

System & Resource Outlook Update

Economic Planning Department

Electric System Planning Working Group (ESPWG)

Tuesday June 21st, 2022 - WebEx Teleconference

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Agenda

- Outlook Study Status
- Draft Report Postings
- Draft Report Key Finding Review
- Next Steps



Outlook Study Status

- September October 2021: Finalize reference case assumptions*
- November December 2021: Conduct simulations and analysis*
- January, February, March, April 2022, May 2022: Conduct Policy case simulations and analysis
- May-July 2022: Issue draft report, finalize draft report, seek input from Market Monitoring Unit, Business Issues Committee and Management Committee review and action
- August 2022: Seek Board of Directors review and approval
- Following issuance, the NYISO will conduct a public information session on the Outlook

*Collaborate with ESPWG and seek stakeholder input Information in italics represents an update from the previous status or schedule



Material Attached w/ Agenda

- Draft Report Chapter 1-4 (.pdf)
- Draft Report Chapter 1-5 (.pdf) later posting



Report: Key Findings



Significant new resource development will be required in order to achieve CLCPA energy targets. The total installed generation capacity to meet policy objectives within New York is projected to range from 111 GW and 124 GW by 2040. Compared to the 51 GW of generation capacity that exists and is contracted today, this represents a significant increase in the amount of capacity needed to satisfy system reliability and policy requirements.



To achieve an emission-free grid, dispatchable emission-free resources (DEFRs) must be developed and deployed throughout New York to replace the various electrical attributes that are provided today by fossil generation. DEFRs that provide sustained on-demand power and system stability will be essential to meeting policy objectives while maintaining a reliable electric grid. The capacity contribution of intermittent renewable resources declines as more are added to the system. The limited contribution of incremental resources inhibits the ability of the power system to effectively meet mandatory resource requirements and to serve load in hours in which renewable generation are limited or unavailable. The scale and technology of DEFRs necessary to meet state energy needs will also depend upon the buildout of the transmission and distribution grids.



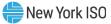
Resource buildout alone to meet minimum capacity requirements is not sufficient to efficiently achieve policy goals. If resources are not built in excess of reserve requirements to meet reliability margins, New York will likely import significant amount of external energy that may or may not be renewable. Even with additional imports, there could be significant renewable energy that is not deliverable to customers during peak producing hours.



Transmission expansion is critical to facilitating efficient CLCPA energy target achievement. The current New York transmission system, at both local and bulk levels, is inadequate to achieve currently required policy objectives. Renewable generation pockets throughout the State become more constrained as an increasing number of intermittent generation resources connect, necessitating transmission upgrades to make the renewable energy deliverable. Bulk and local transmission constraints on today's grid will limit the effective delivery of renewable energy to consumers throughout the State. A significant portion of projected renewable generation will be built in upstate New York areas, which are geographically and electrically distant from the major consumer hubs in downstate New York. Without significant transmission investment to provide access to renewable energy resource rich areas, the renewable energy cannot efficiently traverse New York State and be delivered to consumers.



When dispatched effectively, energy storage could help to increase the utilization of the renewable generation, but energy storage alone cannot completely resolve the transmission limitations in the pockets analyzed.



Peak load management should be integrated as a measure to facilitate CLCPA energy target achievement. By lowering the peak load and avoiding system buildout to serve the highest demand hour, less DEFR buildout will be needed, and during the transition fossil fuel-fired plants can be utilized less to meet lower peaks.



Electrification from other sectors, such as building and transportation, into the power sector should be monitored and managed closely. Electrification is one of the largest factors driving peak and annual energy demand. While other sectors, such as transportation, currently account for a larger share of greenhouse gas emissions, unmitigated electrification of the energy sector could lead to higher energy costs and reduced reliability.



Co-optimization of renewable energy additions and fossil fuel plant operation during the transition could facilitate a more efficient and cost-effective buildout of the future renewable generation portfolio. High natural gas prices, high CO2 prices, or lower capital costs for renewable generation, could all lead to a relatively larger buildout of renewable energy resources. However, the large amount of renewable energy additions to achieve the CLCPA goals will impact the operations of the fossil fuel fleet in the 20-year transition to an emission-free grid. Overall, the annual output of the fossil generation will decline. The units that are more flexible will be dispatched more often, while the units that are less so may be dispatched less or not at all. Balancing the need to retain fossil resources that are necessary in the transition for the continued reliability of the grid with the goals of achieving a zeroemissions grid will be the central challenge to the industry in the coming decades.



Next Steps



Next Steps

Full Draft Report v2 at 7/1 ESPWG

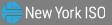
- Posting deadline Tuesday 6/28
- Please send feedback to NYISO by Monday 6/27
- Upcoming Stakeholder Meetings
 - Friday July 1st ESPWG
 - Wednesday July 13th BIC
 - Wednesday July 27th MC

Board of Directors Meeting on August 15th



Questions, Feedback, Comments?

Email additional feedback to: JFrasier@nyiso.com



2021-2040 Outlook Data Catalog

	May 20, 2021	<u>April 1, 20</u>
	Model Benchmark Results	<u>S</u>
	September 22, 2021	<u>April 26, 2</u>
	System & Resource Outlook Update	<u>S</u>
	<u>October 25, 2021</u>	<u>May 23, 20</u>
US	Capacity Expansion Model Primer	<u>S</u>
0	System & Resource Outlook Update	<u>June 2, 20</u>
ESPWG/TPAS Presentations	November 19, 2021	<u>S</u>
Jt.	System & Resource Outlook Update	<u>June 8, 20</u>
e	December 19, 2021	<u>S</u> U
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CT I	Base & Contract Case Results	
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A	System & Resource Outlook Update	
S	<u>March 8, 2022</u>	
	System & Resource Outlook Update	
	March 24, 2022	
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	Contract Case Congestion Analysis	

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Assumptions Matrix v1 Capacity Expansion Assumptions Matrix v1 Contract Case Renewable Projects **Emissions Price Forecast** Fuel Price Forecast Capacity Expansion Assumptions Matrix v2 (Redline) Capacity Expansion Assumptions Matrix v3 (Redline) Production Cost Assumptions Matrix v2 (Redline) Capacity Expansion Assumptions Matrix v4 (Redline) Capacity Expansion Assumptions Matrix v5 (Redline) Policy Case Hourly Load Forecasts Policy Case Zonal Capacity Expansion Preliminary Results Capacity Expansion Assumptions Matrix v6 (Redline) Capacity Expansion Assumptions Matrix v7 (Redline) S1 & S2 New Generator Additions Hourly Load Forecasts Capacity Expansion Assumptions Matrix - Final Production Cost Assumptions Matrix - Final

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<u>6/7 – Draft Report Chapter 1</u> 6/16 – Draft Report Chapters 1-4

Our Mission & Vision

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Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

