

# NYISO Summer 2021 Hot Weather Operations

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VICE PRESIDENT, OPERATIONS

**NYSRC - Executive Committee**

October 15, 2021

# 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)

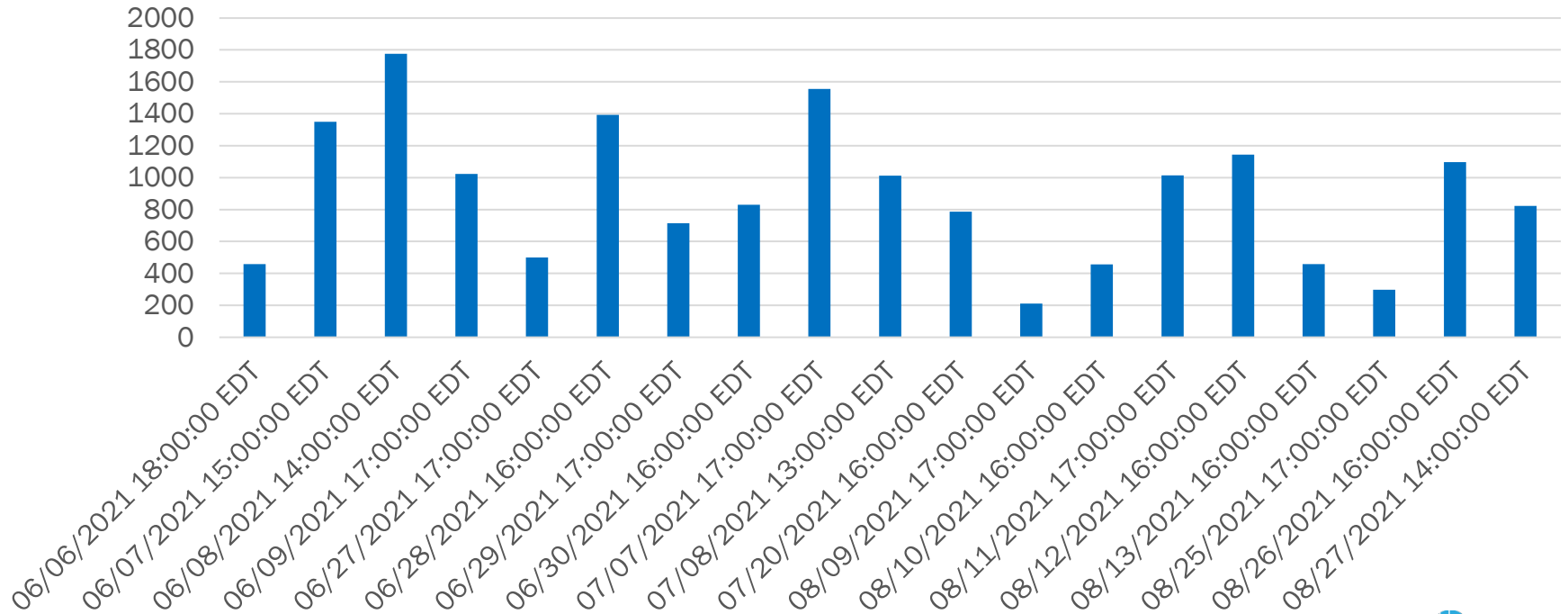
- Operations participated in regional coordination conference calls
- Worked with Transmission Owners to restore out of service equipment to support peak loads
- Local reliability commitments per NYSRC Applications of Reliability Rules
- Transmission Owners did activate utility (retail) demand response 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 2<sup>nd</sup>, 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

