

Winter 2019-2020 Cold Weather Operations

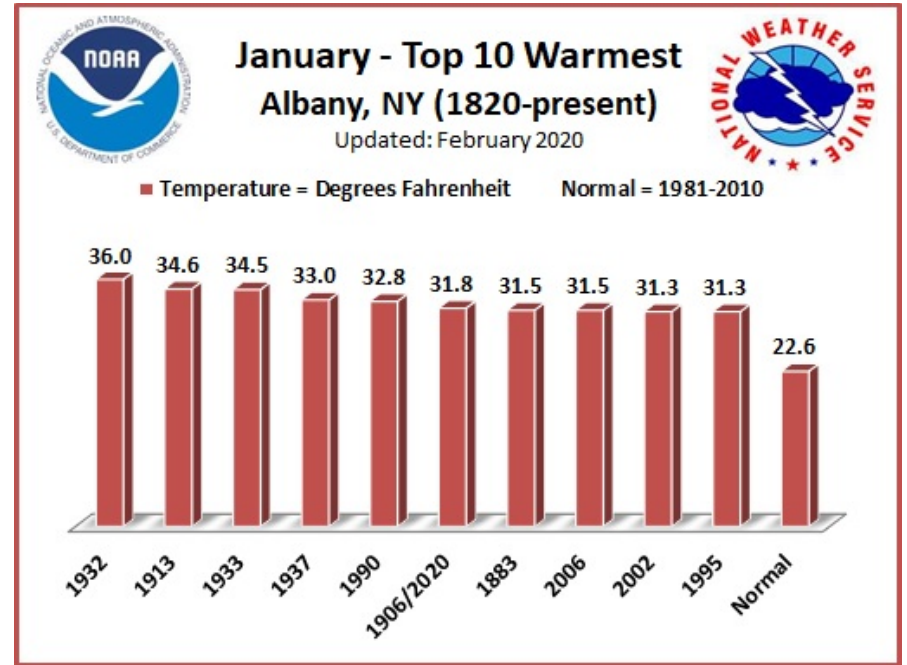
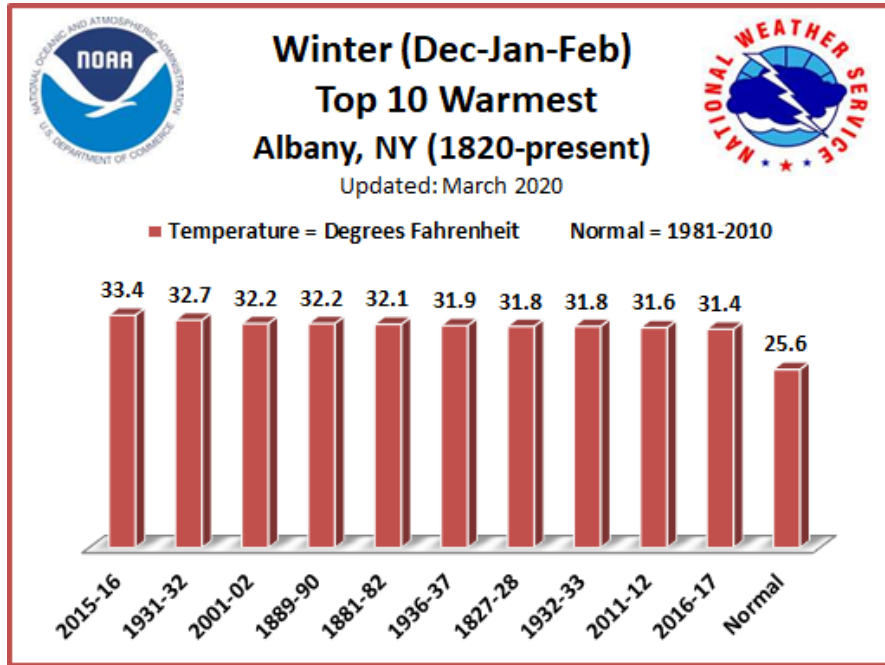
Wes Yeomans

