



NYISO Summer 2021 Hot Weather Operations

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VICE PRESIDENT, OPERATIONS

Management Committee

September 29, 2021, Rensselaer, NY

Agenda

- **Operations recommendations from Summer Operations**
- **Summer 2021 Hot Weather Operations**
 - Sunday, June 6 – Wednesday, June 9
 - Sunday, June 27 – Wednesday, June 30
 - Monday, August 9 – Friday, August 13
 - Wednesday, August 25 – Friday, August 27
- **Summer Ambient Temperatures & Loads**
- **Loads & Peaks**
- **Renewable Forecasting & Actual Generation**
- **Appendix**

Recommendations Summer 2021

- The Operations Department supports the initiatives related to evaluating Transmission Security need as described at the September 9, 2021 ICAP/ESPGWG meeting.
- Current practices for evaluating Transmission Security may not be sufficient to ensure future reliability as the fleet transitions to weather-dependent intermittent resources and duration limited resources.
- An assessment of current assumptions and practices is necessary to determine if they are sufficient to sustain reliability while accounting for the changing characteristics of the power system and resource fleet.

Recommendations Summer 2021

- **In the future, assumptions related to generator unavailability will need to be developed to maintain reliability as the fleet transitions to intermittent and duration limited energy resources**
 - Historical reliability needs have been driven by summer afternoon high temperature peak loads and have been met by dispatchable fossil resources with non-coincident failure modes
 - Assumptions need to be developed for the appropriate treatment of all supply resources, including off-shore wind and duration limited resources in Transmission Security Analysis
- **Given the significant amount of supply resource unavailability observed on high load days for Summer 2021, the Operations Department believes a comprehensive assessment of all supply resource types is appropriate for the evaluation of Transmission Security Needs.**

June 6-9 Hot Weather Operations

- The Governor's Office issued an extreme heat warning and urged customers to conserve electricity
- Forecast highs were mainly in the upper-80s to lower-90s across the state
- 6/7/21 NYISO issued a supplemental resource evaluation call ("SREd") for Roseton 1 due to an increase in load forecasts after the Day-Ahead Market (DAM) for statewide capacity needs

June 27-30 Hot Weather Operations

- Summer Peak load occurred June 29 HB17- 30,919 MW (96% of the 50-50 forecast of 32,327 MW)
- Governor's Office issued extreme heat warning and urged customers to conserve electricity
- The National Weather Service posted Heat Advisories throughout the state over the period
- Forecast highs on 6/29/21 were in the lower-90s upstate and mid-90s downstate
- 6/28/21 NYISO issued a supplemental resource evaluation call ("SREd") for Roseton 1 due to an increase in load forecasts after the DAM for statewide capacity needs
- 6/29/21 NYISO issued a SRE for Danskammer 4 and Oswego 5 due to >1,500 MWs of generator derates and uncertain unit return times to meet statewide capacity needs at the time of the SREs.
- NYISO declared a NERC EEA-1 on 6/28/21 indicating the expectation to just meet the NYCA minimum reserve requirements

August 9-13 Hot Weather Operations

- The National Weather Service posted Excessive Heat Warnings and Heat Advisories throughout the state over the period
- Forecast highs were mainly in the lower to mid-90s with heat indexes approaching 105°F
- Y49 Sprainbrook-East Garden City 345 kV tripped out-of-service (OOS) on 8/7/2021 with the Y50 Dunwoodie-Shore Rd 345 kV already OOS. This resulted in limited transmission capability on/off Long Island and small surplus capacity margins
- 8/12/21 NYISO issued a supplemental resource evaluation call (“SREd”) for Roseton 1 due to >1,100 MWs of generator derates and uncertain return times for statewide capacity needs at the time of the SRE



August 25-27 Hot Weather Operations

- Summer ICAP Peak load occurred Thursday, August 26 HB16-30,309 MW (94% of the 50-50 forecast of 32,327 MW)
- The National Weather Service posted Heat Advisories throughout the state over the period because of the combination of high temperatures and humidity
- Forecast highs were in the upper-80s to near 90 statewide

Summer 2021 Hot Weather Operations

(Applicable to prior periods and the entire season)

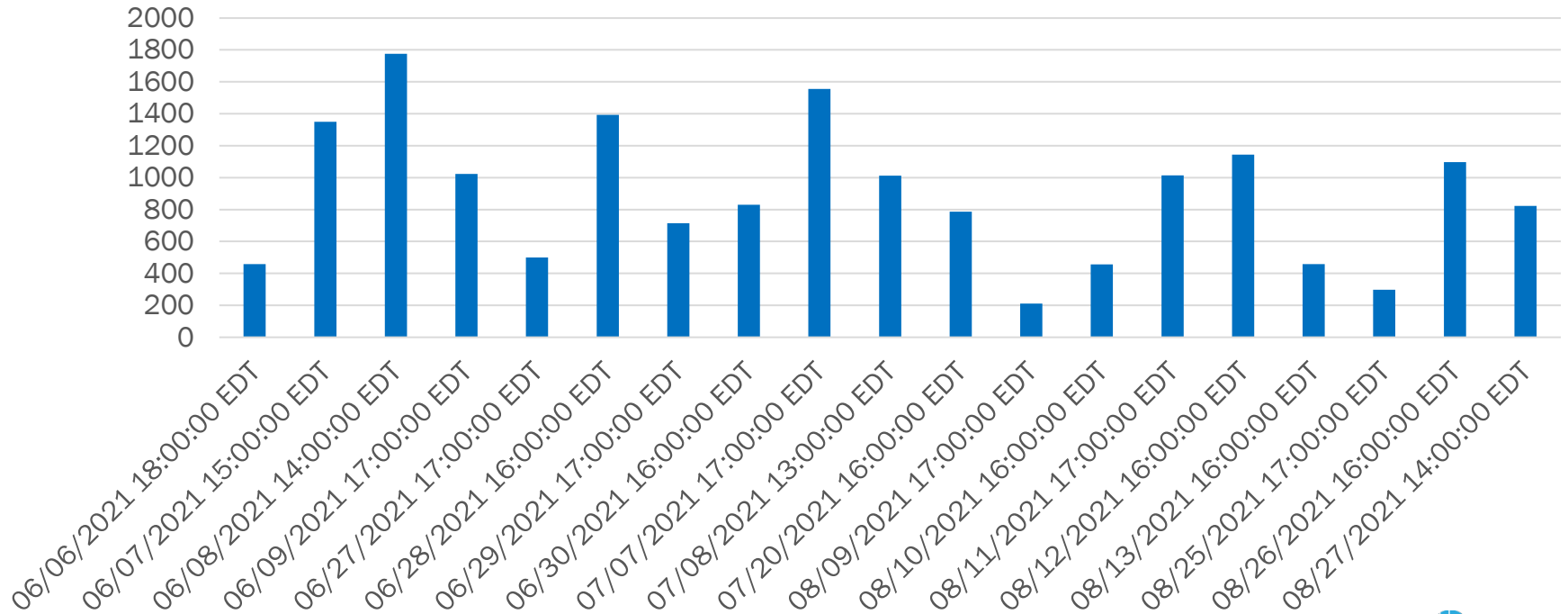
- Operations participated in regional coordination conference calls
- Worked with Transmission Owners to restore out of service equipment to support peak loads
- Local reliability commitments per NYSRC Applications of Reliability Rules
- Transmission Owners did activate utility (retail) demand response programs
- No need for emergency actions such as emergency purchases or statewide voltage reduction
 - Small amount of utility voltage reduction and utility public appeals for local transmission and distribution needs
- Pipeline and LDC Operational Flow Order (OFOs) were observed during high load periods

Other noteworthy events

- **First summer without Indian Point 2 & 3**
- **Tropical Storm Elsa**
 - Made landfall in the Florida Panhandle on 7/7/2021 as a tropical storm and brought heavy rain, flooding, and strong winds to the Northeast
 - Elsa formed unusually far south and east and became the first hurricane of the 2021 season, almost six weeks earlier than the average
- **Tropical Storm Henri**
 - Made landfall on 8/22/2021 in southwest Rhode Island as a tropical storm, primarily a rain event
 - Very low level of customers outage.
- **Tropical Storm Ida**
 - Made landfall on 8/29/2021 near Port Fourchon, Louisiana as a Category 4 Hurricane
 - Flash flooding, severe rainstorms, and an EF3 tornado impacted the northeast causing 51 deaths
 - Governor declared a state of emergency 9/2/2021 in response to record-breaking flooding as a result of Tropical Depression Ida
 - New York distribution observed around 40,000 outages on the morning of September 2nd, 2021.
- **7/8/21 NYISO issued a supplemental resource evaluation call (“SREd”) for Roseton 2 due to >1,500 MWs of generator derates and uncertain unit return times to meet statewide capacity needs at the time of the SRE**
- **7/20/21 NYISO issued a SRE for Selkirk 1&2 due to >750MWs of generator derates and uncertain unit return times to meet statewide capacity needs at the time of the SRE**

