New York ISO
Independent System Operator

2025-2044 System & Resource Outlook - Update

Sarah Carkner

Manager, Long Term Assessments

Electric System Planning Working Group (ESPWG)

Thursday, September 4, 2025

Agenda

- Study Scope & Timeline
- Assumptions
- Next Steps
- Appendix

New York ISO

Study Scope & Timeline

System & Resource Outlook Scope

Model Development

- Model Benchmark
- Assumptions
- Reference Cases
- Sensitivities

Transmission Congestion Assessment

- Historic & Future Transmission Congestion
- Congestion Relief Analysis

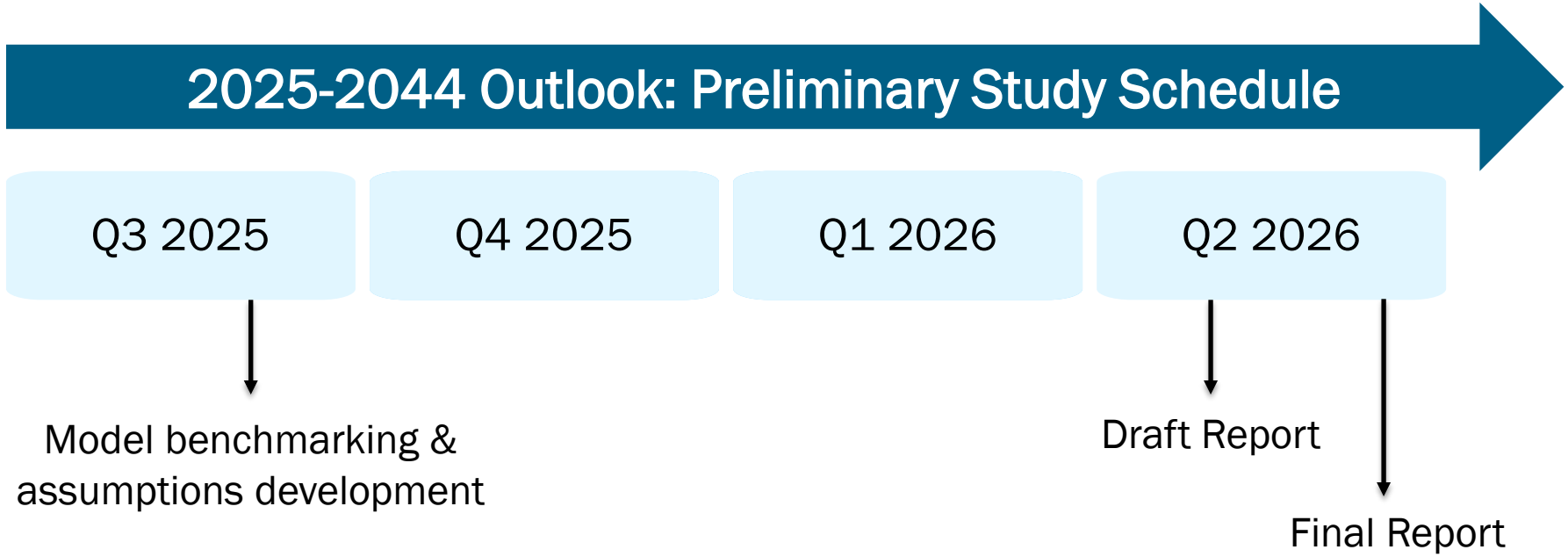
Analyses

- Resources to Meet Policy Objectives
- Energy Deliverability
- Future Resource Attributes
- Transmission Investment Opportunities

Report, Appendix, Data Catalog, & Fact Sheet

New York ISO

Preliminary Study Schedule



New York ISO

Assumptions

Preliminary Assumptions

- **Assumptions for the base & contract case scenarios were discussed at the 7/23/25 and 8/21/25 ESPWG meetings**
  - Assumptions lockdown date: 9/1/25
- **Preliminary assumptions for the policy case scenarios are included in this presentation**
  - Draft assumptions matrix will be shared at future ESPWGs
  - Proposed assumptions lockdown date: 10/20/25

