



2021-22 Winter Assessment & Winter Preparedness

Wes Yeomans

VICE PRESIDENT GRID OPERATIONS, New York ISO

NYISO Management Committee

November 17, 2021

Agenda

- **Key Observations**
- **Winter 2021-22 Capacity Assessment**
- **Winter 2021-22 Preparedness**
- **Infrastructure Updates**

Key Observations – 2021-22 Winter Capacity Assessment

- The NYISO expects sufficient winter capacity margins assuming all firm and non-firm fuel generation available under normal and extreme weather conditions

- 9,080 MW - capacity margin for 50-50 peak forecast conditions
- 7,916 MW - capacity margin for 90-10 peak forecast conditions
- 6,875 MW - capacity margin for 99-1 peak forecast conditions

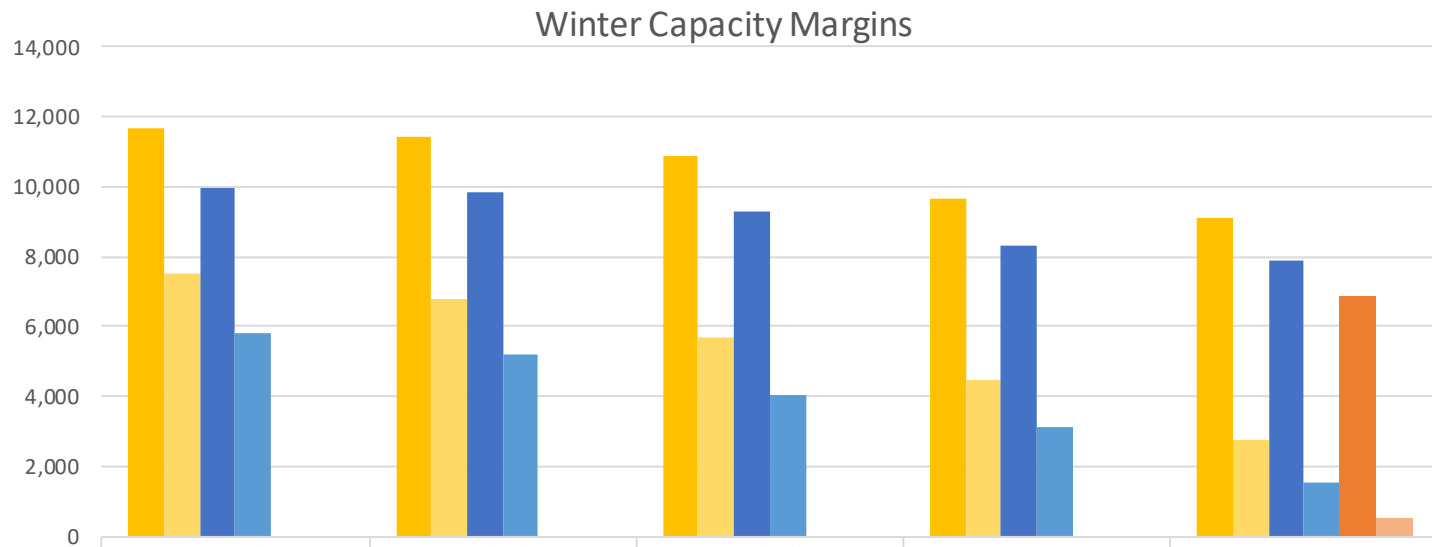
- Winter capacity margins assuming all firm and non-firm fuel generation available are declining (2,568 MW reduction since Winter 2017-18)

- Non-firm fuel generation includes gas-only fired generation without firm gas transportation contract arrangements.
- Firm fuel generation includes all generation types other than non-firm fuel generation (e.g., nuclear, hydro, wind, solar, oil fired only, dual fuel capable, gas only with firm gas transportation)

Key Observations – 2021-22 Winter Capacity Assessment

- The NYISO expects sufficient capacity margins assuming only firm fuel generation available under normal and extreme weather conditions
 - 2,370 MW - capacity margin for 50-50 peak forecast conditions
 - 1,566 MW - capacity margin for 90-10 peak forecast conditions
 - 525 MW - capacity margin for 99-1 peak forecast conditions
- Winter capacity margins assuming only firm fuel generation available has declined significantly (4,781 MW reduction since Winter 2017-18)
- Continued future reductions in winter capacity margins may result in operational challenges given the expected reliance on only firm fuel generation during extreme cold weather events