Vice President, Operations

NYS Reliability Council – Executive Committee

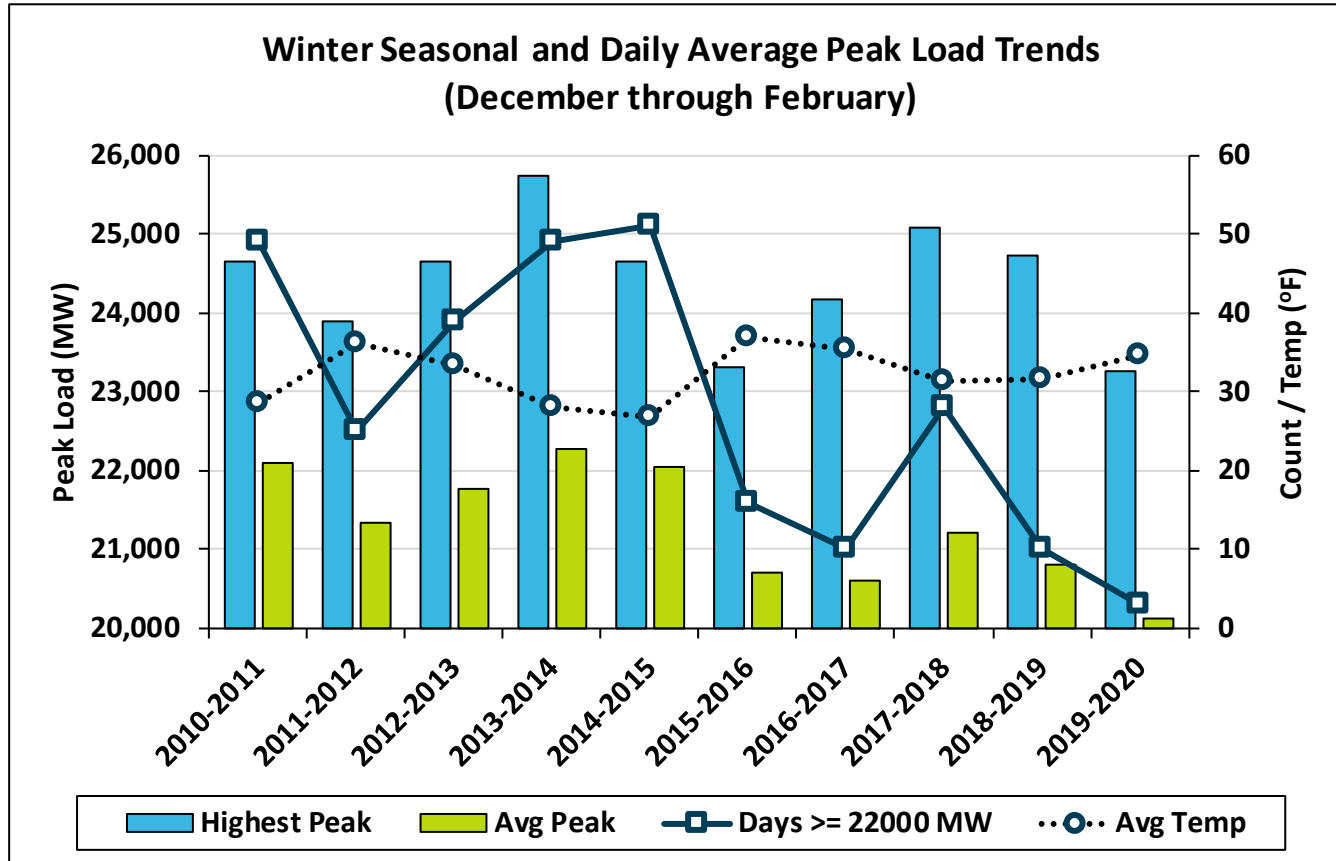
April 9, 2020

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

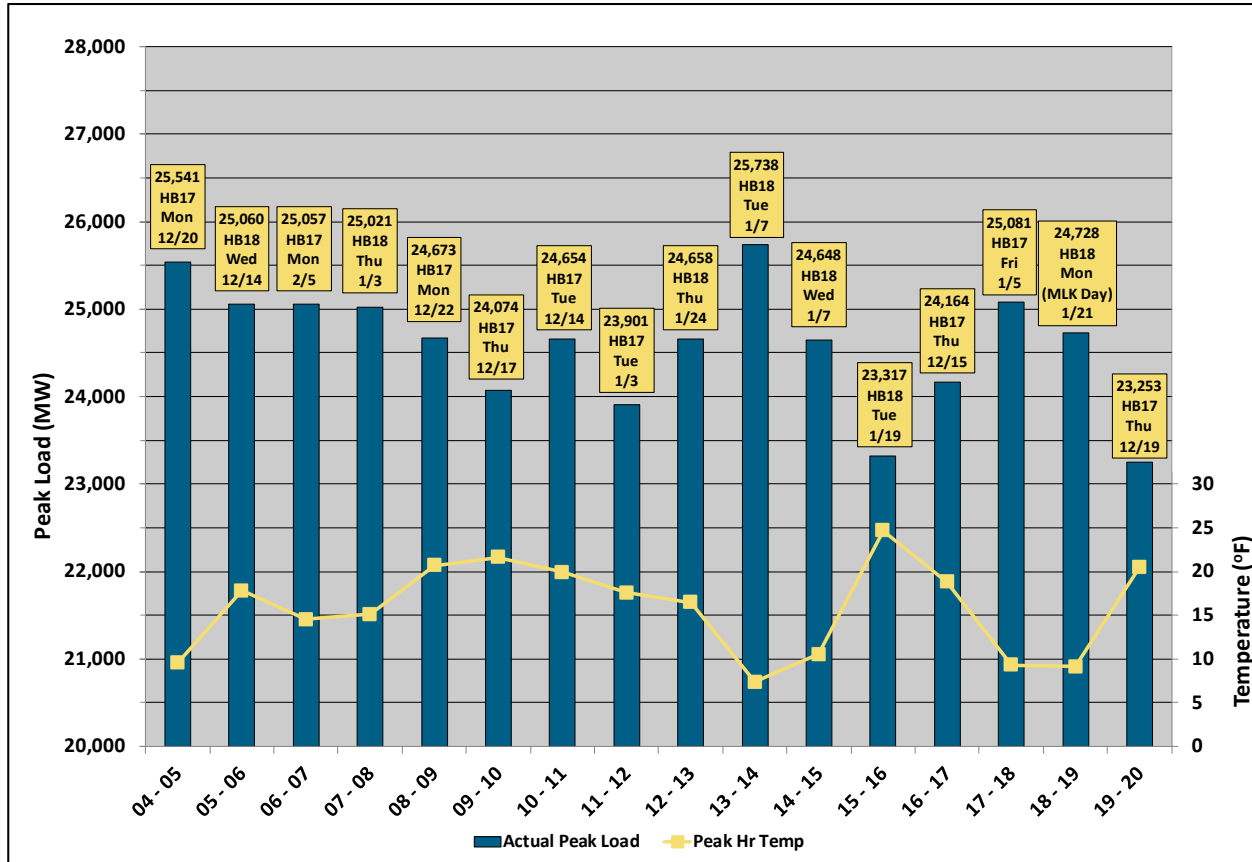
Date	DOW	AM Low Temp	Aft High Temp	HB18 Temp	Avg Temp	Peak Load (MW)
11/12/2019	Tue	33.4	32.2	27.6	33.8	21,085
11/13/2019	Wed	18.7	29.4	26.0	24.1	21,324
11/14/2019	Thu	24.0	39.3	39.0	32.8	20,631
12/18/2019	Wed	28.8	32.4	25.5	28.1	22,323
12/19/2019	Thu	12.7	21.4	20.1	17.2	23,253
12/20/2019	Fri	16.8	27.9	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.

