

# **Winter 2019-2020 Cold Weather Operations**

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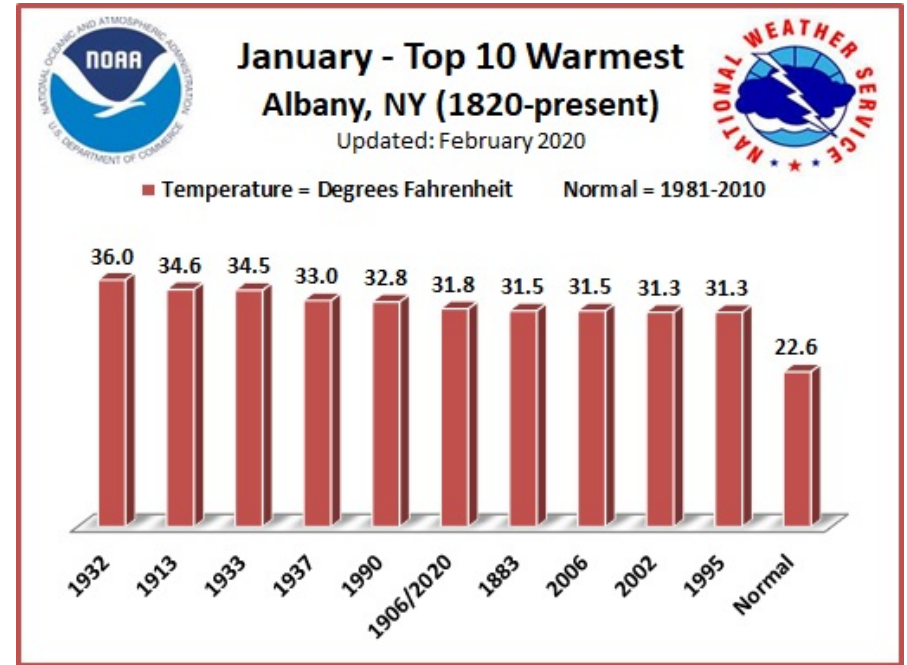
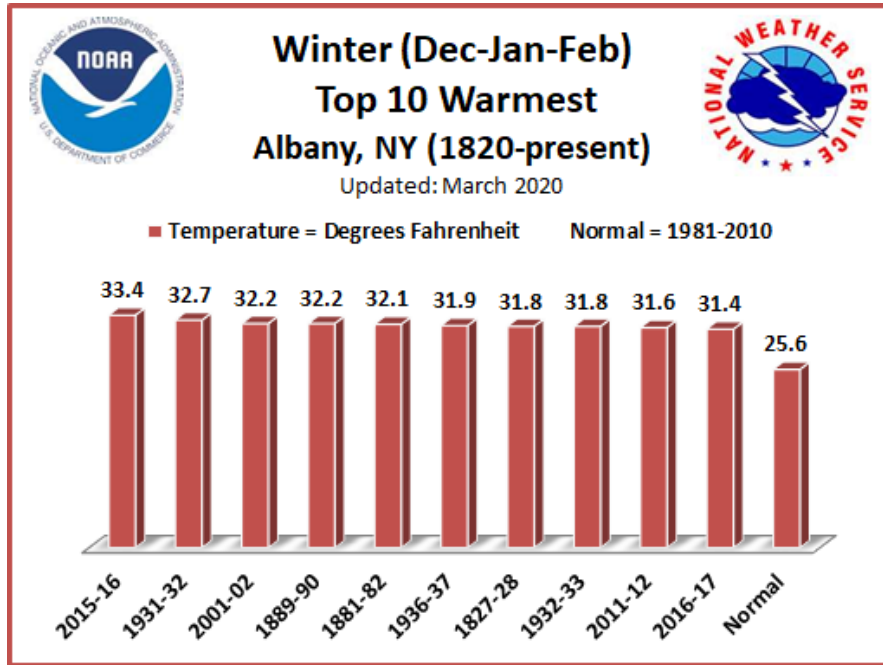
Wes Yeomans

Vice President, Operations

**NYISO Management Committee Meeting**

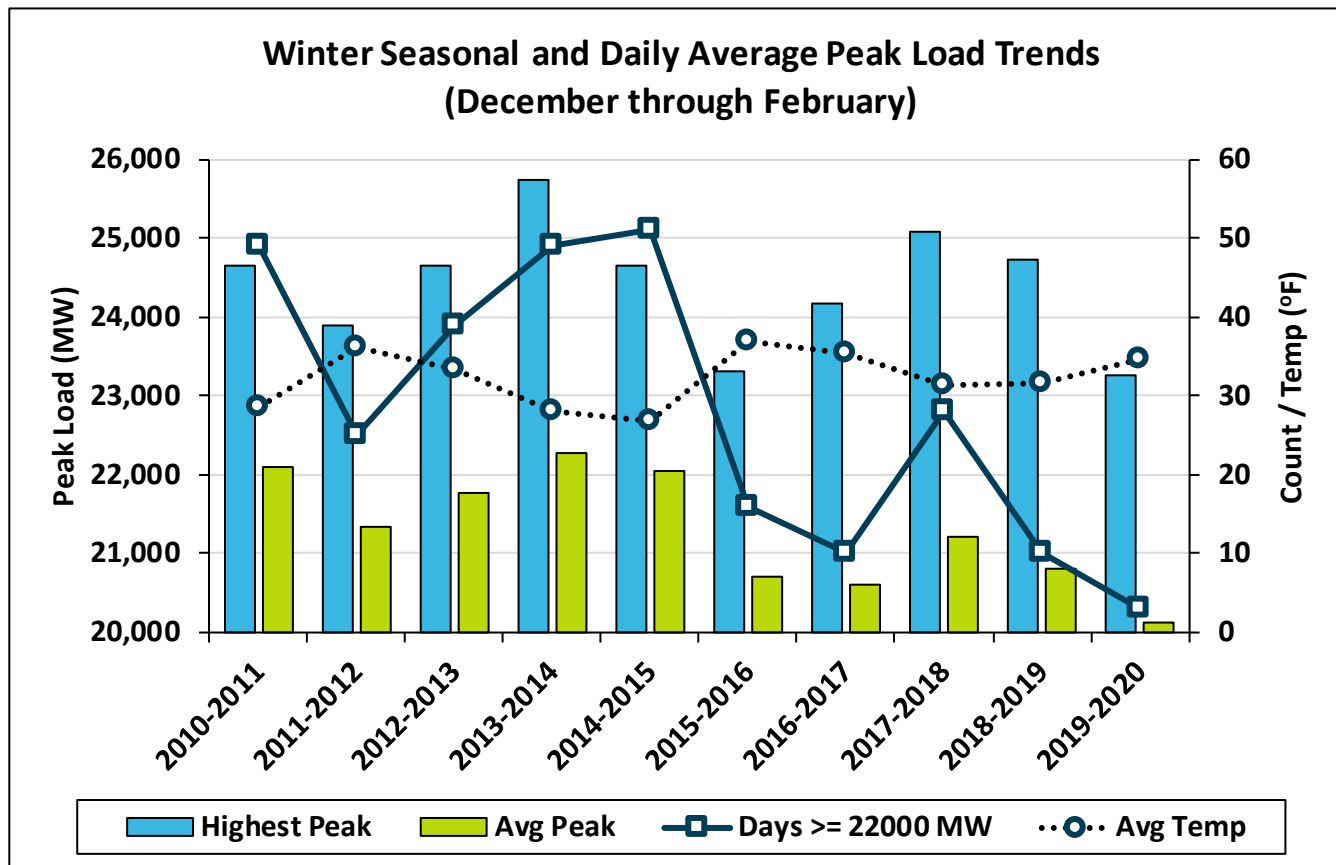
March 25, 2020, Rensselaer, NY

# Mild Winter Weather Prevailed



- January 2020 was Earth's hottest January on record <https://www.noaa.gov/news/january-2020-was-earth-s-hottest-january-on-record>

# Winter 2019 – 2020 Daily Peak Loads In Perspective



# Noteworthy Cold Weather Conditions

## 11/12/19 – 11/14/19 – Iroquois, Texas Eastern, and Downstate Gas LDCs Force Majeure

- Iroquois issued a Force Majeure 11/12/19 at 20:00 caused by an unplanned outage of the Dover compressor station
- Texas Eastern issued a Force Majeure 11/13/19 at 07:30 caused by an unplanned outage of the Entriken compressor station
- National Grid and Con Ed LDCs issued hourly or stricter OFOs due to pipeline restrictions