New York ISO

Reference Cases

Base Case

- **Demand:** 2025 Gold Book Baseline Forecast
- **Supply:** Consistent with inclusion rules for NYISO's Reliability Planning Process
- **Simulation:** Production cost optimization

Contract Case

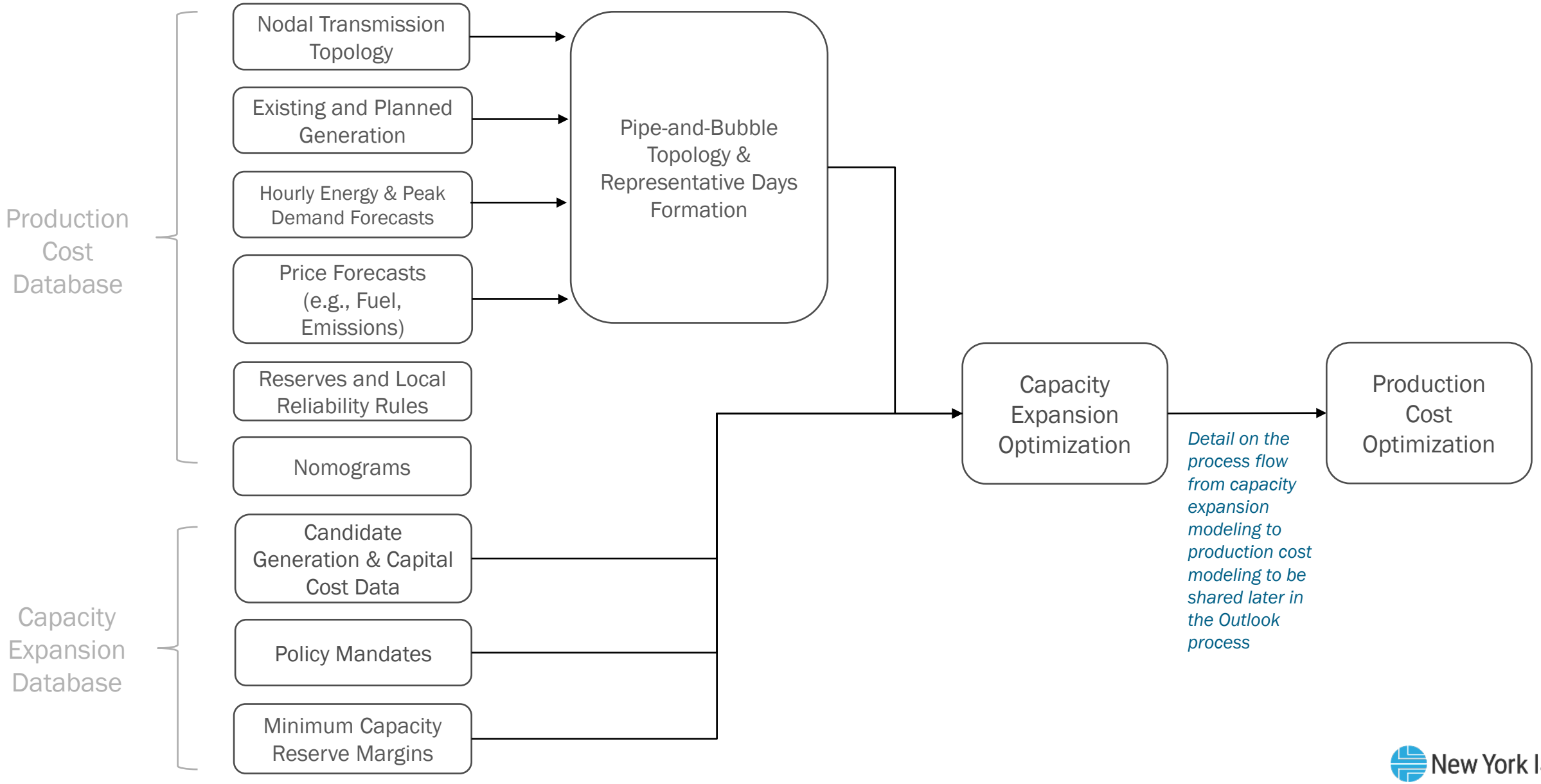
- **Demand:** 2025 Gold Book Baseline forecast
- **Supply:** Resource additions consistent with contracted resources from NYSERDA LSR database
- **Simulation:** Production cost optimization