Winter 2017-18 to Winter 2021-22 Capacity Margins



	17-18	18-19	19-20	20-21	21-22
50/50 - Firm and Non-Firm Fuel	11,648	11,436	10,900	9,638	9,080
50/50 - Only Firm Fuel	7,511	6,820	5,668	4,447	2,730
90/10 - Firm and Non-Firm Fuel	9,964	9,821	9,299	8,309	7,916
90/10 - Only Firm Fuel	5,827	5,205	4,067	3,118	1,566
99/1 - Firm and Non-Firm Fuel					6,875
99/1 - Only Firm Fuel					525

2020-21 & 2021-22 Winter Capacity Assessment & Comparison

Line	Item	2020-21		2021-22	
		Baseline 50/50 Forecast	90/10 Forecast	Baseline 50/50 Forecast	90/10 Forecast
1a	Winter Generation Capacity ¹	40,943	40,943	40,239	40,239
1b	SCR - ICAP Values	839	839	630	630
1c	Net Purchases & Sales	496	496	1,546	1,546
1	Total Capacity Resources	42,277	42,277	42,415	42,415
2	Assumed Unavailable Capacity (Gen + SCR)	-5,889	-5,889	-6,690	-6,690
3 = 1 + 2	Net Capacity Resources	36,388	36,388	35,725	35,725
4	Peak Load Forecast	24,130	25,459	24,025	25,189
5	Operating Reserve Requirement	2,620	2,620	2,620	2,620
6 = 4+5	Total Capacity Requirement	26,750	28,079	26,645	27,809
7 = 3 - 6	Capacity Margin	9,638	8,309	9,080	7,916

1. Reflects the 2021 Gold Book existing capacity with projected and actual deactivations and additions during 2021-22
2. Derates: 1,306 MW for wind, 375 MW for Hydro, 2,393 MW for thermal units, 65 MW for other renewables and 219 MW for SCRs

During last year's December 16, 2020 Winter Peak Load:

- Actual peak load was 22,542 MW. Weather-adjusted peak was 23,890 MW
- The all-time winter peak was 25,738 MW, set on January 7, 2014

2021-22 Winter Capacity Assessment – Extreme Scenarios

Line	Item	Baseline 50/50 Forecast	90/10 Forecast	99/1 Forecast
1a	Installed Capacity Resources	40,239	40,239	40,239
1b	SCR - ICAP Values	630	630	630
1c	Net ICAP External Imports	1,546	1,546	1,546
1	NYCA Resource Capability	42,415	42,415	42,415
2	Total Projected Capacity Outages	-6,690	-6,690	-6,690
3 = (1-2)	Net Installed Capacity Resources	35,725	35,725	35,725
4	Load Forecast	24,025	25,189	26,230
5	Operating Reserve Requirement	2,620	2,620	2,620
6 = (3-4-5)	Capacity Margin	9,080	7,916	6,875
7a	Subtract All Gas Only Units and Duct Burner Capabilities*	-8,834	-8,834	-8,834
7 = (6-7a)	Capacity Margin, Loss of Gas	246	-918	-1,959
8a	Add Back Units with Firm Gas Contracts	2,484	2,484	2,484
8 = (7-8a)	Expected Capacity, Only Firm Fuel	2,730	1,566	525

* Duct Burner derates on dual fuel combined cycle units with non-firm gas account for approximately 500 MW of derate capacity

2021 Emergency Operating Procedure Impacts

Procedure	Impact	MW Value
Emergency Demand Response Programs	Expected Load Reduction	4 MW
Voltage Reductions	Expected Load Reduction	605 MW
Voluntary Industrial Curtailment	Expected Load Reduction	259 MW
General Public Appeals	Expected Load Reduction	80 MW
Emergency Assistance	Assumed Emergency Imports Available	1,000 MW
Thirty Minute Reserves to Zero	Allow Operating Reserves to decrease to Emergency Minimum Requirements	1,310 MW
Total Emergency Operating Procedures		3,258 MW

Winter 2021-22 Operational Preparedness

- ISO Operations is monitoring regional energy supplies as indications are these could be limited in supply this winter. US Energy Information Administration (EIA) indicates oil inventories both regionally and throughout the United States are below historical values.
- Seasonal and weekly fuel surveys indicate oil and dual fuel capability generation have sufficient start-of-winter oil inventories (but lower than past years' inventories).
- ISO Operations has surveyed most generating stations to discuss past winter operations, preparations for the upcoming winter, including last dual fuel operation, cold-weather preventative maintenance, fuel procurement arrangements, and fuel switching capabilities.
- ISO Operations coordination of transmission and generation maintenance outages helps mitigate the reliability impact of such outages during extreme cold weather periods.

