Attachment #7.1.1
Return to Agenda

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Independent System Operator

2025-2044 System & Resource Outlook

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NYSRC Executive Committee (EC)

Friday, September 11, 2026

NYISO Economic Planning Process

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System & Resource Outlook Objectives

- Publish a biennial report that summarizes the current assessments, evaluations, and plans in the biennial Comprehensive System Planning Process
- Produce a twenty-year projection of system conditions for demand, generation, and transmission across the transmission system
- Identify, rank, and group congested transmission elements
- Assess the potential benefits of addressing congestion in New York State
- Develop potential future scenarios and perform technical analyses to inform internal and external stakeholders

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Additional Uses for the Outlook

- Inform stakeholders and policymakers where future transmission investment opportunities may exist
- Evaluate possible resource mixes to meet projected energy needs
- Identify renewable generation pockets
- Determine potential challenges to meeting the New York State CLCPA mandates
- Prepare system models to perform Economic Transmission Project Evaluation and/or Requested Economic Planning Studies, if requested

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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

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2025-2044 System & Resource Outlook

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Reference Cases

- **The Outlook encompasses three distinct references cases, which build upon each other through changes in modeling assumptions to represent different potential futures**
  - Examples of assumption changes between cases include: demand, generation, transmission, policy mandates, etc.
- **Outlook reference cases:**
  - Base case, contract case, and policy case
    - Base and contract cases include production cost simulations
    - Policy case includes capacity expansion simulations + production cost simulations and includes multiple scenarios

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Base Case Assumptions Summary

- Energy and peak demand forecast based on the 2025 NYISO “Gold Book” Baseline forecast
- Fuel price forecast based on EIA’s 2025 Annual Energy Outlook forecast of national delivered price
- Generation and transmission assumptions consistent with the assumptions with the NYISO’s 2024 Reliability Needs Assessment and 2025 Quarter 3 Short-Term Assessment of Reliability
- Neighboring systems’ representation based on public information for respective ISOs/RTOs
- Study years for production cost model: 2030, 2035, 2040, 2044

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Contract Case Assumptions Summary

- **The contract case builds on the base case with changes in the NYCA generation mix and transmission topology**
- **Assumed generator additions and retirements:**
  - Approximately 3.9 GW of new generation projects with REC/OREC contracts are added
    - All new generators are in service by the 2030 model year
  - Assumed generator retirements align with accelerated deactivations from the 2025-2034 CRP
    - The assumed retirements extend throughout the study period (2044)
- **Transmission changes:**
  - Transmission Owner Phase 1 & Phase 2 transmission projects that did not meet the base case inclusion rules are included in the contract case

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Policy Case Assumptions Summary

- **The 2025-2044 Outlook's Policy Case includes extensive scenario analysis to assess a range of future system conditions**
- **To assess the impact of these drivers on the potential future resource mix, the 2025-2044 Outlook's capacity expansion model evaluated scenarios with:**
  - Three (3) demand forecasts
  - Six (6) unique combinations of policy targets
- **The scenarios from the capacity expansion model showcase the generation fleet differences at various levels of policy achievement towards decarbonization of the electric sector at multiple load levels**
  - Of the 18 capacity expansion scenarios for this Outlook, two of these scenarios were selected for further evaluation in the NYISO's production cost model

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Policy Case: Capacity Expansion Scenarios

- The capacity and energy policy targets and timelines that were modeled for each capacity expansion scenario are prescribed in the following tables
- Scenarios are referenced using a naming convention that reflects the clean energy targets and demand assumptions (e.g., 100x2044-Higher, 95-2044-Baseline)

Assumption		Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
		Business As Usual	100x2040	100x2044	95x2044	85x2044	100x2044 Alternate
Capacity & Energy Policy Targets	BTM-PV Capacity (GW)	6 GW BTM-PV by 2025, and 10GW BTM-PV by 2030					
	ESR Capacity (GW)	No minimum threshold	6 GW ESR by 2030	6 GW ESR by 2035	No minimum threshold		
	OSW Capacity (GW)	No minimum threshold	9 GW OSW by 2035	9 GW OSW by 2040	No minimum threshold		
	Renewable Energy (%)	No minimum threshold	70% Renewable Energy by 2033	70% Renewable Energy by 2035	60% Renewable Energy by 2035	50% Renewable Energy by 2035	No minimum threshold
	Zero-Emission Electricity Target (%)	No minimum threshold	100% Zero-Emission Electricity by 2040	95% Zero-Emission Electricity by 2040, and 100% Zero-Emission by 2044	90% Zero-Emission Electricity by 2040, and 95% Zero-Emission by 2044	80% Zero-Emission Electricity by 2040, and 85% Zero-Emission by 2044	95% Zero-Emission Electricity by 2040, and 100% Zero-Emission by 2044

Assumption	Scenario - Lower	Scenario - Baseline	Scenario - Higher
Peak, Energy, and Large Load Demand Forecast	Consistent with 2025 Gold Book Lower Demand	Consistent with 2025 Gold Book Baseline	Consistent with 2025 Gold Book Higher Demand

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Policy Case: Production Cost Scenarios

- The NYISO selected two scenarios from the capacity expansion model for further analysis in its production cost model to help identify transmission investment opportunities in the Policy Case for this Outlook
- The selected scenarios had unique resource mixes (i.e., total amount and type of generation capacity) and varying degrees of policy achievement to evaluate transmission opportunities over a range of future outcomes
  - 95x2044-Baseline
  - 100x2044-Higher

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Key Findings

Key Findings: Demand

- ✓ Electricity demand growth is outpacing resource additions and increasing the urgency of timely resource and infrastructure development.
- ✓ The location and characteristics of large loads materially affect infrastructure needs and system efficiency.