Policy Case
(multiple scenarios)

- **Demand:** Varies by scenario
- **Supply:** Resource additions and retirements optimized in consideration of decarbonization policy mandates
- **Simulations:** Capacity expansion optimization & production cost optimization

New York ISO

Policy Case Process Flow



New York ISO

Policy Case Assumptions

Policy Case Assumptions Summary

- Policy case will include multiple scenarios to assess a range of future system conditions
- Transmission assumptions will be consistent across scenarios
- Energy and peak demand forecasts may differ by scenario
- Generation capacity will be determined by the capacity expansion model results for each scenario
- Study years for capacity expansion and production cost models include: 2030, 2035, 2040, 2044
  - Simulation years for the capacity expansion model will be 2025—2044

New York ISO

Policy Case Assumptions

- For purposes of this discussion, the preliminary assumptions will primarily focus on the capacity expansion model, which is the first step in developing Outlook policy scenarios
- Additional detail on the capacity expansion model assumptions for policy scenarios, as well as detail on the production cost model assumptions for select policy scenarios in this Outlook, will be shared at future ESPWGs

New York ISO

Proposed Scenarios

- **NYISO proposes that the policy case include multiple scenarios to assess a range of future system conditions**
  - These policy scenarios will be based on NYISO and stakeholder feedback for assumptions
  - Development of the State Scenario from the 2023-2042 Outlook will continue in this 2025-2044 Outlook based on previous assumptions
  - The NYISO, DPS and NYSERDA continue to collaborate on the evaluation of the existing State Scenario and NYISO will update its stakeholders on the findings
- **NYISO encourages feedback on its proposed assumptions for consideration**

New York ISO

Model Framework

- **The level of detail in the production cost model is computationally infeasible to apply to the capacity expansion model due to modeling complexities and differences in their optimization objectives**
  - For example, the production cost simulation models the complete nodal transmission network in New York whereas the capacity expansion model requires reduction to a pipe-and-bubble transportation model
- **The capacity expansion model assumes simplifications of certain modeling assumptions, as outlined on the following two slides**

New York ISO

Model Framework – Transmission

- **Transmission**
  - The capacity expansion model leverages a zonal pipe-and-bubble equivalent of the NYCA transmission system, including simplified representation of external systems
  - The interface transfer limits will be consistent with the 2025 Comprehensive Area Transmission Review

New York ISO

Model Framework – Time Representation

- **Time representation**
  - Similar to the 2023-2042 Outlook, representative days will be considered in the capacity expansion model for this Outlook study
    - See 2023-2042 Outlook Appendix D for additional information
  - As one of the model improvements for this Outlook, representative days will be identified separately for summer and winter to represent a year's variety of conditions, resulting in a greater number of representative days as compared to the prior Outlook
    - For each model year, the following representative days will be considered each capability period (summer and winter)
      - Peak day (weighted 1x)
      - Near peak day (weighted 5x)
      - Moderate day (weighted based on grouping)
      - 8 groups to represent each combination of high/low energy, wind, and solar profiles (also weighted based on grouping)
    - Each model year will include 22 representative days with 4-hour resolution

New York ISO

Energy and Peak Demand Forecasts

- **Demand forecasts for consideration in the policy case include the 2025 NYISO "Gold Book" Baseline forecast and Higher Demand forecast**
  - Modeled large loads would align with each respective Gold Book demand forecast
  - Additional detail is included in the appendix
- **Details on the demand forecasts proposed for each policy case scenario will be shared at future ESPWGs**

