

2021 Long Term Forecast of Solar PV

Arthur Maniaci

PRINCIPAL FORECASTER

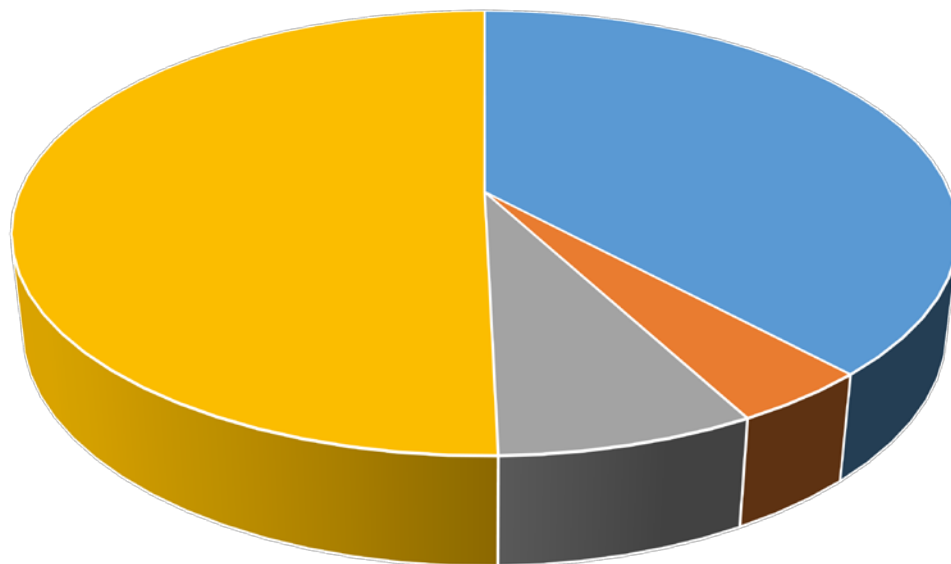
Electric System Planning Working Group

February 23, 2021

New Sources of Data for Behind-the-Meter Solar PV Systems

- **NYISO has integrated four different sources of BTM solar data**
 - New York Sun inventory
 - NY DPS Standard Interconnection Request (SIR) inventory
 - NYISO interval data for a sample of 9,400 BTM solar inverters
 - California Energy Commission data on solar panels and inverters
- **BTM Solar is being segmented into four size categories to better represent growth of larger sized systems**
- **Data and analysis occurs at county level and size category. This permits consistent aggregations from county to Zone, Subzone and Transmission District**

