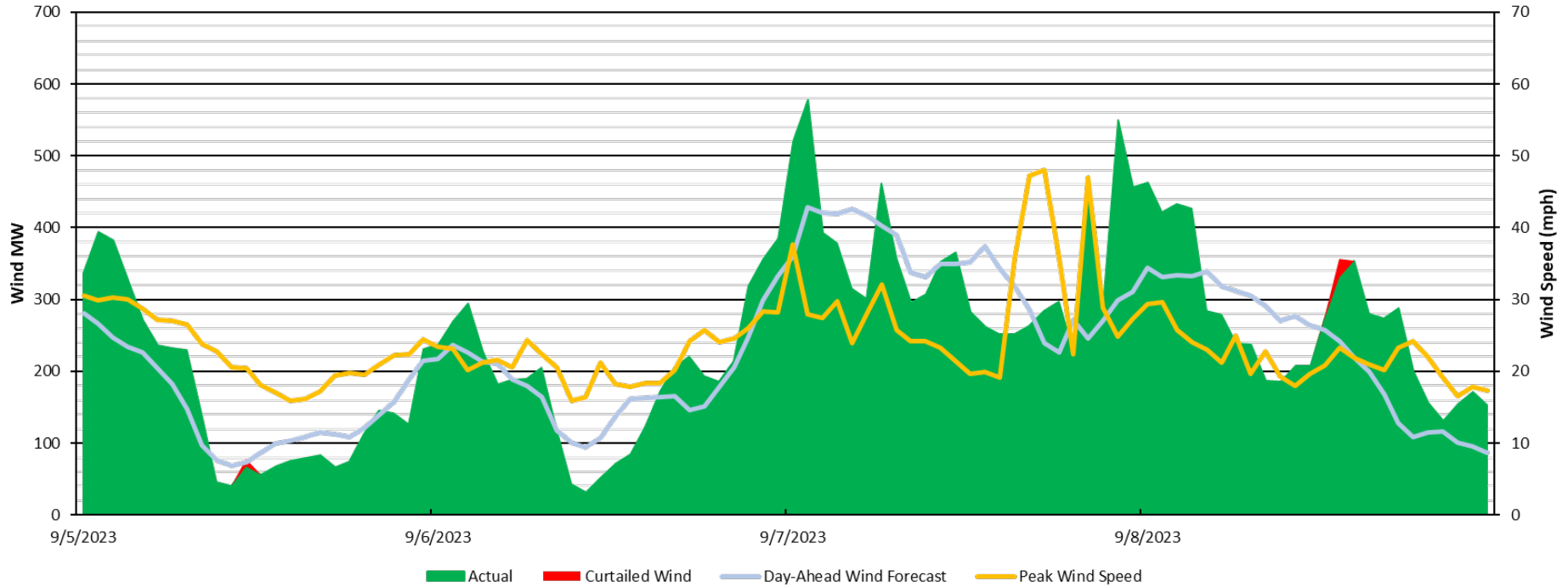
Installed Capacities - Est BTM: ~4,760 MW FTM: 174 MW



Hourly Wind & Solar Production 9/5 - 9/8

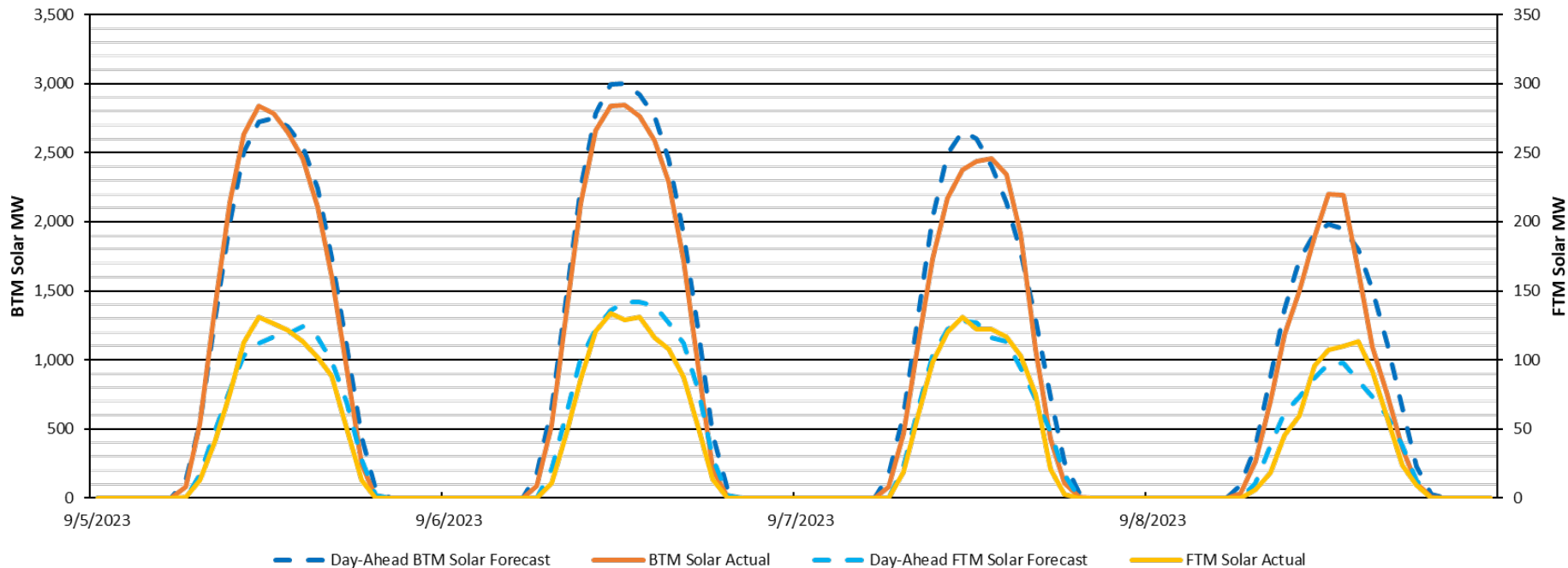


NYCA Wind Profile 9/5 - 9/8



NYCA Solar Profile 9/5 - 9/8

Installed Capacities - Est BTM: ~4,886 MW FTM: 174 MW



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