New York ISO

Price Forecasts

- Fuel price forecasts for natural gas, oil, coal, and uranium are the same as that assumed in the production cost model
- Emissions allowance price forecasts are the same as that assumed in the production cost model
- Details on these forecasts are included in the 8/21/25 ESPWG materials

New York ISO

Generation Capacity

- The existing generation mix and contracted generators in the capacity expansion model aligns with the Outlook's contract case
- The capacity expansion model allows for new generation additions, as well as the retirement of generators, throughout the model's study horizon
  - Details on the generation additions are included on the following slide
  - Details on the generation retirements will be shared at a future ESPWG

New York ISO

Generation Expansion

- **Generation expansion is enabled at the zonal level for candidate resources**
- **The NYISO is considering the following resource types to be eligible for generation expansion in this Outlook:**
  - Renewable resources (UPV, land-based wind, offshore wind)
  - Battery storage
  - Nuclear
  - Fossil*
  - Dispatchable emission-free resources (DEFRs), as applicable
- **Details on candidate generator properties will be shared at a future ESPWG**

*Potential options for consideration include new fossil and repowering of existing fossil units

New York ISO

Maximum Resource Potential

- **A constraint will be imposed in the capacity expansion model to limit the amount of new generation capacity by its maximum potential (MW) by resource type (as applicable to the technology) to represent a reasonable build based on a given area**
  - Resource potential for renewable resources will align with the LSR supply curve analysis in development by NYSERDA and its consultants
  - Additional detail will be shared at a future ESPWG

New York ISO

Policy Targets

- The Outlook's policy scenarios include constraints in the capacity expansion model to simulate policy mandates
- At this time, the NYISO is considering exploration of policy constraints similar to prior Outlook studies, for example:
  - Adjustments to CLCPA mandates (e.g., 70% renewable generation by 2033)
  - Delayed achievement of policy
  - Lower thresholds for policy targets (e.g., 90% zero-emissions electricity by 2040)
- The NYISO encourages feedback on these assumptions for consideration

New York ISO

Next Steps

Next Steps

- **Begin model development for Outlook base & contract cases**
- **Return to ESPWG to continue discussions with stakeholders**
  - Share final benchmark case results
  - Continue discussions on proposed assumptions for policy case scenarios
  - Proposed assumptions lockdown date: 10/20/25

New York ISO

Questions, Comments, & Feedback?

Email additional feedback related to the 2025-2044 System & Resource Outlook to: stakeholder_services@nyiso.com with the subject line "System & Resource Outlook"