2020 Solar PV Capacity – MW-DC Segmented by System Size



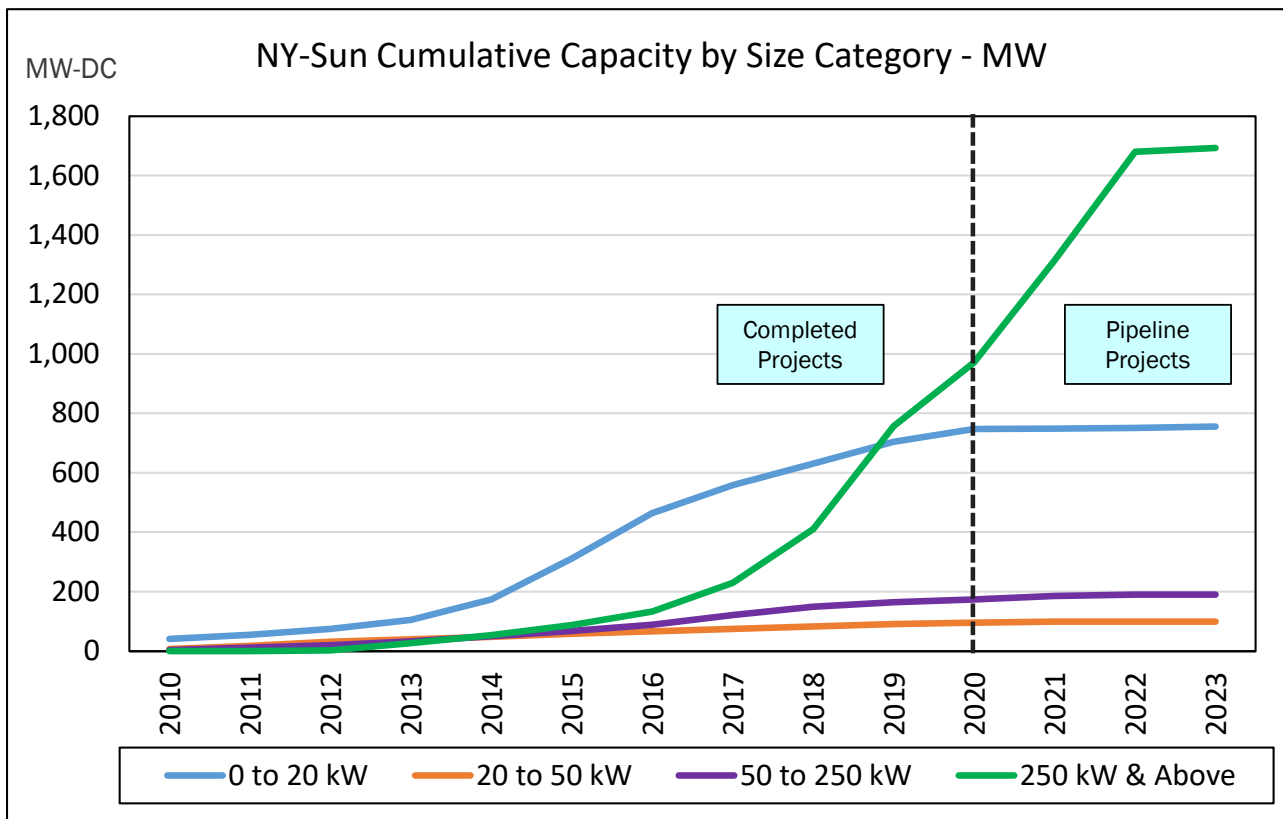
- | | |
|-----------------|-------------------|
| 1. 0 to 20 kW | 2. 20 to 50 kW |
| 3. 50 to 250 kW | 4. 250 kW & Above |

Total Capacity:
2,445 MW-DC

Half of all current installed capacity is in systems that are 250 kW and larger.

