

2021-2040 System & Resource Outlook Update

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Agenda

- Outlook Progress Update
- Follow-Up Items
- Model Updates
 - Base Case
 - Contract Case
 - Policy Case
- Next Steps

Progress Update

Target Schedule

- **September – October 2021: Finalize reference case assumptions***
- **November - December 2021: Conduct simulations and analysis***
- **January - February 2022 : Complete analysis and finalize draft report***
- **March 2022: Seek Business Issues Committee review and approval**
- **April 2022: Seek Board of Director review and approval**

* Collaborate with ESPWG and seek stakeholder input

Goals Today...

- Lock down Base Case assumptions
- Identify data sources for development of Contract Case
- Introduce high-level Policy case direction

Follow-Up Items

Follow-Ups for NYISO

■ Questions from 9/22 ESPWG

- Will generator retirements be included in capacity expansion model?
 - Yes
- HVDC Hurdle Rates & Directionality
 - Zone J & K HVDC lines confirmed to be uni-directional based on historical operation. This assumption may be modified going forward.
- PSEG Long Island LTP Upgrades
 - Confirmed inclusion in underlying powerflow case

Model Development

Reference Case Model Assumptions

- Preliminary assumptions matrix posted with today's material

Parameter	Reference Case Model		
	Base Case	Contract Case (Preliminary)	Policy Case (Preliminary)
NYCA System Model			
Assumption Lock Down Date	11/1/2021	TBD	TBD
Peak Load	Based on 2021 Load & Capacity Data Report ("Gold Book") Baseline Forecast of Non-Coincident Peak Demand, including impacts of statewide Energy Efficiency programs	Based on 2021 Load & Capacity Data Report ("Gold Book") Baseline Forecast of Non-Coincident Peak Demand, including impacts of statewide Energy Efficiency programs	Based on 2021 Load & Capacity Data Report ("Gold Book") Forecast. Impacts of statewide policy programs that impact load included

- Matrix now includes Base, Contract, and Policy cases

Base Case Update

■ Model update ongoing

- RGGI CO₂ prices applied to PA units starting 2023 (based on stakeholder feedback)
- Emissions prices updated with latest auction results

■ Next Steps

- Internal quality assurance of results
- Presentation of preliminary results
- Historic congestion analysis
- Transmission “Relaxation” process

Emissions Allowance Price Forecast

Updated Forecast to Account for
Recent RGGI Price Trends

Forecast Presented at 9/22
ESPGW

2021 System and Resource Outlook Emission Allowance Price Forecast (\$Nominal/ton)							
	SO ₂	Annual NO _x	Ozone Season NO _x Group 2	Ozone Season NO _x Group 3	Ontario CO ₂	RGGI CO ₂	Mass CO ₂
2021	\$ 2.00	\$ 3.00	\$ 300.00	\$ 1,800.00	\$ 29.03	\$ 8.60	\$ 8.89
2022	\$ 2.00	\$ 3.00	\$ 100.00	\$ 600.00	\$ 36.29	\$ 9.27	\$ 8.89
2023	\$ 2.00	\$ 3.00	\$ 40.00	\$ 200.00	\$ 47.17	\$ 10.00	\$ 7.90
2024	\$ 2.00	\$ 3.00	\$ 30.00	\$ 90.00	\$ 58.06	\$ 10.78	\$ 7.90
2025	\$ 2.00	\$ 3.00	\$ 20.00	\$ 40.00	\$ 68.95	\$ 11.62	\$ 7.90
2026	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 79.83	\$ 12.53	\$ 7.90
2027	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 90.72	\$ 13.50	\$ 7.90
2028	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 101.60	\$ 14.56	\$ 7.90
2029	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 112.49	\$ 15.69	\$ 7.90
2030	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 16.91	\$ 7.90
2031	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 18.22	\$ 7.90
2032	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 19.64	\$ 7.90
2033	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 21.17	\$ 7.90
2034	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 22.81	\$ 7.90
2035	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 24.57	\$ 7.90
2036	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 26.48	\$ 7.90
2037	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 28.53	\$ 7.90
2038	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 30.74	\$ 7.90
2039	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 33.11	\$ 7.90
2040	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 35.67	\$ 7.90

Preliminary 2021 System and Resource Outlook Emission Allowance Price Forecast (\$Nominal/ton)							
	SO ₂	Annual NO _x	Ozone Season NO _x Group 2	Ozone Season NO _x Group 3	Ontario CO ₂	RGGI CO ₂	Mass CO ₂
2021	\$ 2.00	\$ 3.00	\$ 300.00	\$ 1,800.00	\$ 29.03	\$ 8.10	\$ 8.89
2022	\$ 2.00	\$ 3.00	\$ 100.00	\$ 600.00	\$ 36.29	\$ 8.74	\$ 8.89
2023	\$ 2.00	\$ 3.00	\$ 40.00	\$ 200.00	\$ 47.17	\$ 9.44	\$ 7.90
2024	\$ 2.00	\$ 3.00	\$ 30.00	\$ 90.00	\$ 58.06	\$ 10.19	\$ 7.90
2025	\$ 2.00	\$ 3.00	\$ 20.00	\$ 40.00	\$ 68.95	\$ 10.99	\$ 7.90
2026	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 79.83	\$ 11.86	\$ 7.90
2027	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 90.72	\$ 12.80	\$ 7.90
2028	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 101.60	\$ 13.81	\$ 7.90
2029	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 112.49	\$ 14.90	\$ 7.90
2030	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 16.07	\$ 7.90
2031	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 17.33	\$ 7.90
2032	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 18.70	\$ 7.90
2033	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 20.17	\$ 7.90
2034	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 21.75	\$ 7.90
2035	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 23.46	\$ 7.90
2036	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 25.30	\$ 7.90
2037	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 27.28	\$ 7.90
2038	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 29.41	\$ 7.90
2039	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 31.71	\$ 7.90
2040	\$ 2.00	\$ 3.00	\$ 10.00	\$ 20.00	\$ 123.38	\$ 34.19	\$ 7.90

Contract Case Update

- Base Case used as the starting point
- Renewable projects with contracts awarded in NYSERDA Solicitations added
- Projects added per Offshore Wind Solicitations
 - 5 offshore wind projects
 - ~4,400 MW
- Next steps
 - Add projects to model & perform simulation

Policy Case Update

- **Contract case used as the starting point**
- **Policy case will include:**
 - CLCPA mandates
 - Northern New York Priority Transmission Projects
 - Tier 4 HVDC projects recommended by **NYSERDA**
- **Next Steps**
 - Capacity Expansion database in final stages of preparation
 - Present preliminary capacity expansion results

Next Steps

Next Steps

- Continued database development by NYISO
- Publication of fuel and emissions price forecasts spreadsheets
- Next presentation - November TPAS/ESPPWG
 - Base case results
 - Contract case detailed assumptions review

Questions, Feedback, Comments?

- Email additional feedback to: JFrasier@nyiso.com

Appendix

2021 Outlook Data Catalog

ESPWG/TPAS Presentations

May 20, 2021

Model Benchmark Results

September 22, 2021

System & Resource Outlook Update

October 25, 2021

Capacity Expansion Model Primer

System & Resource Outlook Update

Final Reports

Data Posted to ESPWG

Early 2022
Release

Month DD, 2021

TBD

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