## 12/18/19 – 12/21/19 – Restrictive Pipeline and LDC OFOs

- Current Winter Peak – 12/19/19, HB 17 - 23,253 MW
- NYISO fuel surveys indicated sufficient alternate fuel inventory
- Thursday 12/19/19 - Day ahead 50/50 forecast was 23,290MW, 90/10 forecast was 23,860MW

## 2/14/20 – 2/15/20 – Restrictive Pipeline and LDC OFOs

- Potential lowest temps (Albany) of the season.
- Lows 2/15/20 were -4 degrees in Syracuse, 5 degrees in Albany and 15 degrees in NYC
- NYISO fuel surveys indicated sufficient alternate fuel inventory

# Temperature and Peak Load Statistics for Selected Periods

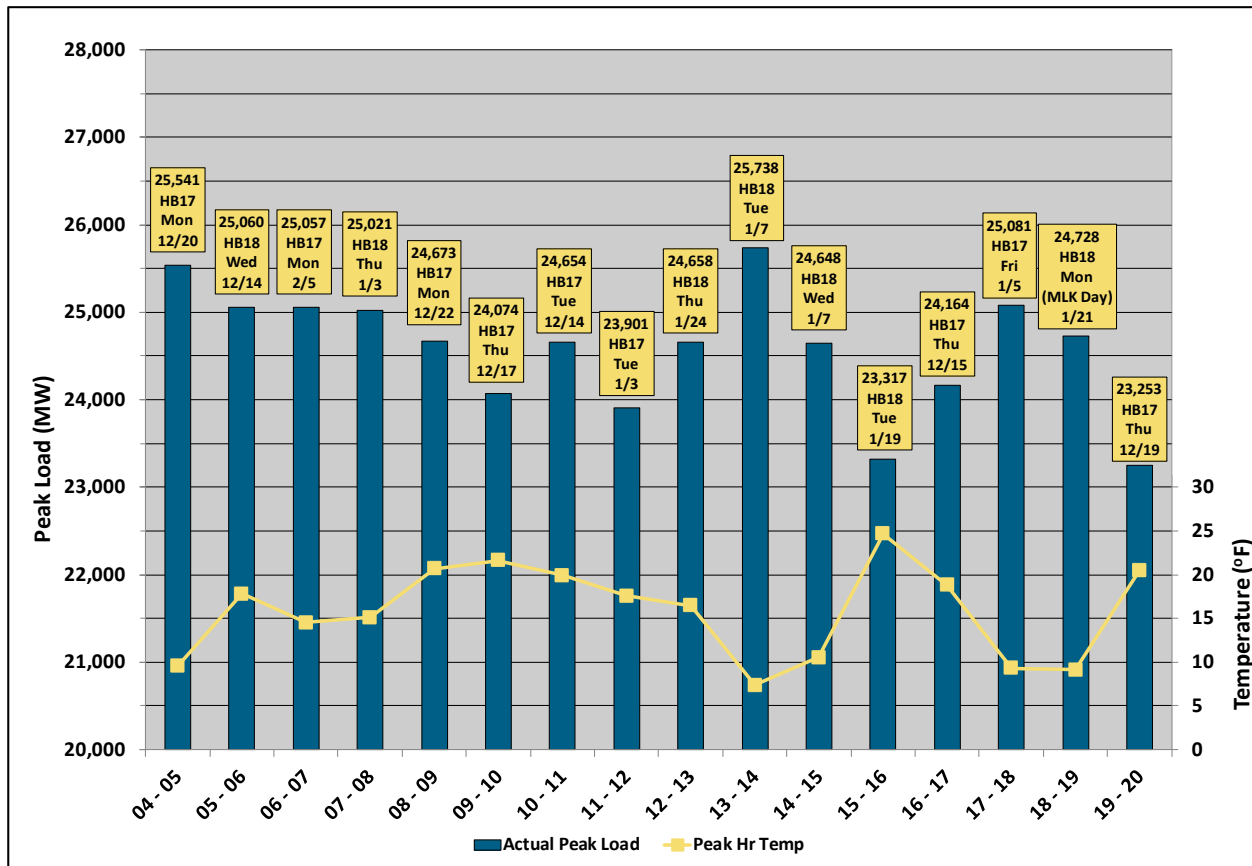
| Date       | DOW | AM Low Temp | Aft High Temp | HB18 Temp | Avg Temp | Peak Load (MW) |
|------------|-----|-------------|---------------|-----------|----------|----------------|
| 11/12/2019 | Tue | 33.4        | 32.2          | 27.6      | 33.8     | 21,085         |
| 11/13/2019 | Wed | 18.7        | 29.4          | 26.0      | 24.1     | 21,324         |
| 11/14/2019 | Thu | 24.0        | 39.3          | 39.0      | 32.8     | 20,631         |
| 12/18/2019 | Wed | 28.8        | 32.4          | 25.5      | 28.1     | 22,323         |
| 12/19/2019 | Thu | 12.7        | 21.4          | 20.1      | 17.2     | <b>23,253</b>  |
| 12/20/2019 | Fri | 16.8        | 27.9          | 23.6      | 21.3     | 22,236         |
| 12/21/2019 | Sat | 17.0        | 32.4          | 28.5      | 23.9     | 20,499         |
| 2/14/2020  | Fri | 20.3        | 23.0          | 19.0      | 21.7     | 21,027         |
| 2/15/2020  | Sat | 8.5         | 28.1          | 27.3      | 19.2     | 20,060         |

All temperatures listed represent the NYCA load-weighted composite values.