System sizes are
0 to 20 kW
21 to 50 kW
51 to 250 kW
250 kW & Above

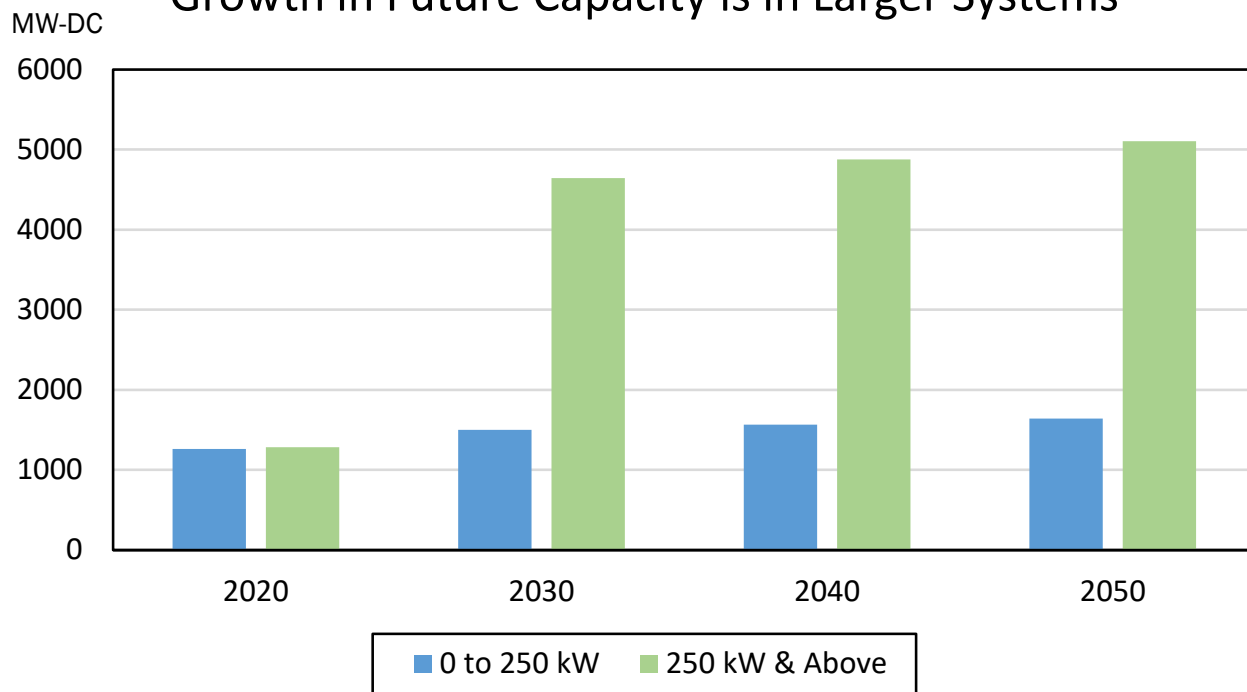
Evolving Trends in Capacity Growth



Evidence from both completed and pipeline projects in the NY-Sun database indicates a lower rate of growth in all system sizes less than 250 kW.

Completion dates of pipeline projects are estimated based upon average time of project completion by size.

Growth in Future Capacity is in Larger Systems

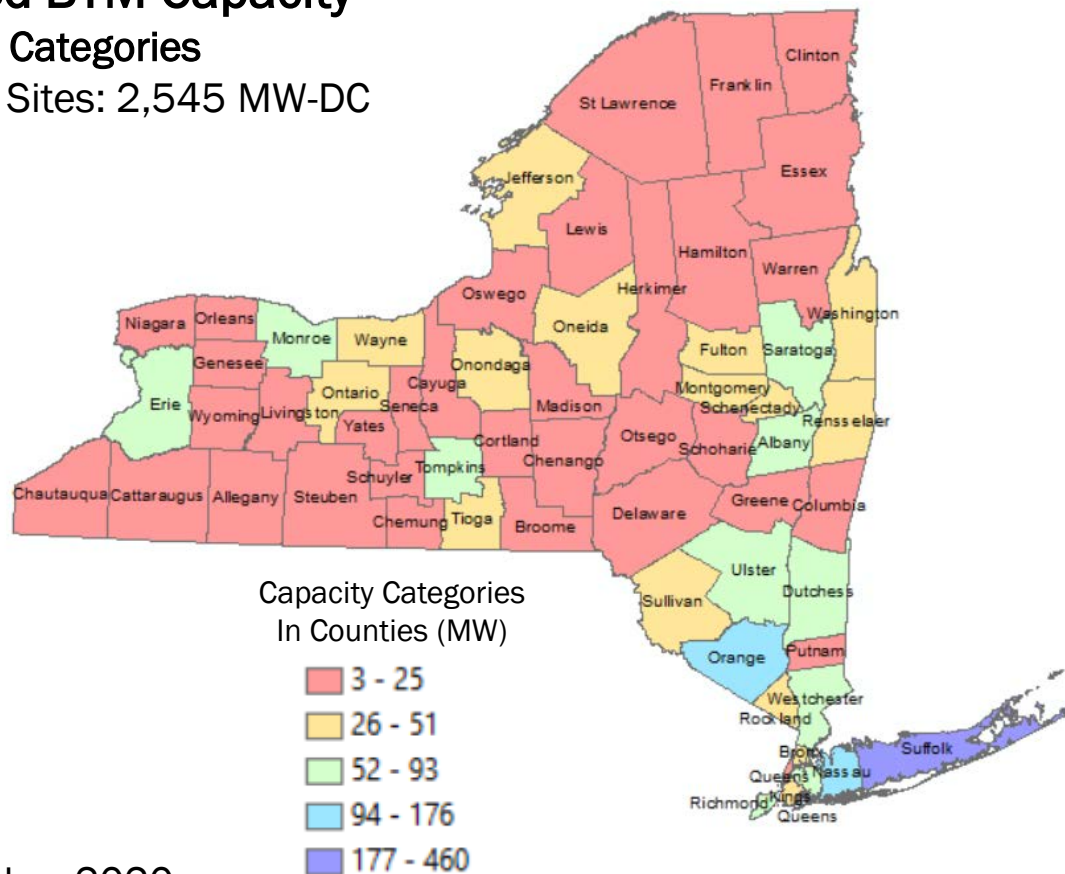


Future growth is expected to follow the current pipeline path, with only small growth in systems less than 250 kW, which are primarily residential roof-top systems.