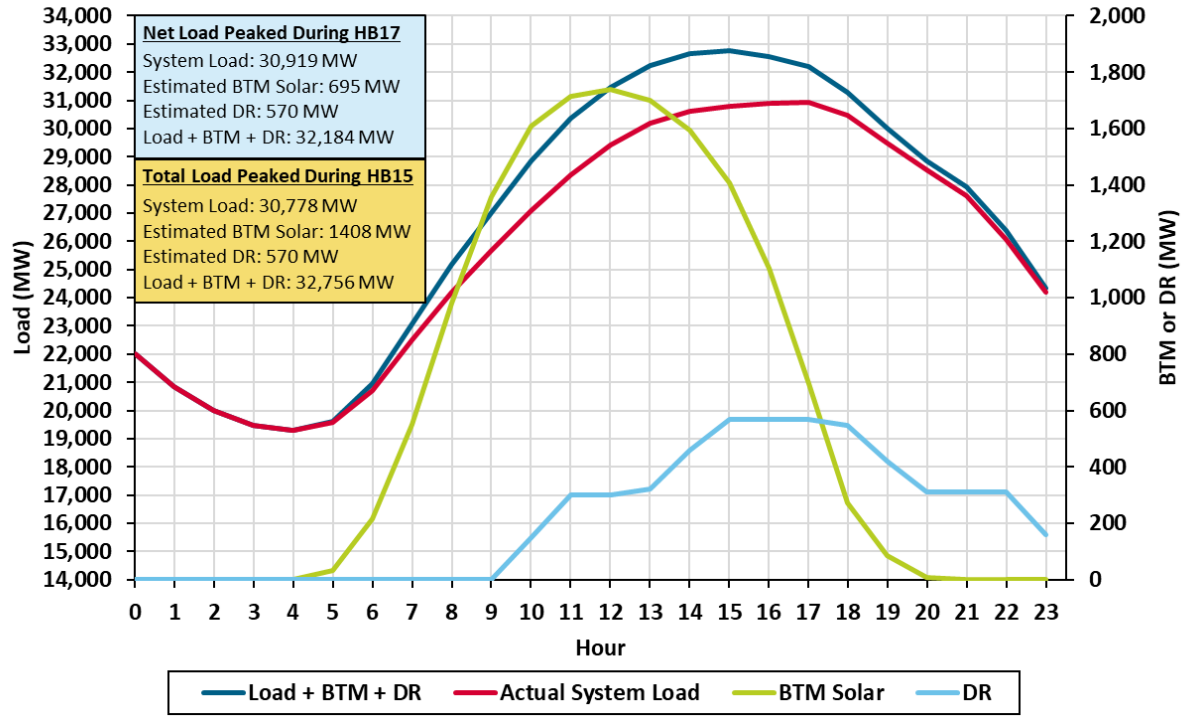
Capacity Deficiency DAM vs. RT



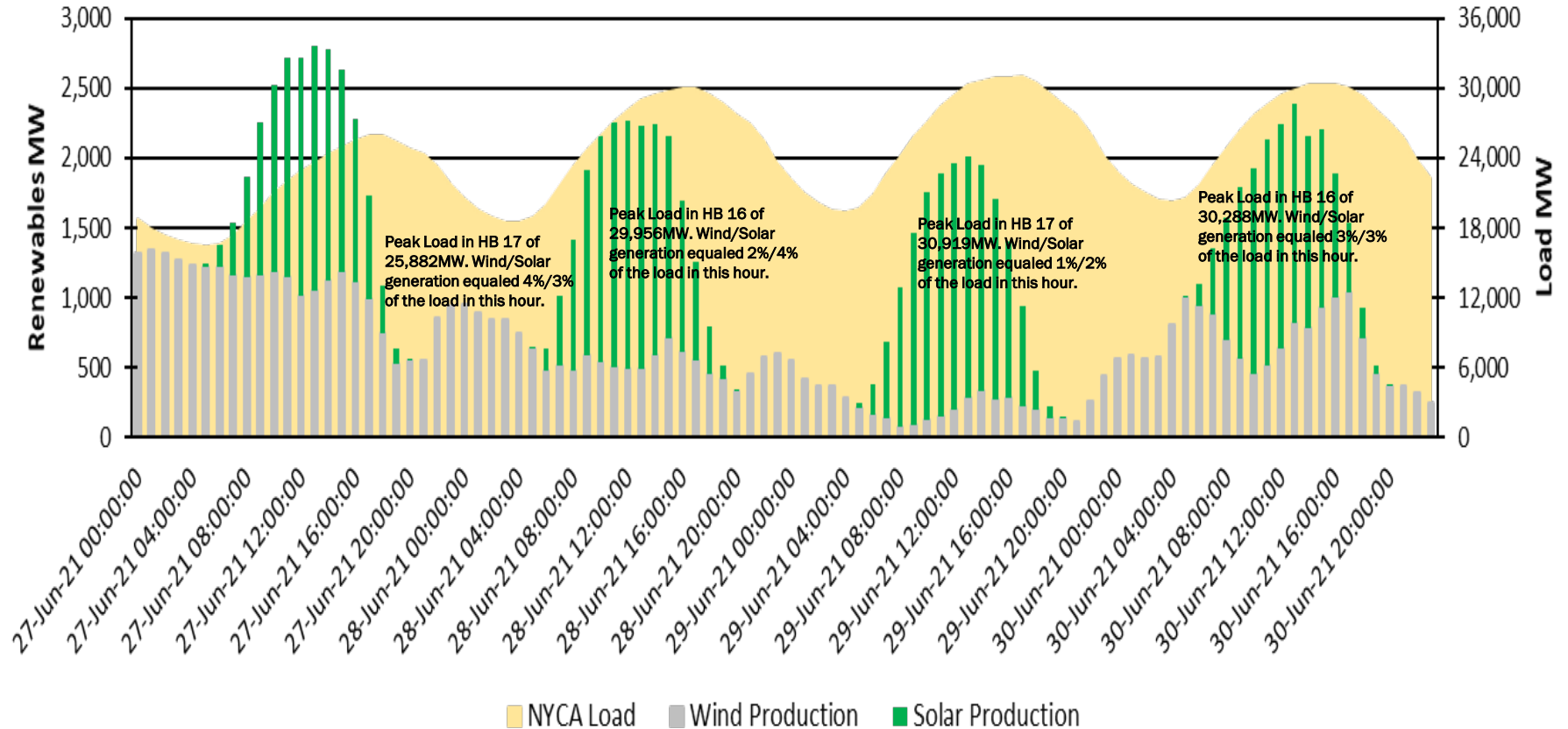
# Ambient Conditions

- **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

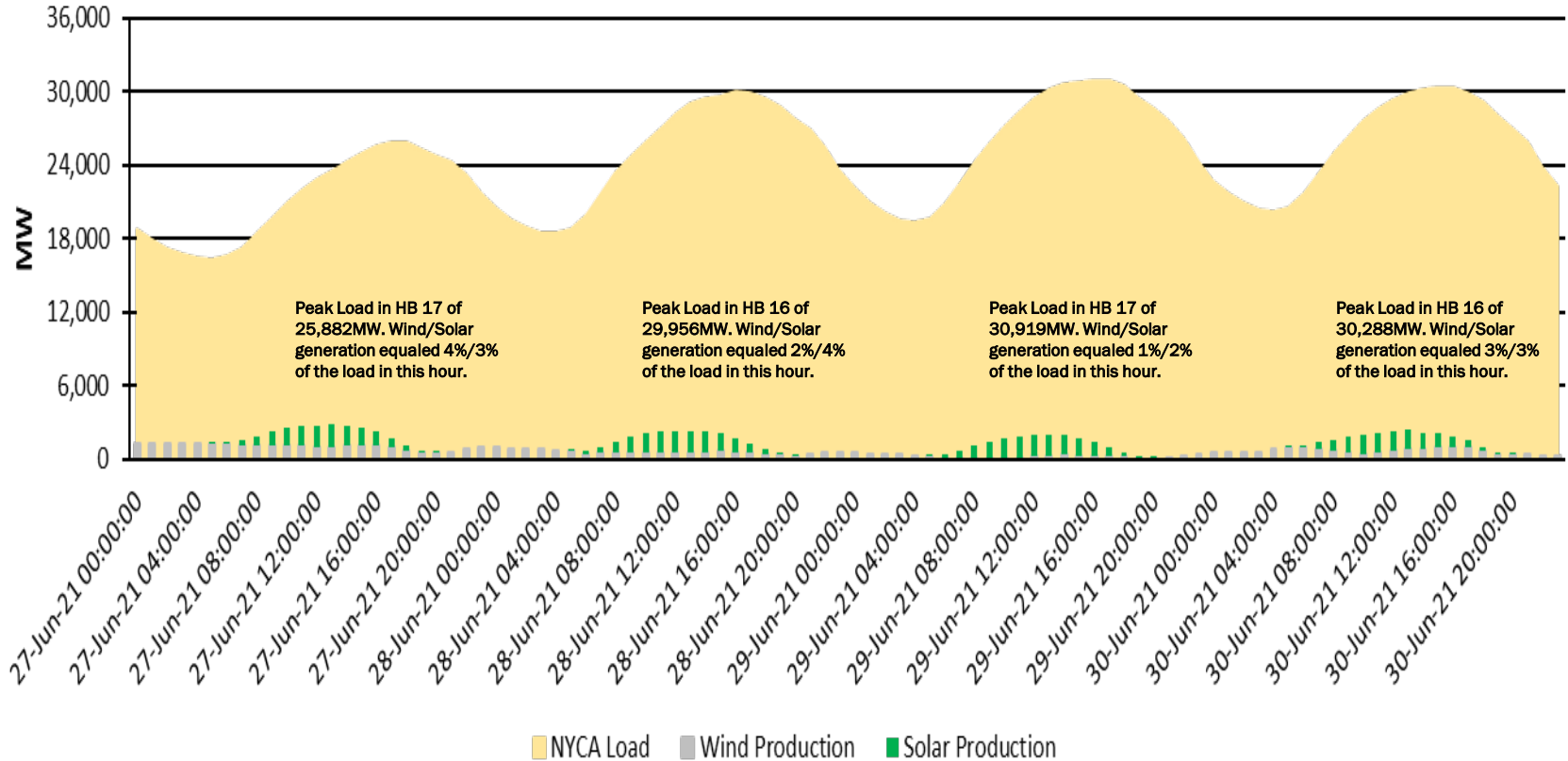
### System Load, DR (NYISO- & TO-Initiated), and BTM Generation June 29, 2021



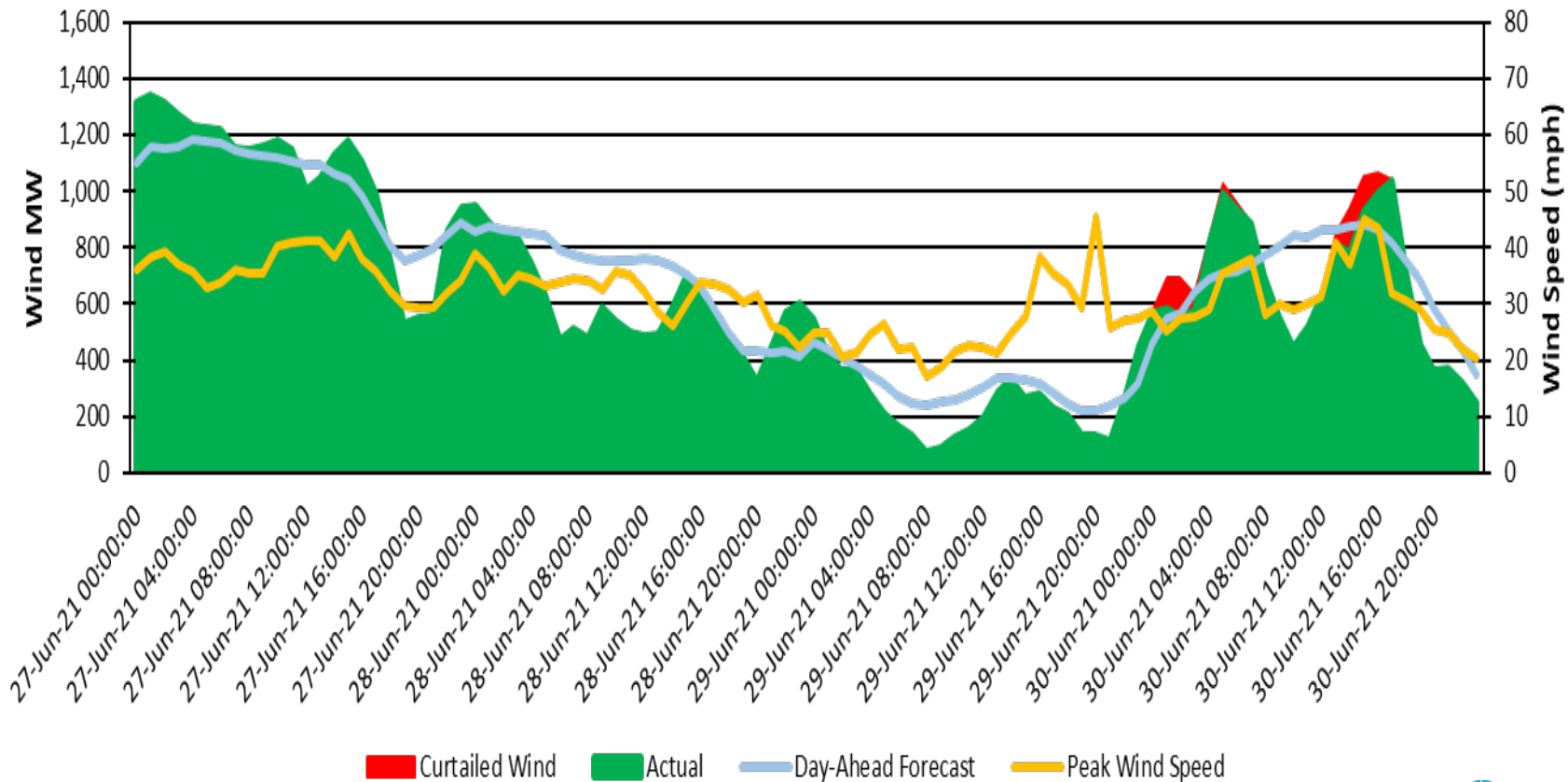
# Hourly Wind & Solar Production 6/27/2021 - 6/30/2021



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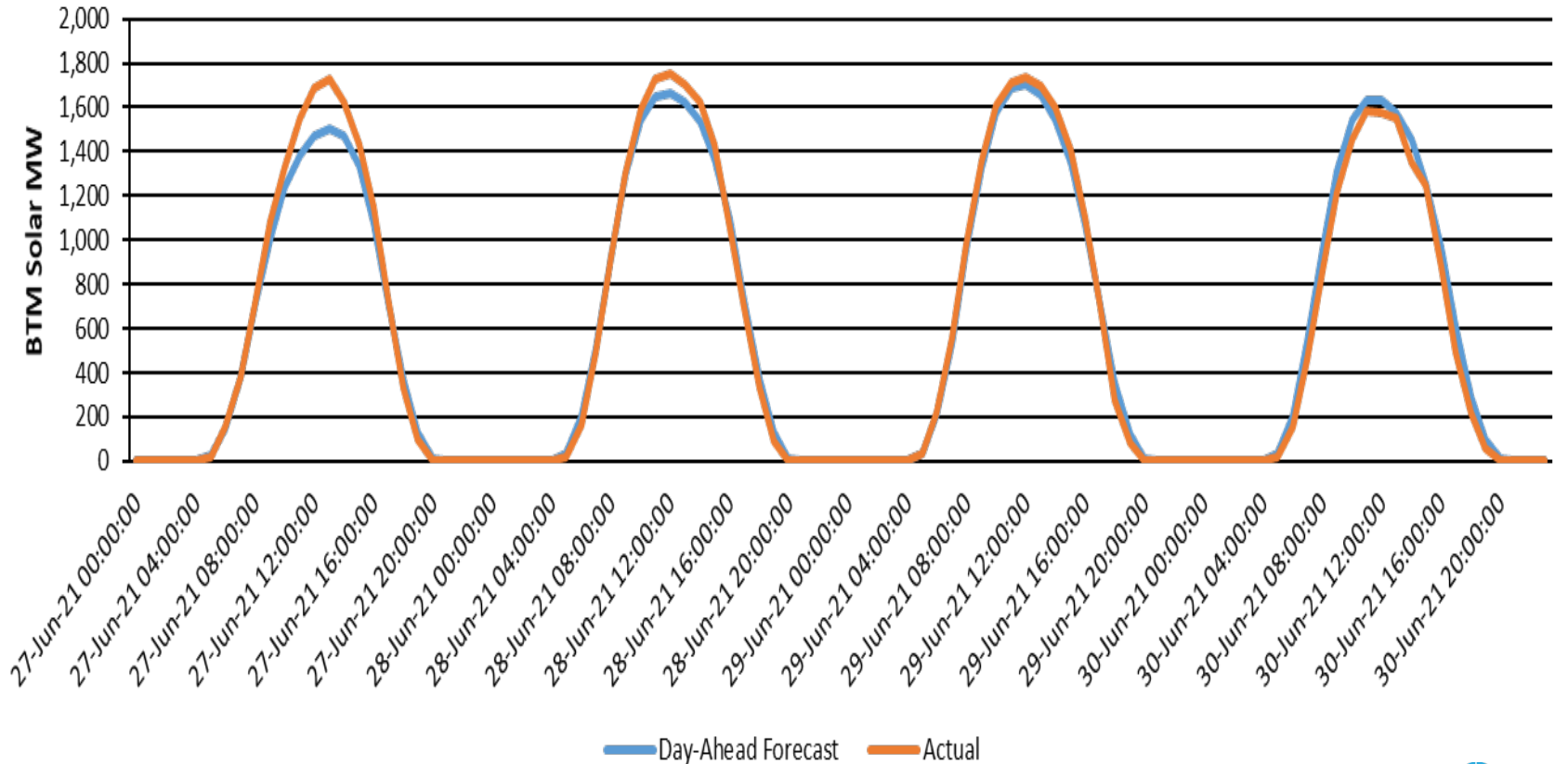