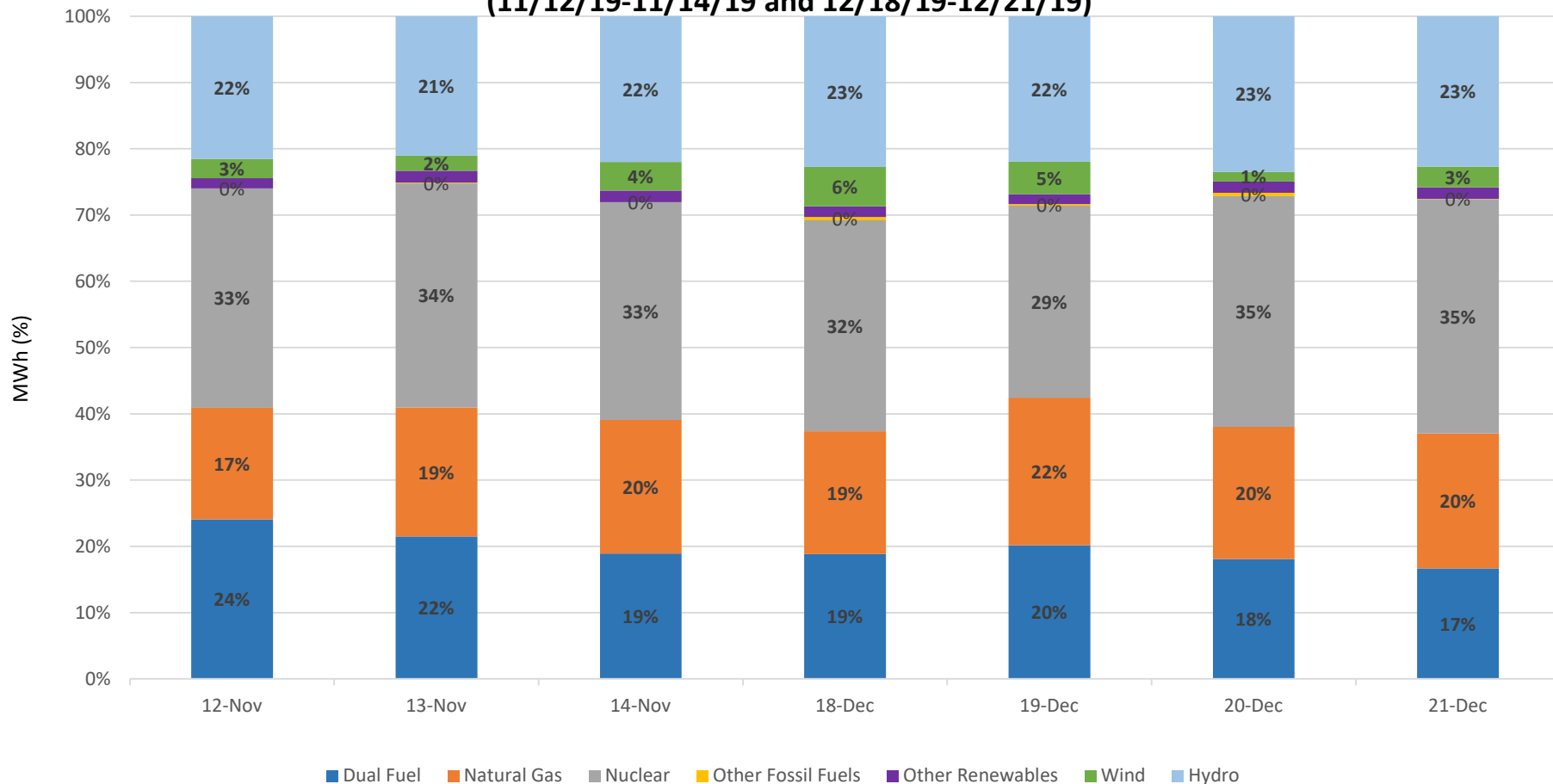
# Peak Loads

- **NY all-time Winter Electric Peak Load was 25,738 MW on January 7, 2014**
- **NYISO Seasonal 50-50 Forecast was 24,123 MW for Winter 2019/2020**
- **This Winter's Actual Peak (to date) is 23,253 MW on Tuesday, December 19, 2019**

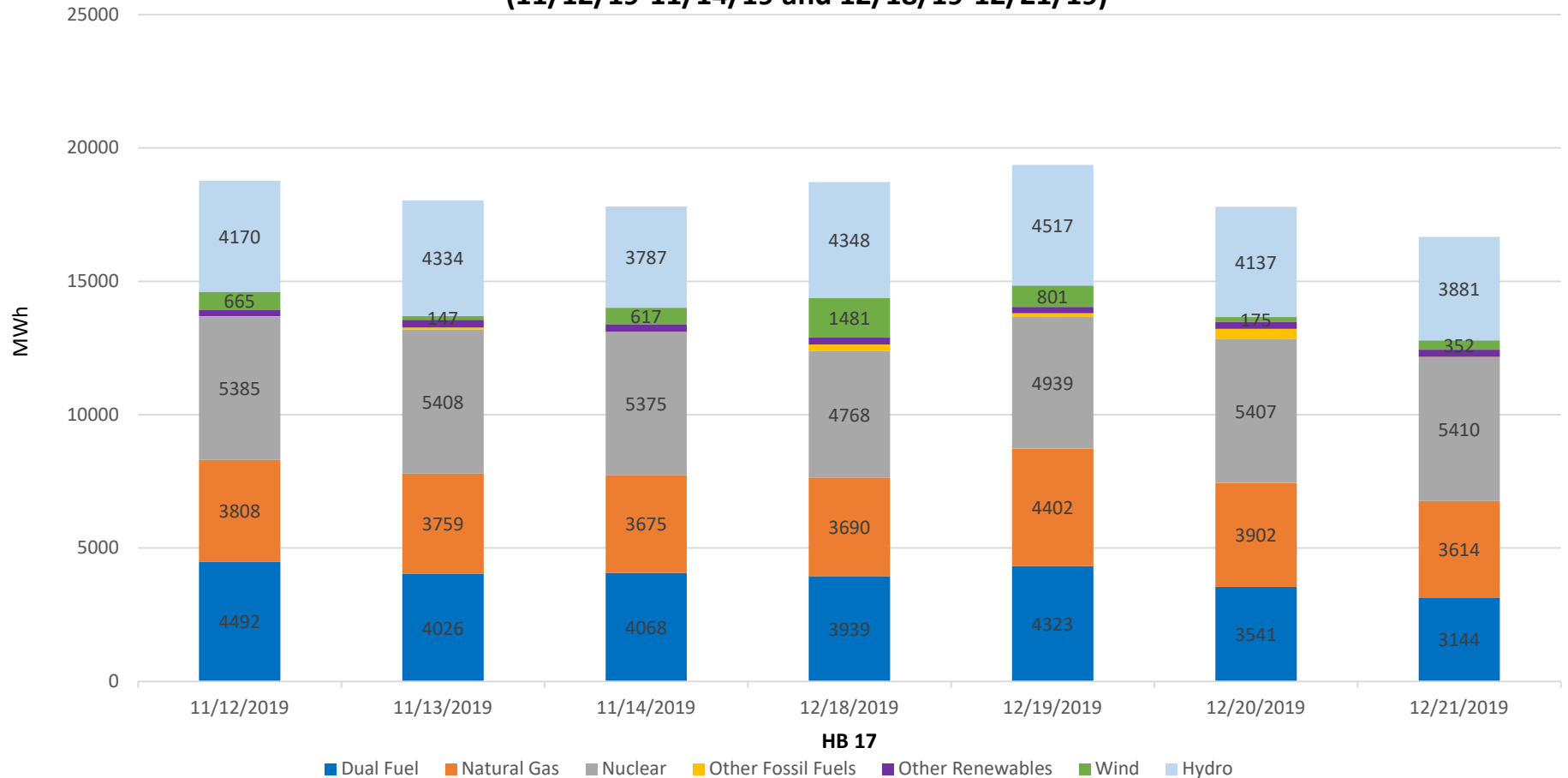
# Winter Peak Loads in MW: 2004-05 to 2019-20



# Total Actual Generation by Fuel Mix Across Day (11/12/19-11/14/19 and 12/18/19-12/21/19)



# Total Actual Generation by Fuel Mix During Peak Hours (11/12/19-11/14/19 and 12/18/19-12/21/19)



# Generator Outage Data

- The small sampling of cold weather conditions occurring during Winter 2019-2020 did not reveal any trends or substantial metrics for review
- NYCA dual fuel resources performed extremely well when needed this winter, even during tight OFO conditions on 11/13/19 only approx. 160 MW of fuel related outages were observed
- Forced outages and derates on 12/19/2019 HB 17 were substantially less than forecast (2,299 MW vs 3,043 MW)

# Operations

- Market systems worked well
- No need for statewide supplemental capacity commitments (SREs or DARUs)
- No activations of SCR/EDRP required
- No need for emergency actions (voltage reduction, public appeals, etc.)
- No need for emergency purchases