Total Installed BTM Capacity

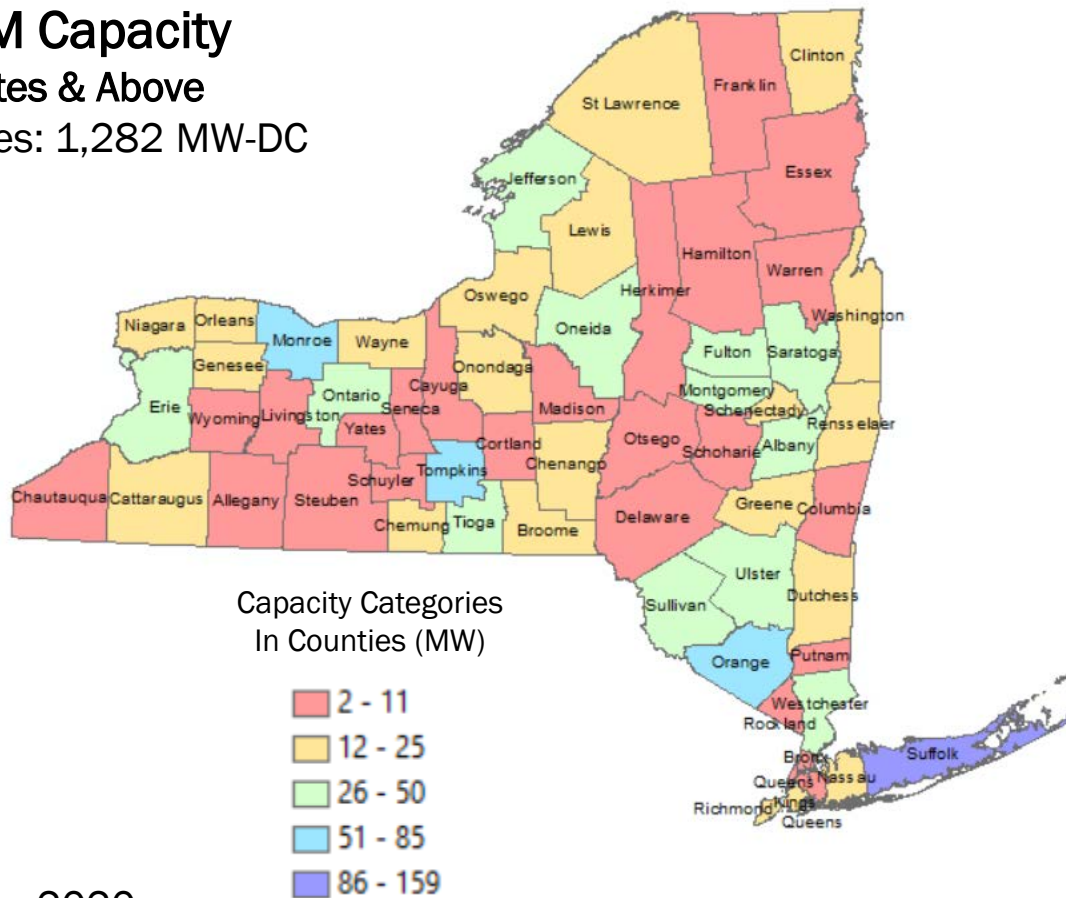
All Size Categories

Total Capacity of Sites: 2,545 MW-DC



Capacity as of December 2020

250 kW-DC Sites & Above