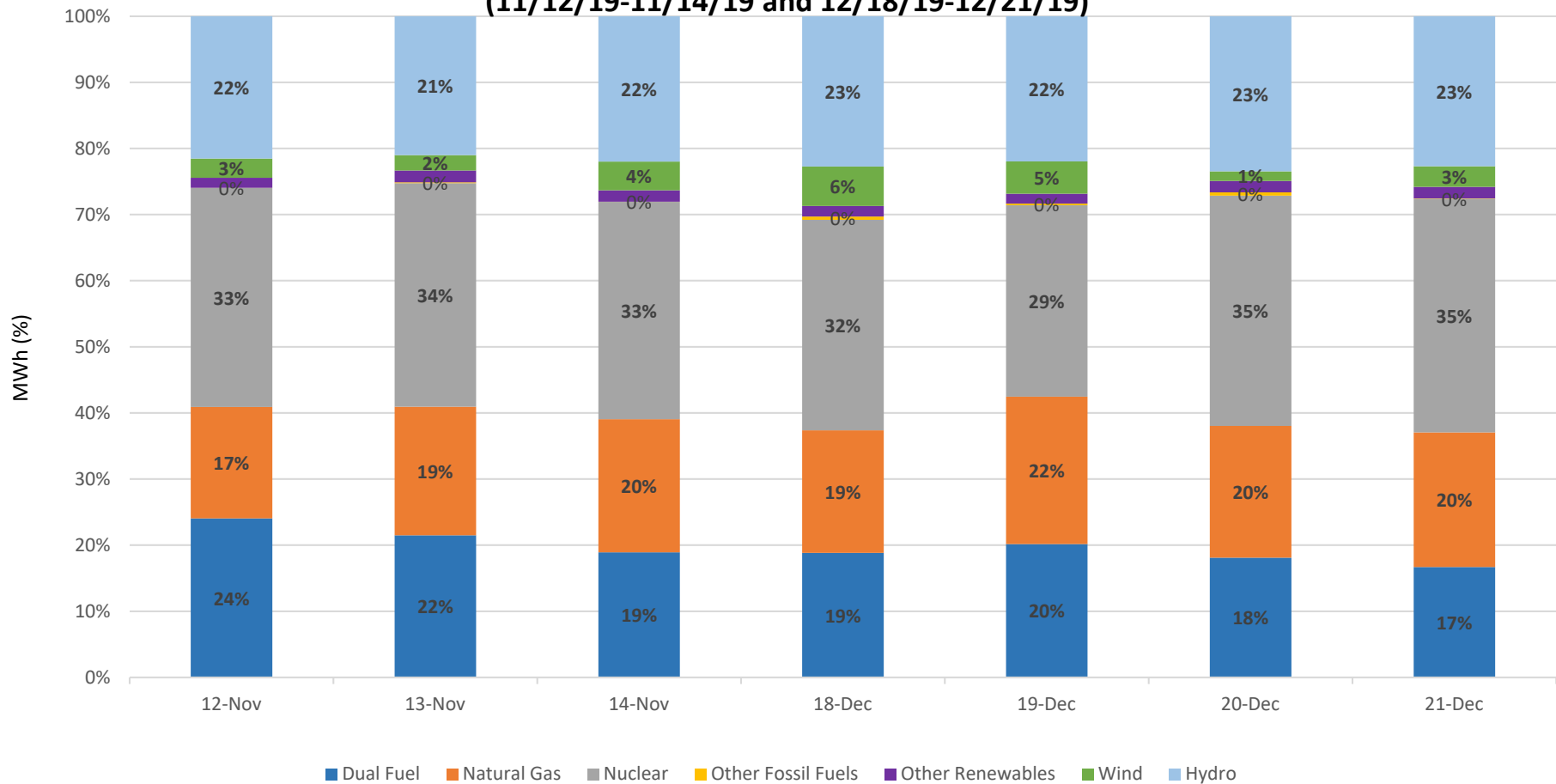
Peak Loads

- **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**

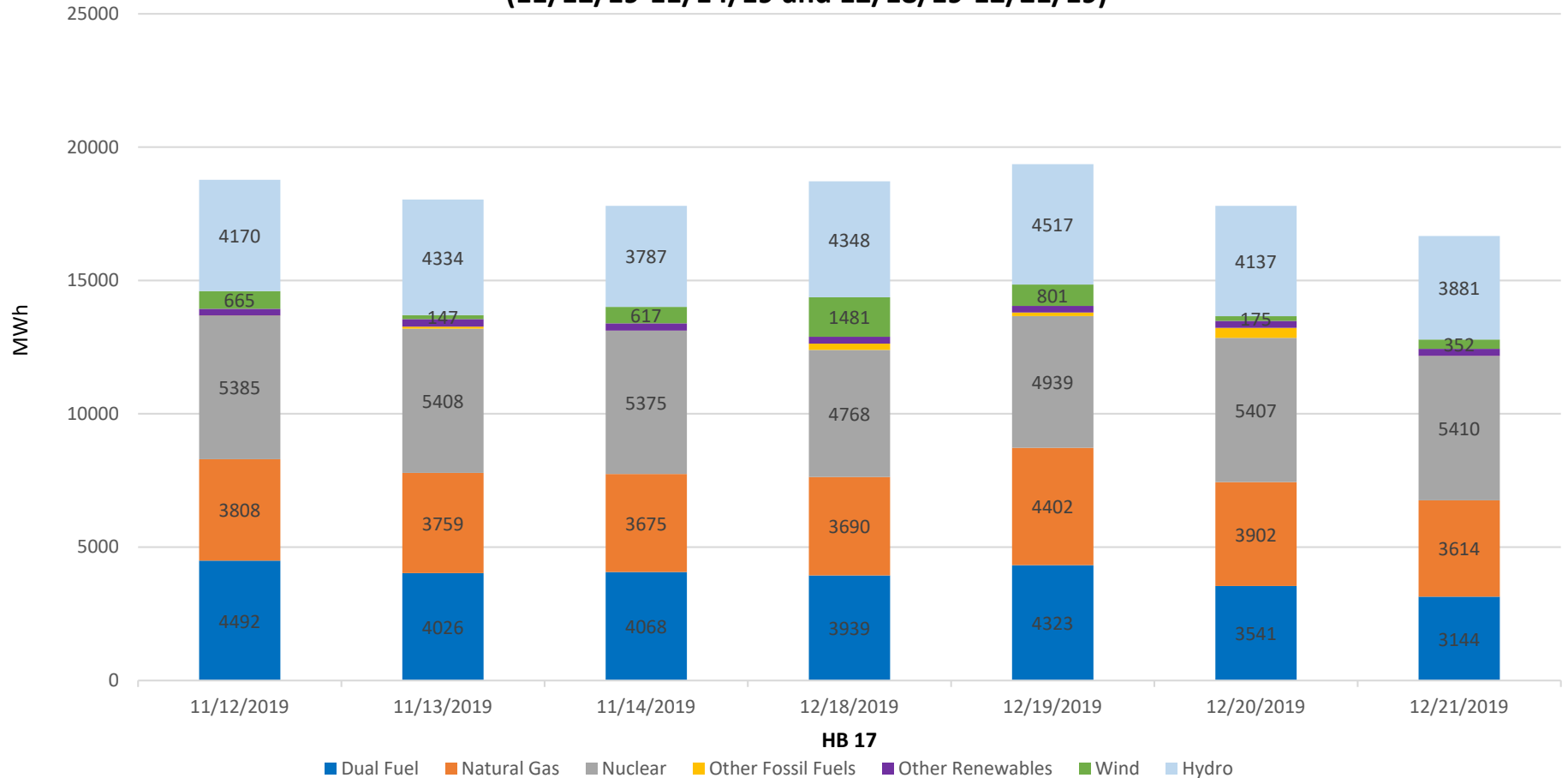
Winter Peak Loads in MW: 2004-05 to 2019-20



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

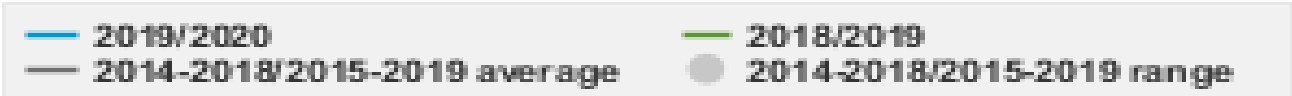
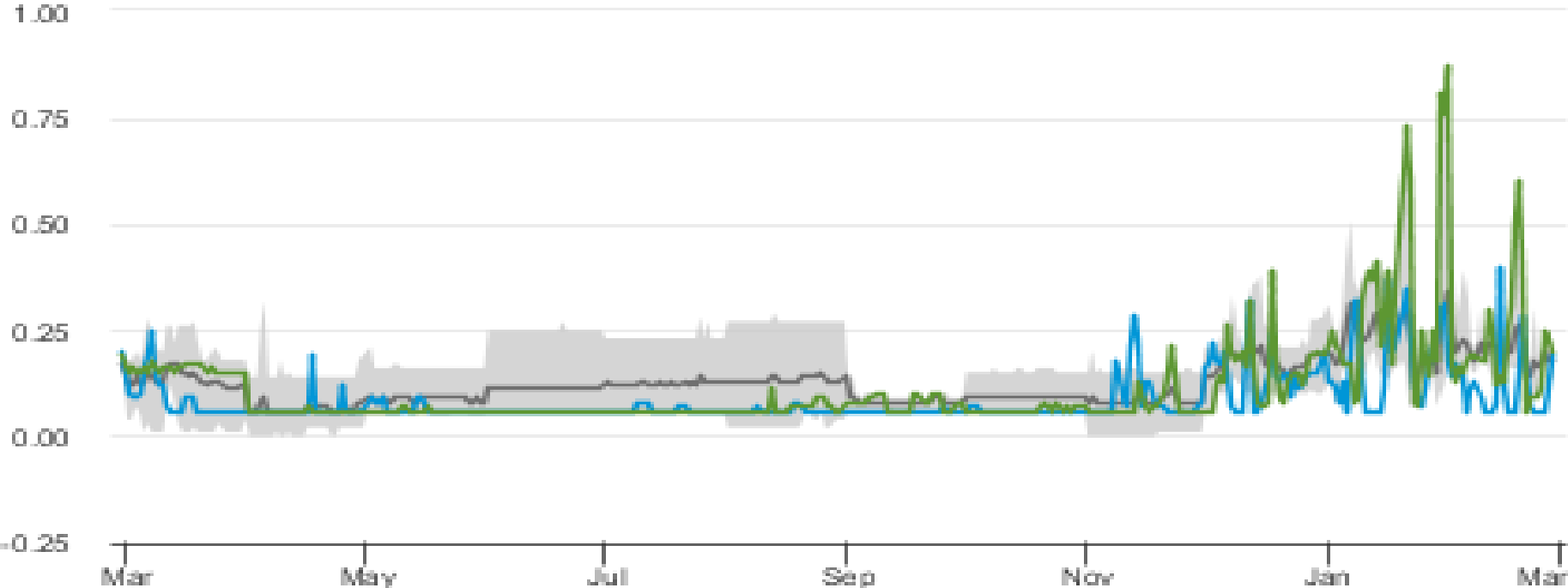
- **Transmission infrastructure performance was excellent**
- **Continuing Forced Outages**
 - B and C lines from NJ to NYC, Hudson-Farragut 345 kV B3402 and Marion-Farragut 345 kV C3403
 - One Phase Angle Regulator (PAR) at the Ontario border, L33P St. Lawrence – Moses