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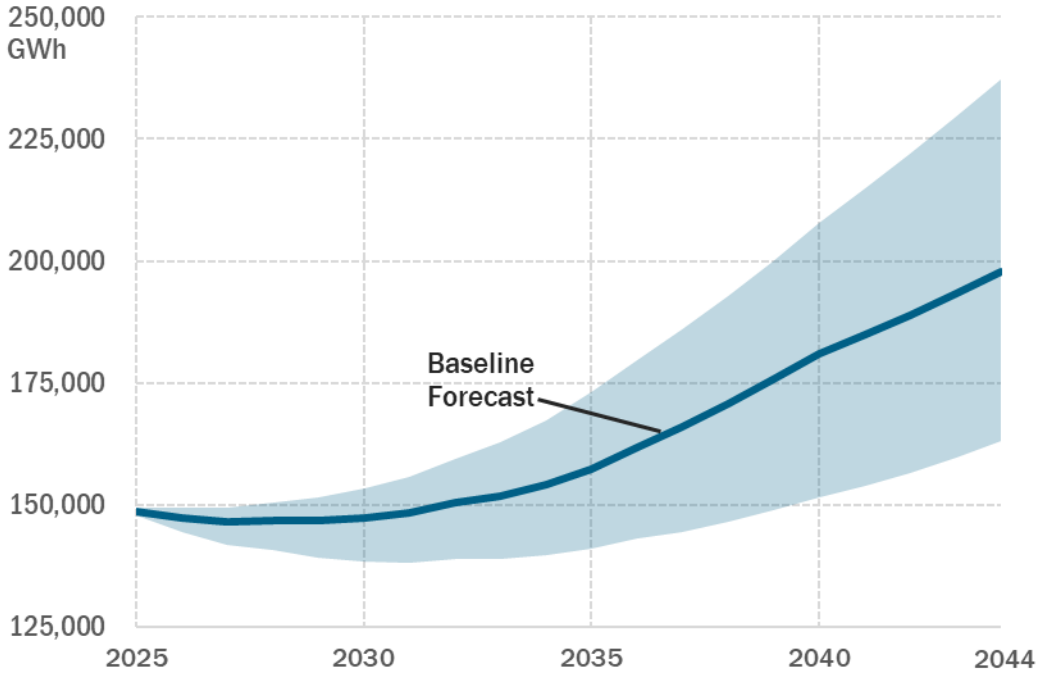
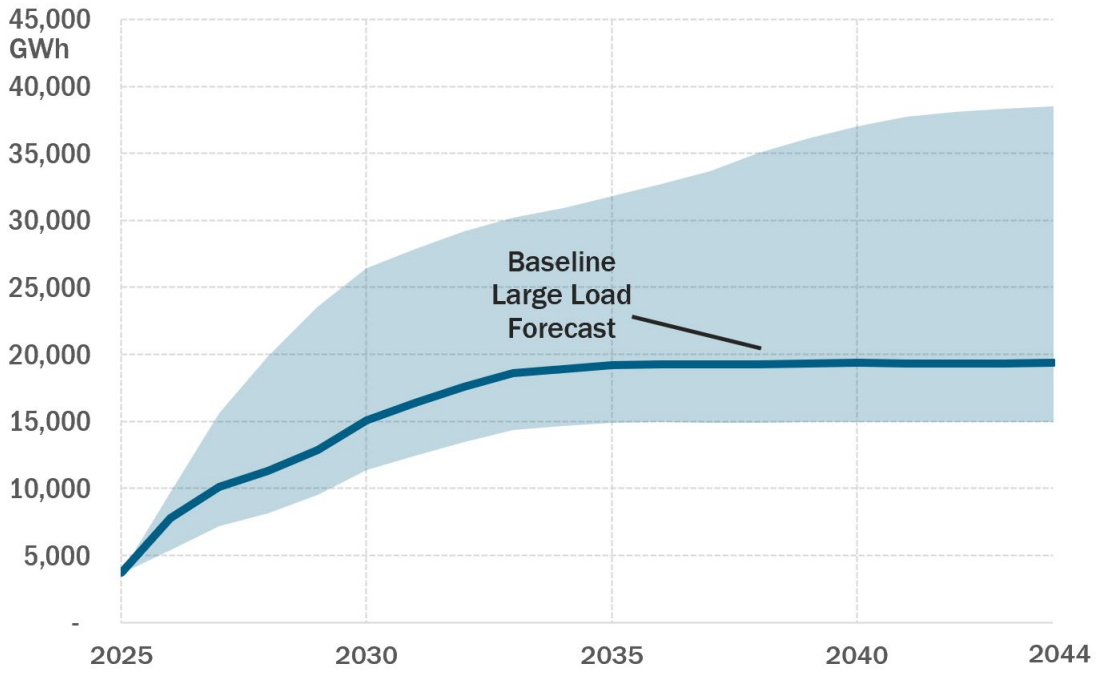
Key Findings: Demand





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Key Findings: Resources

- ✓ Policy design directly determines the scale and composition of future resource development.
- ✓ Firm, dispatchable capacity remains essential in all futures to serve demand and provide essential grid services.
- ✓ Coordinating resource development with generation retirements is increasingly critical to maintaining sufficient margins.