Total Capacity of Sites: 1,282 MW-DC

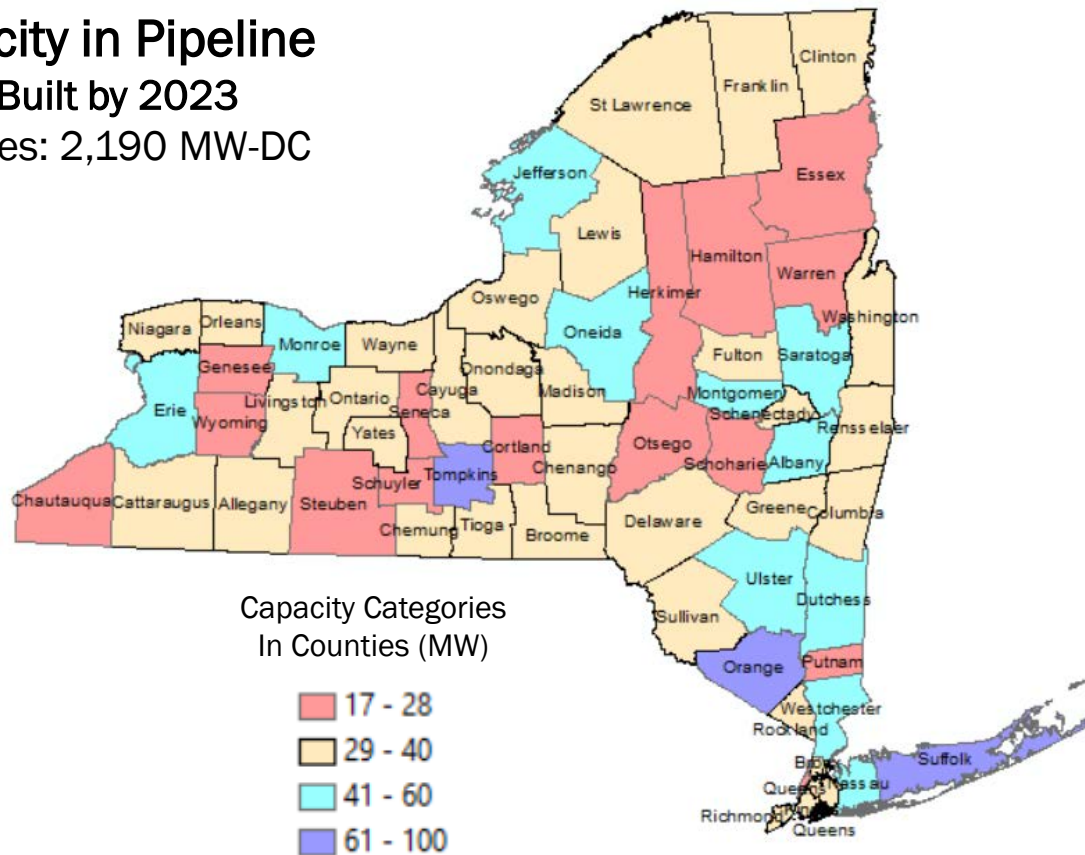


Capacity as of December 2020

Total BTM Capacity in Pipeline

Expected to Be Built by 2023

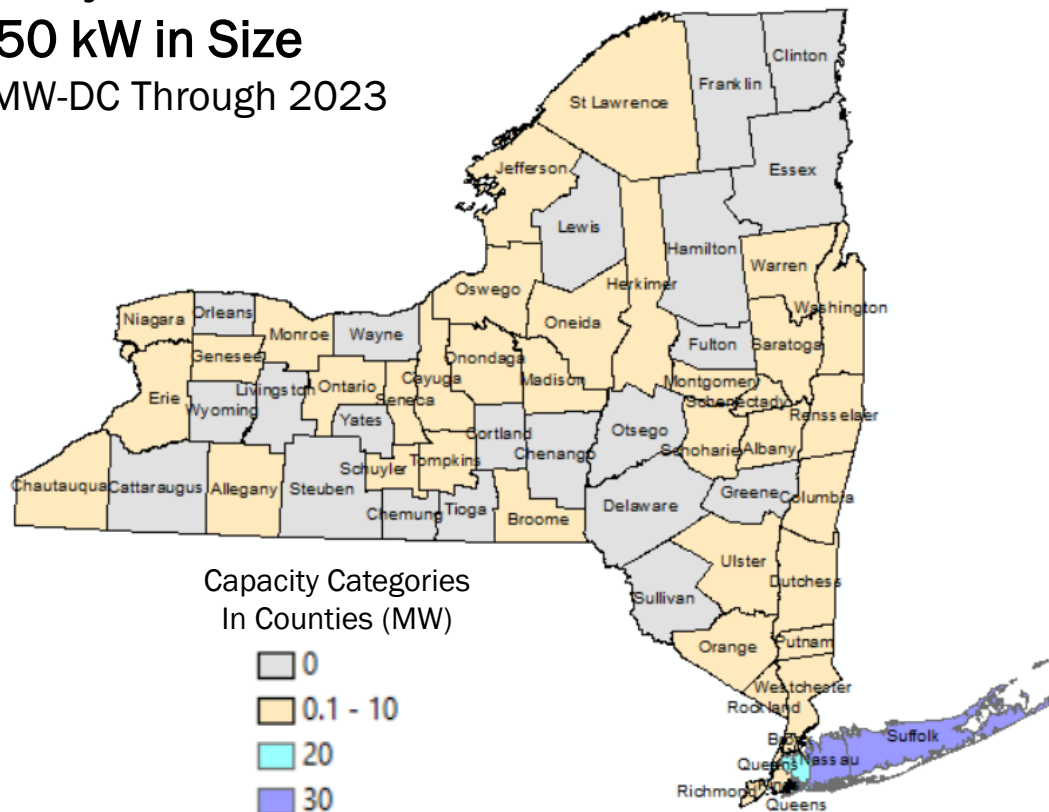