Fuel Monitoring

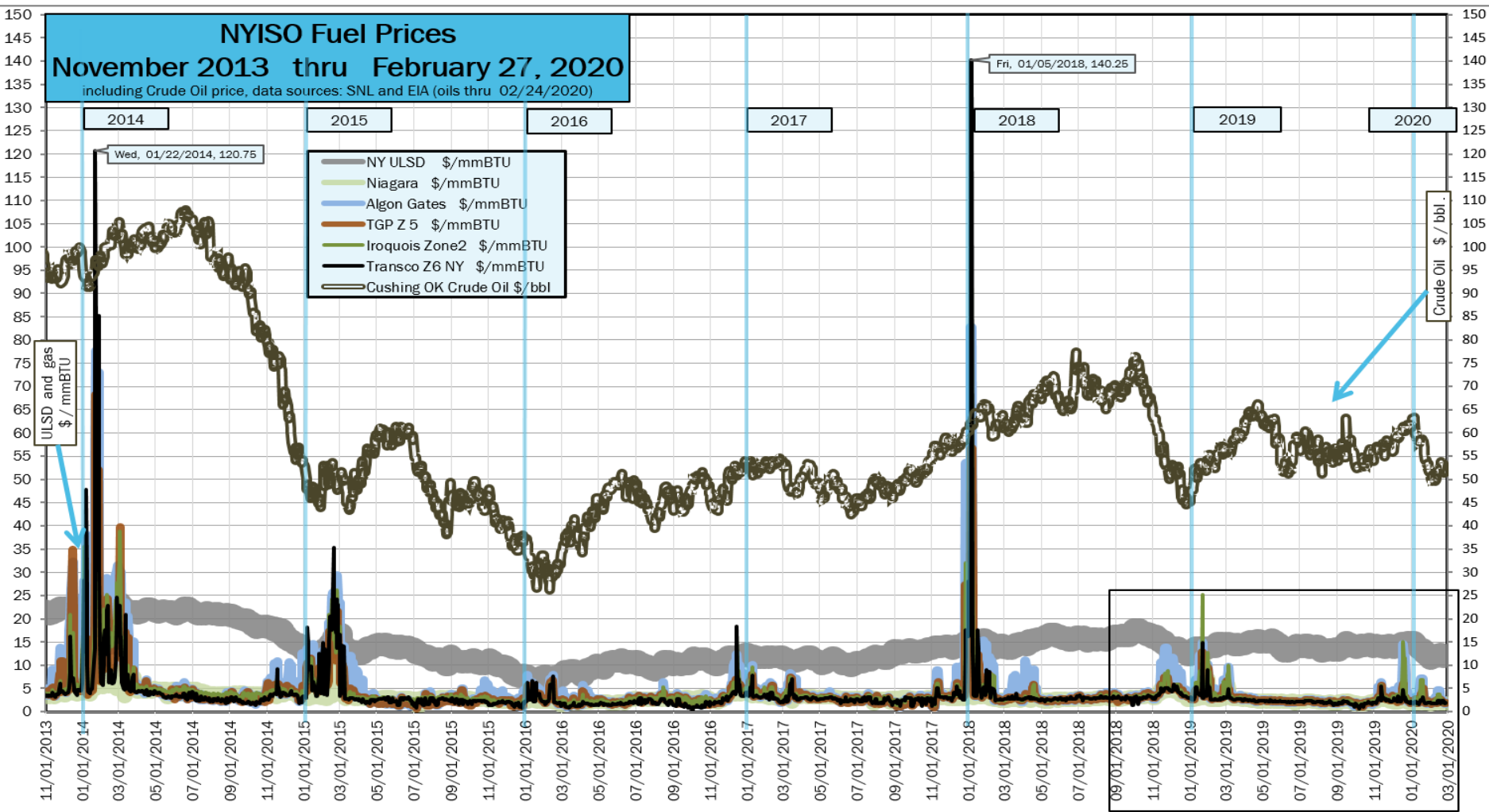
- **Weekly Surveys**
- **Ad Hoc Surveys**
- **Follow-up reach-out to a few individual resources for additional information**
- **Cooperation and accuracy of the Web Based Fuel Survey Application was excellent**

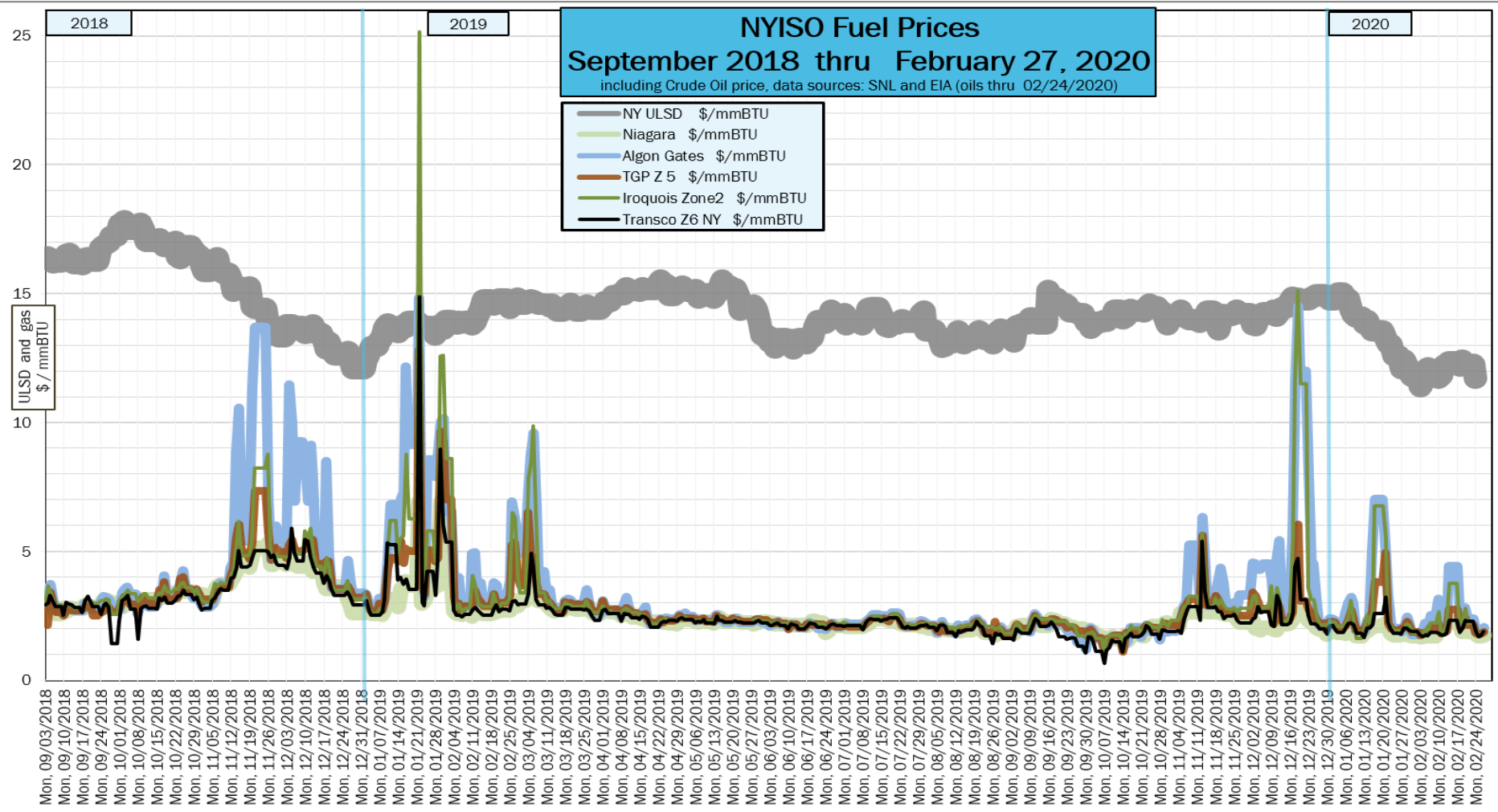
Daily deliveries of liquefied natural gas in New England

billion cubic feet per day (Bcf/d)