# Transmission

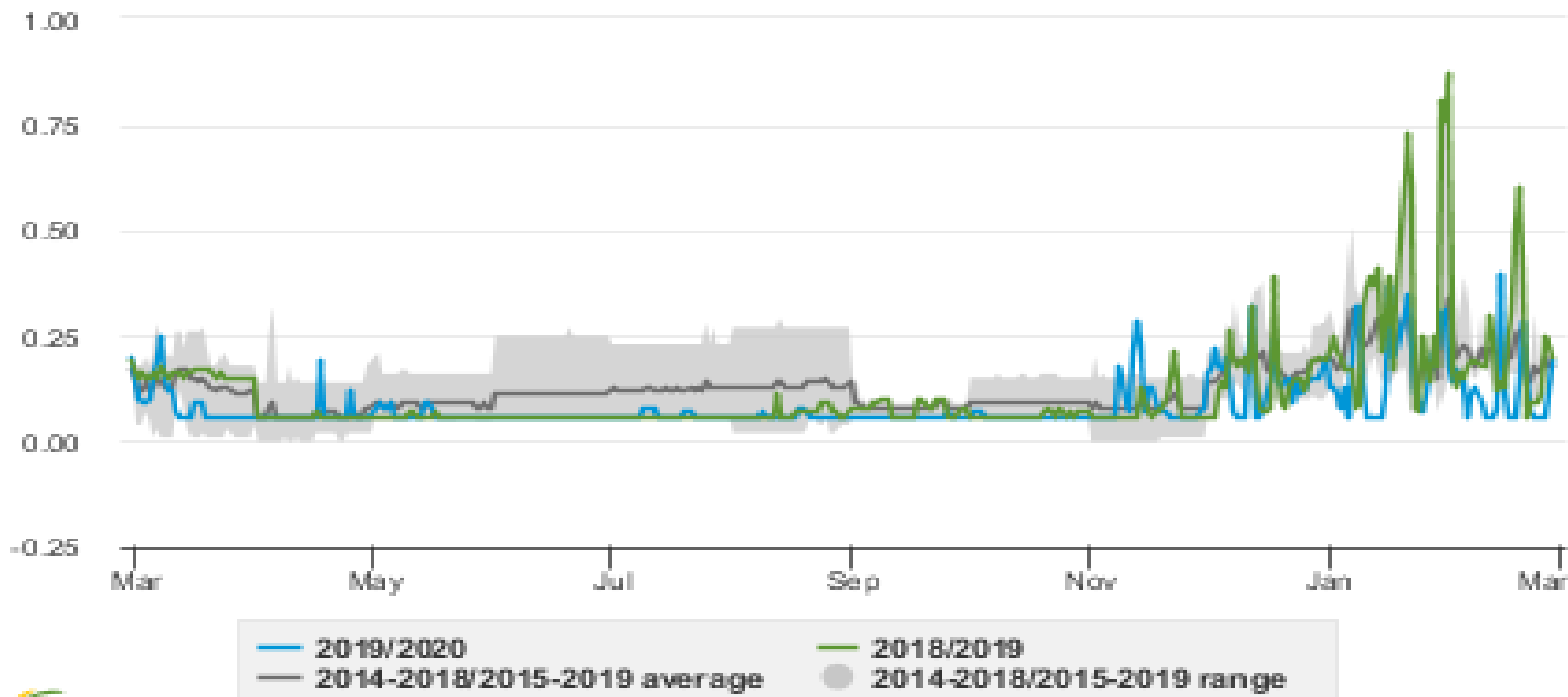
- **Transmission infrastructure performance was excellent**
- **Continuing Forced Outages**
  - B and C lines from NJ to NYC, Hudson-Farragut 345 kV B3402 and Marion-Farragut 345 kV C3403
  - One Phase Angle Regulator (PAR) at the Ontario border, L33P St. Lawrence – Moses

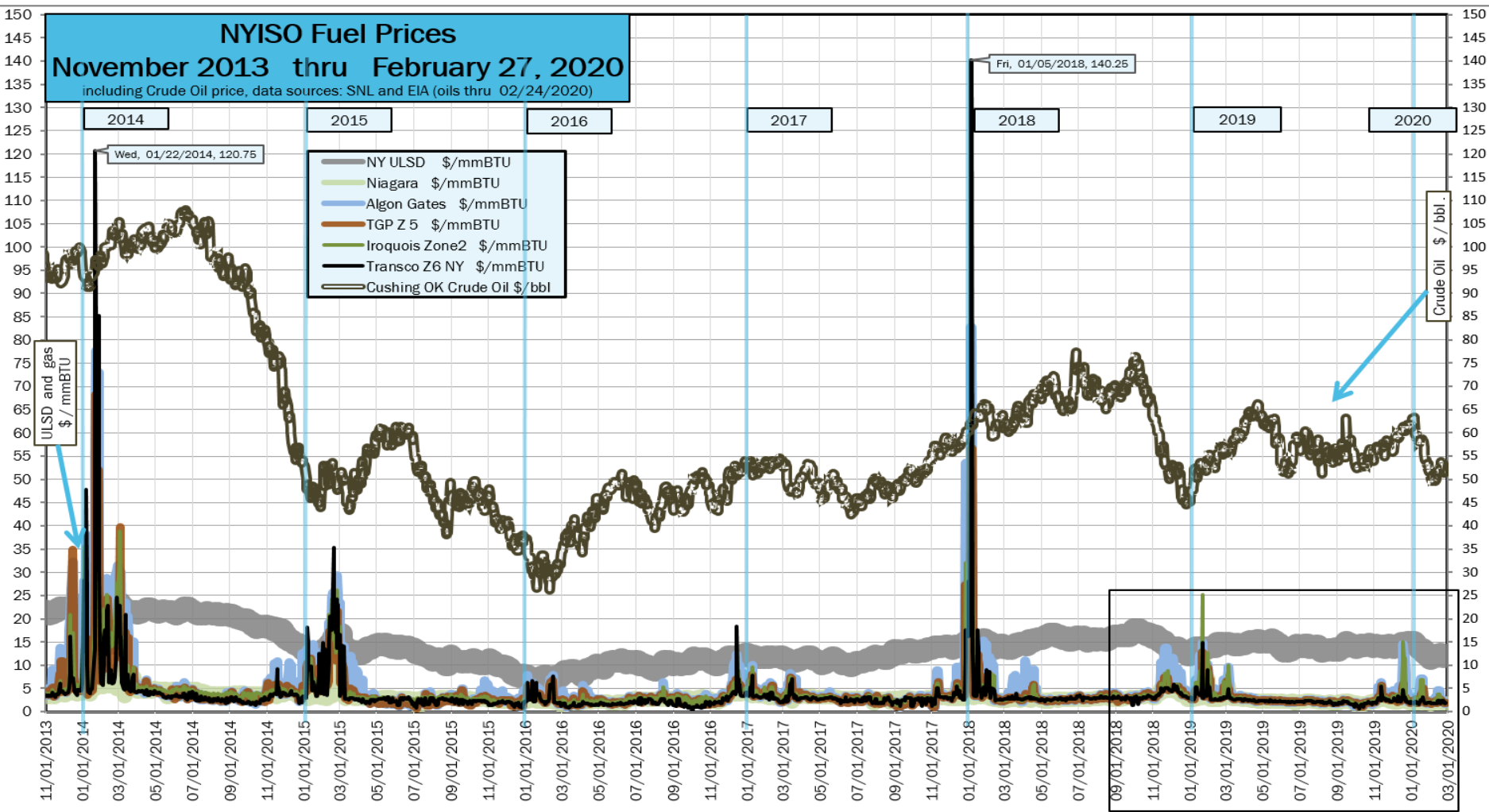
# Fuel Monitoring

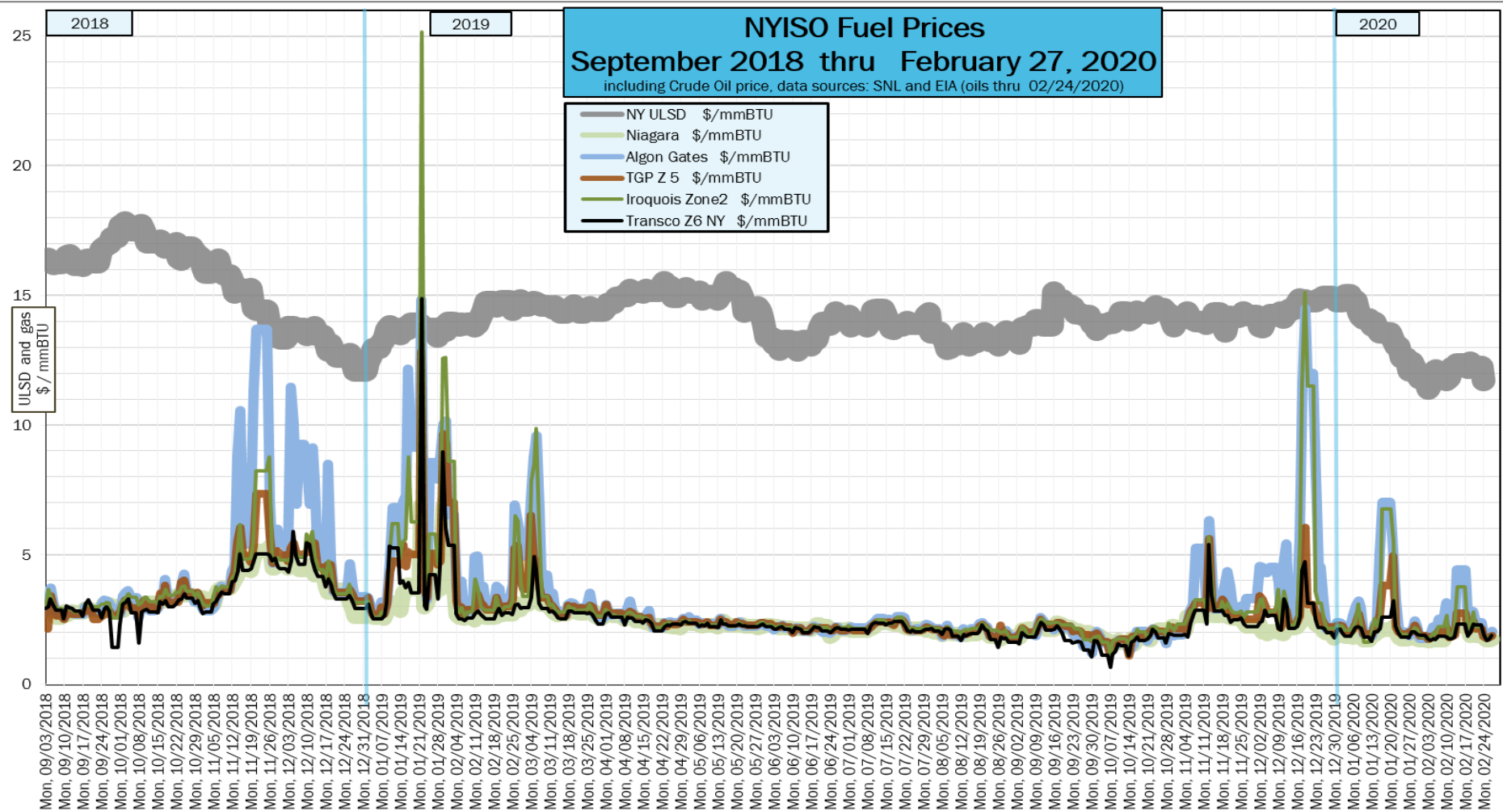
- Weekly Surveys
- Ad Hoc Surveys
- Follow-up reach-out to a few individual resources for additional information
- Cooperation and accuracy of the Web Based Fuel Survey Application was excellent