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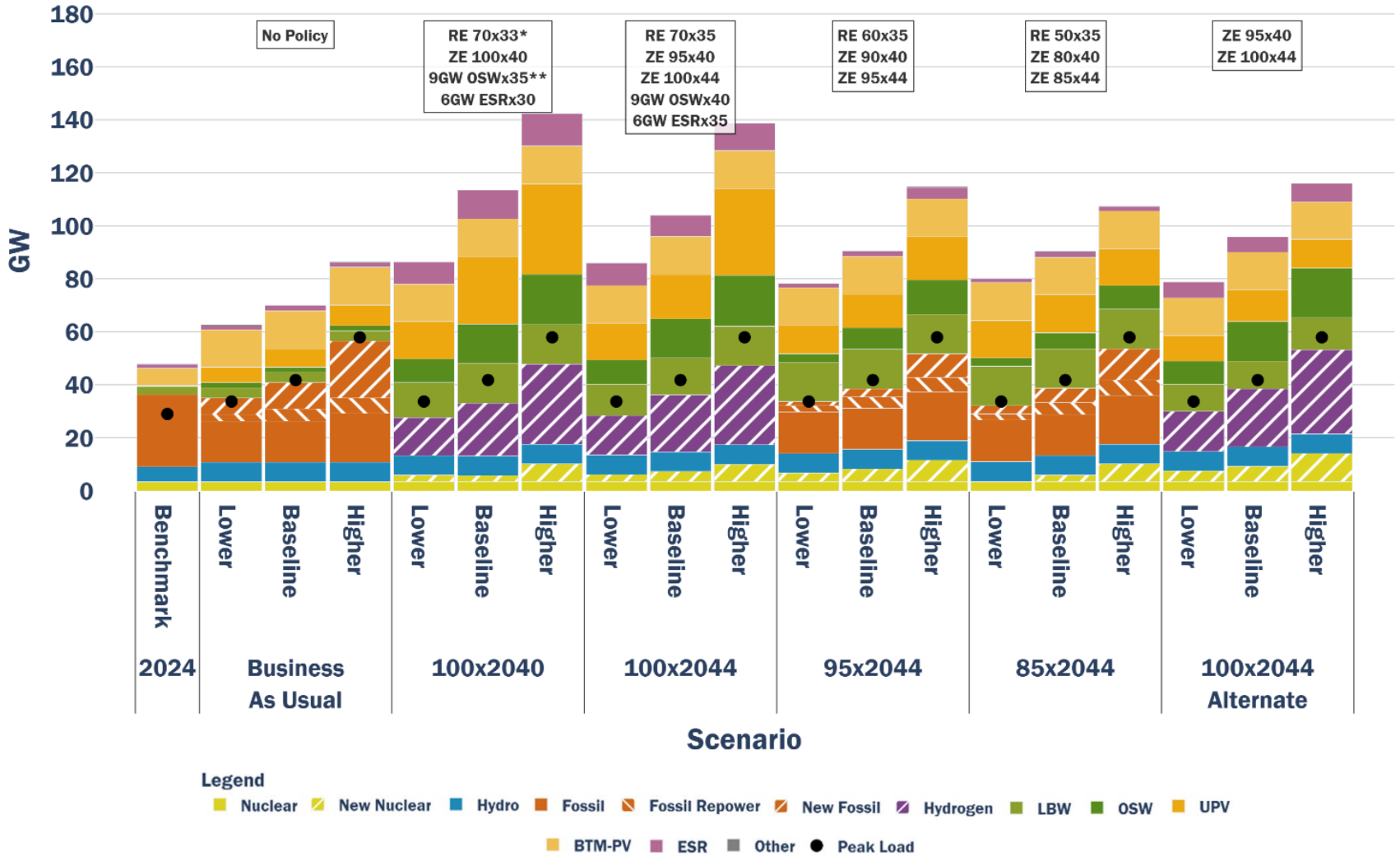
Key Findings: Resource Capacity



