

Update to 2018 CARIS Phase 2 Base Case Results

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2018 CARIS Phase 2

- At August 22nd ESPWG, NYISO agreed to perform additional analysis of NYC generation and emissions patterns for 2019-2023
- NYISO's analysis revealed an anomaly in NO_x emission rates for three fossil fuel units in NYC related to the truncation of the rates in the MAPS' database
- NYISO re-ran CARIS 2 base case with adjusted rates

2018 CARIS Phase 2

- **No material changes to CARIS metrics except for NO_x tonnage in NYC**
 - Maximum change in NYCA Demand Congestion was a decrease of \$3M or 0.35% in 2019
 - Maximum change in System Production Cost was an increase of \$3M or 0.01% in 2021
 - Maximum change in NYC LBMPs was a decrease of \$0.04 or 0.08% in 2026
 - Maximum change in NYCA CO₂ was a decrease of 20 thousand-tons or 0.07% in 2018

Updated NO_x Results and Associated Analysis

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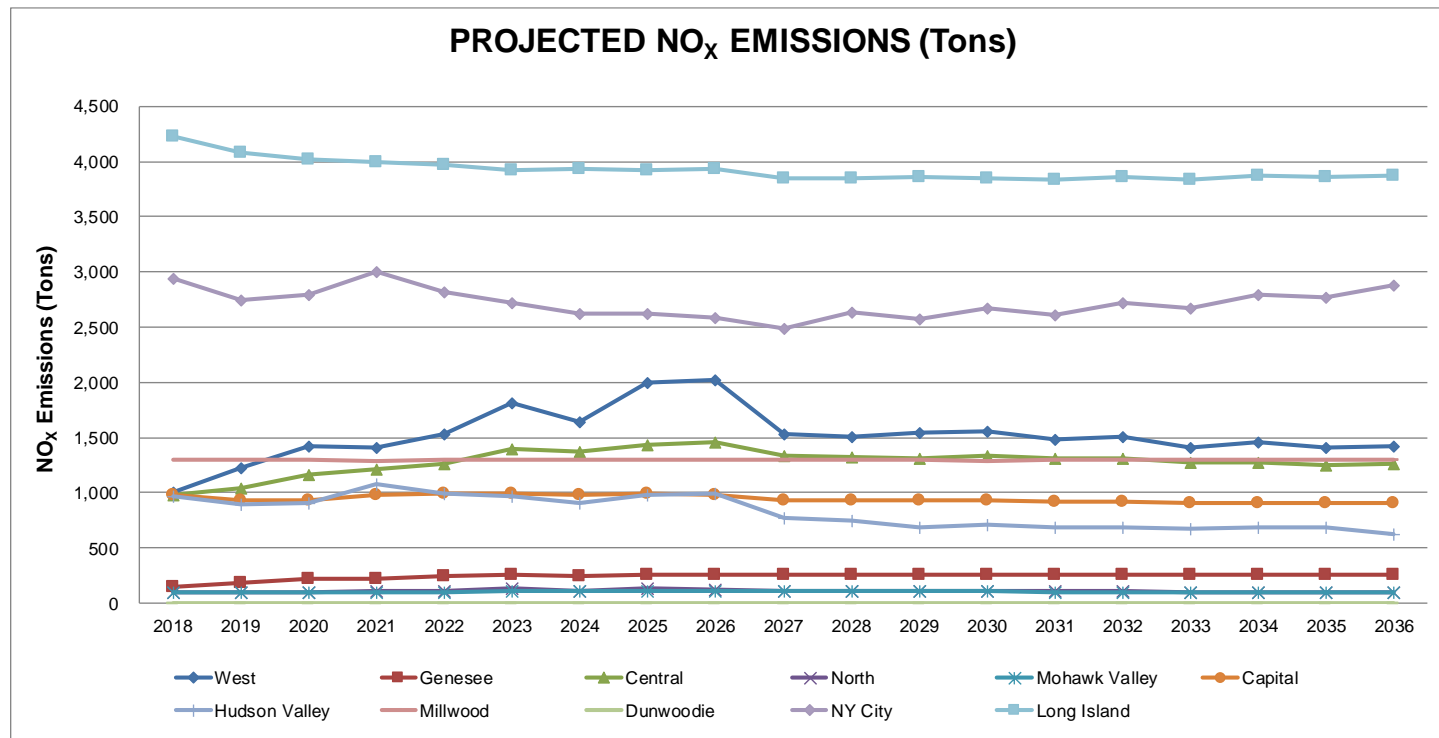
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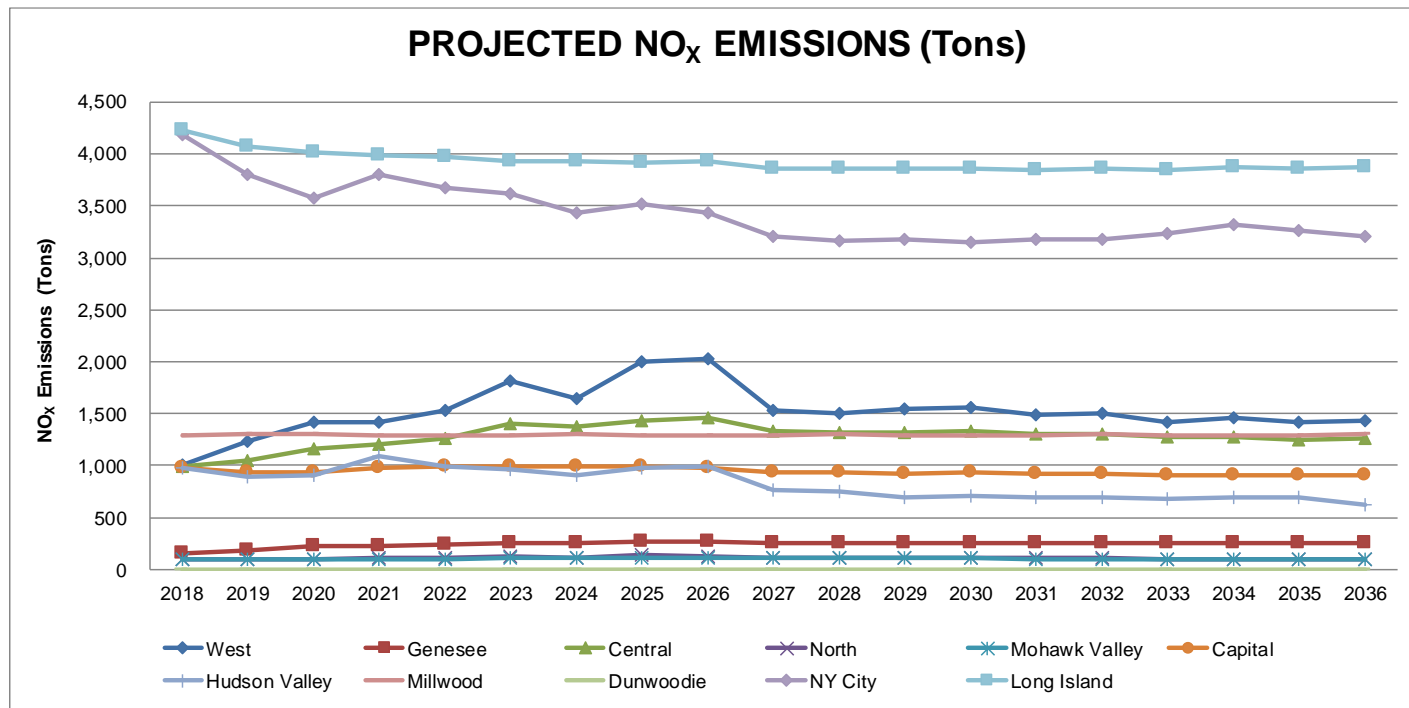
Projected Delta NO_x Emissions (Tons)