DAM Capacity not available in Real Time

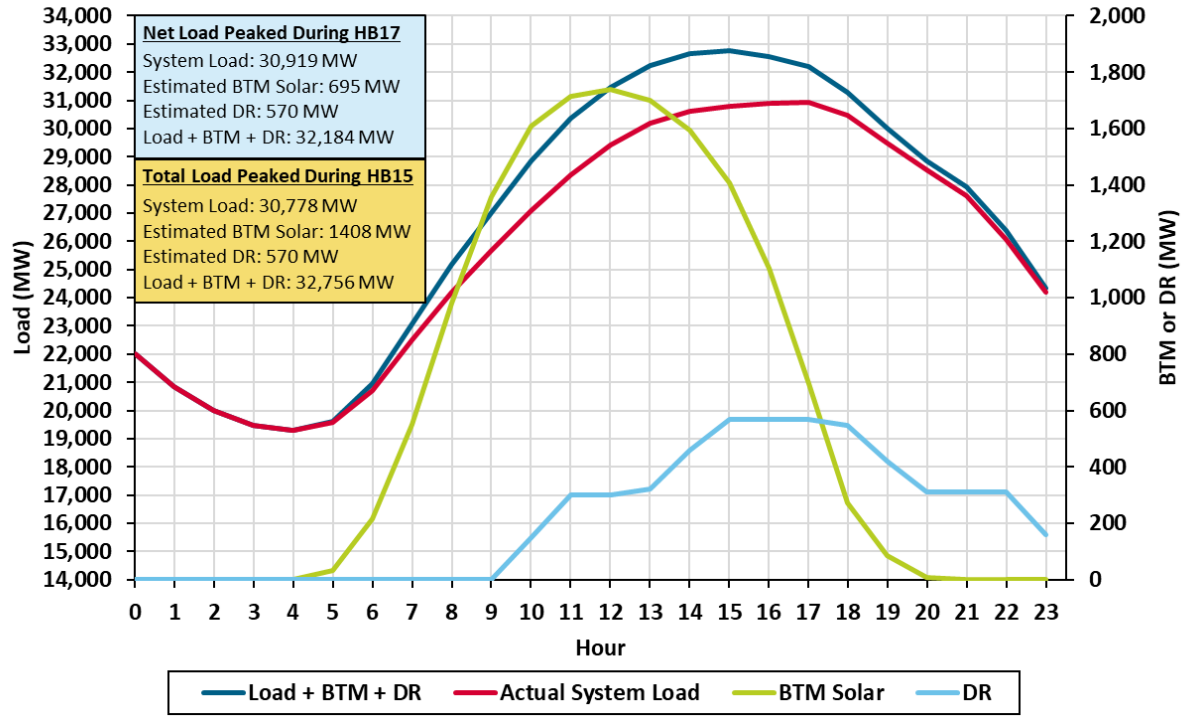
Capacity Deficiency DAM vs. RT



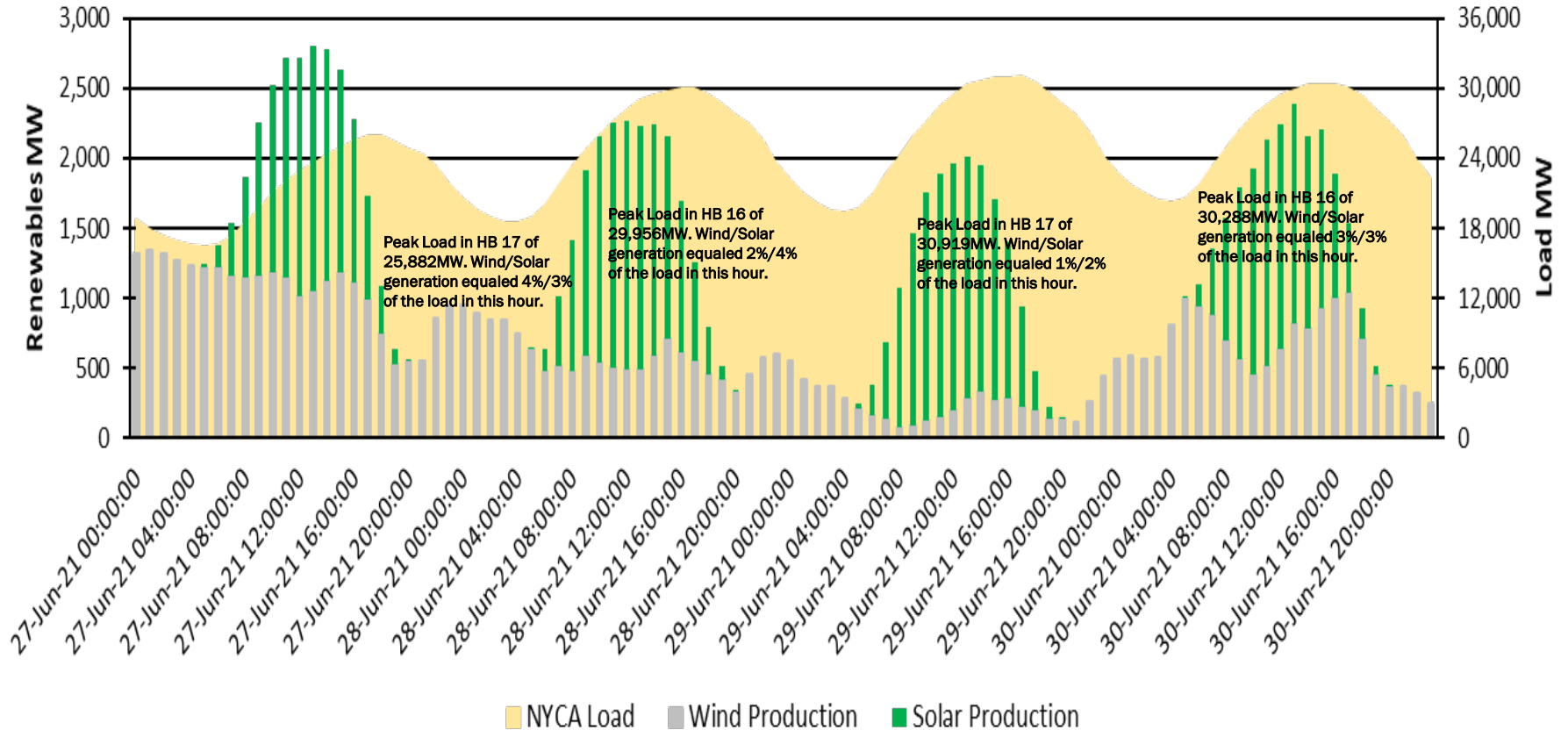
Ambient Conditions

- **Daily mean temperatures were near the 20-year average in May; above average in June and August; below average in July**
 - Highest Temperatures: 98 °F at NYC - Central Park and 92 °F at Albany
 - 17 days with highs above 90 °F at NYC - Central Park (average is 15 days/year from 1991 – 2020)
(Source: National Weather Service – New York City Office)
 - 4 days with highs above 90 °F at Albany (average is 9 days/year from 1991 – 2020)
(Source: National Weather Service – Albany Office)
- **Total load (GWh) was below 50/50 projections, driven by a large July deficit**
- **Peak load was below the 50/50 projection for the 8th consecutive summer**
 - Summer 2021 50/50 forecast was 32,327 MW
 - Summer 2021 actual peak load was 30,919 MW (June 29th)
 - Summer 2020 actual peak load was 30,660 MW
- **Three days with peak loads over 30,000 MW**
 - June 29th: HB13 to HB18
 - June 30th: HB14 to HB16
 - August 26th: HB15 to HB17

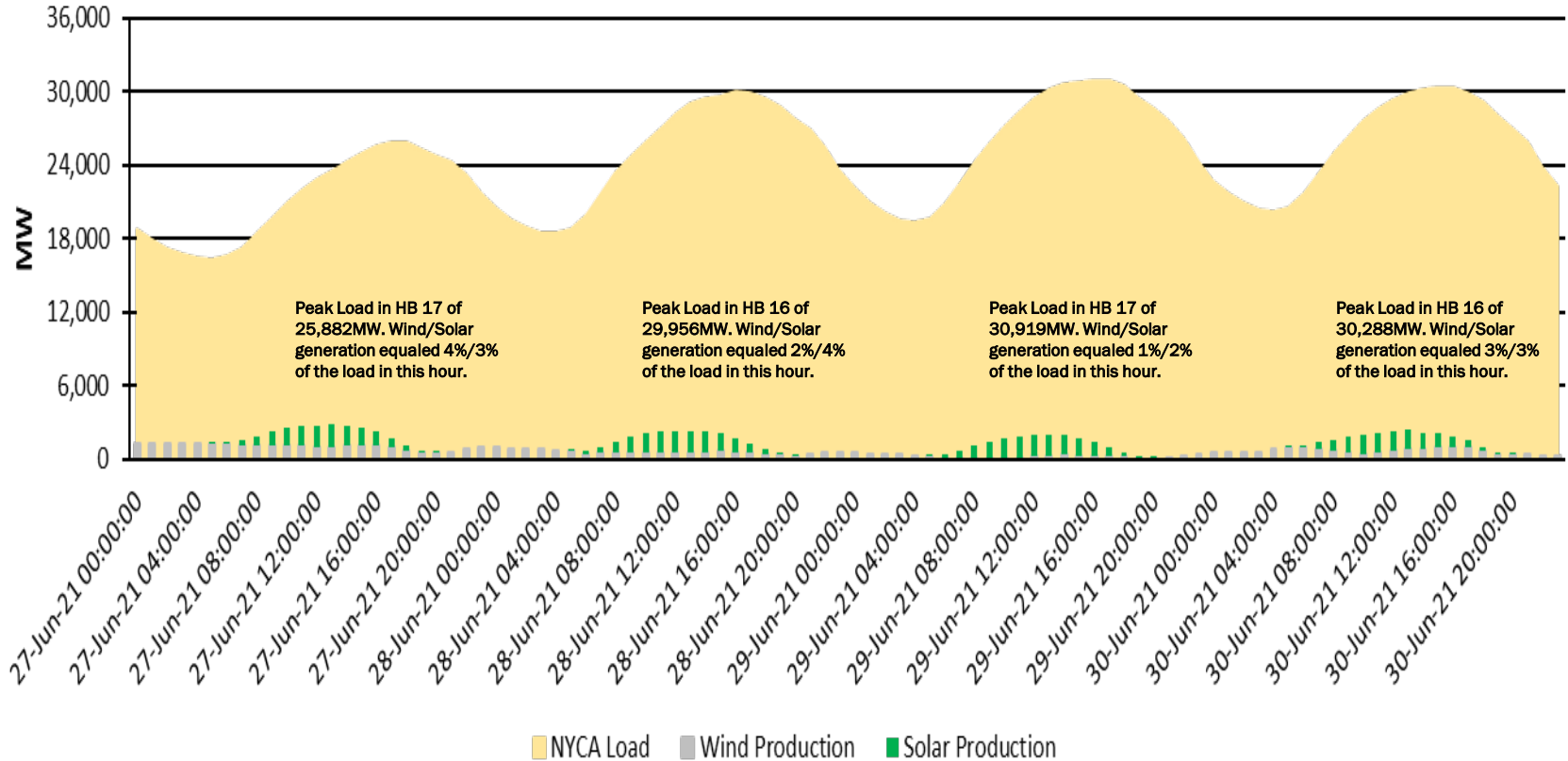
System Load, DR (NYISO- & TO-Initiated), and BTM Generation June 29, 2021