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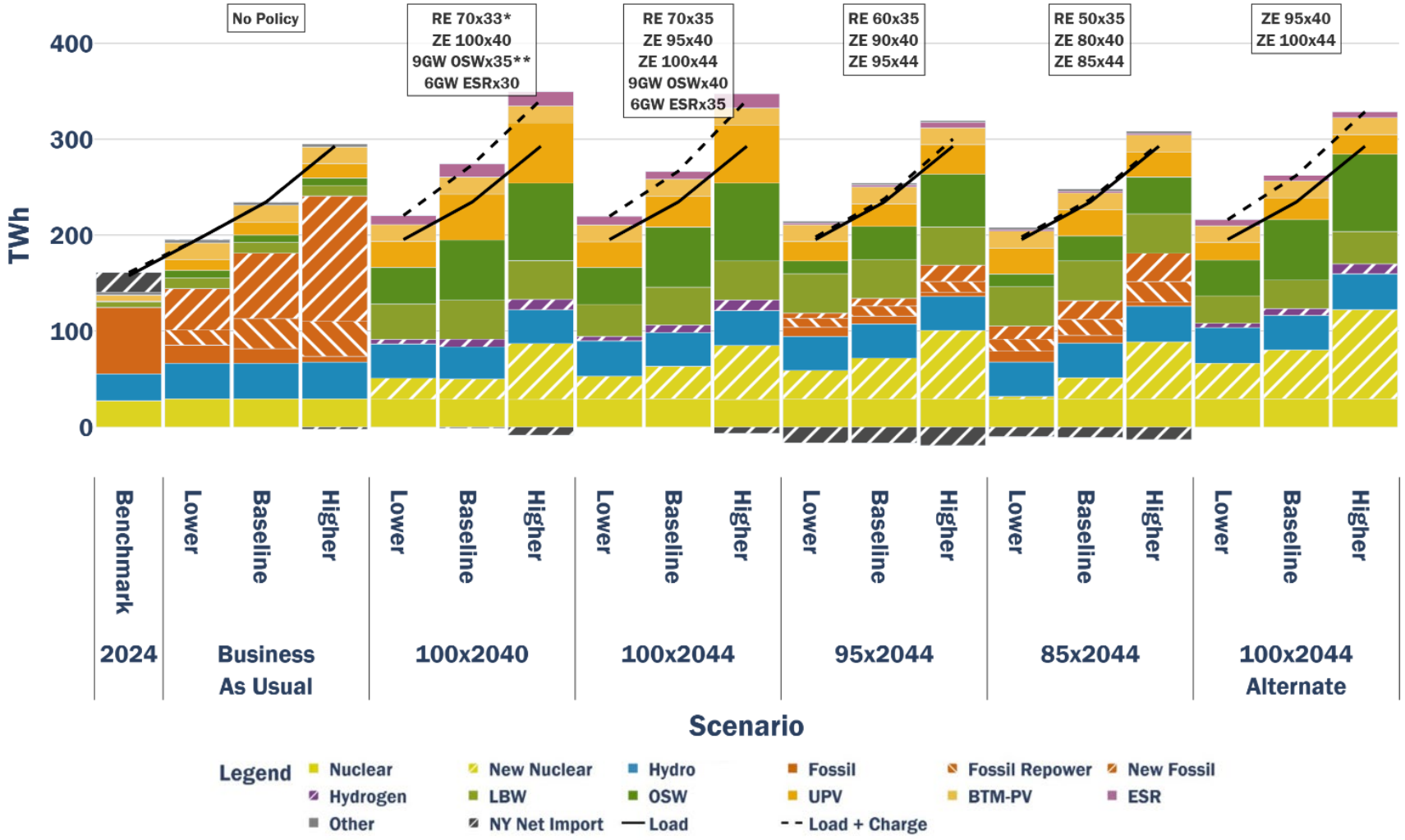
Key Findings: Resource Generation



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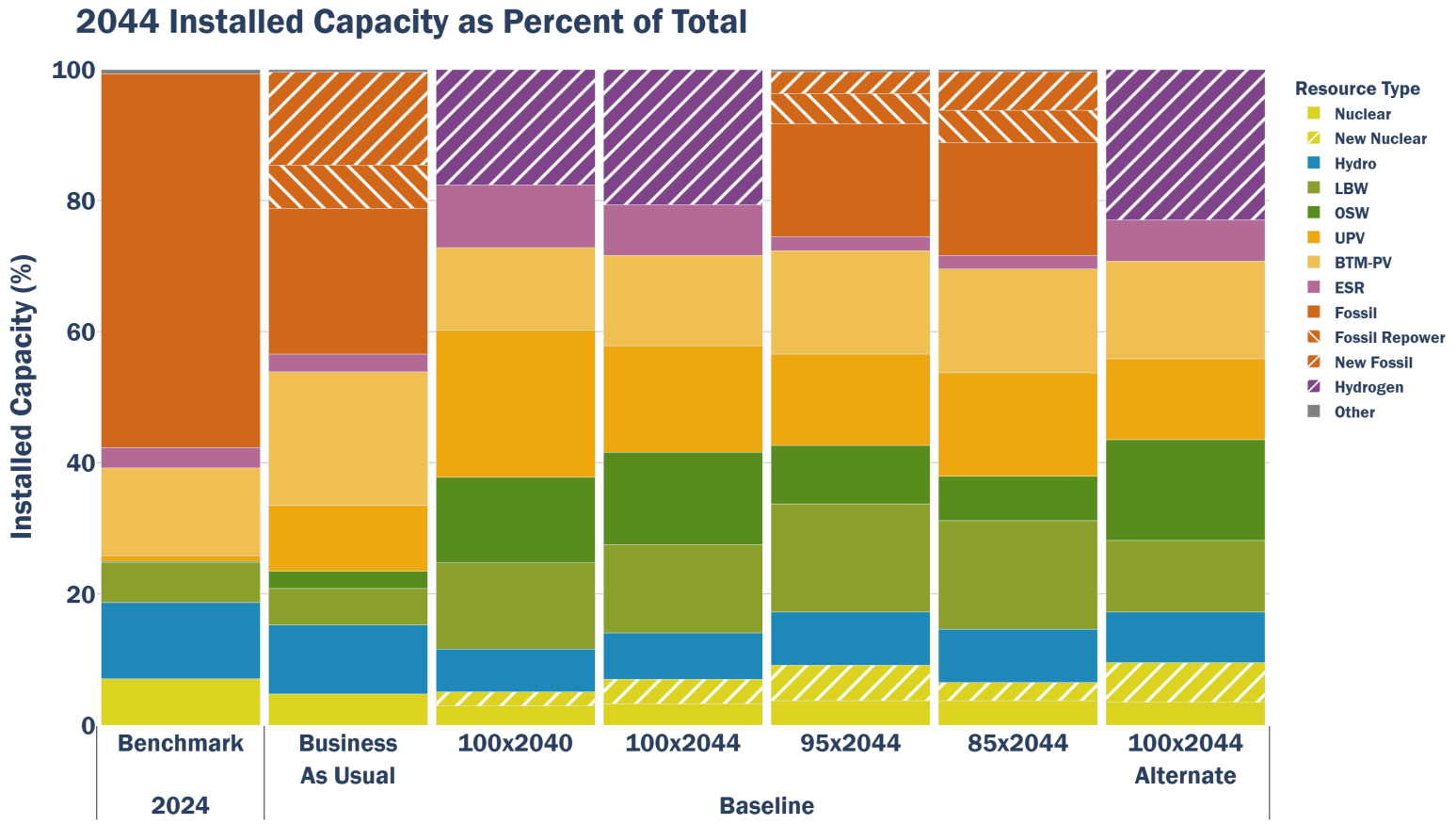
Resource Capacity: % of Total (Baseline)