New York ISO

2025-2044 System & Resource Outlook Data Catalog

Report

Report Placeholder

Study Summary

Summary Placeholder

Report Appendices

Data Documents

Stakeholder Presentations

December 3, 2024

2023-2042 Outlook Lessons Learned

May 21, 2025

2025-2044 Outlook Kickoff

July 23, 2025

2025-2044 Outlook: Base & Contract Case Preliminary Assumptions

August 21, 2025

2025-2044 Outlook: Base & Contract Case Preliminary Assumptions

2023-2042 System & Resource Outlook Data Catalog

2021-2040 System & Resource Outlook Data Catalog

New York ISO

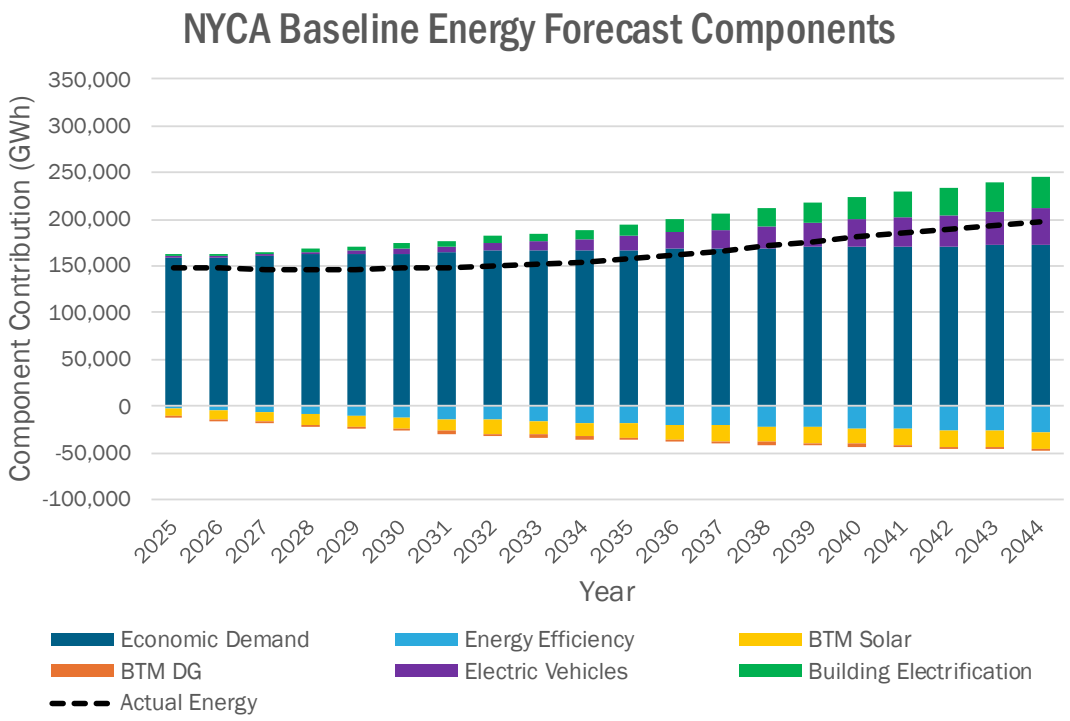
Appendix

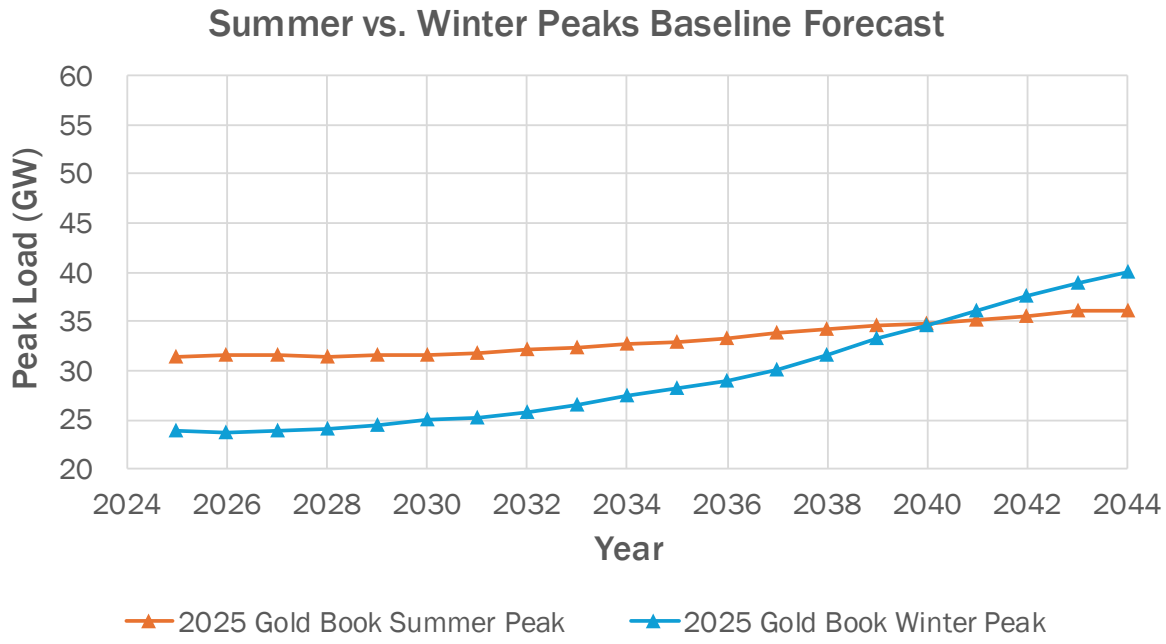
Energy and Peak Demand Forecasts

- **The NYISO is still evaluating which forecast(s) would be best to apply to each policy scenario**
- **Demand forecasts for consideration in the policy case include the 2025 NYISO "Gold Book" Baseline forecast and Higher Demand forecast**
  - Load shapes based on 2018 weather year
  - Includes the impacts of statewide energy efficiency programs and electrification
    - Does not include impacts from ConEd steam upgrades
    - Includes impacts from adherence to NYC local laws
    - Baseline forecast includes significant impacts from electric vehicles and heating electrification, but does not fully meet State electrification and decarbonization policy targets
    - Higher Demand forecast includes heating electrification and electric vehicle adoption levels commensurate with achievement of New York State policy targets
  - Removes the impact from energy storage resources and large loads from the forecast; these are modeled explicitly
  - Removes the impact from electrolysis loads in the Higher Demand forecast