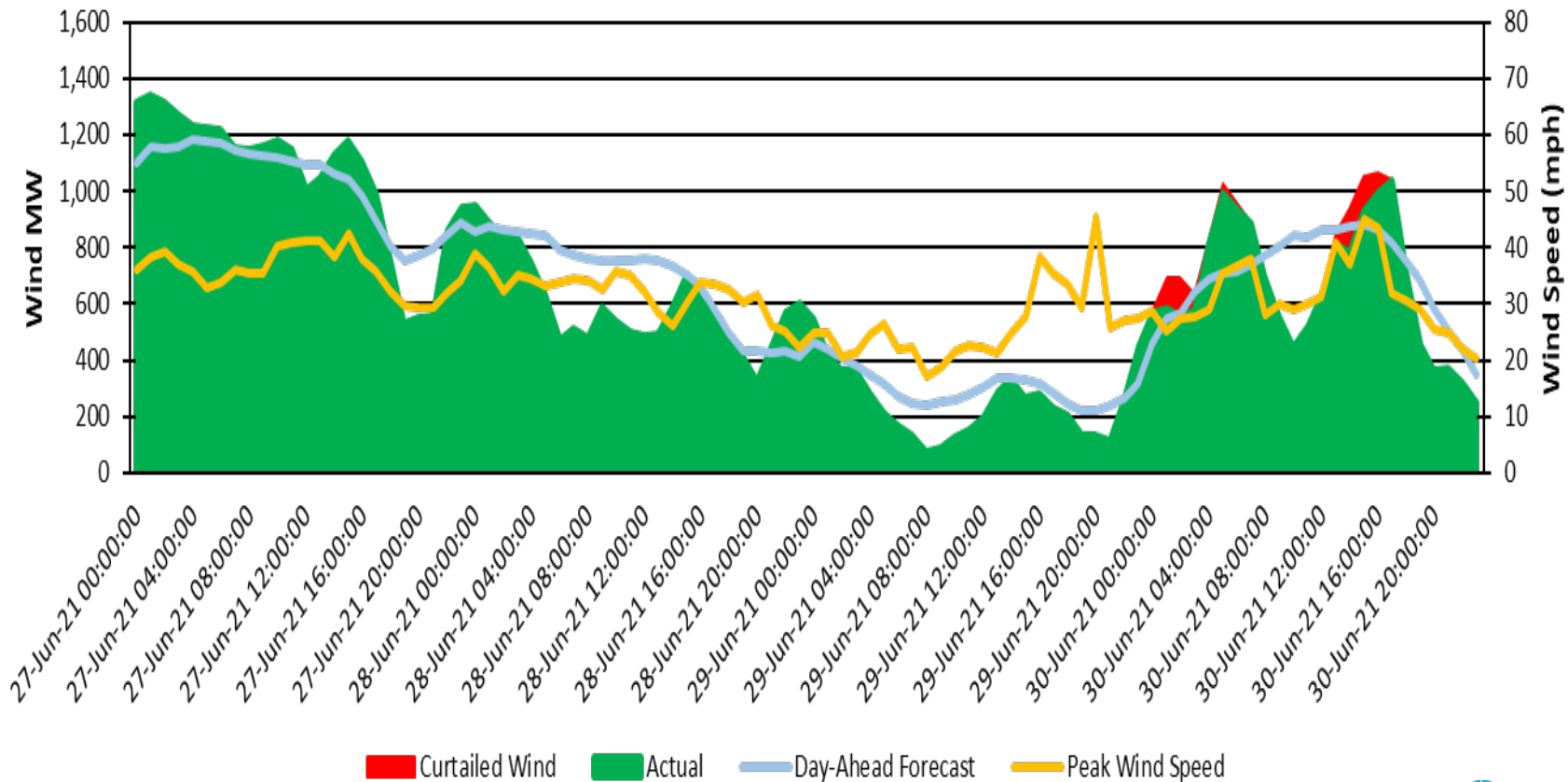
Hourly Wind & Solar Production 6/27/2021 - 6/30/2021



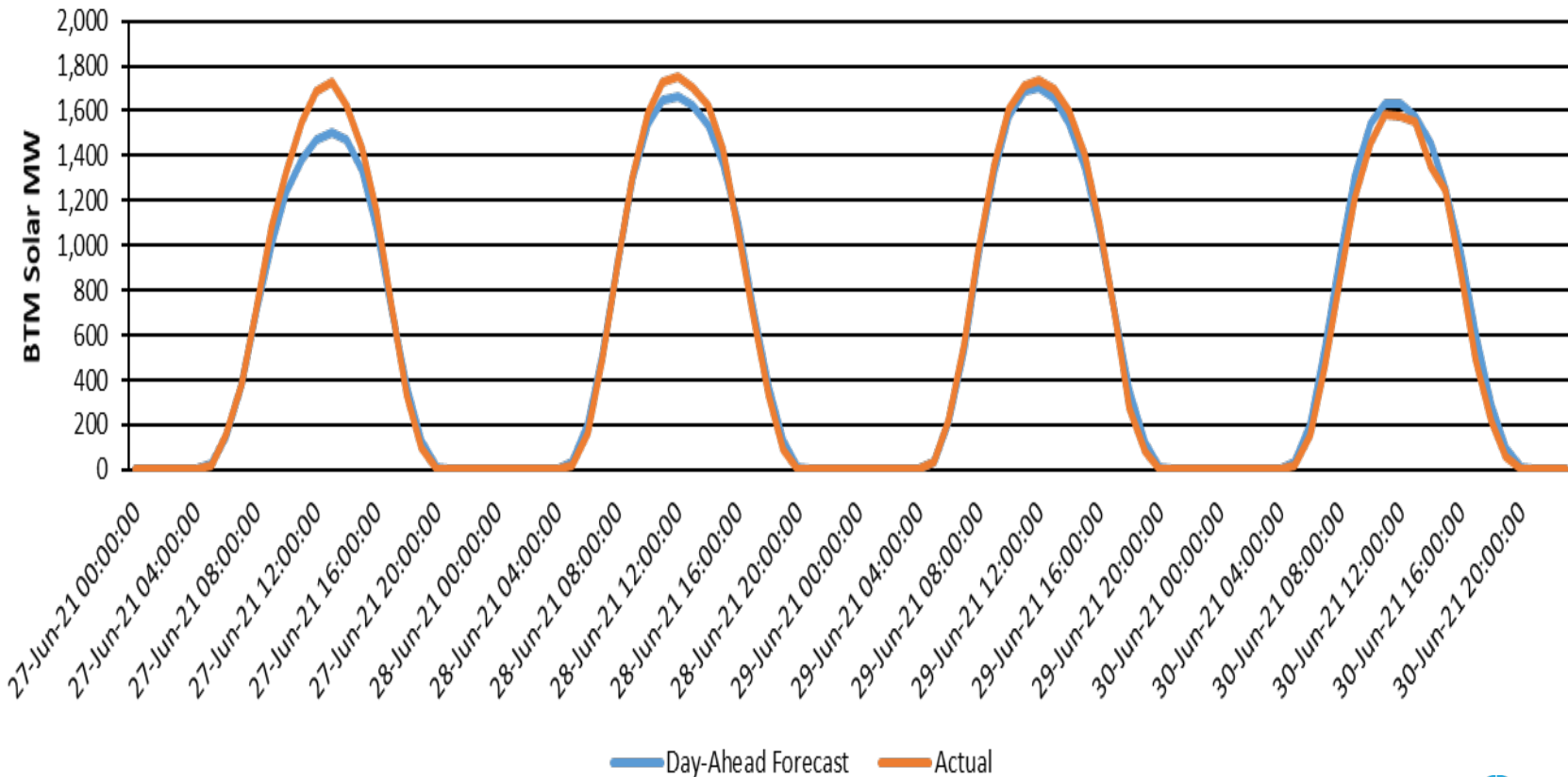
Hourly Wind & Solar Production 6/27/2021 - 6/30/2021



NYCA Wind Profile 6/27/2021 - 6/30/2021



NYCA BTM Solar Profile (~2,886 MW) 6/27/2021 - 6/30/2021



Retail Demand Response Program Activations

Date	Transmission Owner
June 28, 2021	National Grid, NYSEG, O&R, RG&E
June 29, 2021	Con Ed, LIPA, National Grid, NYSEG, O&R
June 30, 2021	Central Hudson, Con Ed, LIPA, O&R
July 16, 2021	Con Ed, LIPA
August 9, 2021	National Grid
August 10, 2021	National Grid, RG&E
August 11, 2021	National Grid, NYSEG, RG&E
August 12, 2021	Central Hudson, Con Ed, LIPA, National Grid, NYSEG, O&R, RG&E
August 13, 2021	Con Ed, LIPA, O&R
August 25, 2021	Con Ed, LIPA, National Grid, RG&E
August 26, 2021	LIPA, National Grid, NYSEG, RG&E
August 27, 2021	Con Ed, LIPA

Targeted Demand Response Program Activations

Date	Transmission Owner	Sub-load Pockets Called
June 29, 2021	Con Ed	J2
June 30, 2021	Con Ed	J2

Special Case Resource Program and Emergency Demand Response Program Activations

Date	Zones Called
August 11, 2021	K
August 12, 2021	K
August 13, 2021	K
August 25, 2021	K
August 26, 2021	K
August 27, 2021	K

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

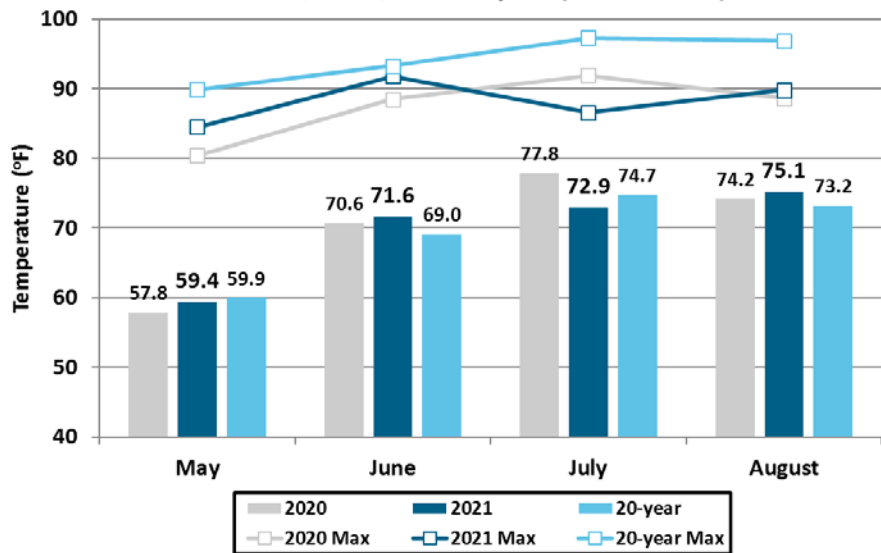
- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system



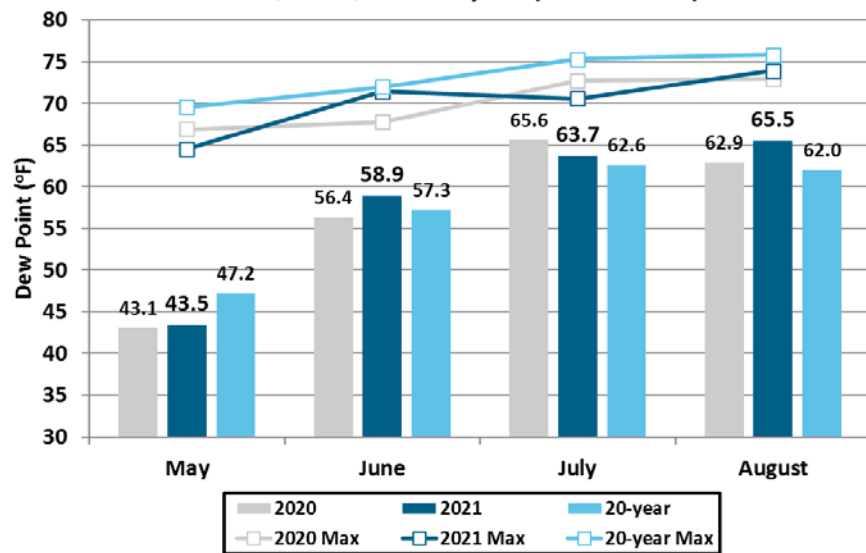
Questions?