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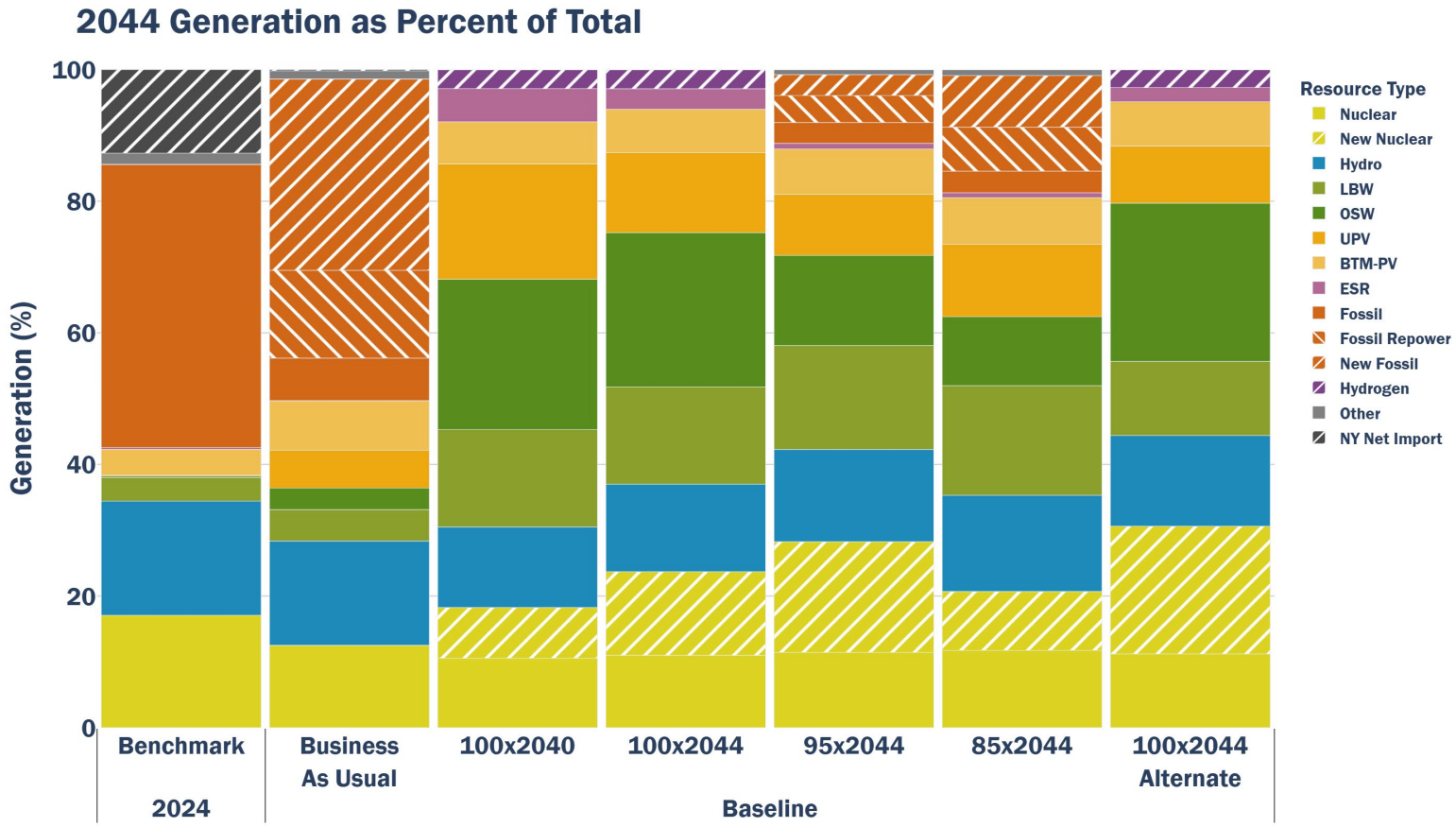
Percent Energy by Generation Type (Baseline)



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Key Findings: Transmission

- ✓ Transmission capability increasingly determines whether new resources can serve load.
- ✓ The Central East interface constraint presents an opportunity for targeted upgrades to improve system efficiency and reduce congestion.
- ✓ Northern New York represents an additional targeted opportunity for bulk transmission upgrades to enable the deliverability of new zero-emission resources.