# NYCA Wind Profile 6/27/2021 - 6/30/2021





# 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:

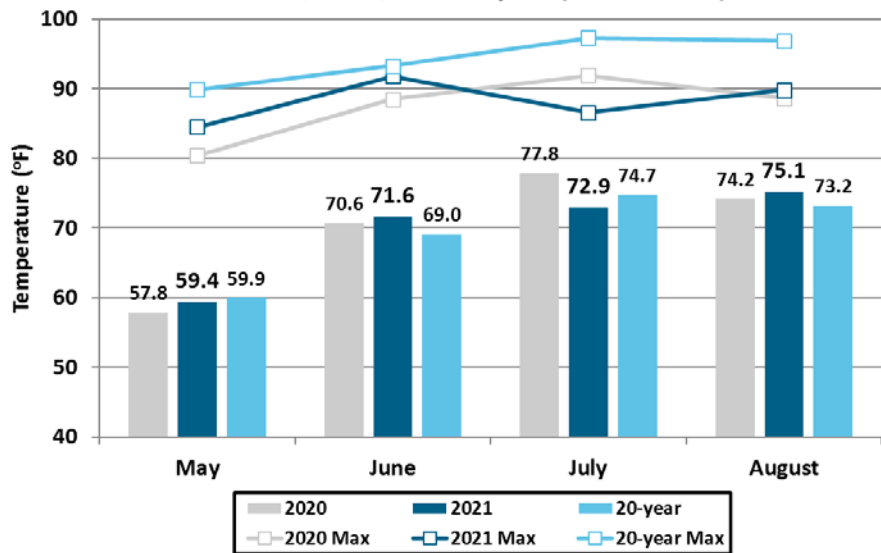
- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system



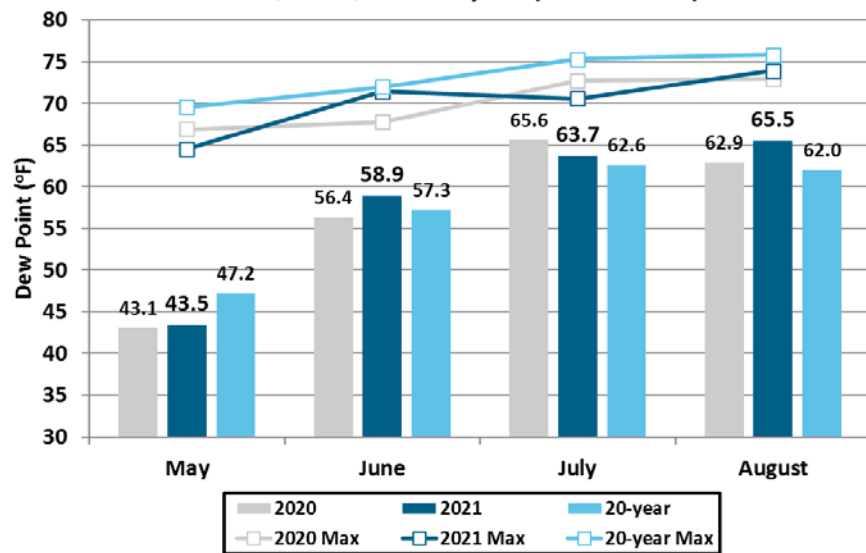
# Questions?

# Appendix

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

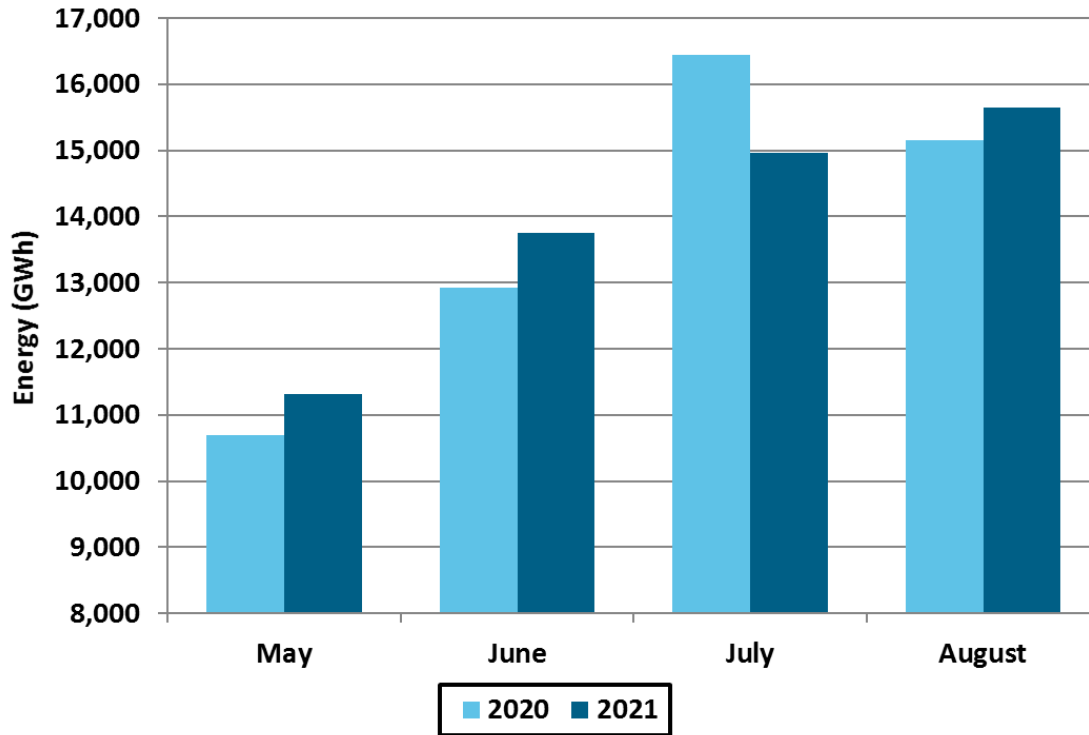


Monthly Average and Max Dew Points  
2020, 2021, and 20-year (2001 - 2020)