Total Capacity of Sites: 2,190 MW-DC



Expected capacity as of December 2023

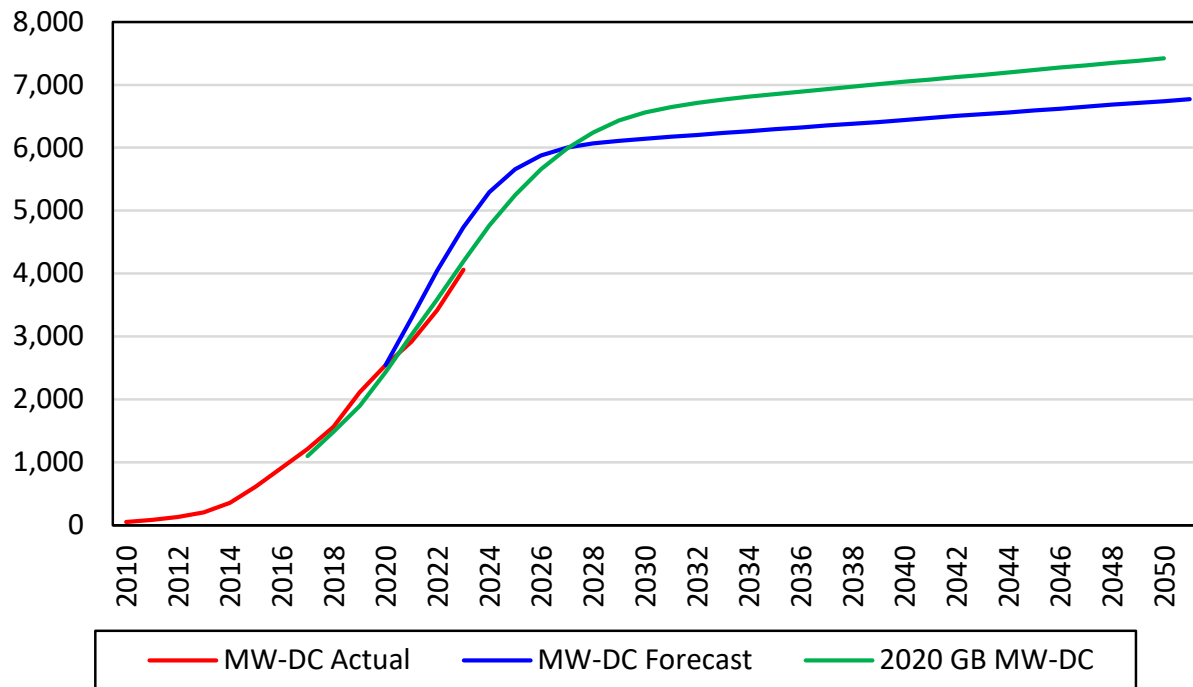
Pipeline Capacity for Sites Less Than 250 kW in Size