Appendix

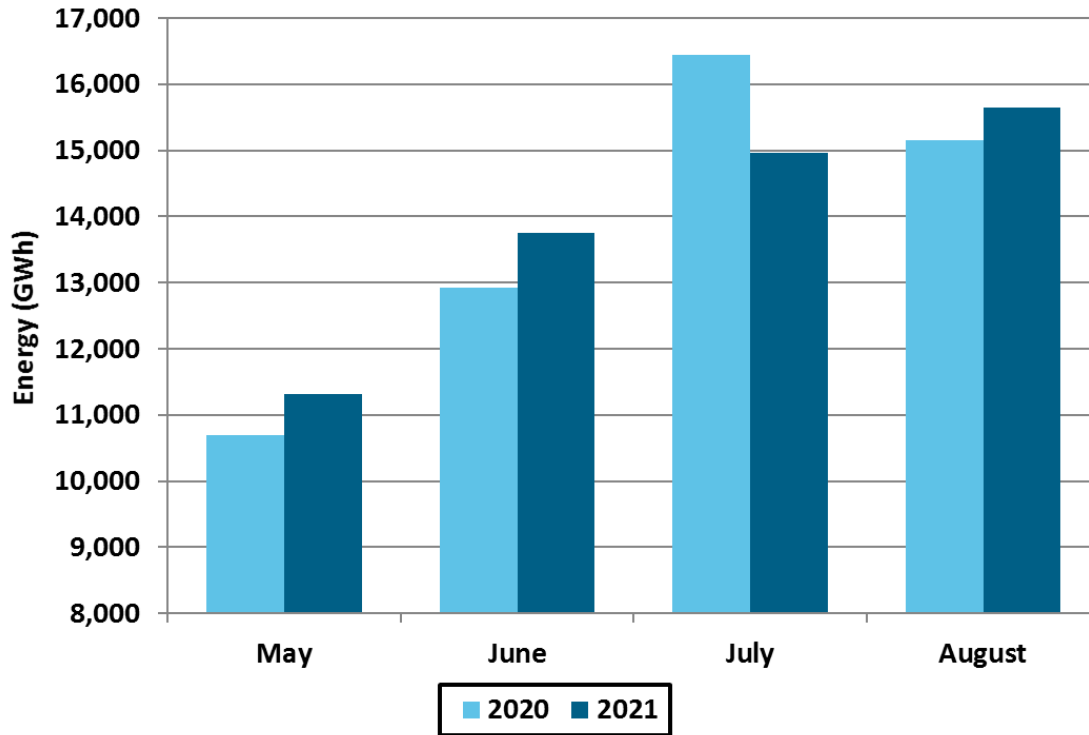
Monthly Average and Max Temperatures
2020, 2021, and 20-year (2001 - 2020)



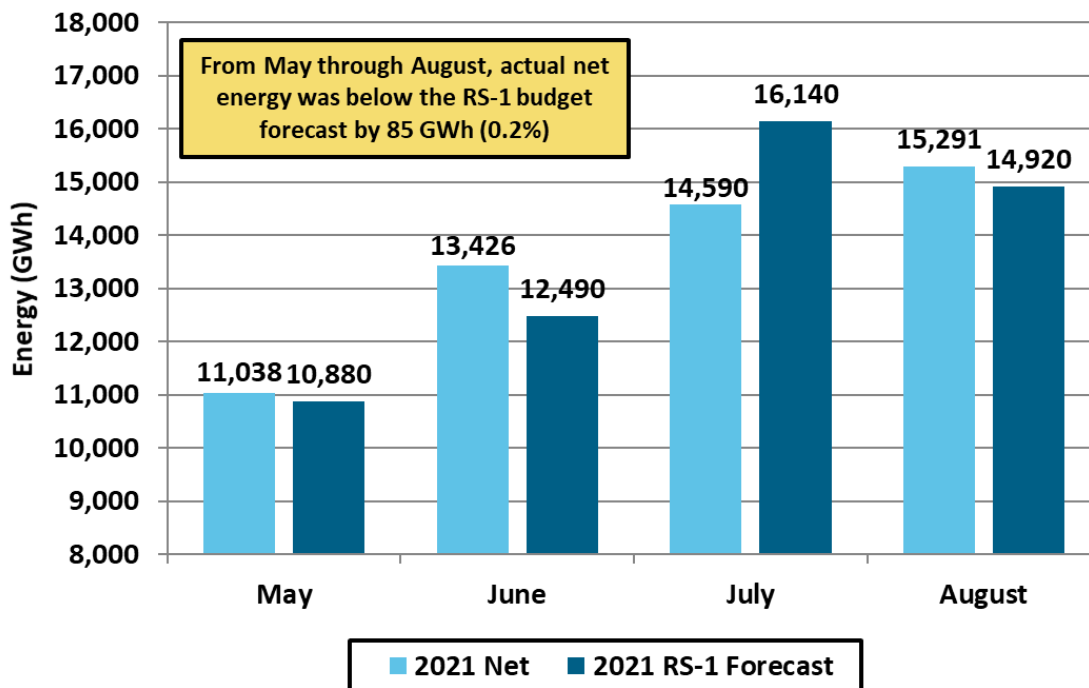
Monthly Average and Max Dew Points
2020, 2021, and 20-year (2001 - 2020)



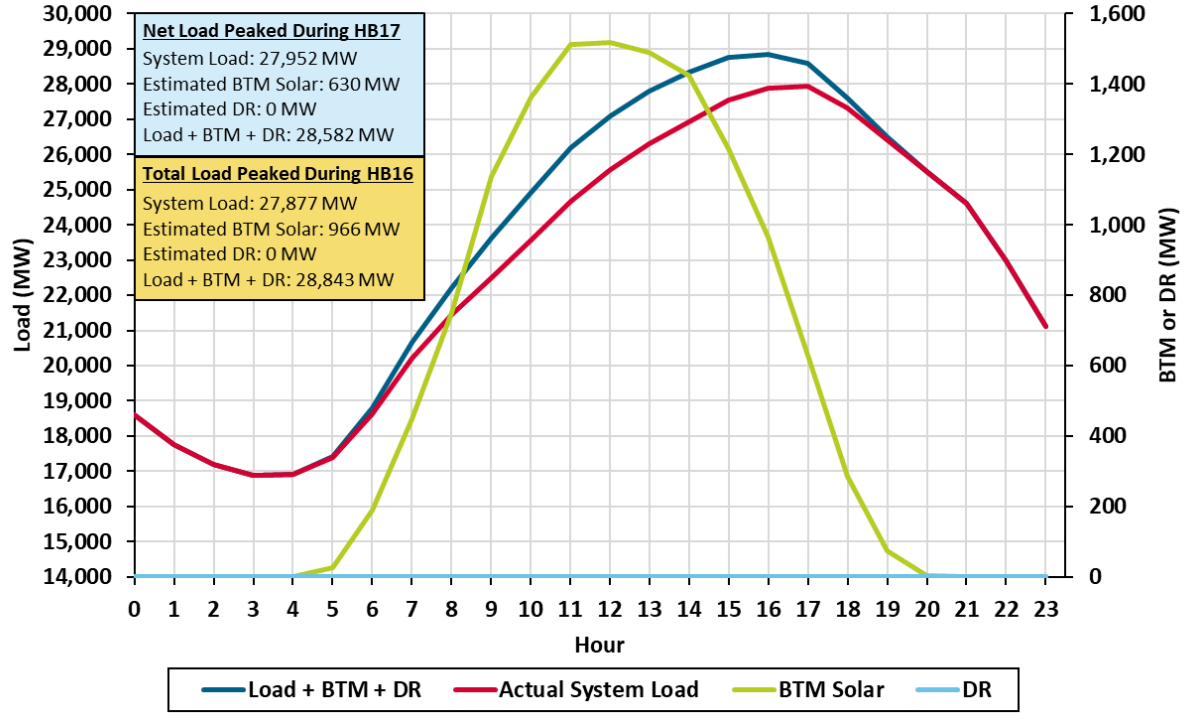
Monthly Send Out - 2020 & 2021 (GWh)



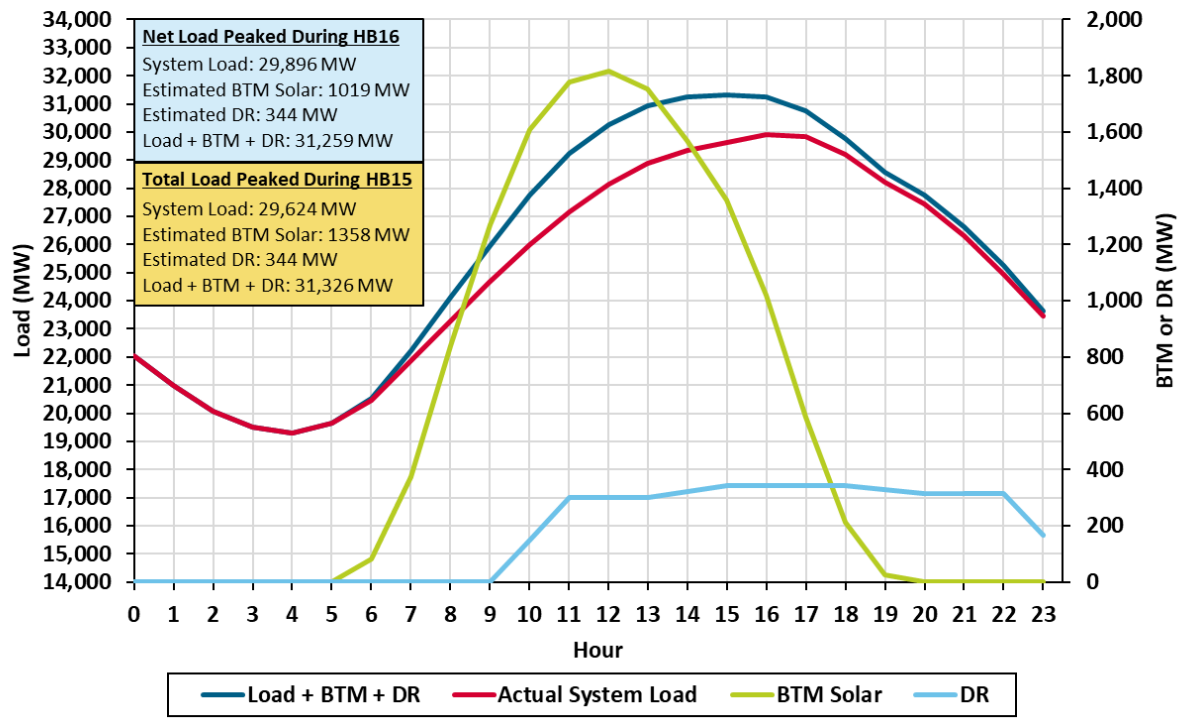
2021 Monthly Net Energy - GWh Actual and RS-1 Budget Forecast