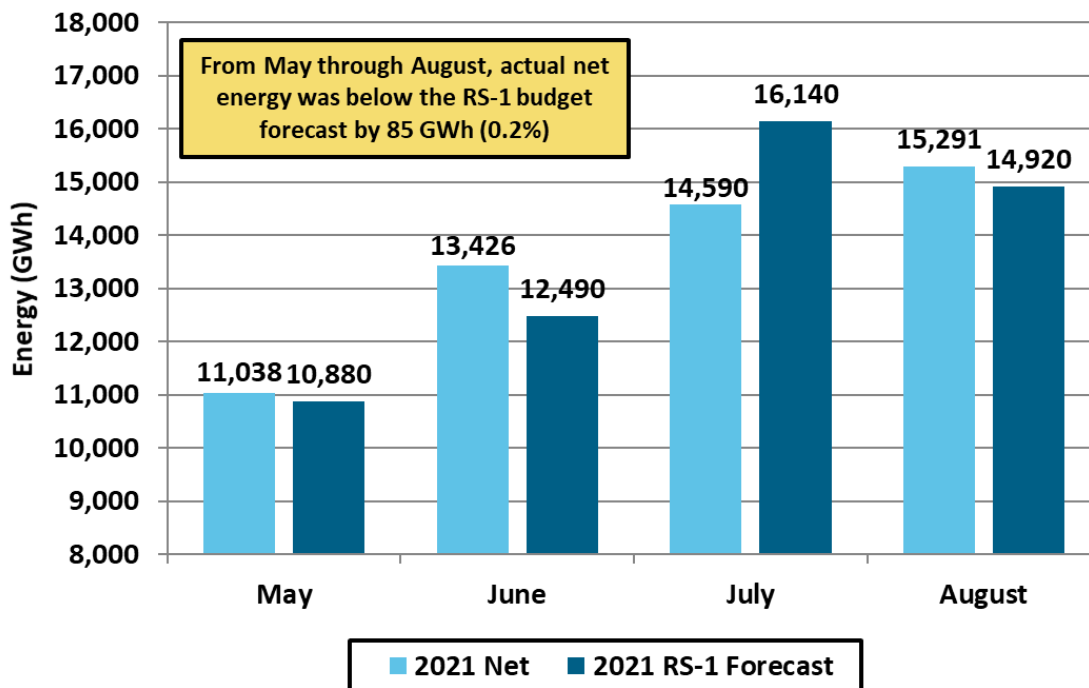




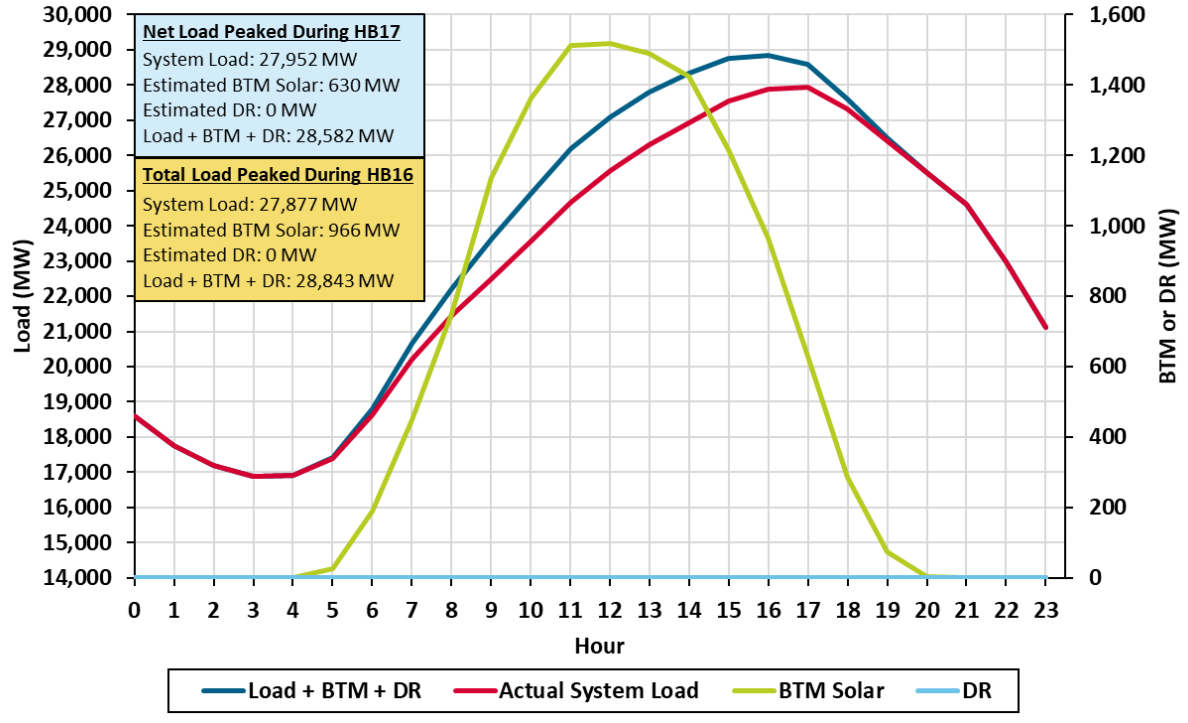
### Monthly Send Out - 2020 & 2021 (GWh)



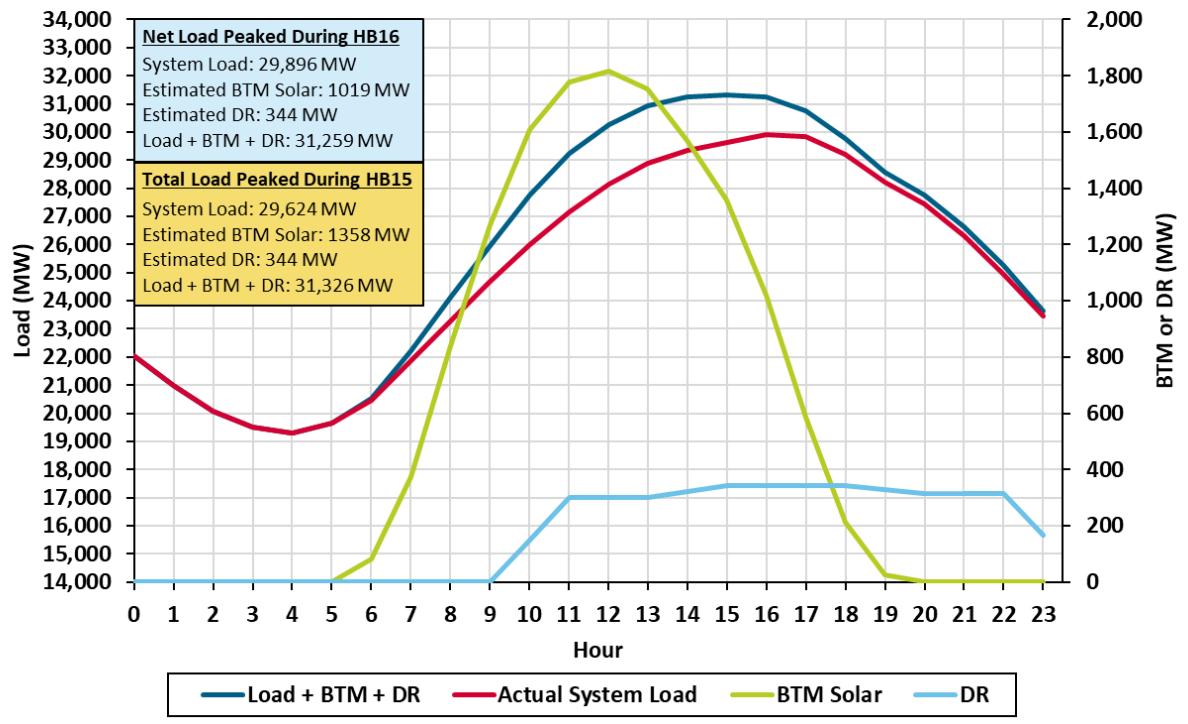
## 2021 Monthly Net Energy - GWh Actual and RS-1 Budget Forecast



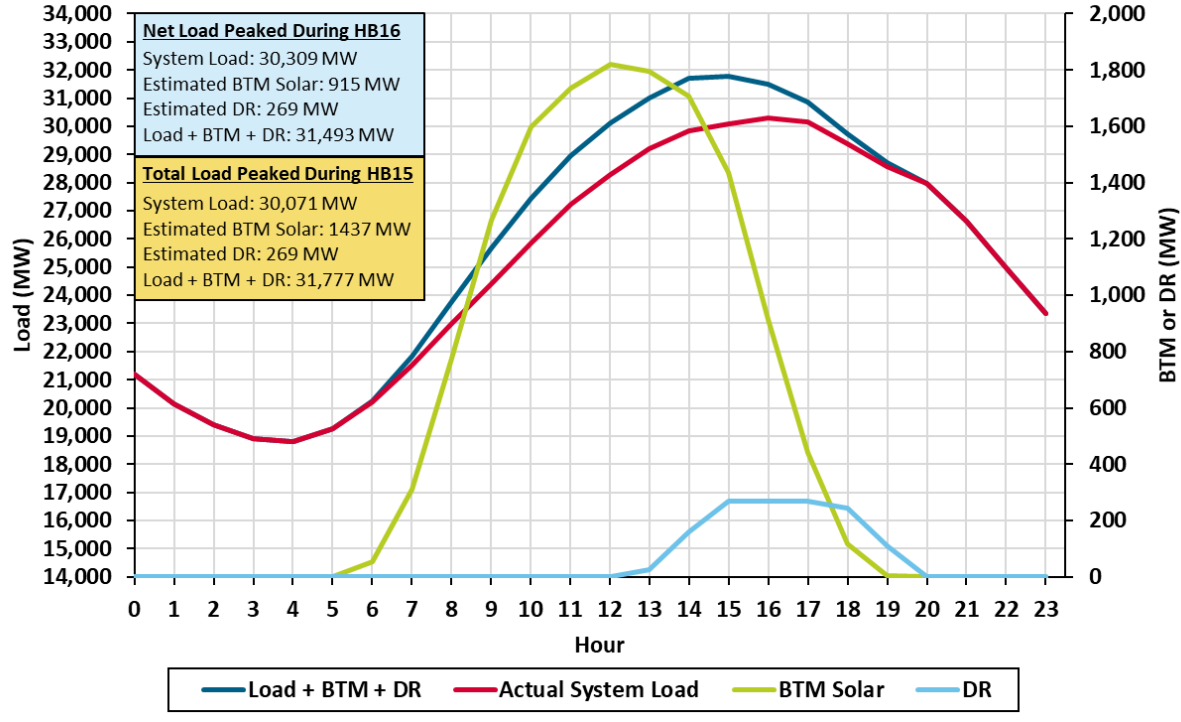
### System Load, DR (NYISO- & TO-Initiated), and BTM Generation June 9, 2021