Total Capacity: 177 MW-DC Through 2023



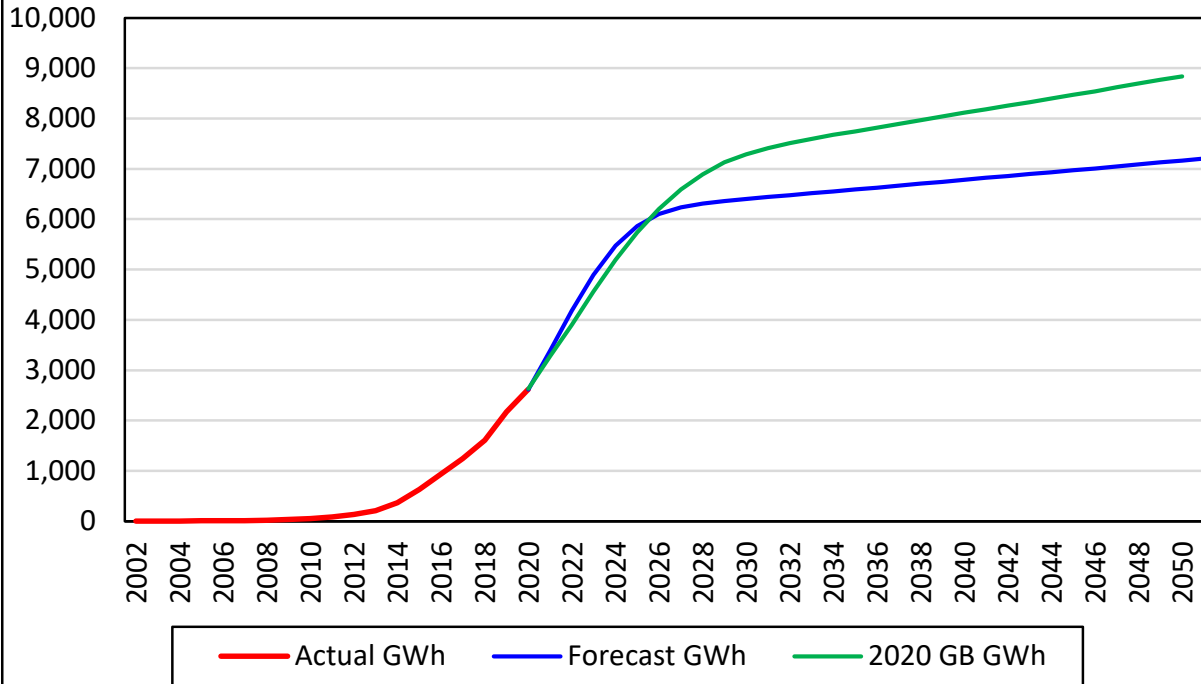
Expected capacity as of December 2023

Actual & Forecast - Prelim 2021 & 2020 Gold Book Installed Capacity (MW-DC)



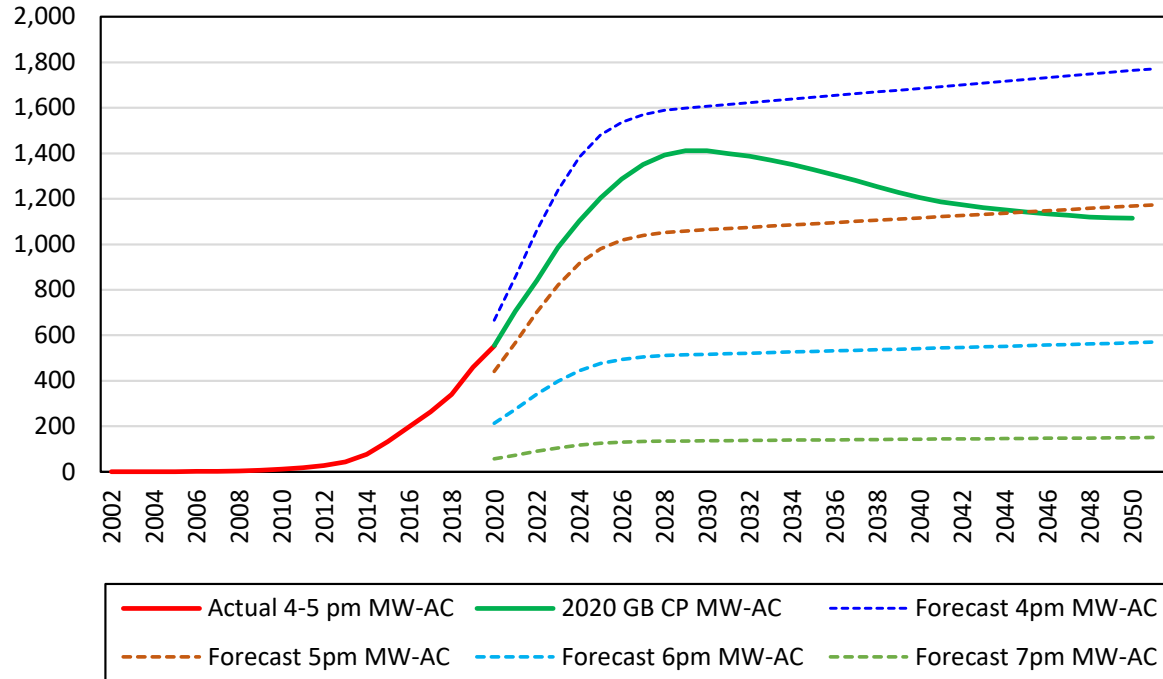
Installed capacity of 6,000 MW-DC is reached by 2027, at a pace somewhat faster than last year's forecast due to larger system sizes being installed. Slightly lower ultimate capacity is projected long term due to decreased growth in smaller sized systems.