NO _x Emissions (Tons)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
West	(3)	8	2	2	(0)	1	0	1	(1)	(1)	0	(1)	(1)	1	(0)	0	1	(1)	(0)
Genesee	0	0	0	0	(0)	0	(0)	0	(0)	0	0	(0)	(0)	0	0	0	0	0	0
Central	1	2	(0)	(0)	0	(0)	(0)	0	0	0	(0)	0	(0)	(0)	0	0	0	0	0
North	0	0	0	0	(0)	0	0	(0)	0	0	(0)	(0)	0	0	0	(0)	(0)	(0)	0
Mohawk Valley	(0)	(0)	0	(0)	0	0	0	(0)	(0)	0	(0)	0	0	0	(0)	0	0	(0)	0
Capital	(0)	0	0	0	0	0	0	0	0	0	0	0	(0)	0	(0)	(0)	0	(0)	0
Hudson Valley	0	(1)	0	1	(0)	(0)	0	0	(3)	(6)	(0)	0	0	0	(0)	0	(0)	0	(0)
Millwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dunwoodie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NY City	1,247	1,060	783	793	850	894	814	902	848	714	537	614	473	570	465	562	529	494	330
Long Island	2	(2)	0	0	0	0	0	0	(2)	0	0	1	0	0	0	0	0	0	0
NYCA Total	1,248	1,067	785	795	850	895	814	903	842	708	537	614	472	571	466	563	531	493	330

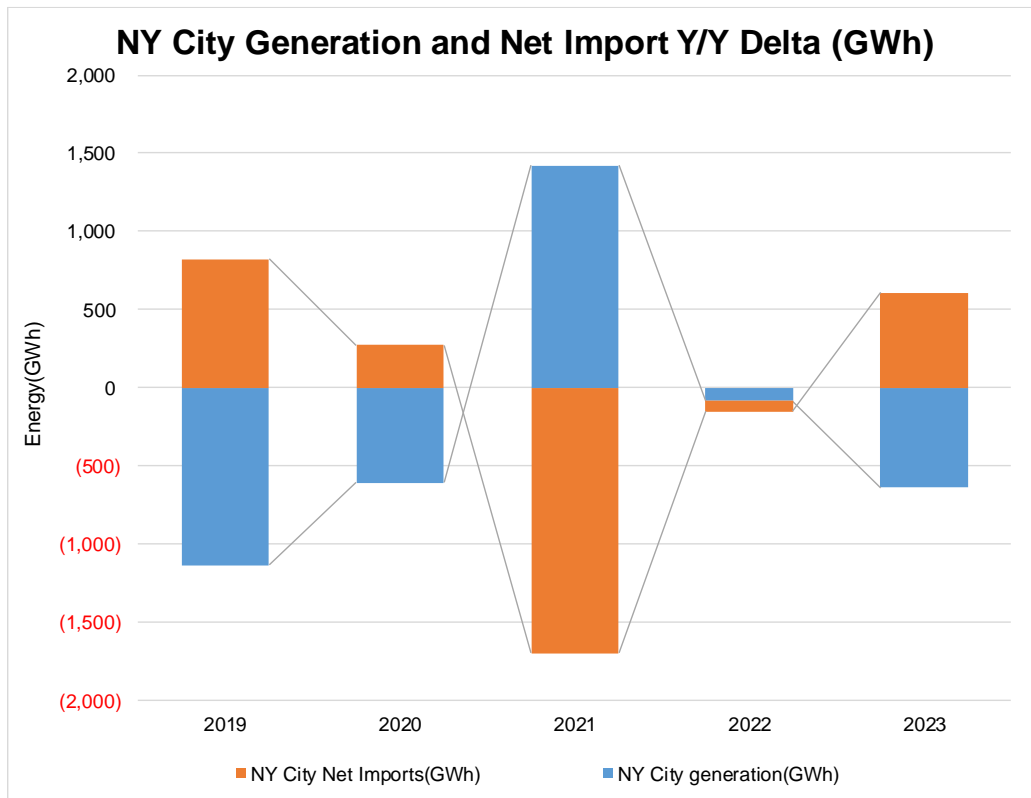
Projected NO_x Emissions (Tons) **Previous**