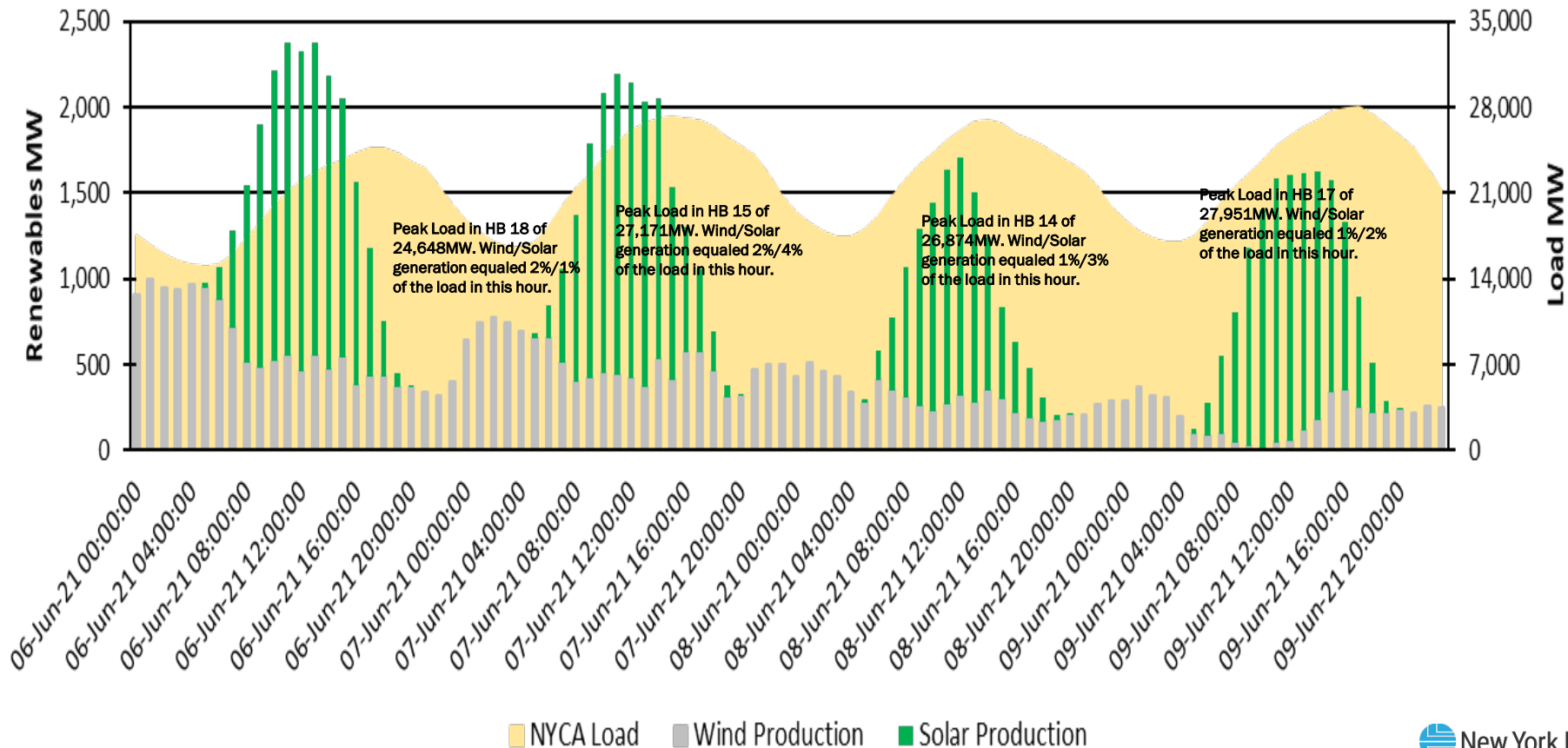
### System Load, DR (NYISO- & TO-Initiated), and BTM Generation August 13, 2021



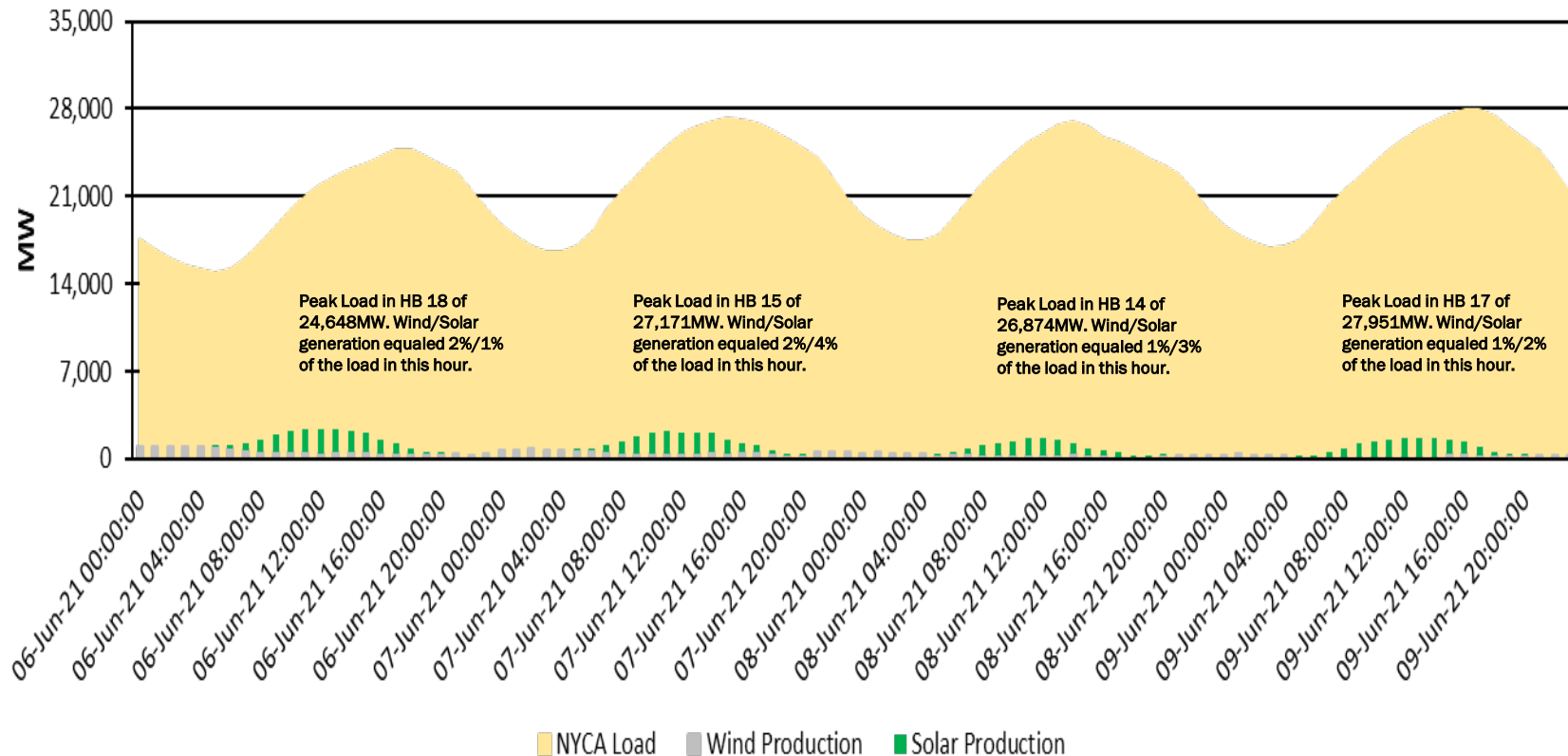
### System Load, DR (NYISO- & TO-Initiated), and BTM Generation August 26, 2021



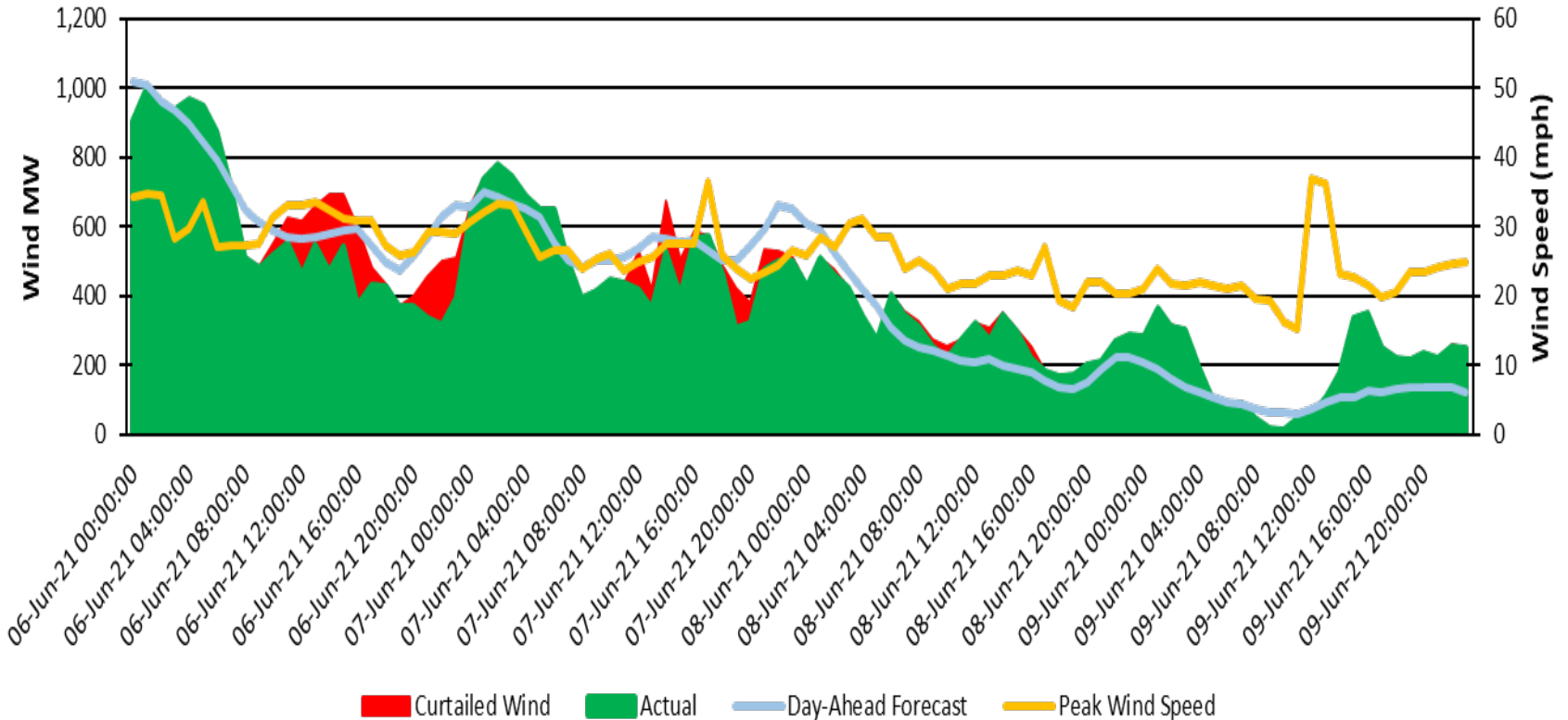
# Hourly Wind & Solar Production 6/6/2021 - 6/9/2021