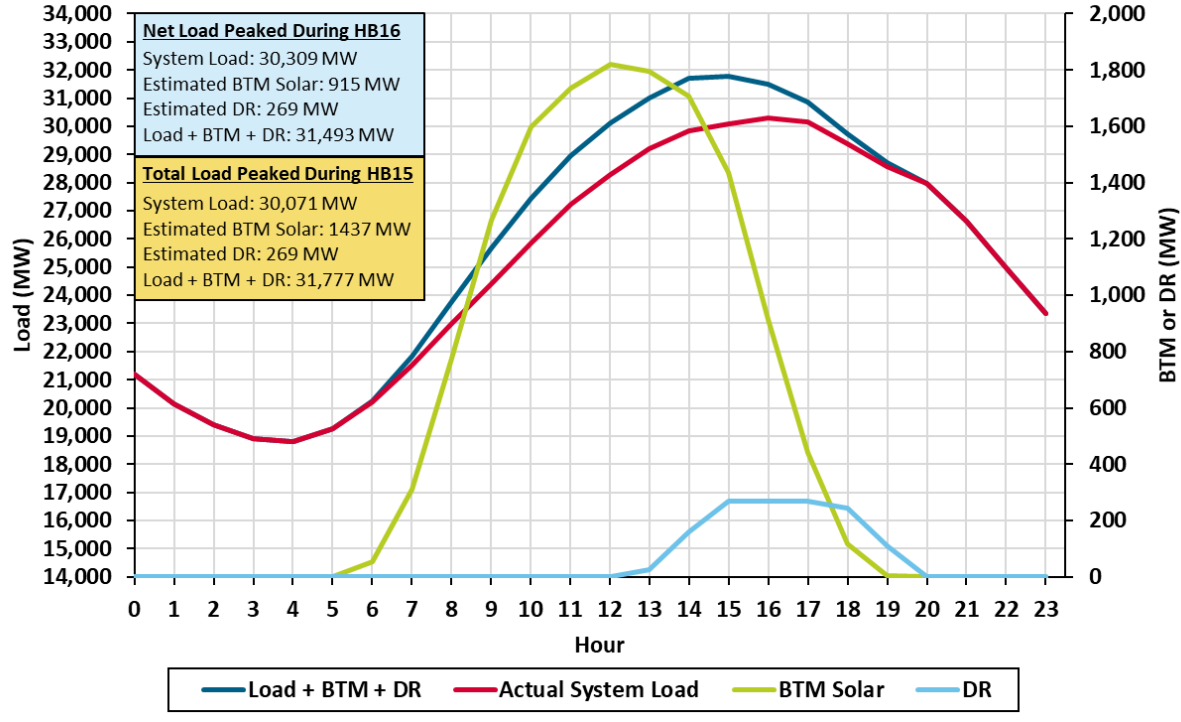
System Load, DR (NYISO- & TO-Initiated), and BTM Generation June 9, 2021



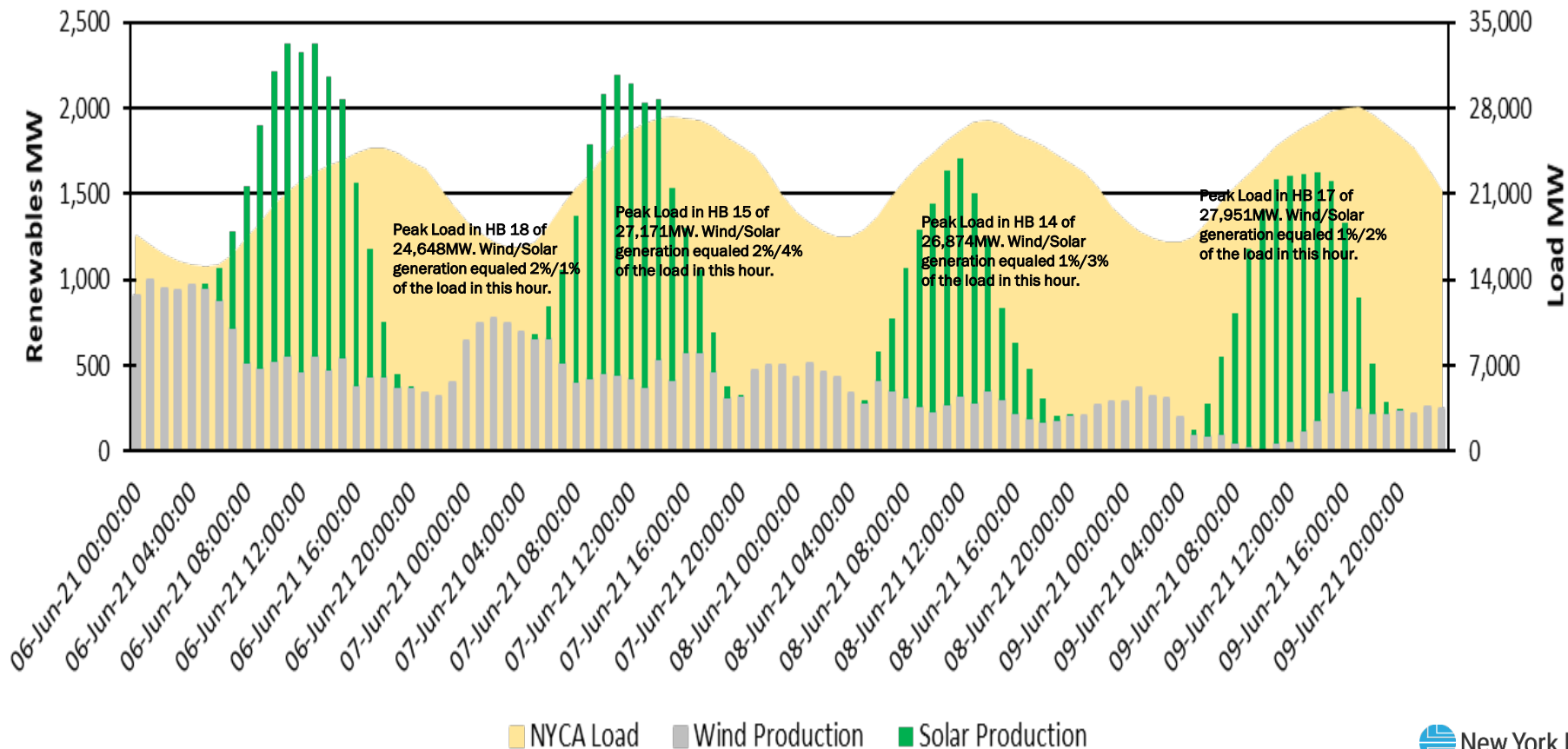
System Load, DR (NYISO- & TO-Initiated), and BTM Generation August 13, 2021



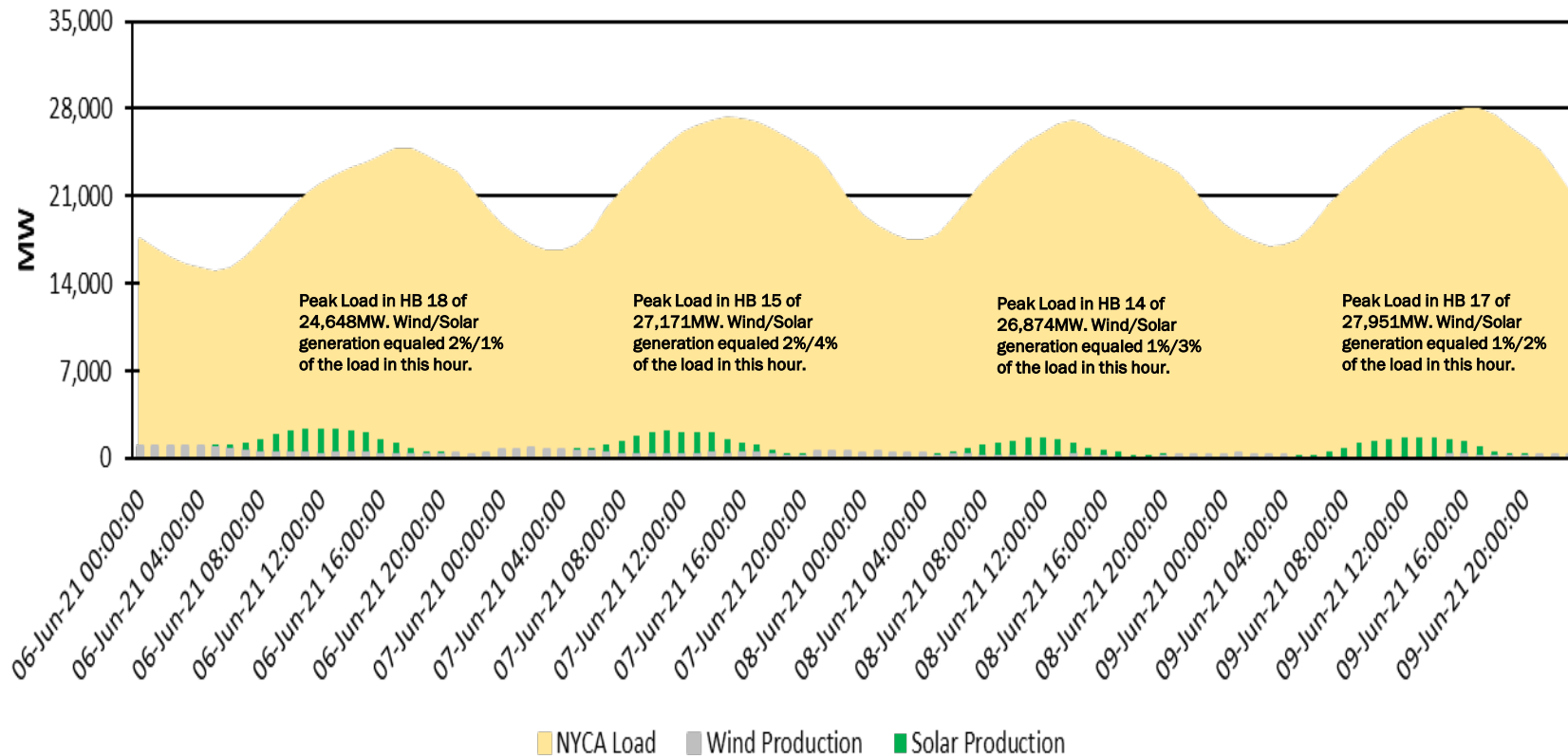
System Load, DR (NYISO- & TO-Initiated), and BTM Generation August 26, 2021