# Daily deliveries of liquefied natural gas in New England

billion cubic feet per day (Bcf/d)







# Near-month NYMEX natural gas futures prices (2000-2020)

Dec 2019 dollars per million British thermal units

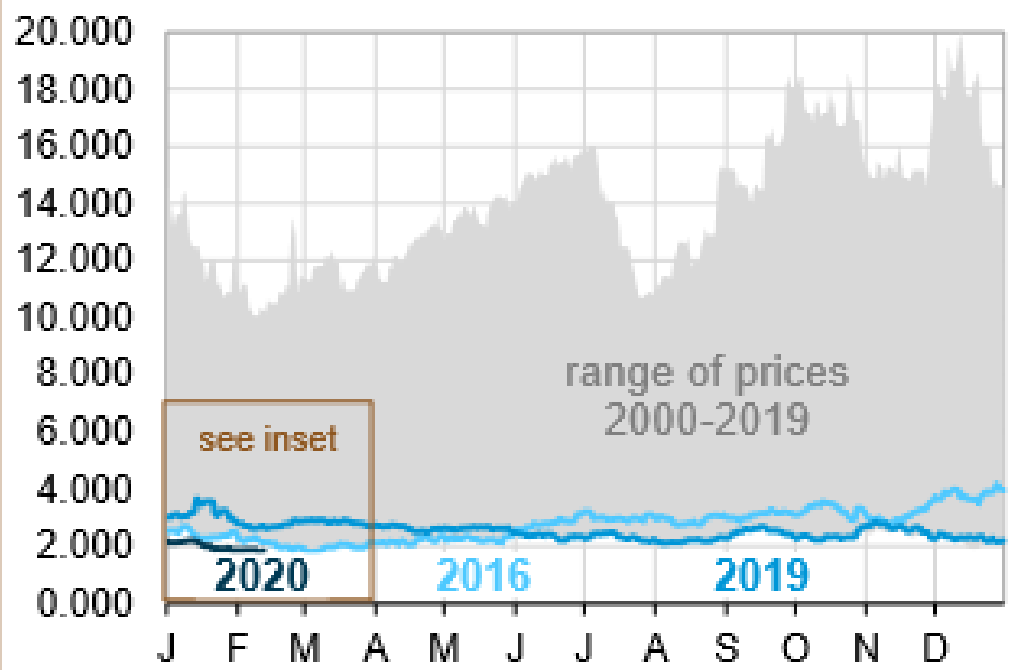
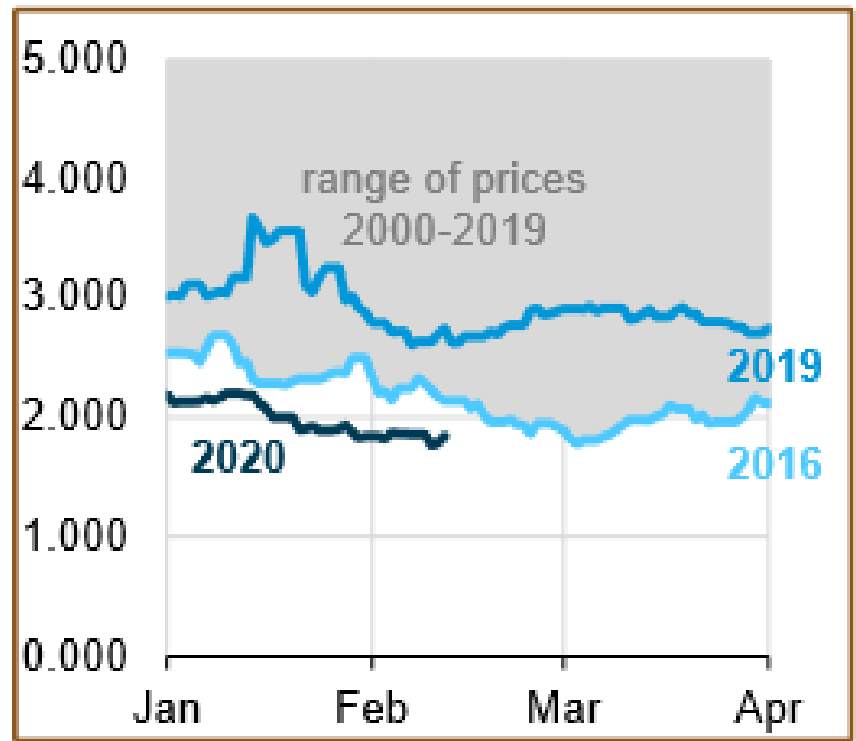
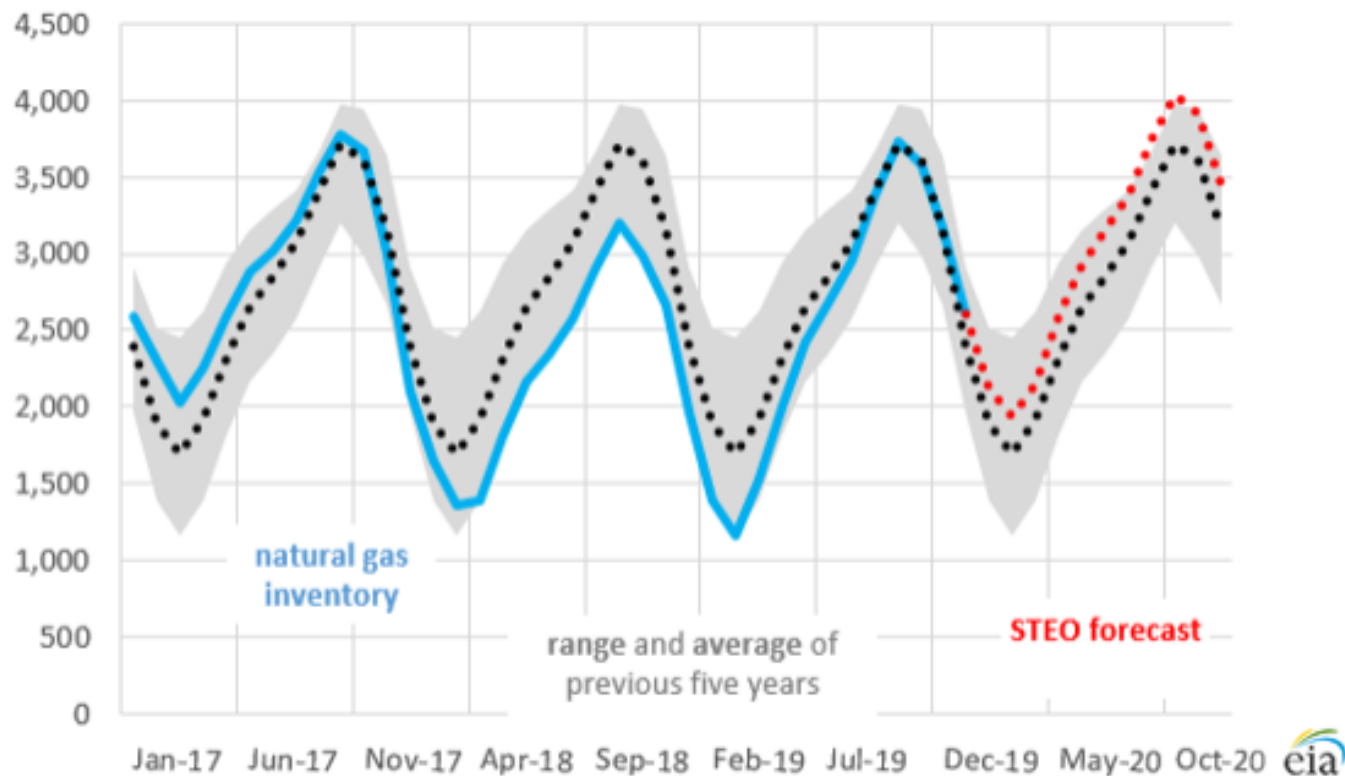
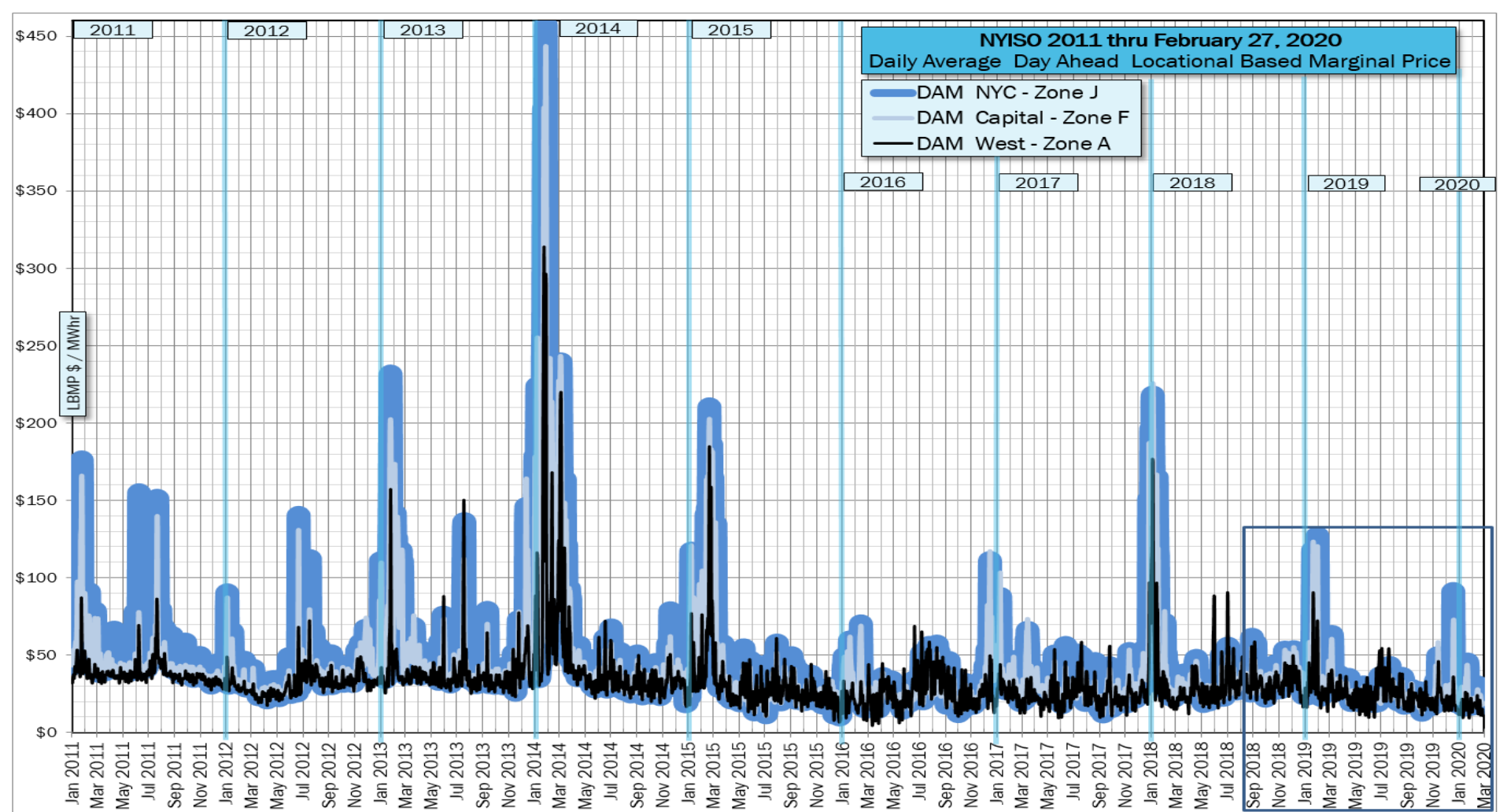
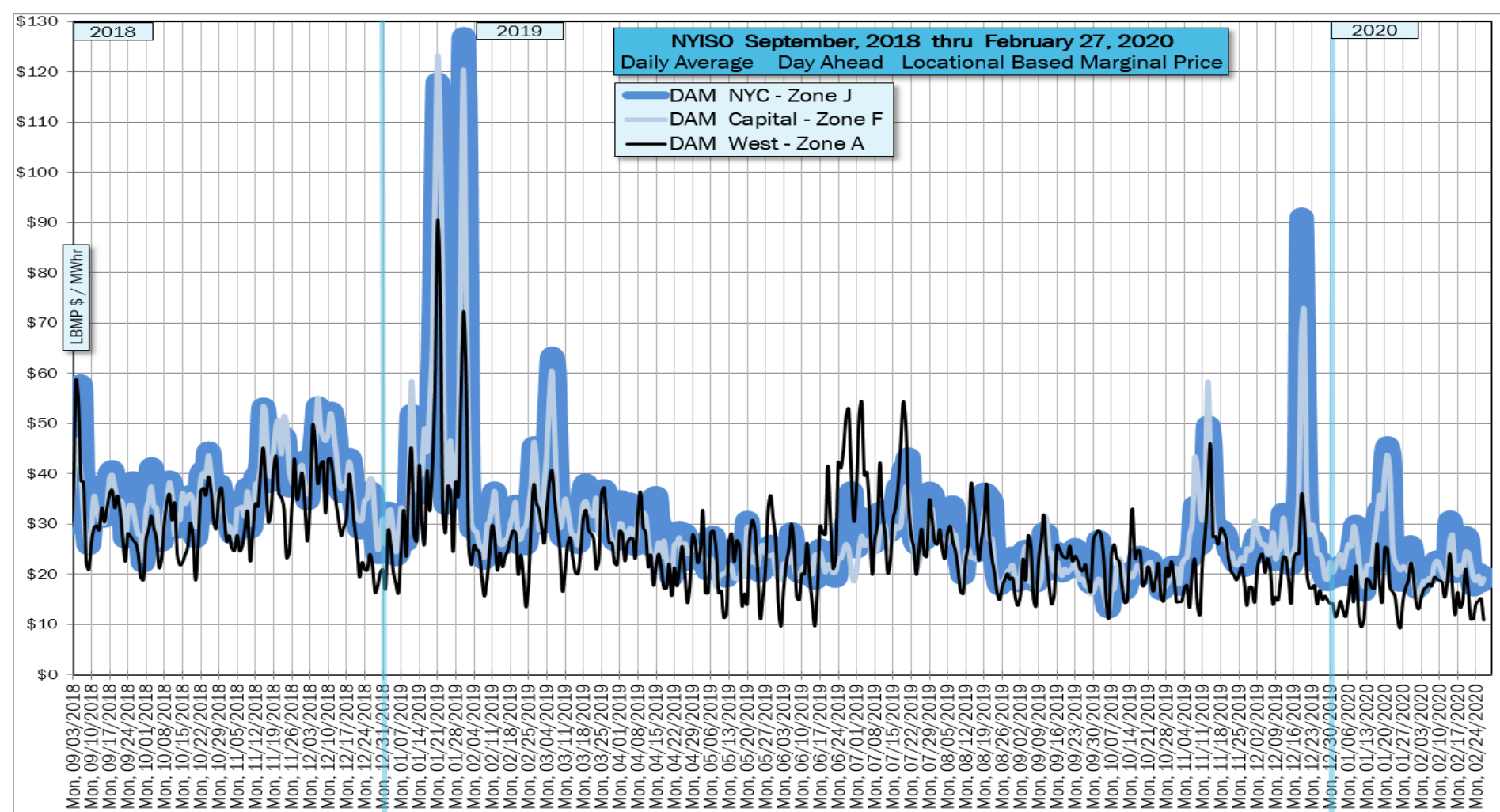