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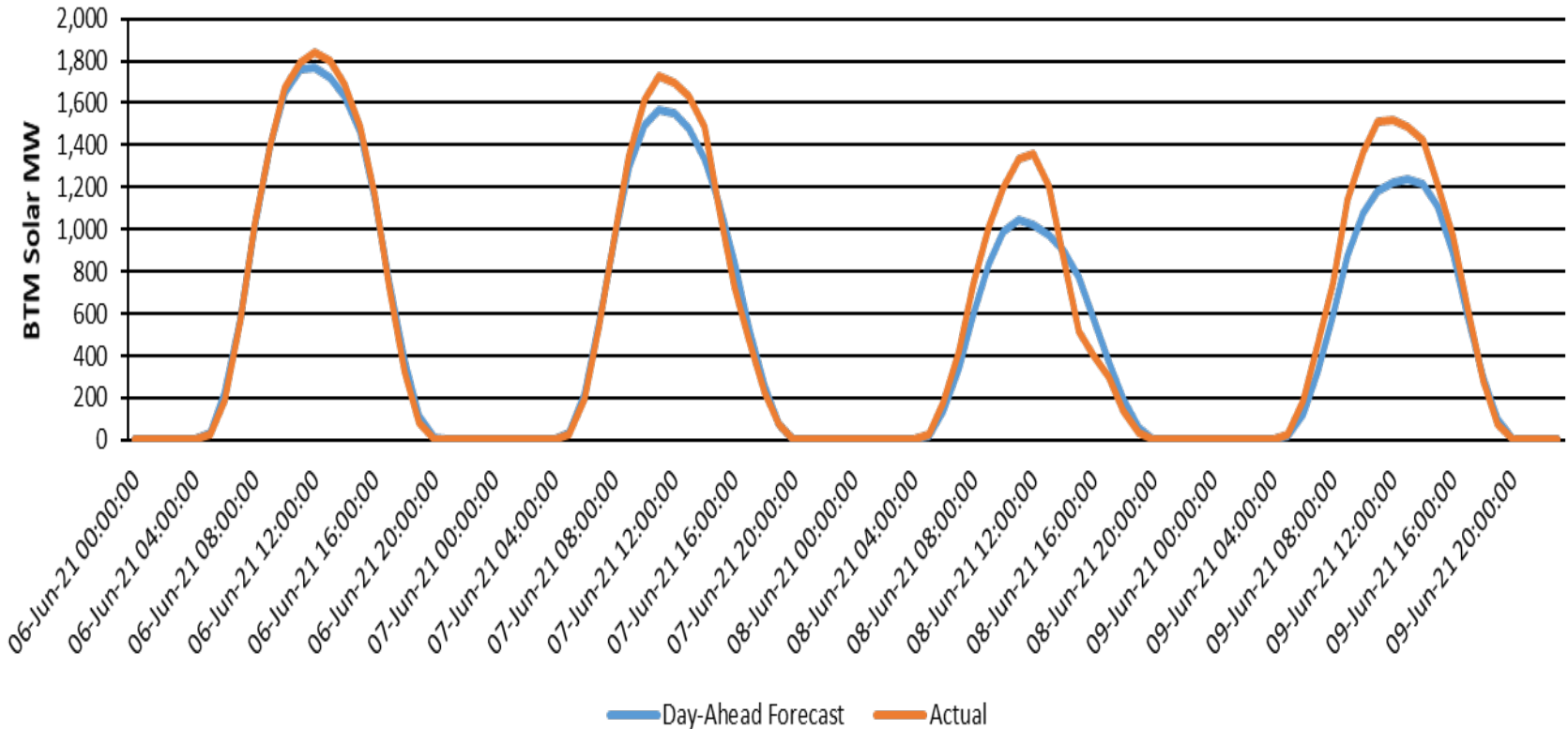


# NYCA Wind Profile 6/6/2021 - 6/9/2021

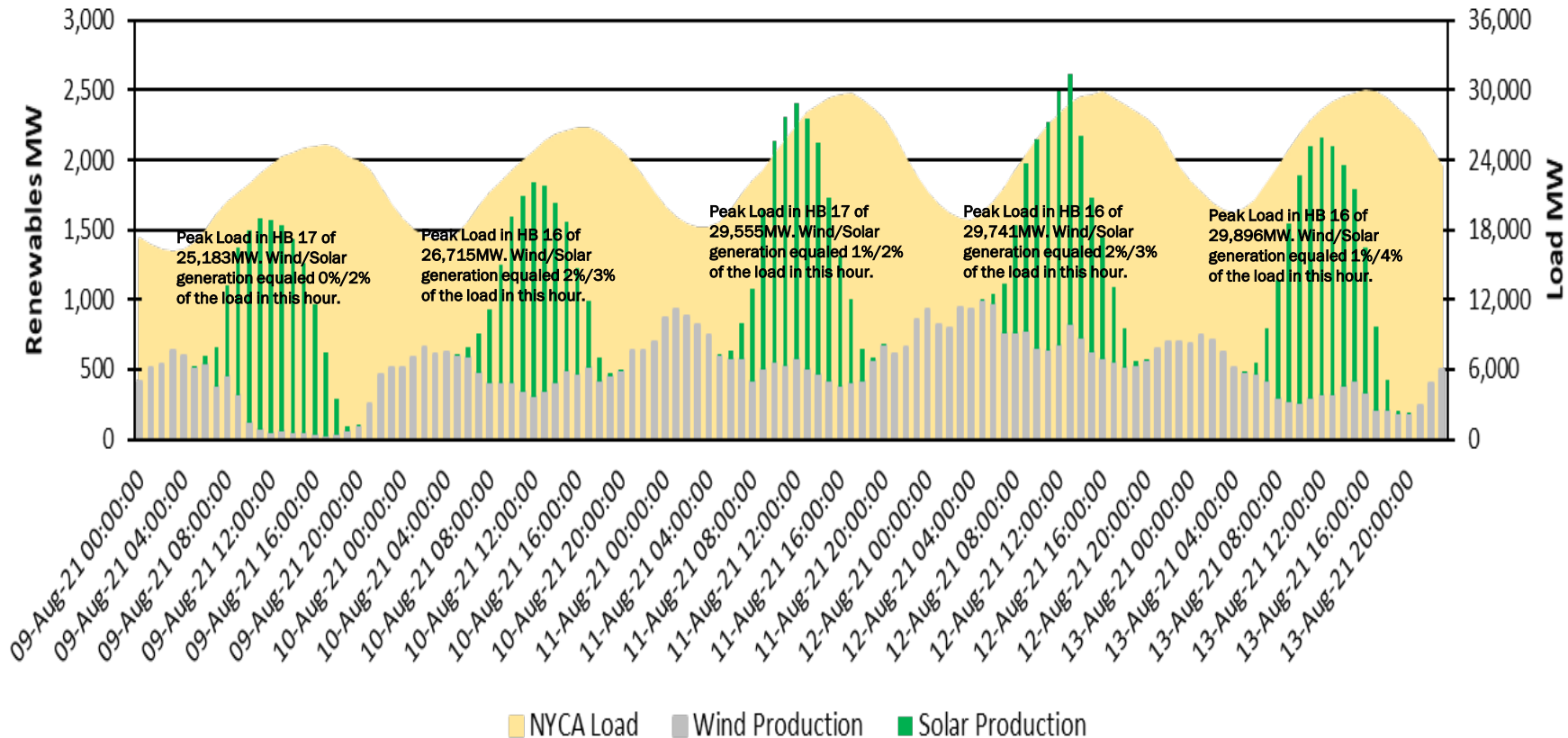




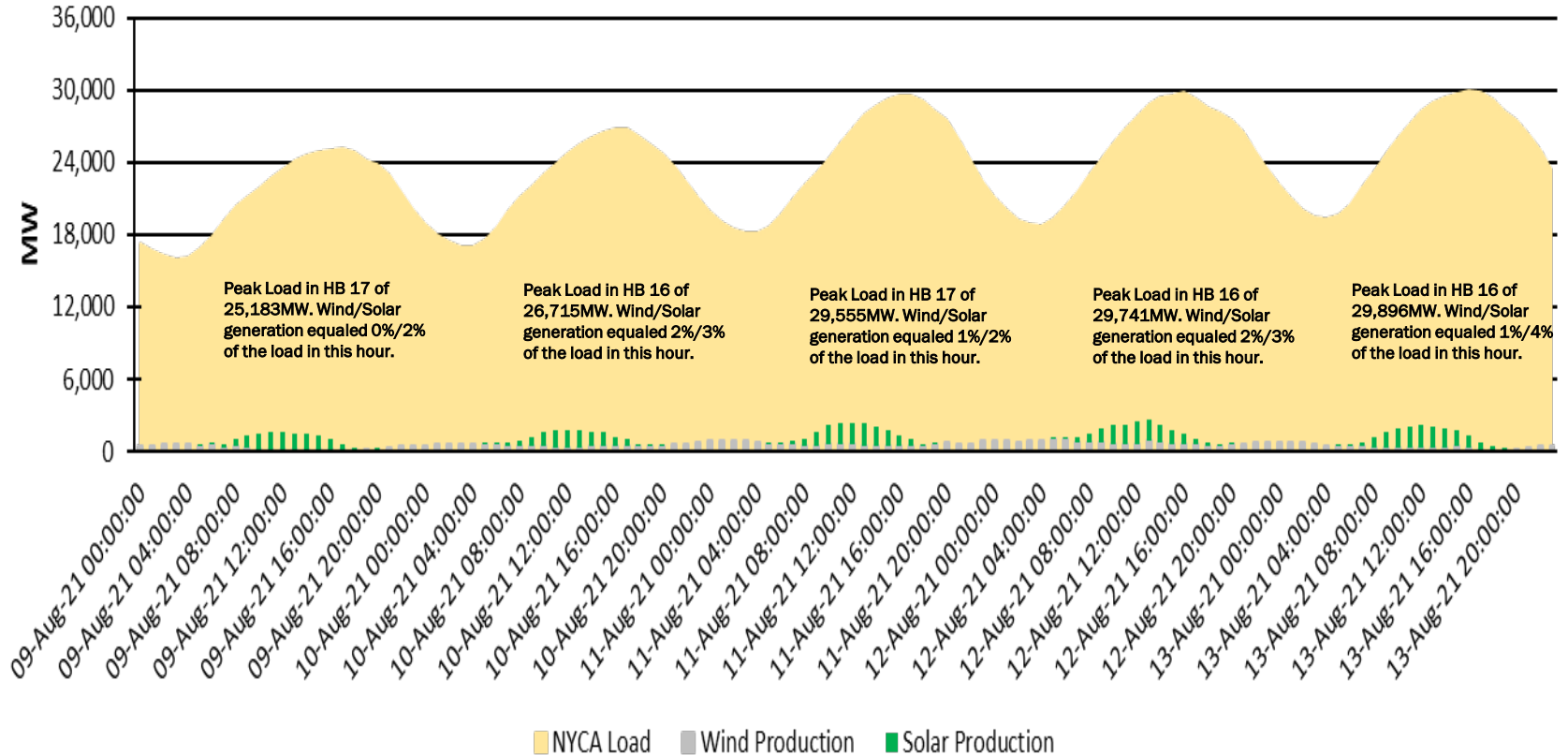
# NYCA BTM Solar Profile (~2,886 MW) 6/6/2021 - 6/9/2021