Source: OPIS PointLogic





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

Dec 2019 dollars per million British thermal units

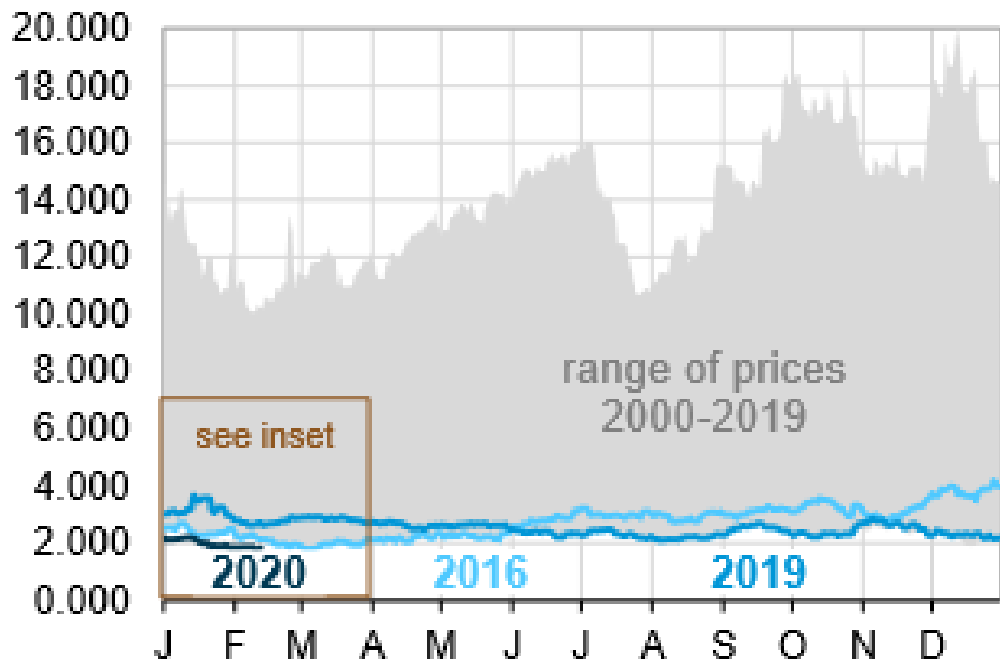
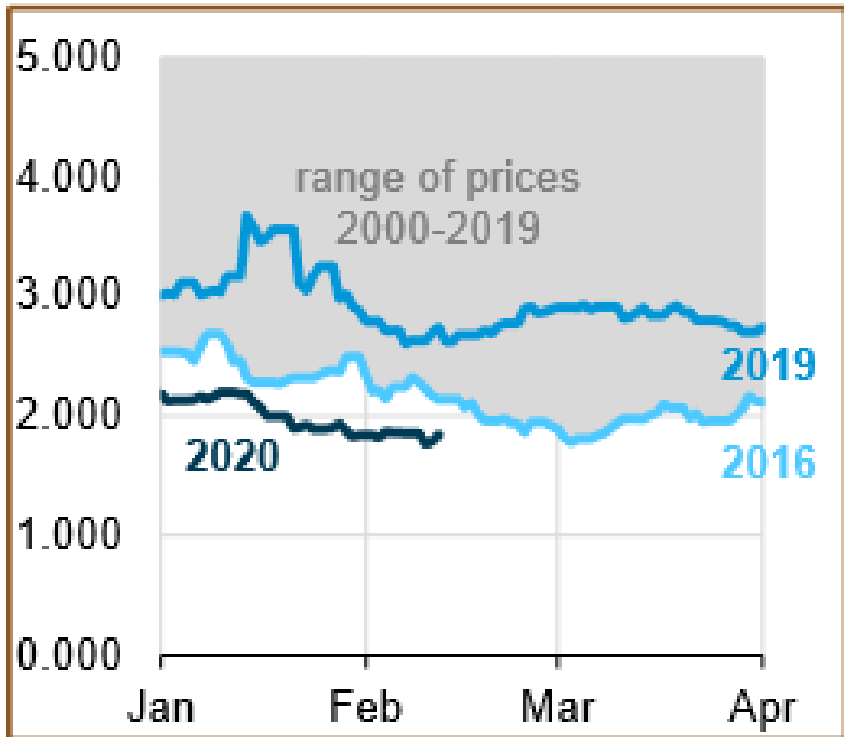
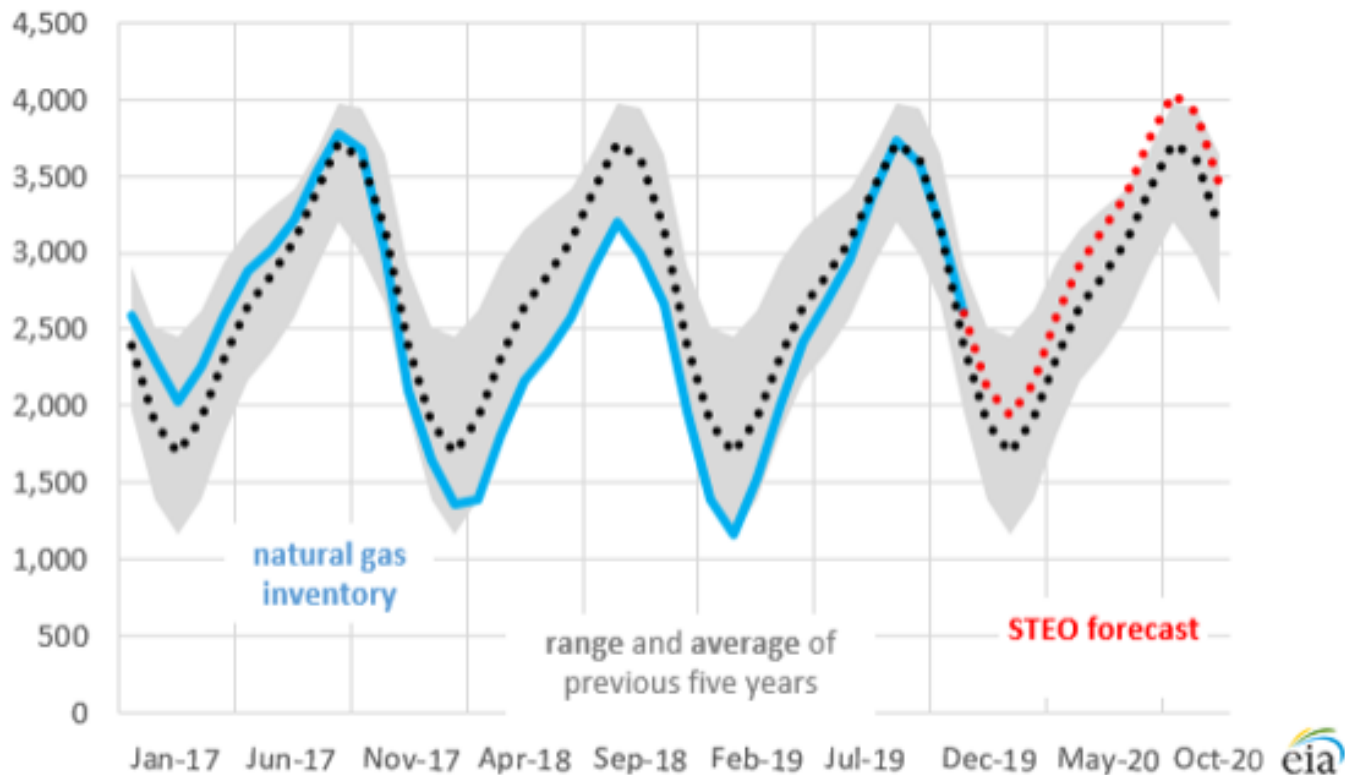
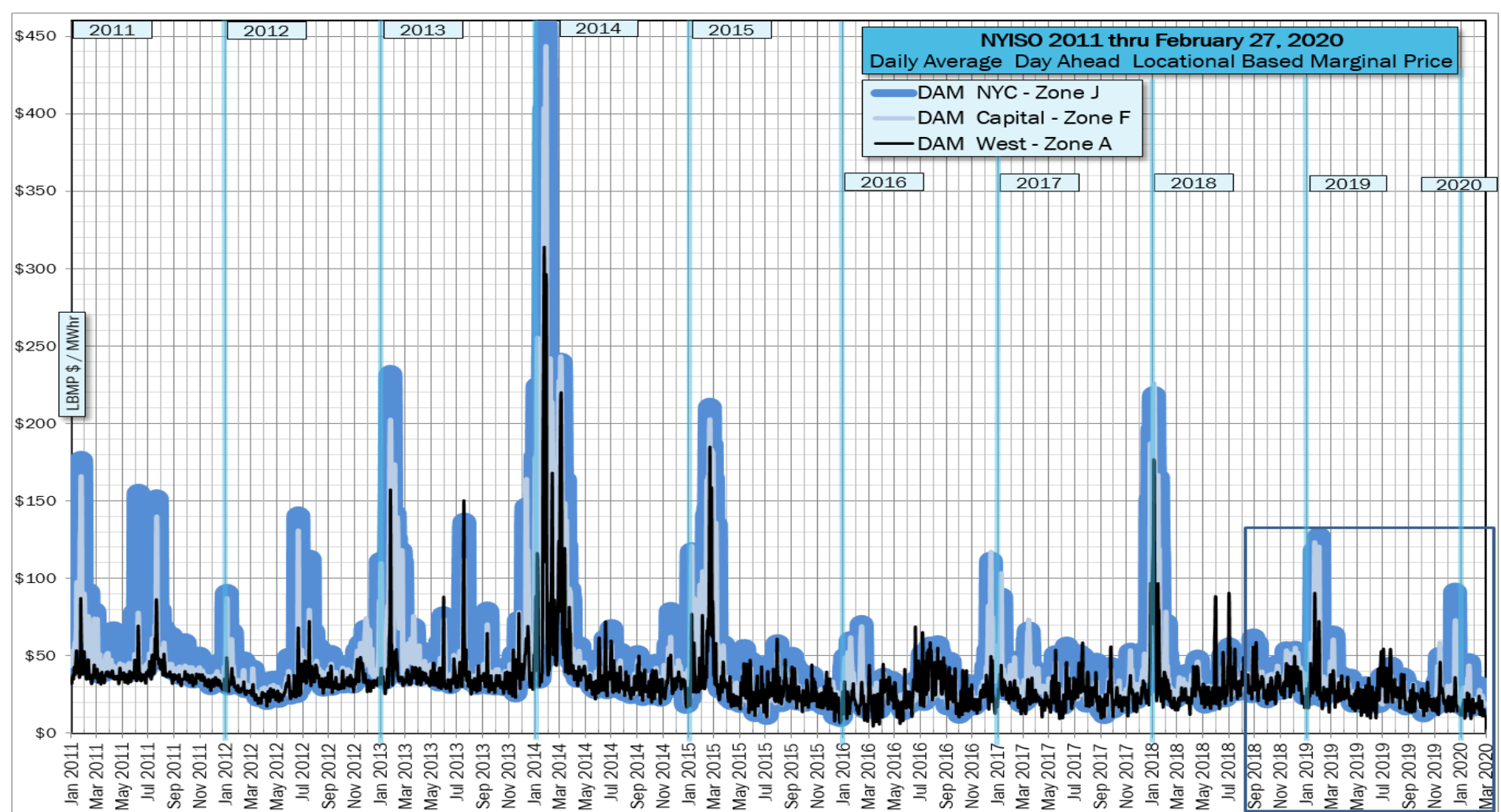