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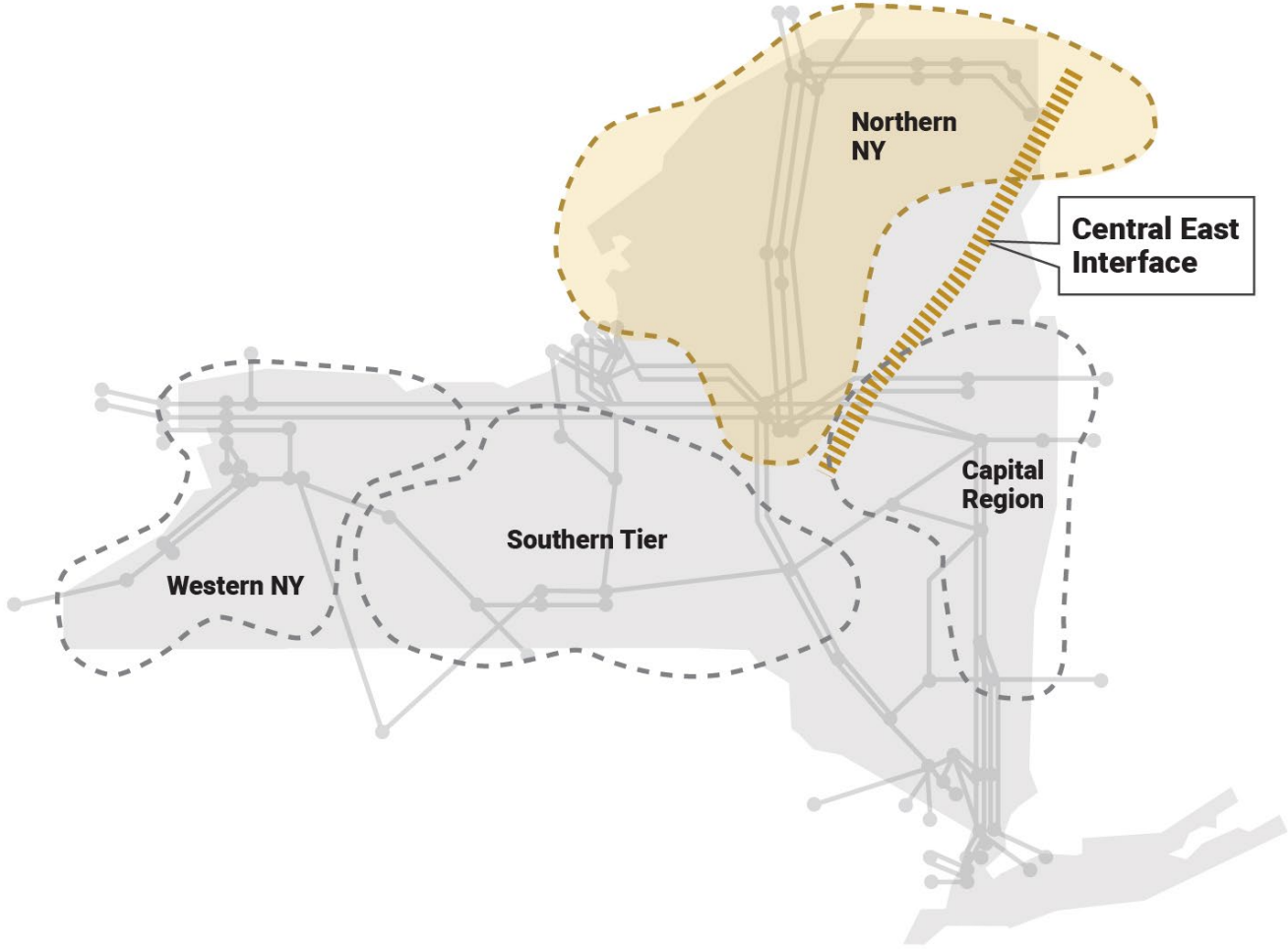
Key Findings: Transmission