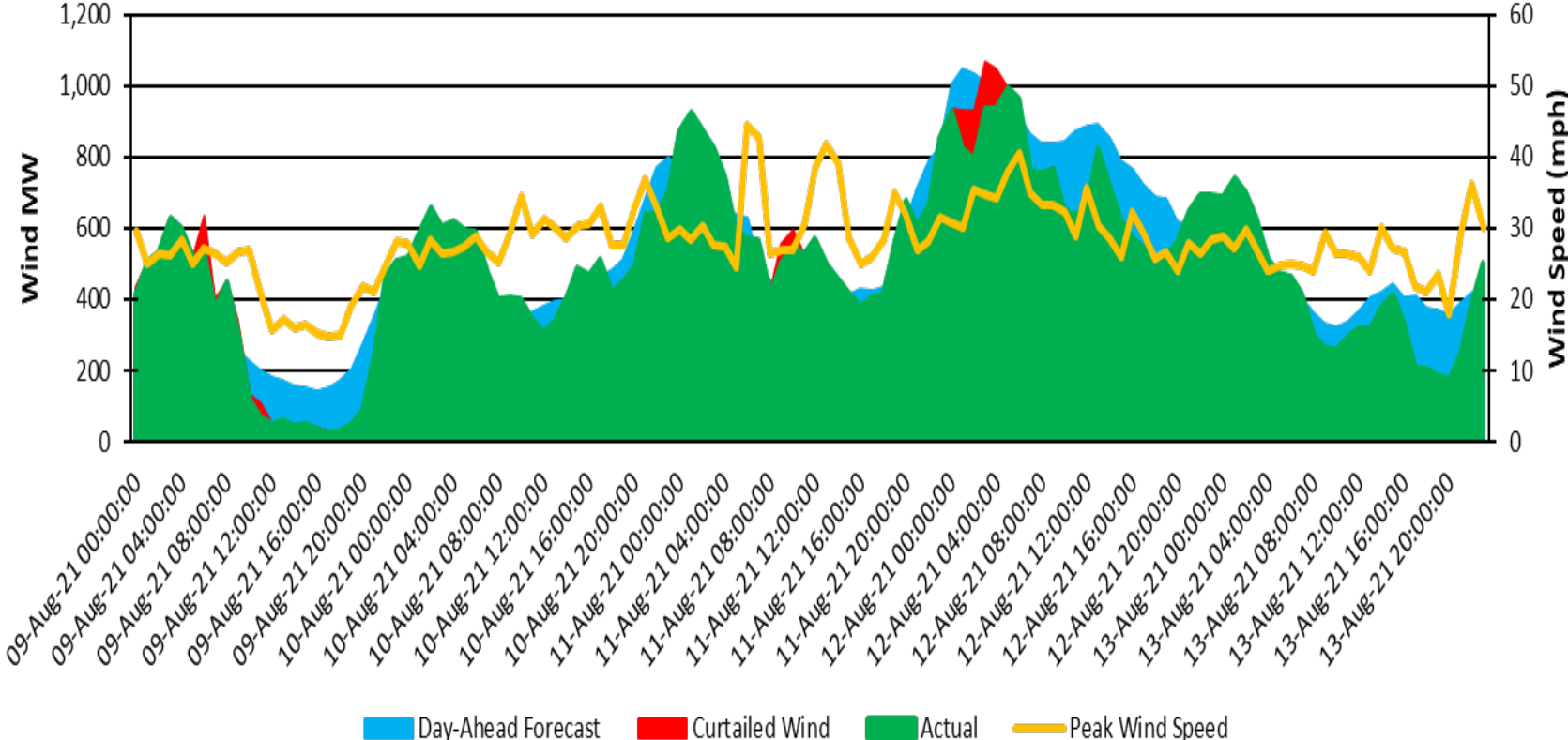
# Hourly Wind & Solar Production 8/9/2021 - 8/13/2021



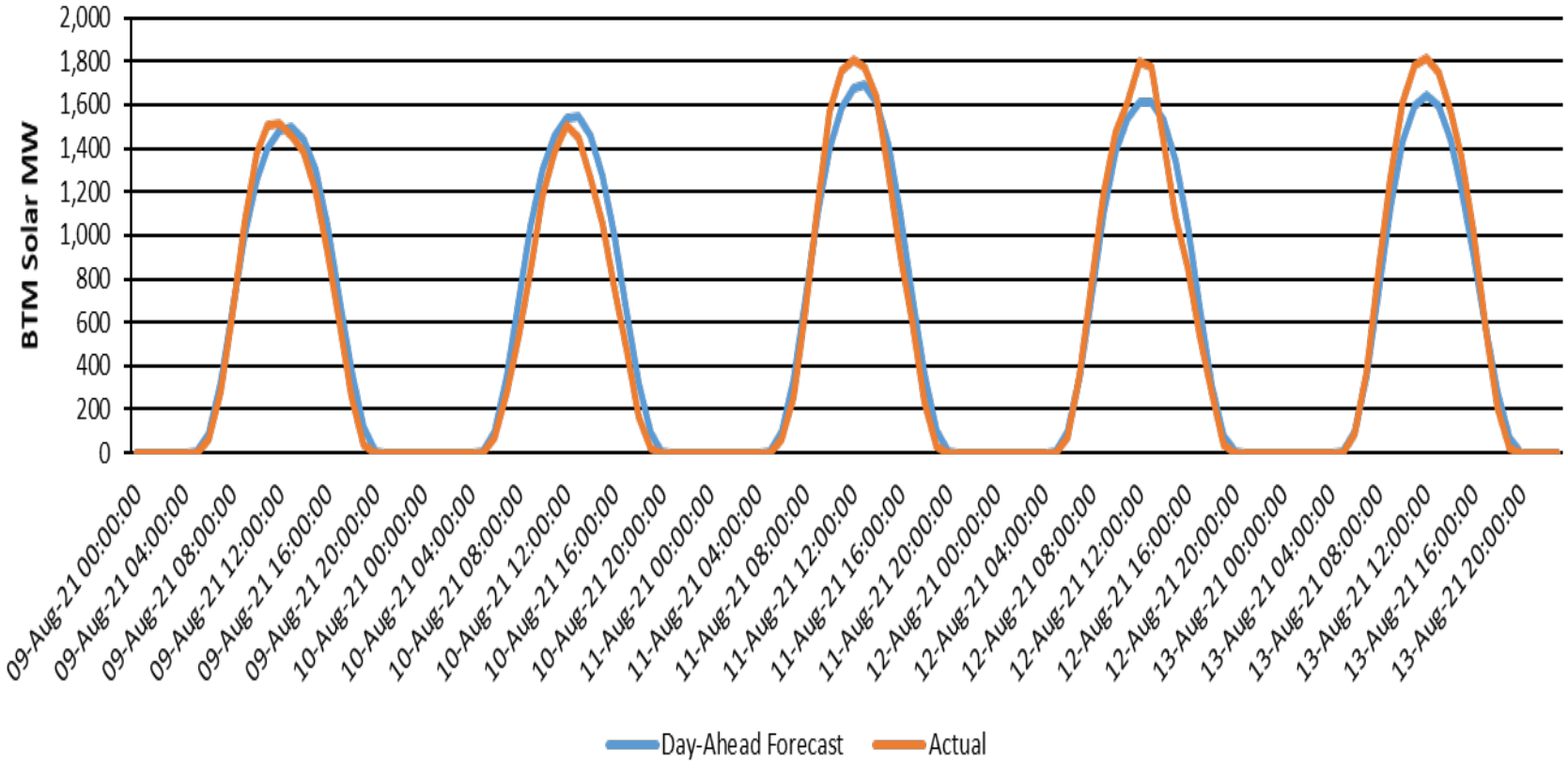
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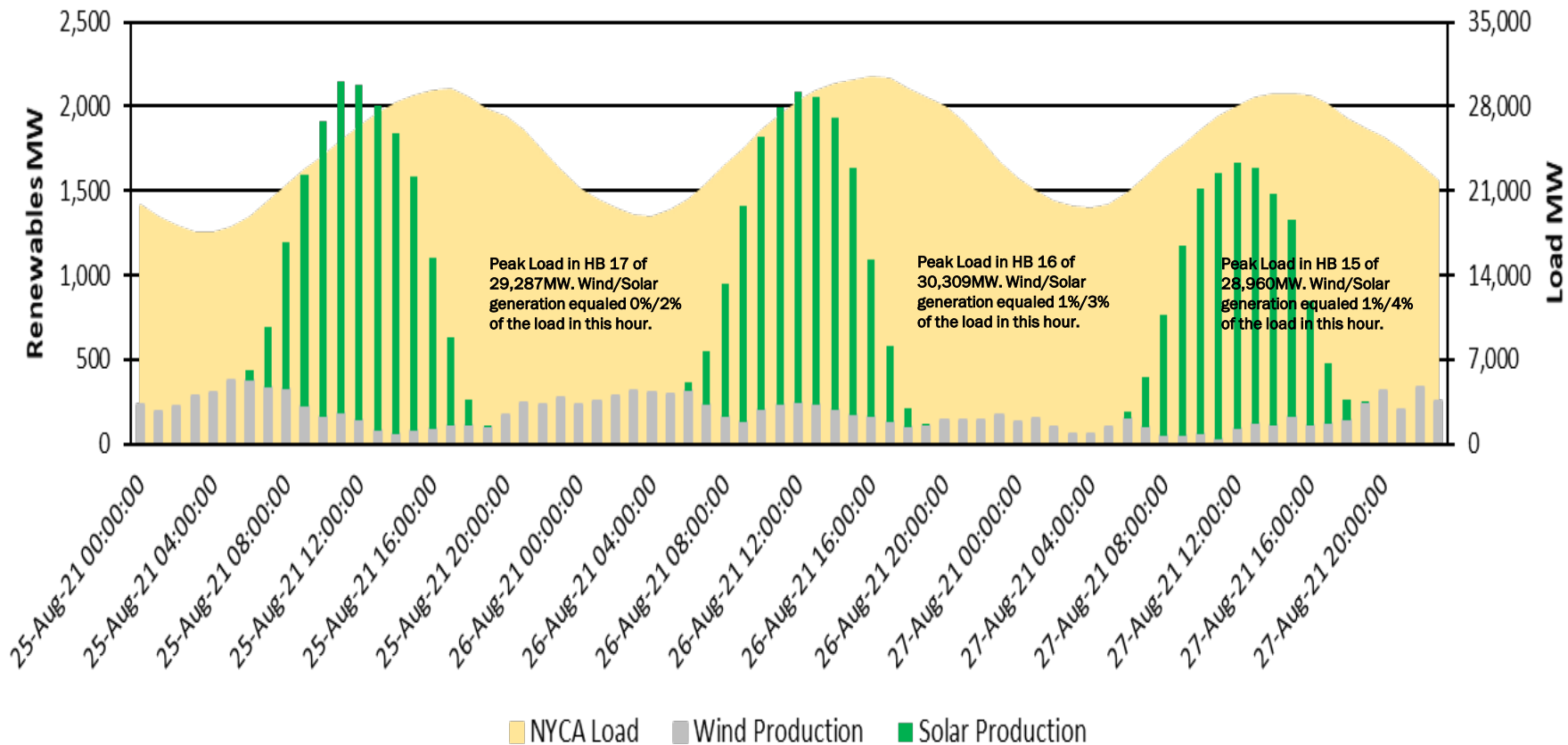
# NYCA Wind Profile 8/9/2021 - 8/13/2021