Projected NO_x Emissions (Tons) **Updated**

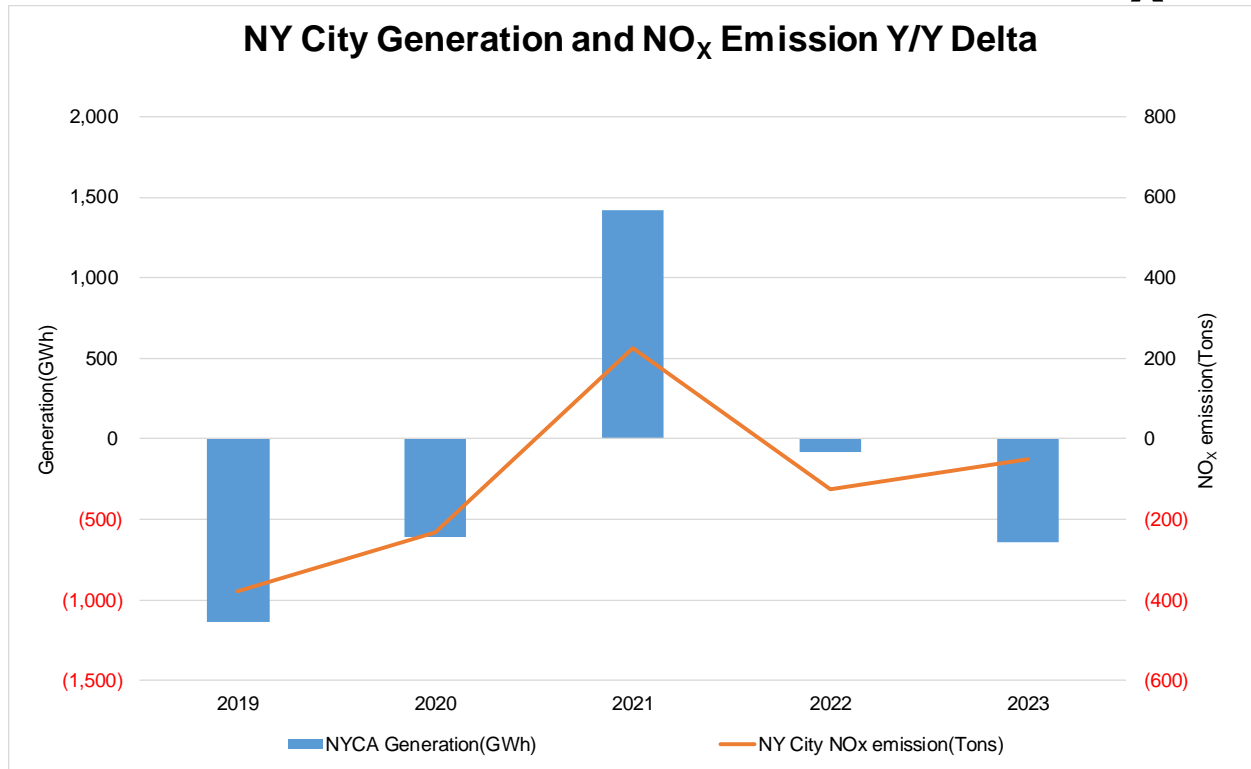


Projected NY City Generation and Net Import



- 2019: Generation addition in IESO and PJM
- 2020: Generation Addition in West and Hudson Valley and Load forecast reduction
- 2021: Nuclear retirements in Millwood
- 2023: AC Transmission project enables Central generation to displace fossil generation in NY City

Projected NY City Generation and NO_x emission



Projected NO_x Emissions (Tons)

- Question from 8/22 ESPWG : Explain the pattern of NO_x emissions in NYC from 2020 to 2022
- Response:
 - From 2020 to 2021, the NO_x emissions increase in NYC is due to increased fossil generation in NYC.
 - Due to nuclear retirements occurring from mid-2020 to mid-2021 in Millwood
 - From 2021 to 2022, the NO_x emission reduction in NYC is due to Steam units being displaced by Combined-Cycle generation in Capital.
 - Due to UPNY-ConEd limit increase after both Millwood nuclear units retire in mid-2021

Next Steps

- Present CARIS 2 Base Case to BIC for review and comment on September 12th
- Post Final CARIS metrics for CARIS 2 Base Case as Appendix to BIC Presentation

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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