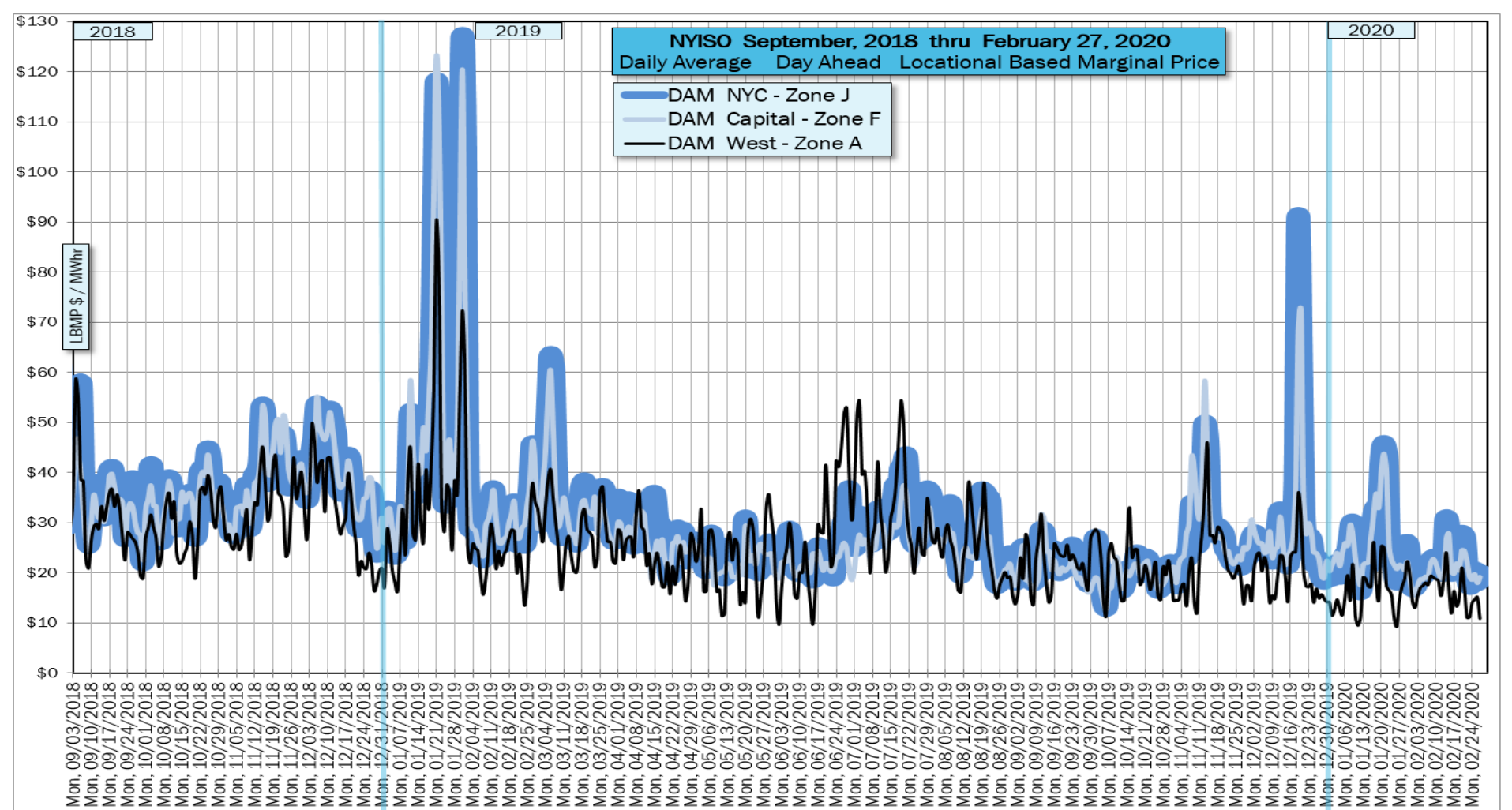
Figure 1. Lower 48 states natural gas inventory (Jan 1, 2017–Dec 31, 2020) billion cubic feet