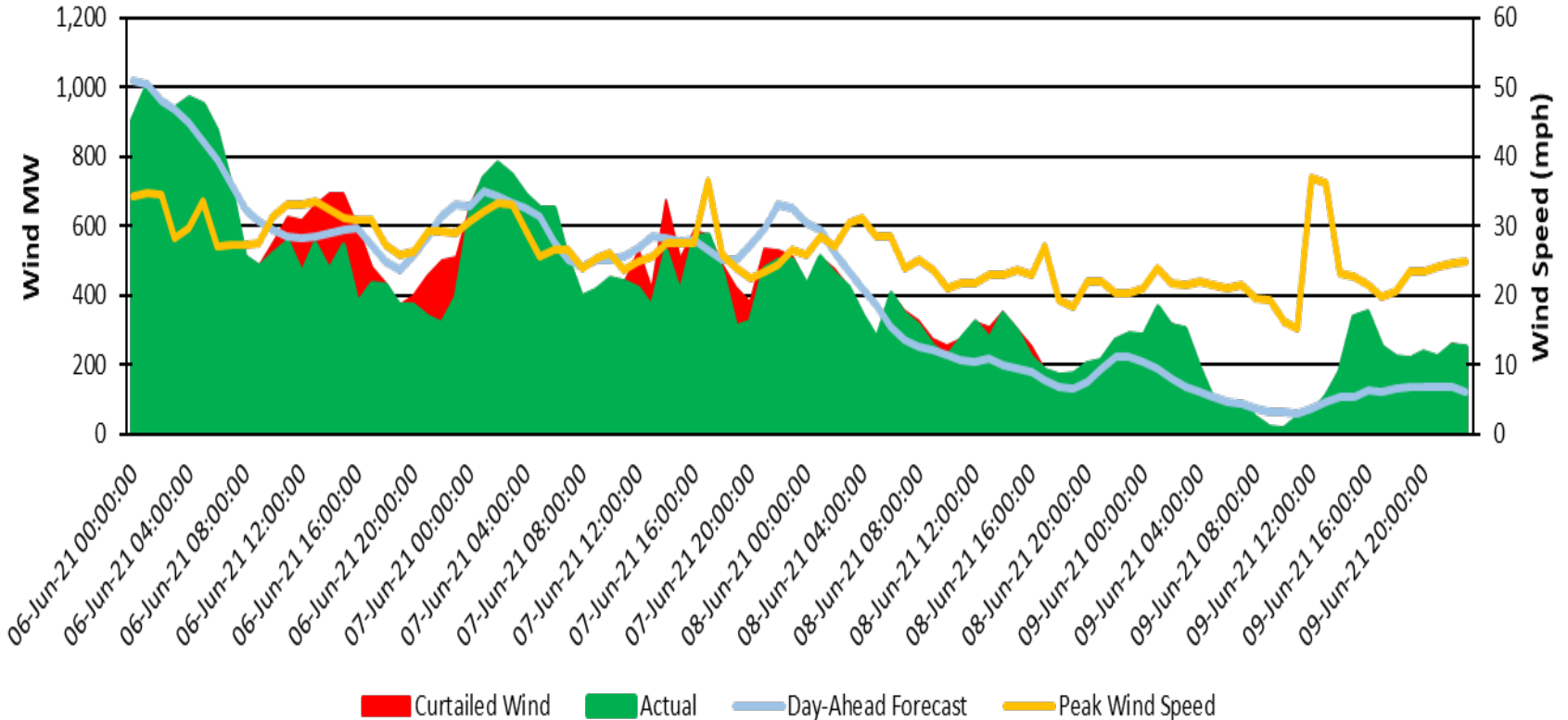
Hourly Wind & Solar Production 6/6/2021 - 6/9/2021



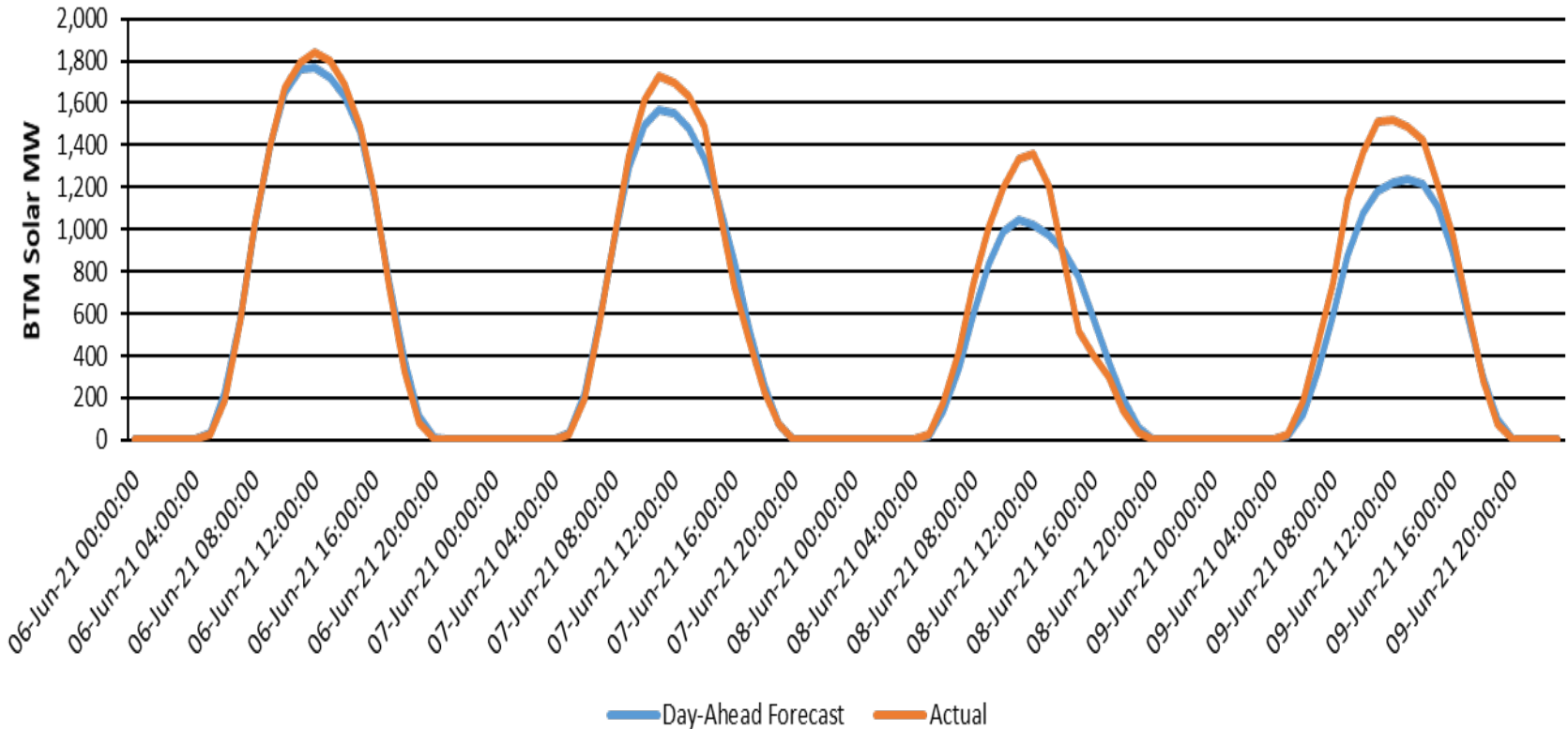
Hourly Wind & Solar Production 6/6/2021 - 6/9/2021