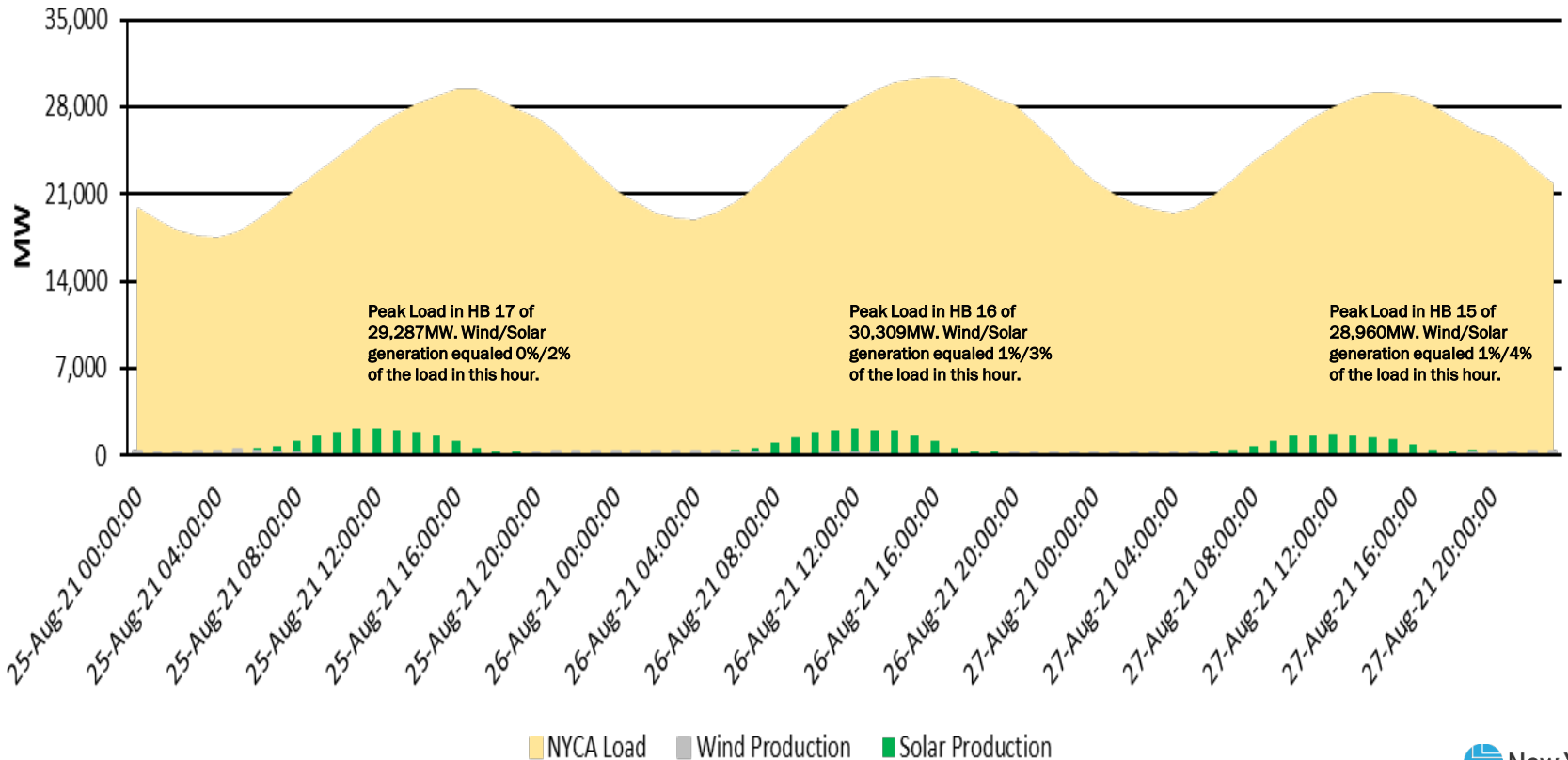
# NYCA BTM Solar Profile (~3,022 MW) 8/9/2021 - 8/13/2021



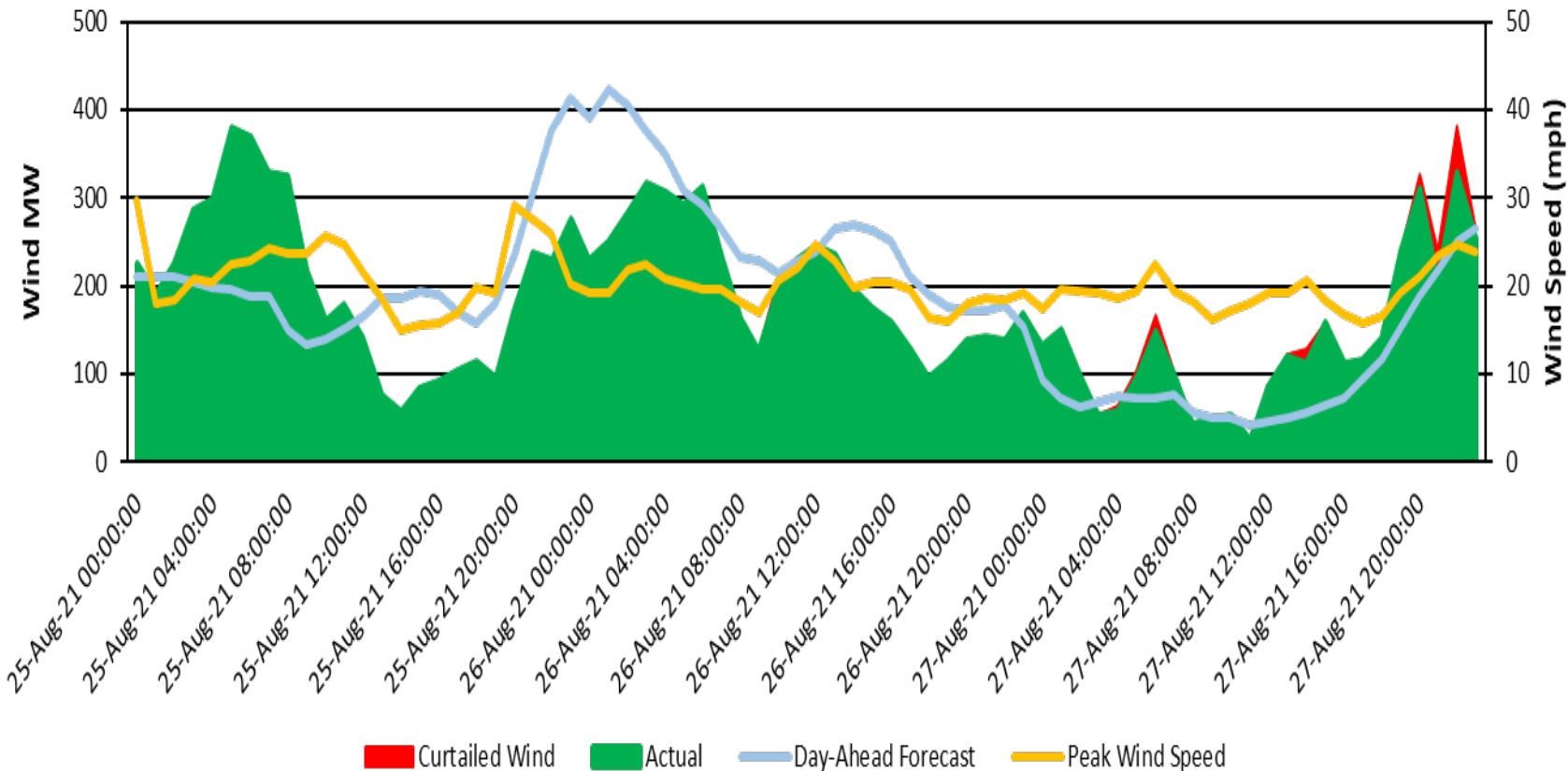
# Hourly Wind & Solar Production 8/25/2021 - 8/27/2021



# 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