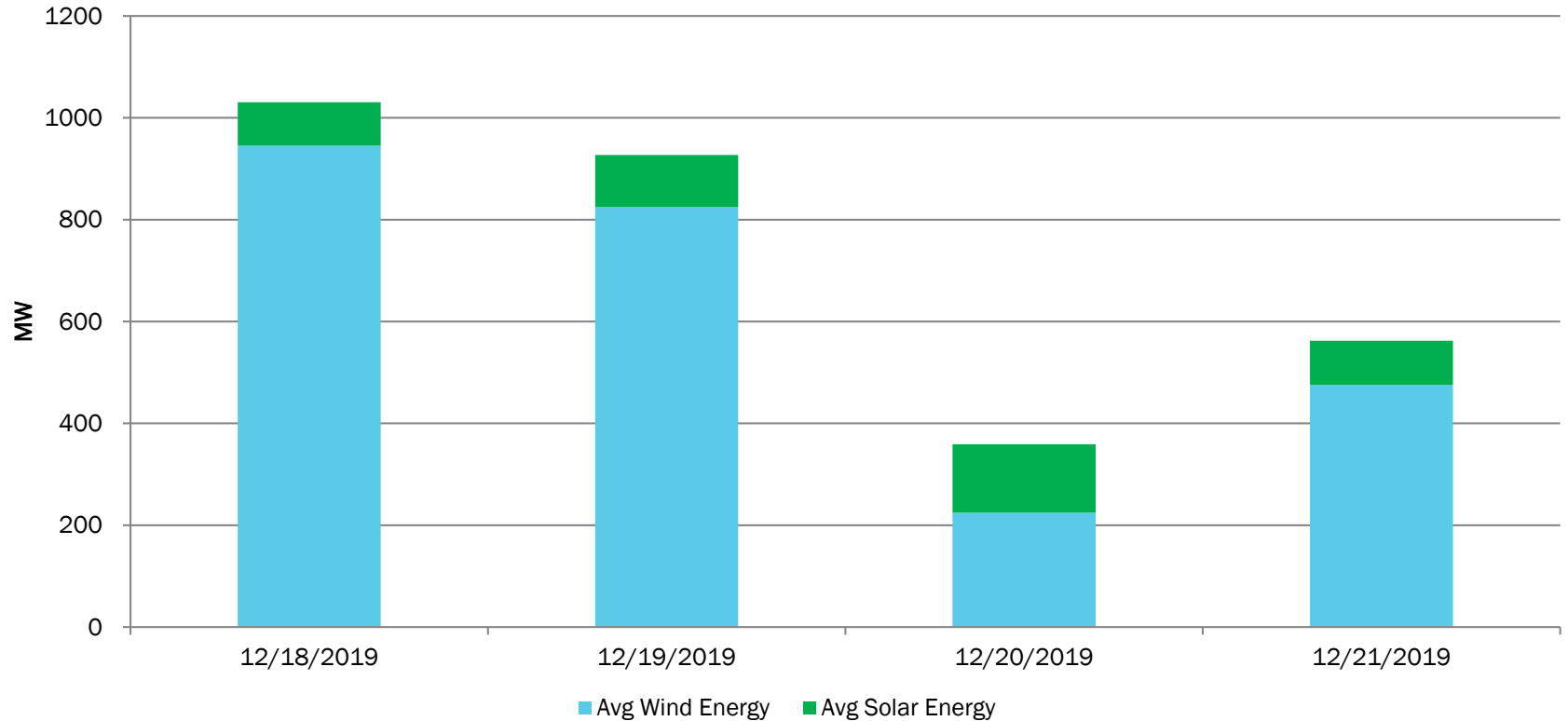
Source: U.S. Energy Information Administration, *Short-Term Energy Outlook, Natural Gas Monthly*