Winter 2021-22 Operational Preparedness

- Participated in various communications and coordination efforts with NERC, state agencies (DPS, NYSERDA), other ISOs/RTOs, and gas industry personnel, including Interstate Natural Gas Association of America (INGAA), Natural Gas Supply Association (NGSA), Northeast Gas Association (NGA), NY pipelines, and NY LDCs
- 97% of the Generator Fuel & Emissions Reporting Annual Survey respondents indicated that their Winter Preparation Procedures include Freeze Protection measures that are in place for the upcoming winter
- Multiple respondents indicated Annual Operator Awareness Training would be implemented prior to this winter
- NERC Project 2019-06 Cold Weather was completed and approved resulting in changes to the EOP-011, IRO-010, and TOP-003 Standards, effective April 1, 2023

Winter 2021-22 Operational Preparedness

- **Based on preliminary, publically available reporting from the 2021 ERCOT & SPP Cold Weather events, the NYISO performed a “gas-electric critical infrastructure survey effort” consisting of:**
 - Outreach/coordination with Local Distribution Companies (LDCs) and pipelines that operate in New York
 - Review of load shedding processes/procedures with the New York Transmission Owner Planning Working Group (TOPWG)
 - Survey of NYISO Demand Response participants to identify “critical interdependent sub-sector loads”

Gas-Electric Coordination

- **A communications protocol is in place with NY state agencies to improve the speed and efficiency of generator requests to state agencies for emissions waivers if needed for reliability**
 - Protocol was leveraged in January 2018 and proved effective in facilitating communications between parties
- **An emergency communications protocol is in place to communicate electric reliability concerns to pipelines and gas LDCs during tight electric operating conditions**
 - Cooperative process with interstate pipelines and LDCs for providing OFO information to the NYISO
- **FERC Order No. 787**
 - The NYISO has modified its Code of Conduct (ISO OATT Att F) per the Order to accommodate pipeline requests for reliability information

Situational Awareness

- **Control Room gas-electric support**
- **Video boards**
 - Northeast interstate pipeline system is displayed
 - Operational Flow Orders are displayed with readily detectable visualization techniques
 - Continuously enhancing weather's impact on NY generation and loads
- **A web-based, fuel survey “portal” provides generator fuel information to the operators**
 - Updated weekly by generators
 - Updated daily during cold weather conditions upon request

Continued Winter Operational Challenges

- **Intra-day Gas Procurement-** Gas only fired generating resources are likely to be unavailable for operation if not scheduled in the ISO's day-ahead energy market due to the difficulty in procuring intra-day gas
- **Alternate Fuel Replenishment-** Generator burn rates of alternative fuels can exceed replacement rates during extreme cold weather conditions
- **Emissions Limitations-** Use of alternate distillate fuels by oil or dual fuel capable generation may be further restricted by emission limits
- **Retail Gas LDC Priority -** Gas Local Distribution Company (LDC) retail gas demand has priority over electric power generation

Generation Deactivations

Station Name	Nameplate MW
Indian Point 3	1,012
West Babylon 4 (behind-the-meter)	52
Glenwood GT1 (behind-the-meter)	16
Gowanus GT1-8 (IIFO)	20
TOTAL	1,100

Generation Additions

Station Name	Nameplate MW
Cassadaga Wind	126
Roaring Brook Wind	79.7
Total	205.7

Capacity & Infrastructure Updates (Cont.)

Transmission (Continuing Forced Outages)

Equipment	Voltage (kV)	Status
Hudson-Farragut B3402	345	Out-of-Service
Marion-Farragut C3403	345	Out-of-Service
St. Lawrence-Moses L33 PAR	230	Out-of-Service
Warren-Falconer 171	115	Operated Normally Open
Sprain Brook/Dunwoodie Series Reactors	345	Bypassed
Marcy South Series Capacitors	345	Bypassed
Moses-Adirondack MA-1 or MA-2	230	Out-of-Service for rebuild, 48 hour recall
Newbridge Road Transformer	345	Out-of-Service, Neptune at 50% capacity

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?