Actual & Forecast - Prelim 2021 & 2020 Gold Book Annual Energy - GWh



Annual energy is lower, due to a revised estimate of capacity factors using NYISO's sample of inverter output.

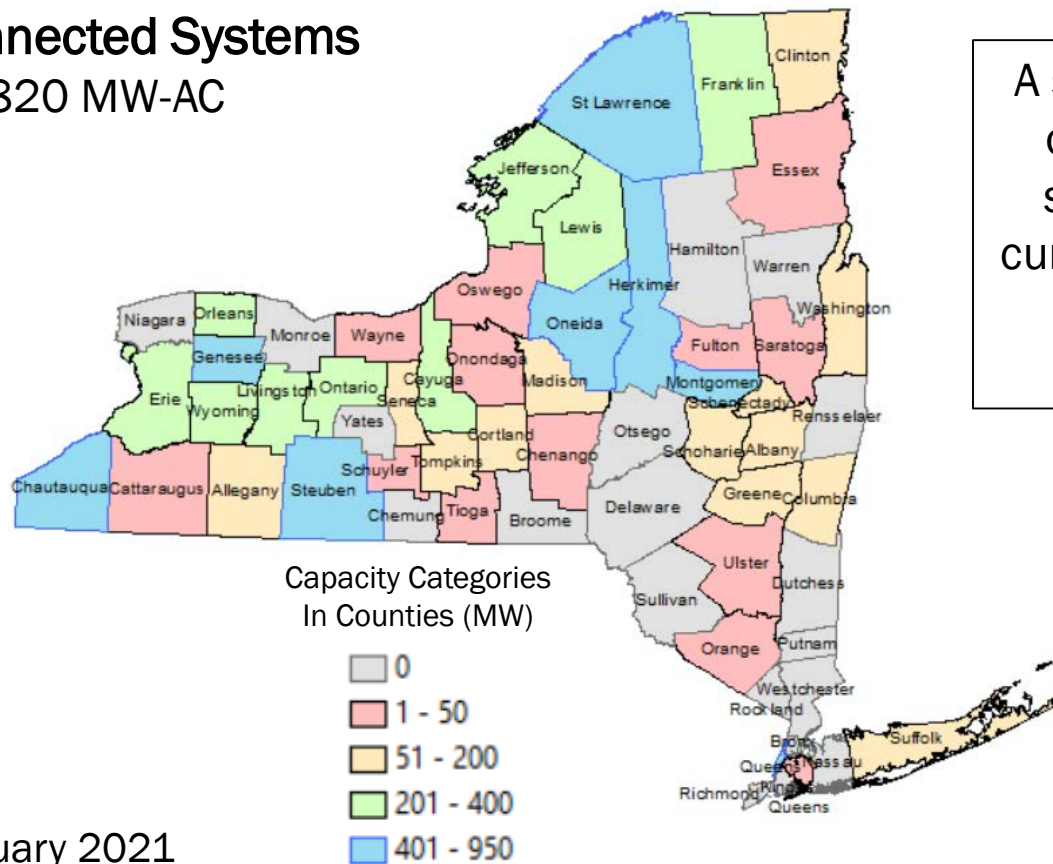
Actual & Forecast - Prelim 2021 & 2020 Gold Book Solar PV Impact at Various Hours of the Day



The hour of the NYCA system coincident peak will change in future years. The impact of solar PV decreases as the hour of the peak gets later in the day.

NYSIO Interconnection Queue for Grid-Connected Systems 9,820 MW-AC

A significant amount of grid-connected solar systems are currently in the NYISO interconnection queue.



Capacity as of January 2021

“ What is now proved was
once only imagined.”

- William Blake

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?