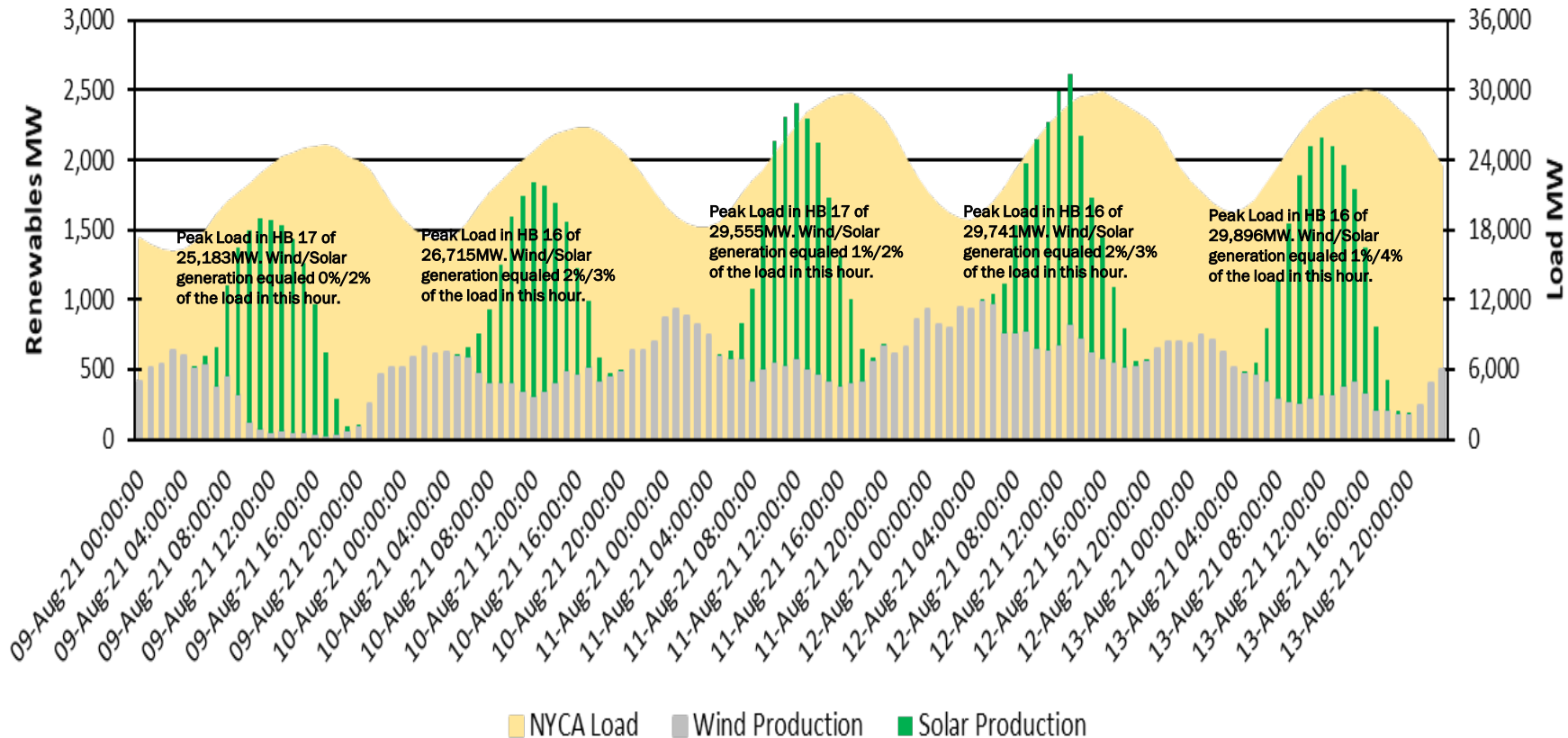
NYCA Wind Profile 6/6/2021 - 6/9/2021



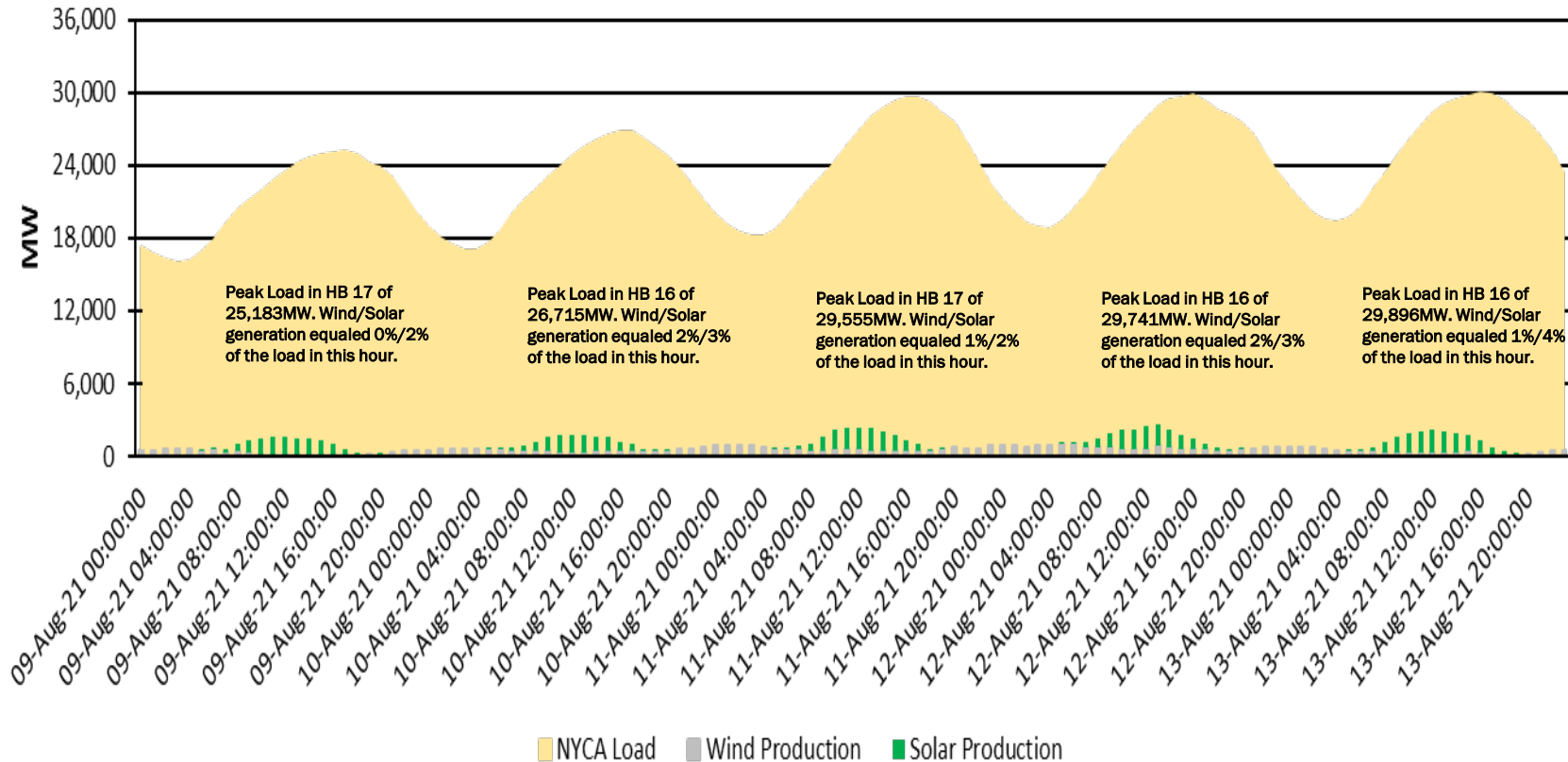
NYCA BTM Solar Profile (~2,886 MW) 6/6/2021 - 6/9/2021



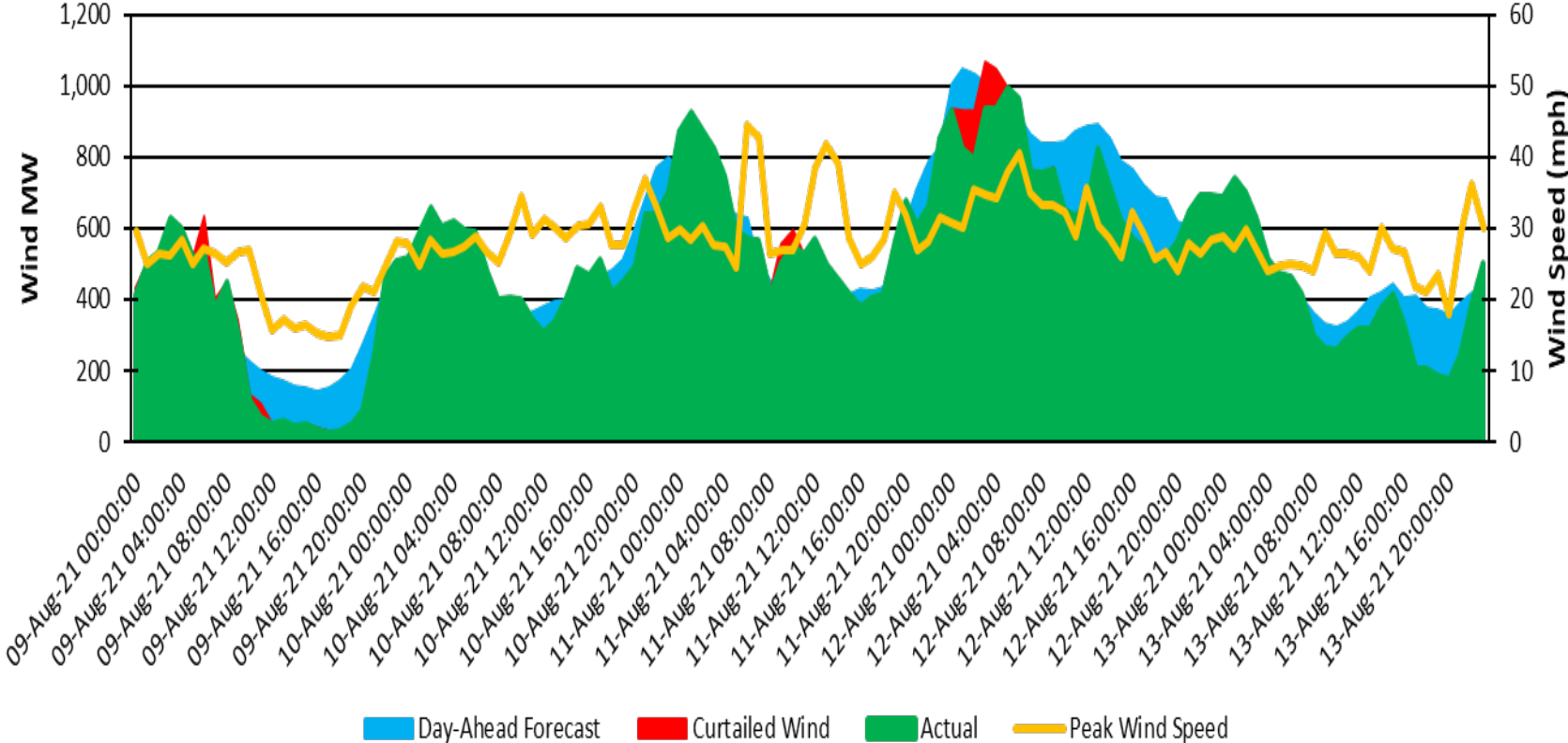
Hourly Wind & Solar Production 8/9/2021 - 8/13/2021



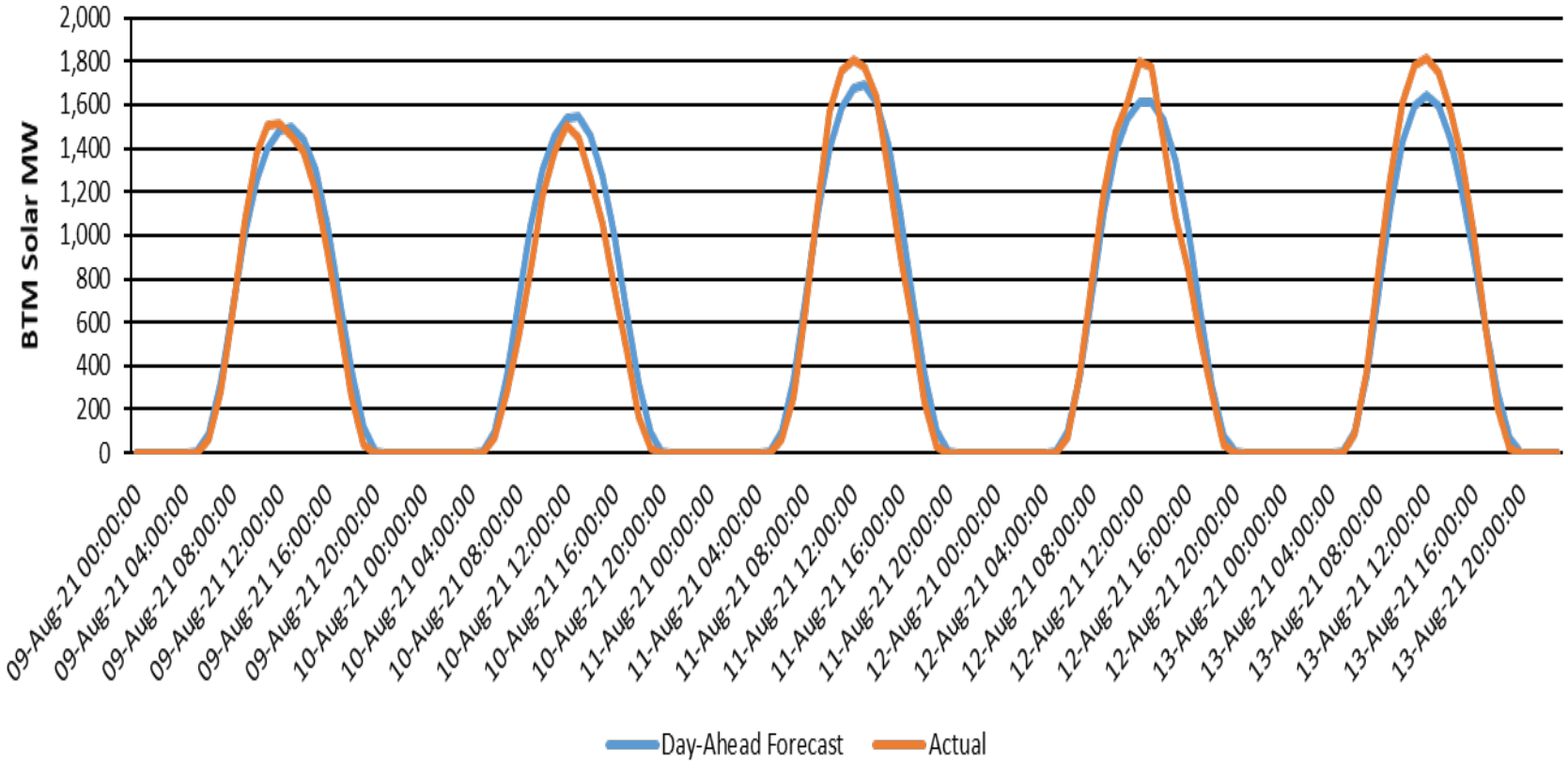
Hourly Wind & Solar Production 8/9/2021 - 8/13/2021