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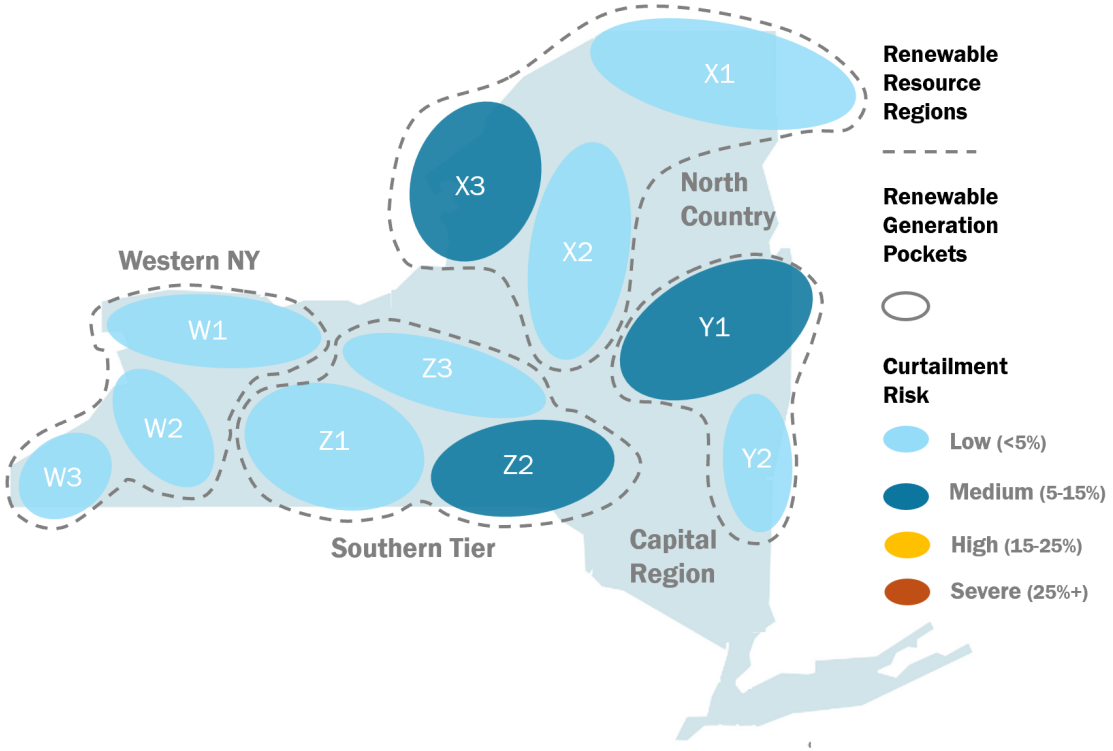
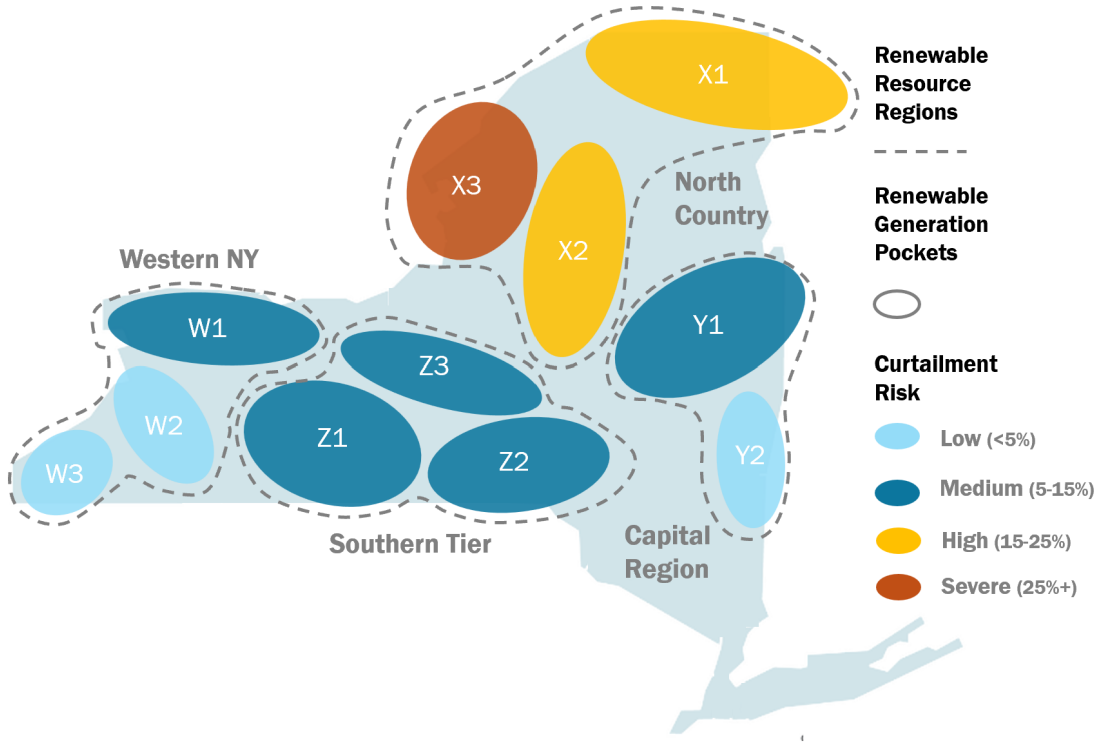
2025-2044 Outlook
Renewable Generation Pockets in 2035

95x2044-Baseline Demand



100x2044-Higher Demand



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Principal Recommendations

Principal Recommendations

- ✓ **Establish a viable path for the development of resources capable of providing firm capacity and operational flexibility as the generation mix evolves.**
  - Across all scenarios, the system requires resources that can serve demand during peak conditions and periods of low renewable output. A mix of new resources, including more efficient new and repowered fossil generation, is needed to supplement the system. The timely development of these resources depends on a range of factors including policy, supply chain, and the ability to site and permit the facility, which can materially influence the pace of development and contribute to tightening system conditions. Notably, hydrogen-based generation could provide zero-emissions firm capacity and operational flexibility, but it is not currently available at commercial scale, and would require significant new infrastructure in fuel production, storage and transportation, which does not exist today. Absent significant progress in the development of new zero-emissions technologies, continued reliance on fossil resources, including repowering and new additions, will be necessary to maintain reliability.