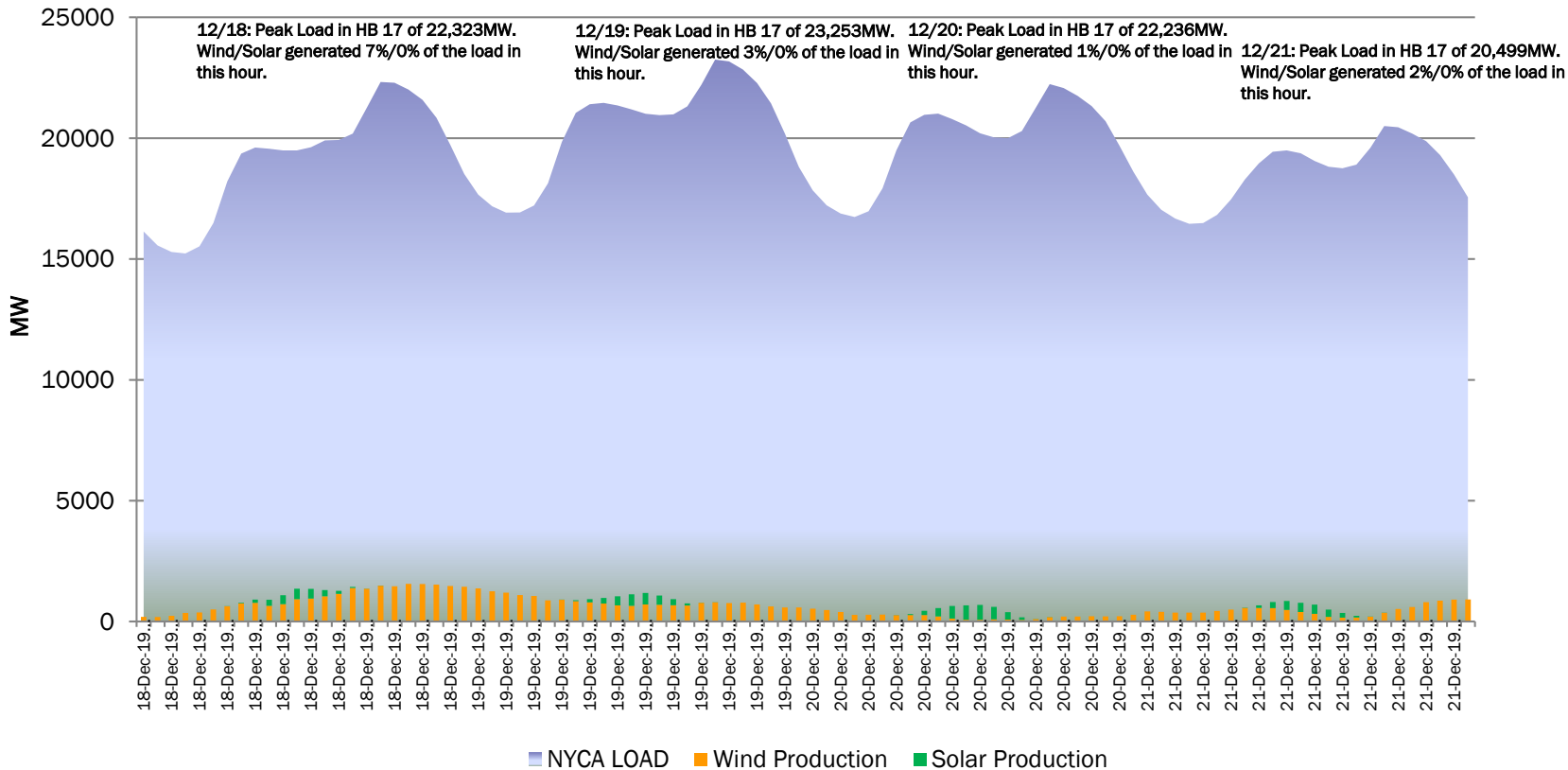




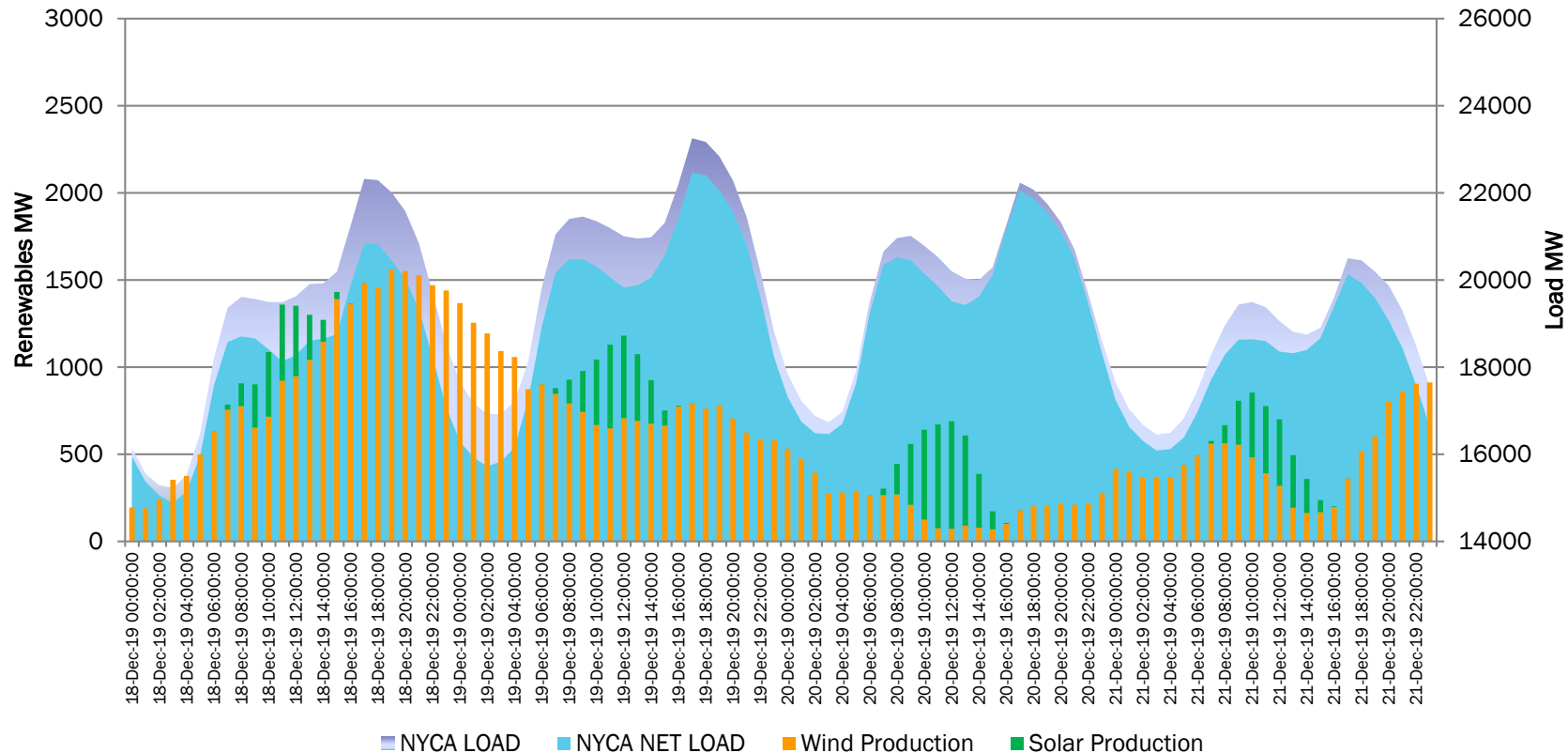
Daily Wind & Solar Production 12/18/2019 - 12/21/2019



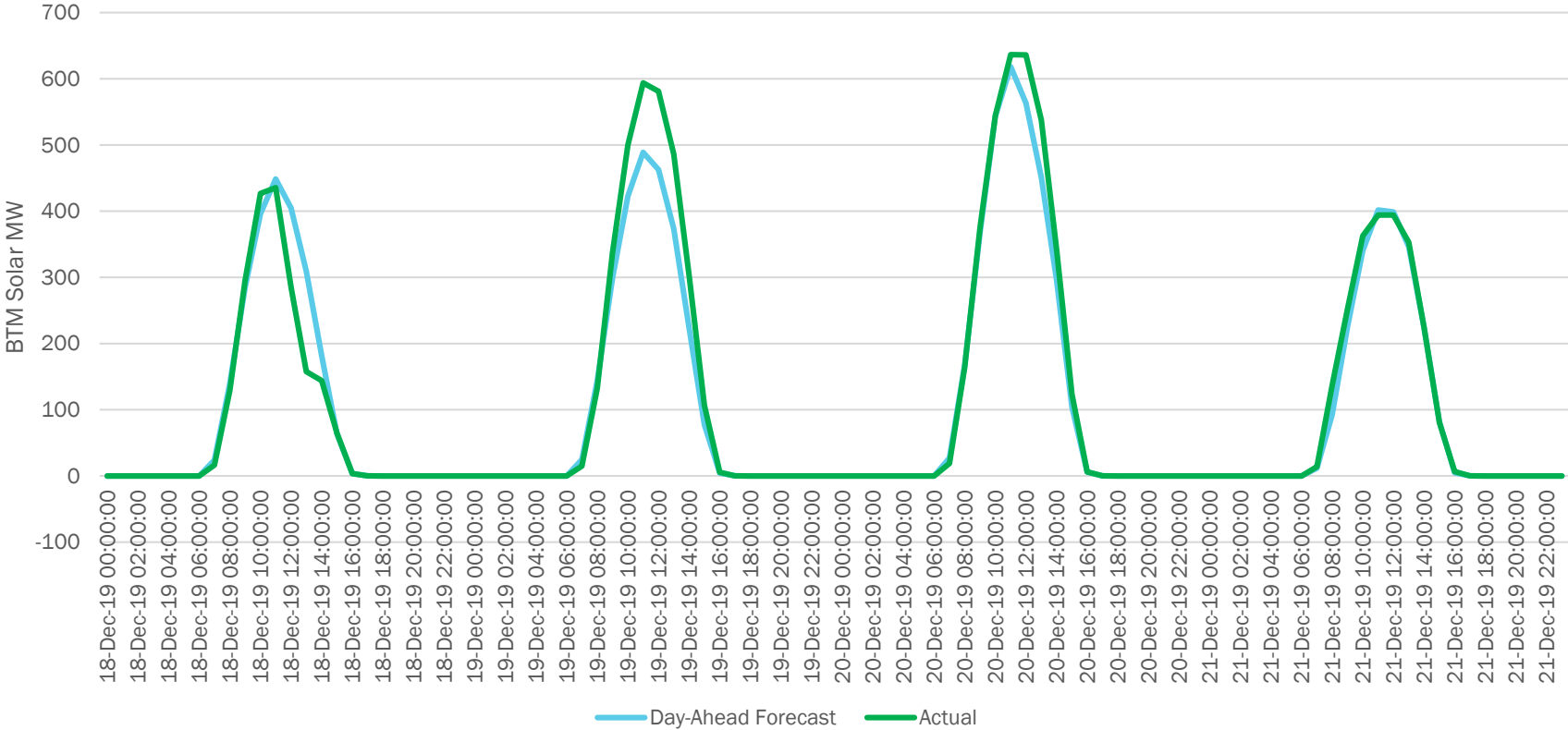
Hourly Wind & Solar Production 12/18/2019 - 12/21/2019



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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