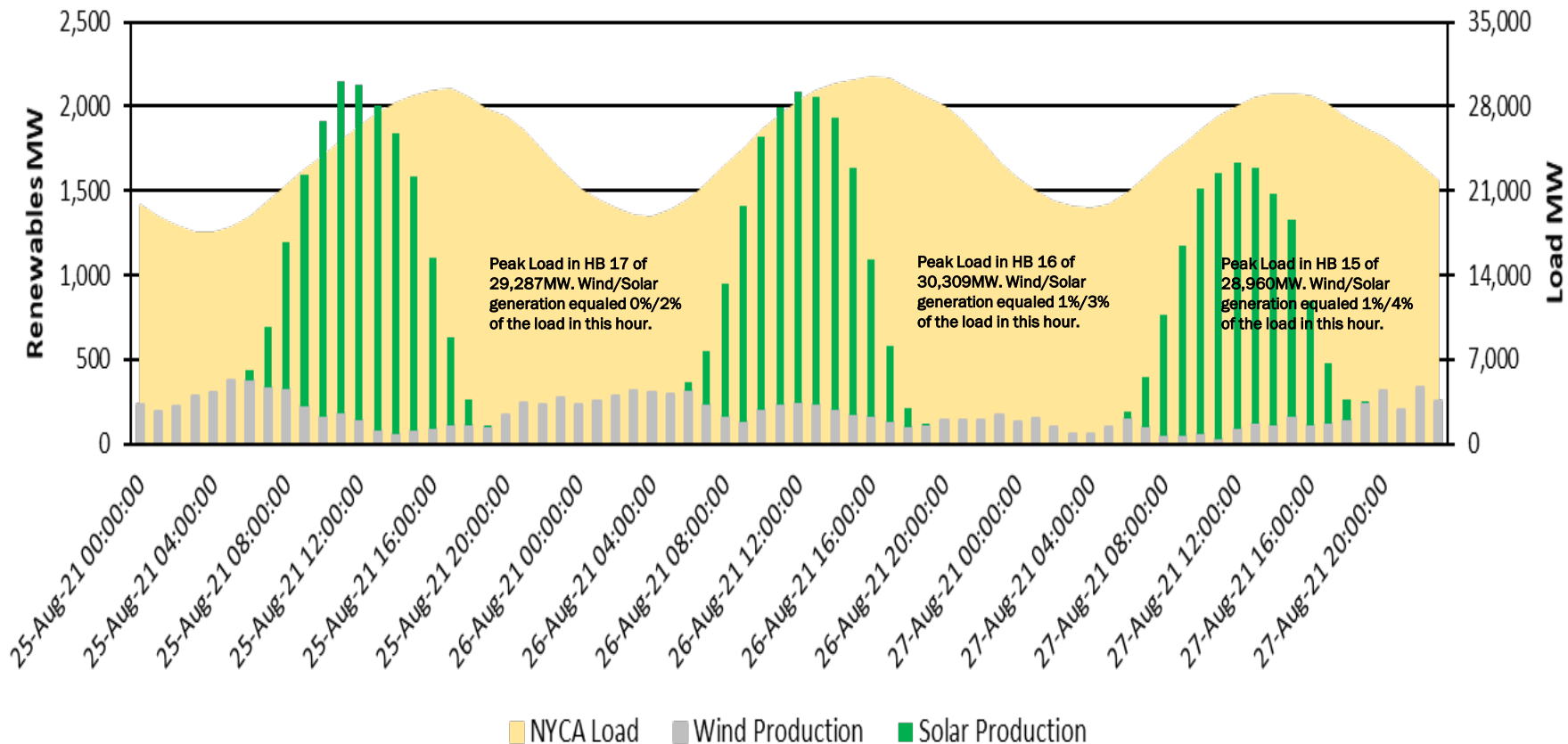
NYCA Wind Profile 8/9/2021 - 8/13/2021



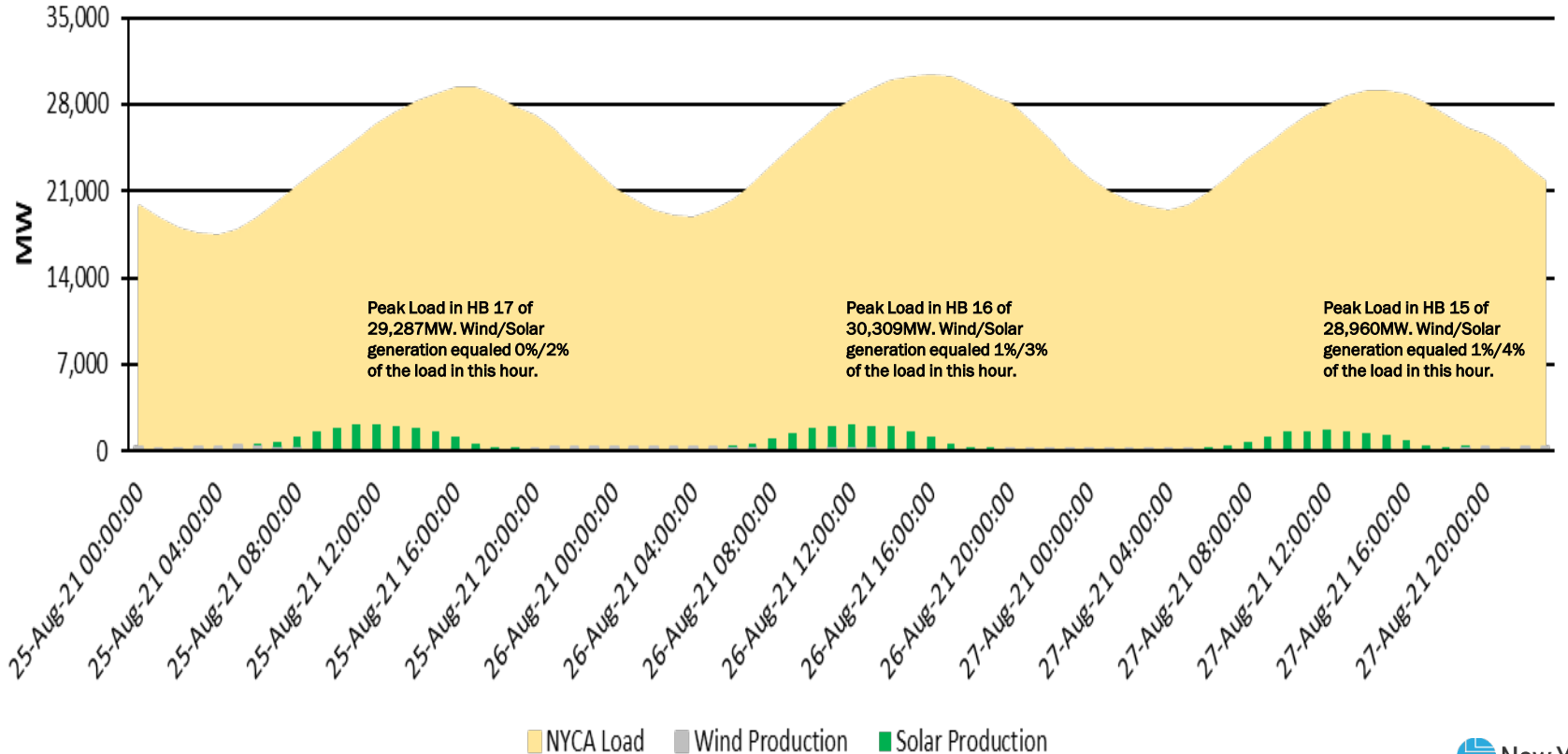
NYCA BTM Solar Profile (~3,022 MW) 8/9/2021 - 8/13/2021



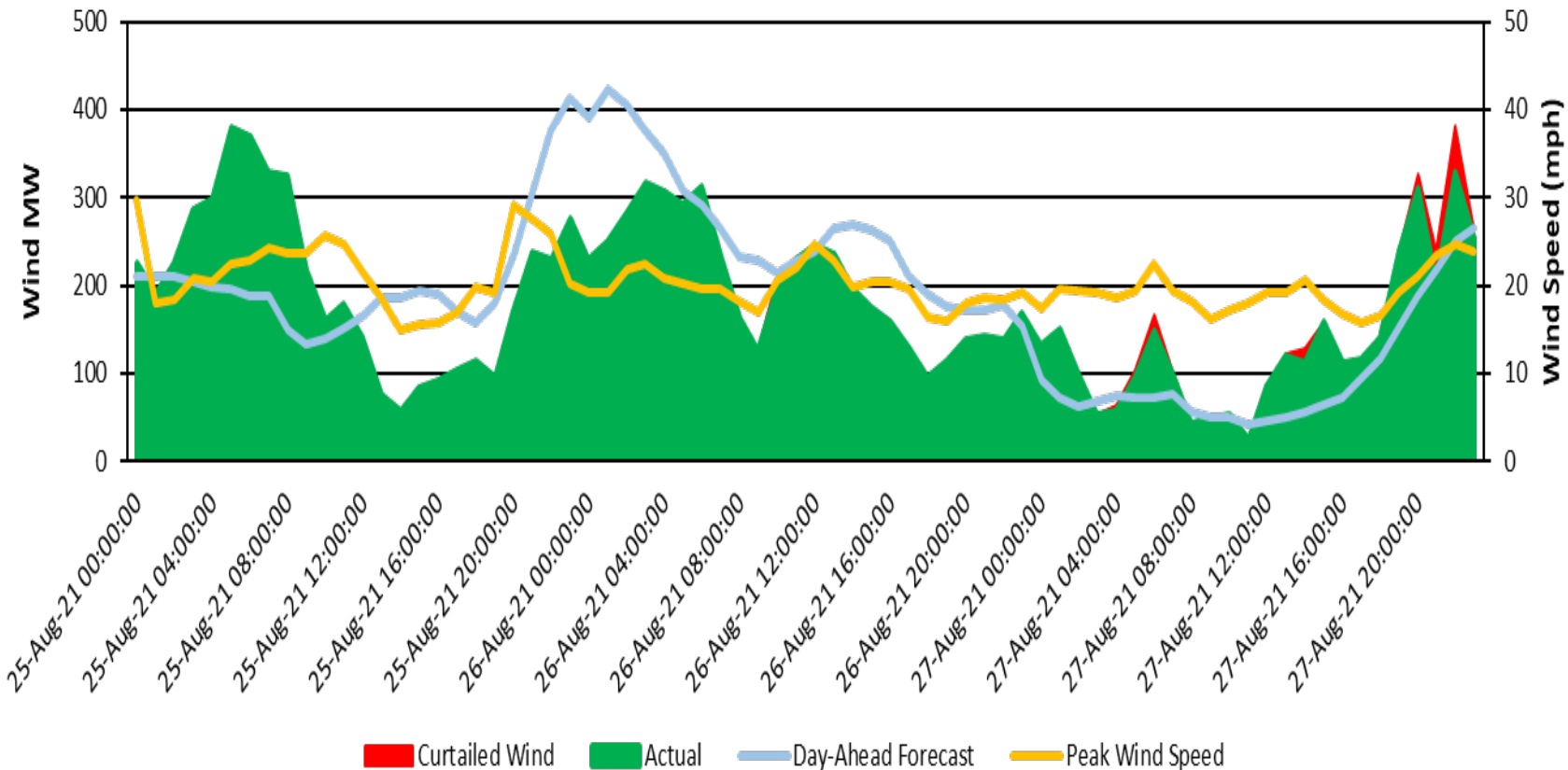
Hourly Wind & Solar Production 8/25/2021 - 8/27/2021



Hourly Wind & Solar Production 8/25/2021 - 8/27/2021



NYCA Wind Profile 8/25/2021 - 8/27/2021



NYCA BTM Solar Profile (~3,022 MW) 8/25/2021 - 8/27/2021