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Principal Recommendations

- ✓ **Coordinate the timing of resource additions, repowering opportunities, and retirements to reduce transition risk and avoid tightening system conditions.**
  - Across all futures, a wide range of new capacity is needed depending on policy stringency and demand growth. As demand increases and existing generation retires, system conditions become increasingly sensitive to the pace and sequencing of new resource development. Aligning resource entry with expected retirements supports adequate energy and capacity supply and reduces reliance on short-term operational measures.

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Principal Recommendations

- ✓ **Increase transfer capability across the Central East interface through targeted dynamic voltage support enhancements.**
  - Consistent with findings in the 2025–2034 Comprehensive Reliability Plan and the prior Outlook, enhancing dynamic voltage support across Central East represents a targeted opportunity to reduce congestion, improve energy deliverability, and better utilize both existing and future generation as system conditions evolve.

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Principal Recommendations

- ✓ **Support zero-emissions generation development in Northern New York with bulk transmission upgrades.**
  - If the level of resource development observed in the Outlook is realized in Northern New York due to its natural resource potential and land availability, increased bulk transmission capability will enable energy deliverability from this region.

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Questions, Comments, & Feedback?

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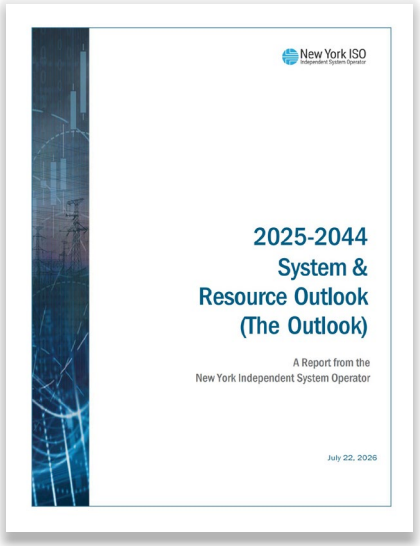
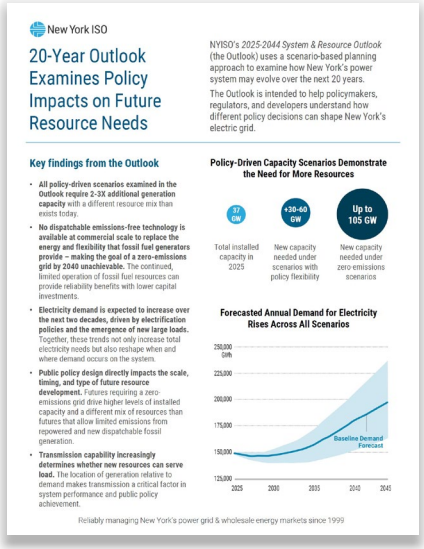
Report & Technical Appendices

2025-2044 System & Resource Outlook Data Catalog

Report



Study Summary



Report Appendices

Appendix A: Production Cost Model Benchmark
Appendix B: Production Cost Model Assumptions Matrix
Appendix C: Capacity Expansion Model Assumptions Matrix
Appendix D: Modeling & Methodologies
Appendix E: Historic Transmission Performance
Appendix F: Projected Transmission Performance
Appendix G: Production Cost Model Results
Appendix H: Capacity Expansion Model Results
Appendix I: Operational Analysis
Appendix J: Renewable Generation Pockets
Appendix K: Production Cost Model Sensitivities
Appendix L: Capacity Expansion Model Sensitivities

Data Documents

Forecast Assumptions Data Document
New York Renewable Power Profile Dashboard
Capacity Expansion Assumptions
Production Cost Model Results
Capacity Expansion Model Results
Capacity Expansion Model Sensitivity Results

Stakeholder Presentations

December 3, 2024
2023-2042 Outlook Lessons Learned

May 21, 2025
2025-2044 Outlook Kickoff

July 23, 2025
Base & Contract Case Preliminary Assumptions

August 21, 2025
Base & Contract Case Assumptions

September 4, 2025
Policy Case Preliminary Assumptions

September 25, 2025
Policy Case Preliminary Assumptions & Final Benchmark Results

October 20, 2025
Policy Case Assumptions

December 18, 2025
Status Update

January 20, 2026
Preliminary Base Case Results

February 3, 2026
Preliminary Contract Case Results

February 19, 2026
Preliminary Policy Case Results

March 9, 2026
Policy Case Update

March 26, 2026
Policy Case Update & Generator Placement Methodology

April 23, 2026
Schedule & Status Update

May 6, 2026
Discuss Report & Supplemental Materials

May 20, 2026
Preliminary Policy Scenario Results & Preliminary Draft Report

June 1, 2026
Additional Policy Scenario Results & Draft Report & Draft Appendices

June 10, 2026 BIC
Presentation, Draft Report & Draft Appendices

June 24, 2026 MC
Presentation, Draft Report & Draft Appendices
MMU Review

2023-2042 System & Resource Outlook Data Catalog
2021-2040 System & Resource Outlook Data Catalog

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Report: Table of Contents

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System & Resource Outlook Appendices

A. Production Cost Model Benchmark
B. Production Cost Model Assumptions Matrix
C. Capacity Expansion Model Assumptions Matrix
D. Modeling & Methodologies
E. Historic Transmission Performance
F. Projected Transmission Performance
G. Production Cost Simulation Results
H. Capacity Expansion Simulation Results
I. Operational Analysis
J. Renewable Generation Pockets
K. Production Cost Model Sensitivities
L. Capacity Expansion Model Sensitivities

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