New York ISO

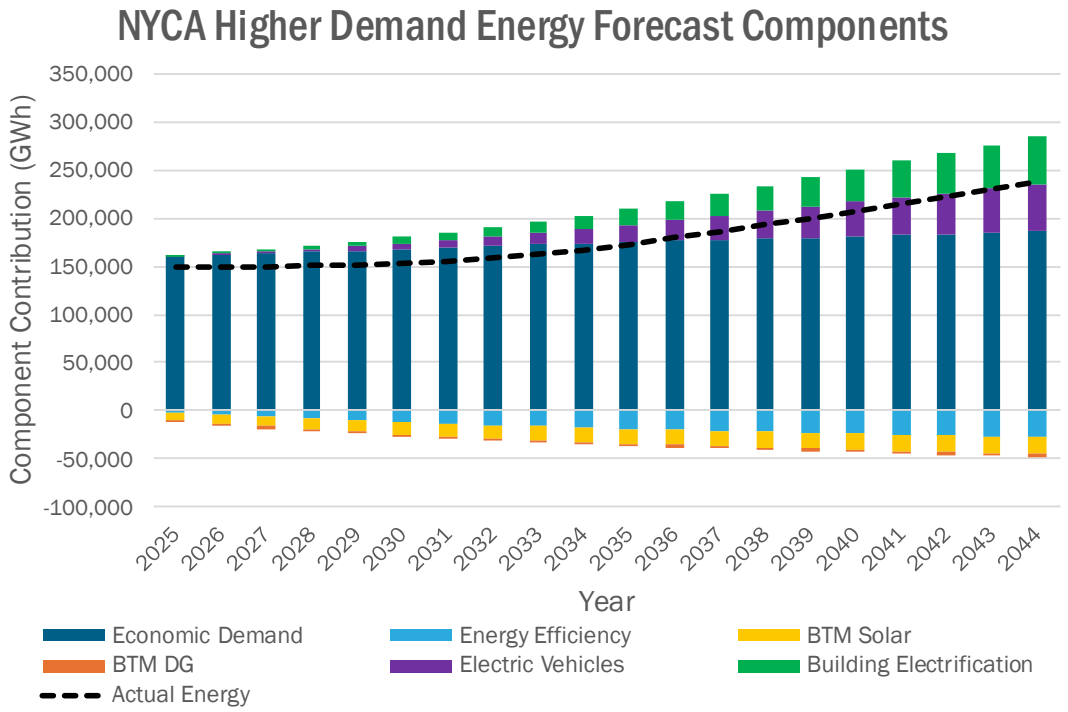
Baseline Demand Forecast

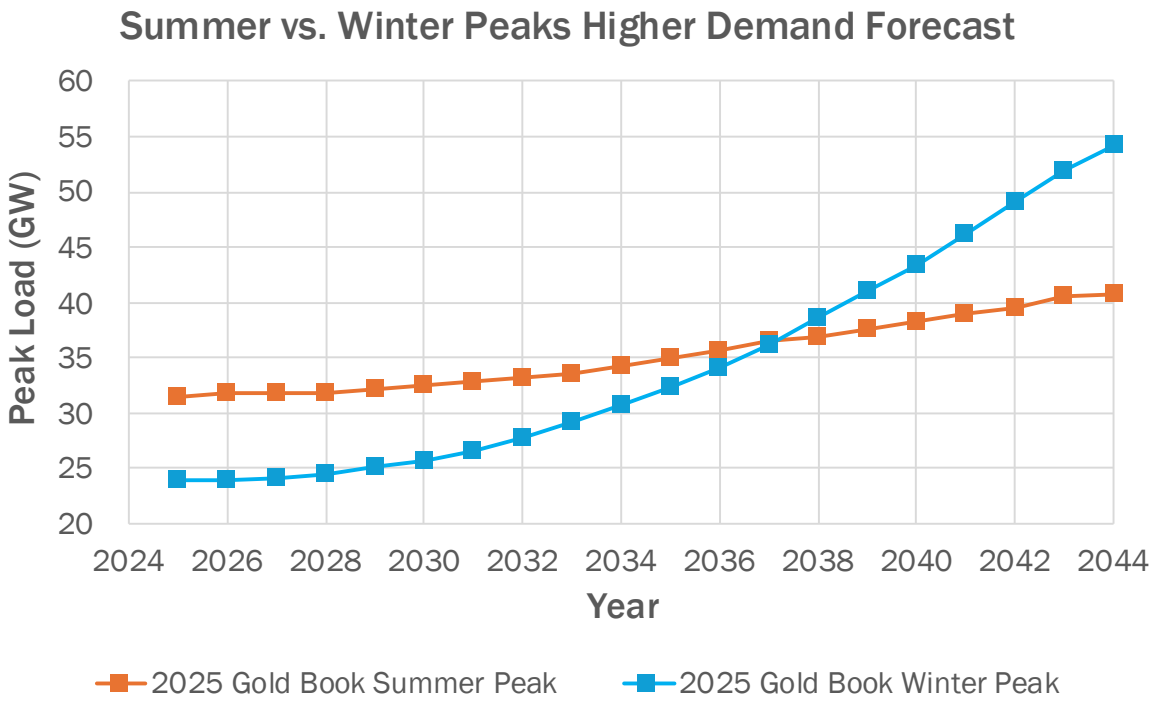




New York ISO

Higher Demand Forecast





New York ISO

Energy and Peak Demand Forecasts

2025-2044 Outlook
Baseline Demand Forecast

Year	NYCA Annual Energy (GWh)	NYCA Summer Peak (MW)	NYCA Winter Peak (MW)
2025	148,573	31,343	23,884
2030	147,205	31,575	24,932
2035	157,207	32,976	28,113
2040	180,801	34,811	34,499
2044	197,733	36,096	40,101

2025-2044 Outlook
Higher Demand Forecast

Year	NYCA Annual Energy (GWh)	NYCA Summer Peak (MW)	NYCA Winter Peak (MW)
2025	149,343	31,429	23,952
2030	153,285	32,416	25,702
2035	173,047	34,918	32,259
2040	207,671	38,246	43,402
2044	237,333	40,797	54,152

New York ISO

Large Load Forecasts

2025-2044 Outlook
Baseline Demand Forecast

Year	Large Load Annual Energy (GWh)
2025	3,710
2030	15,090
2035	19,200
2040	19,300
2044	19,300

2025-2044 Outlook
Higher Demand Forecast

Year	Large Load Annual Energy (GWh)
2025	3,710
2030	26,450
2035	31,830
2040	36,900
2044	38,380

New York ISO