Figure 1. Lower 48 states natural gas inventory (Jan 1, 2017–Dec 31, 2020) billion cubic feet

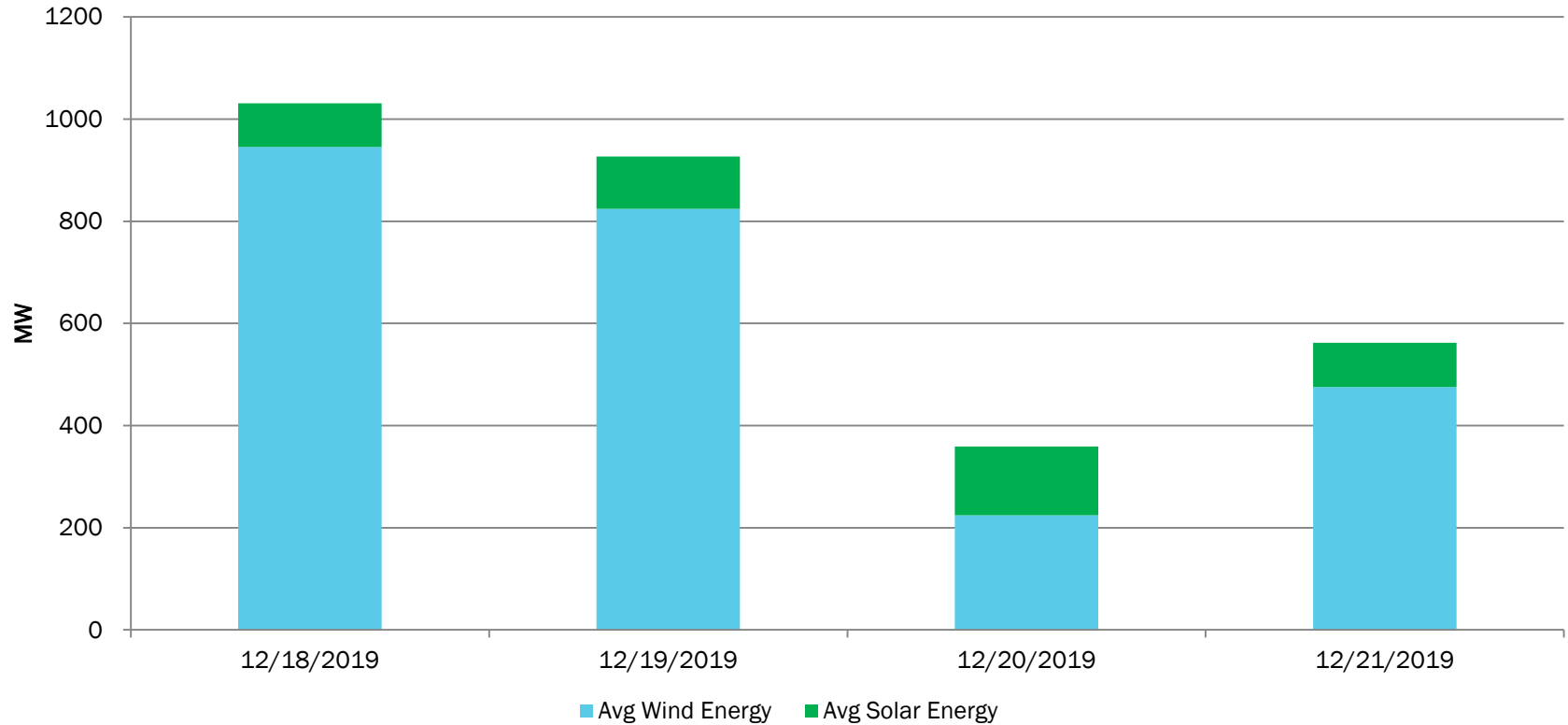


Source: U.S. Energy Information Administration, *Short-Term Energy Outlook, Natural Gas Monthly*

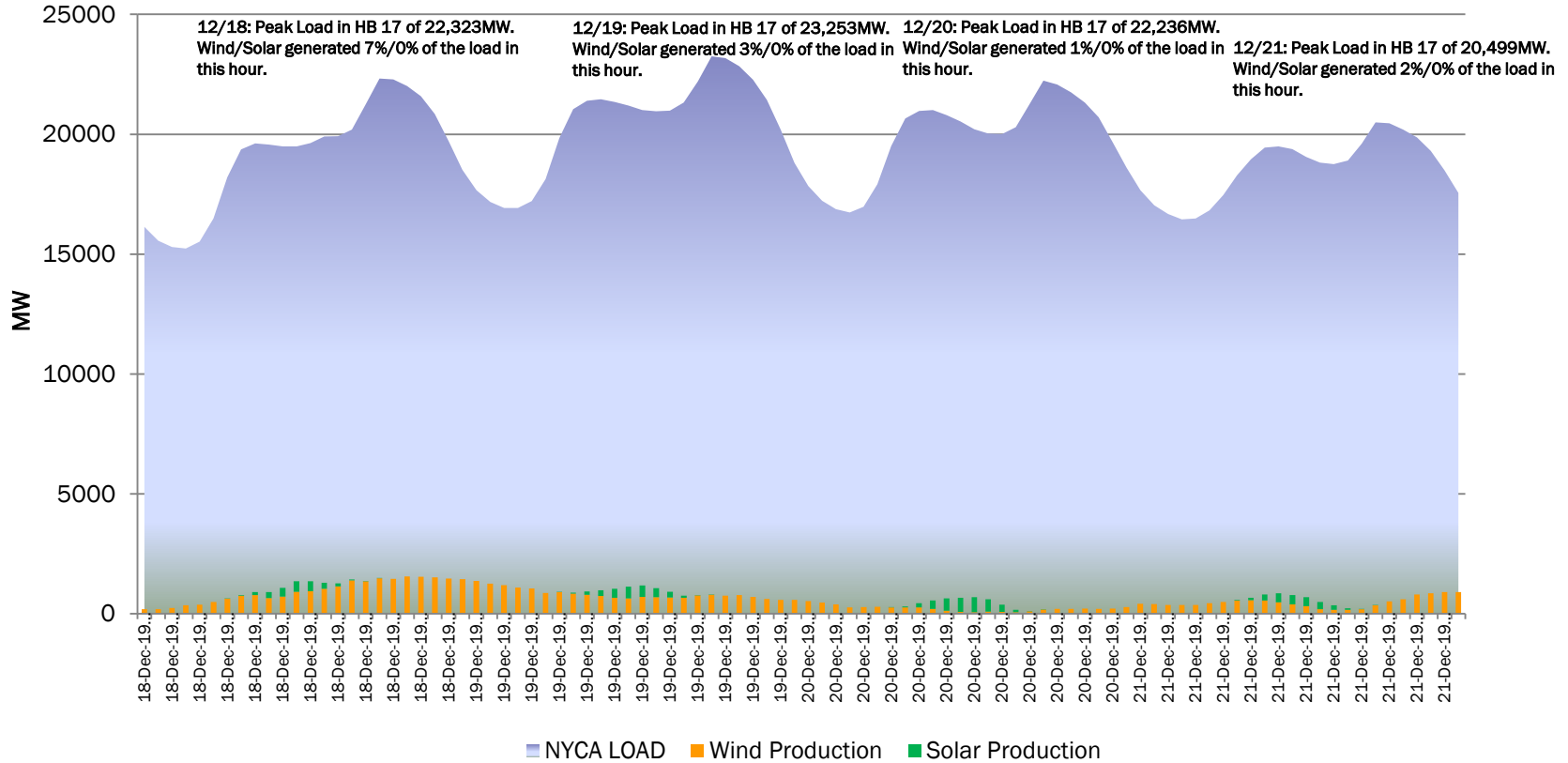




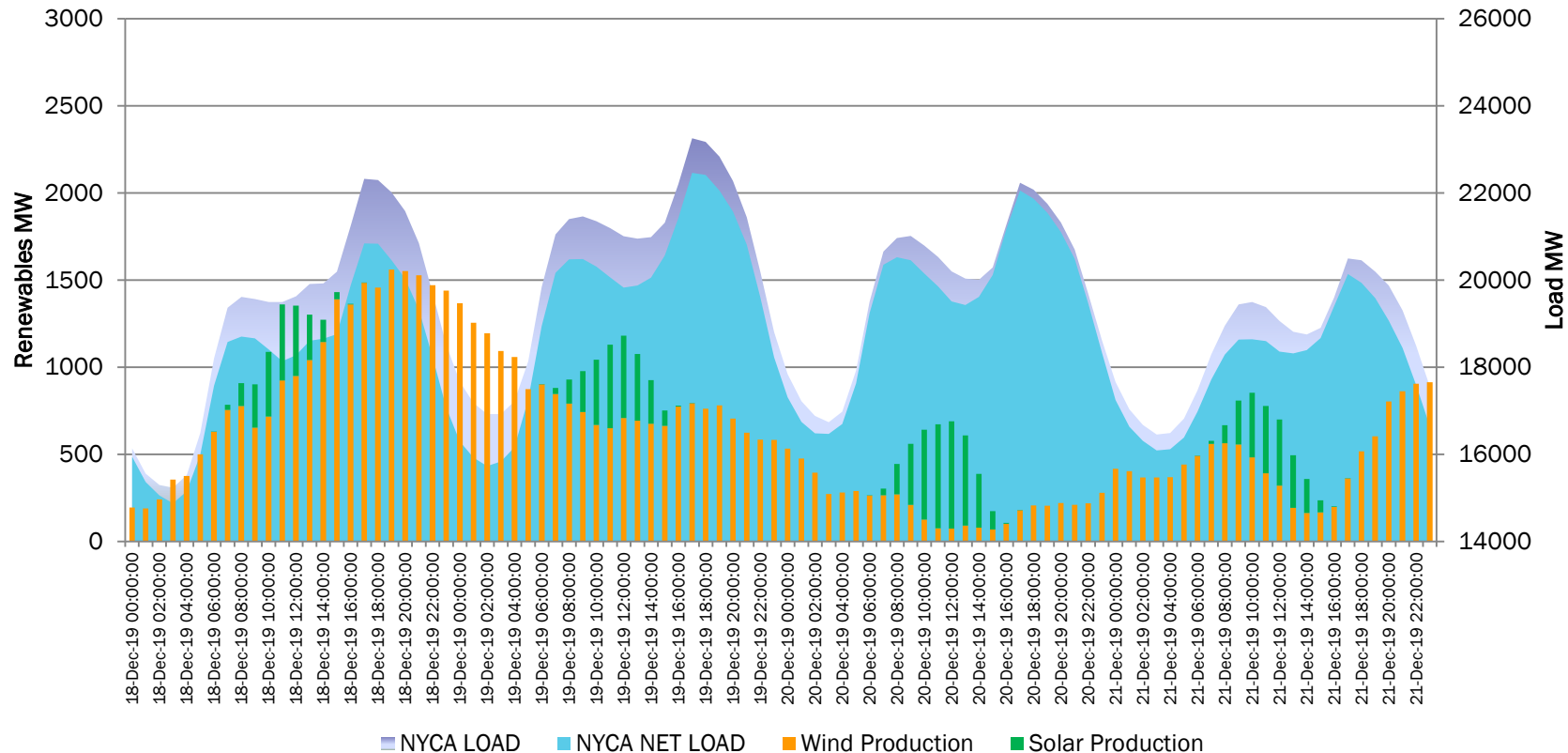
## Daily Wind & Solar Production 12/18/2019 - 12/21/2019



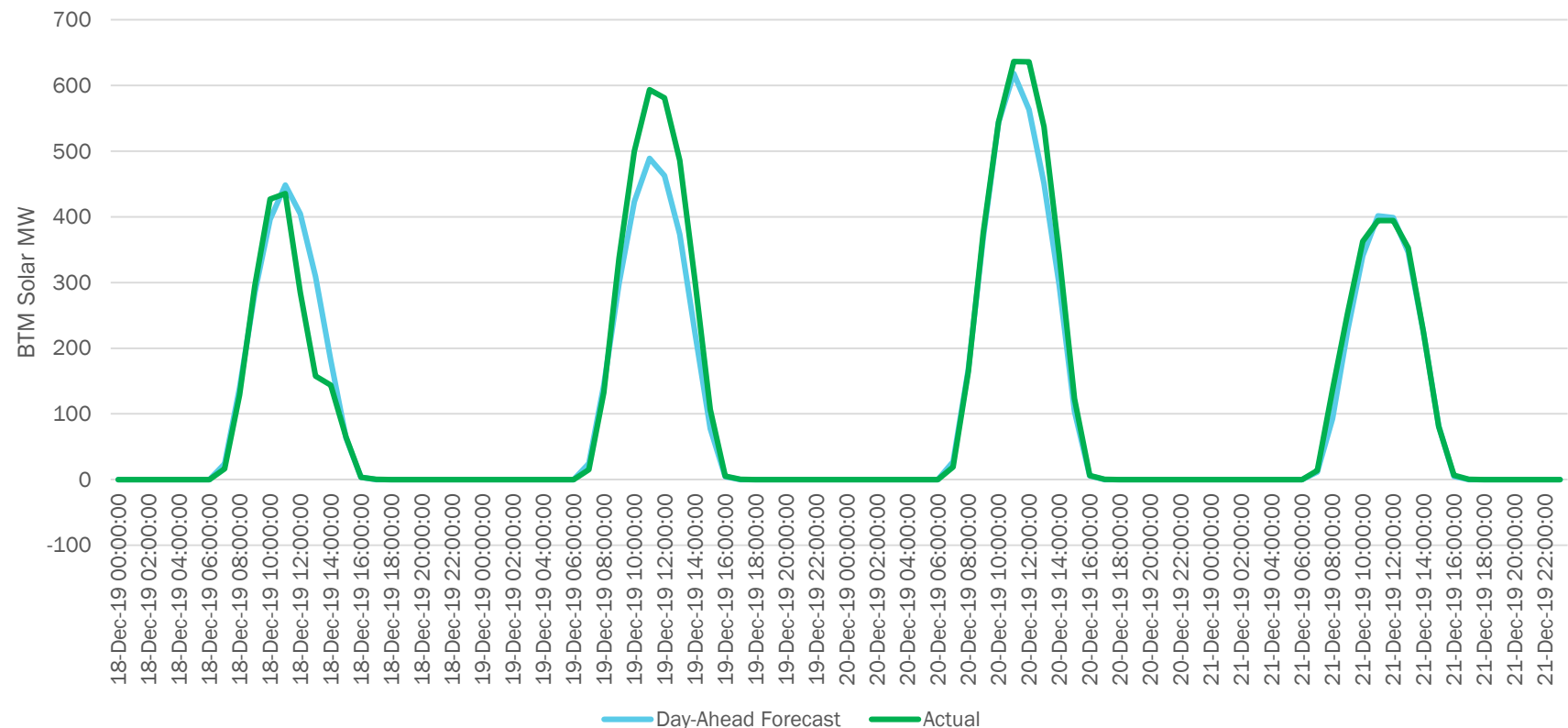
# Hourly Wind & Solar Production 12/18/2019 - 12/21/2019



# Hourly Wind & Solar Production 12/18/2019 - 12/21/2019



December 18-21, 2019 - NYCA BTM Solar Profile (~1,766MW)



# **The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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