

2023-2042 System & Resource Outlook Update

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Electric System Planning Working Group (ESPWG)

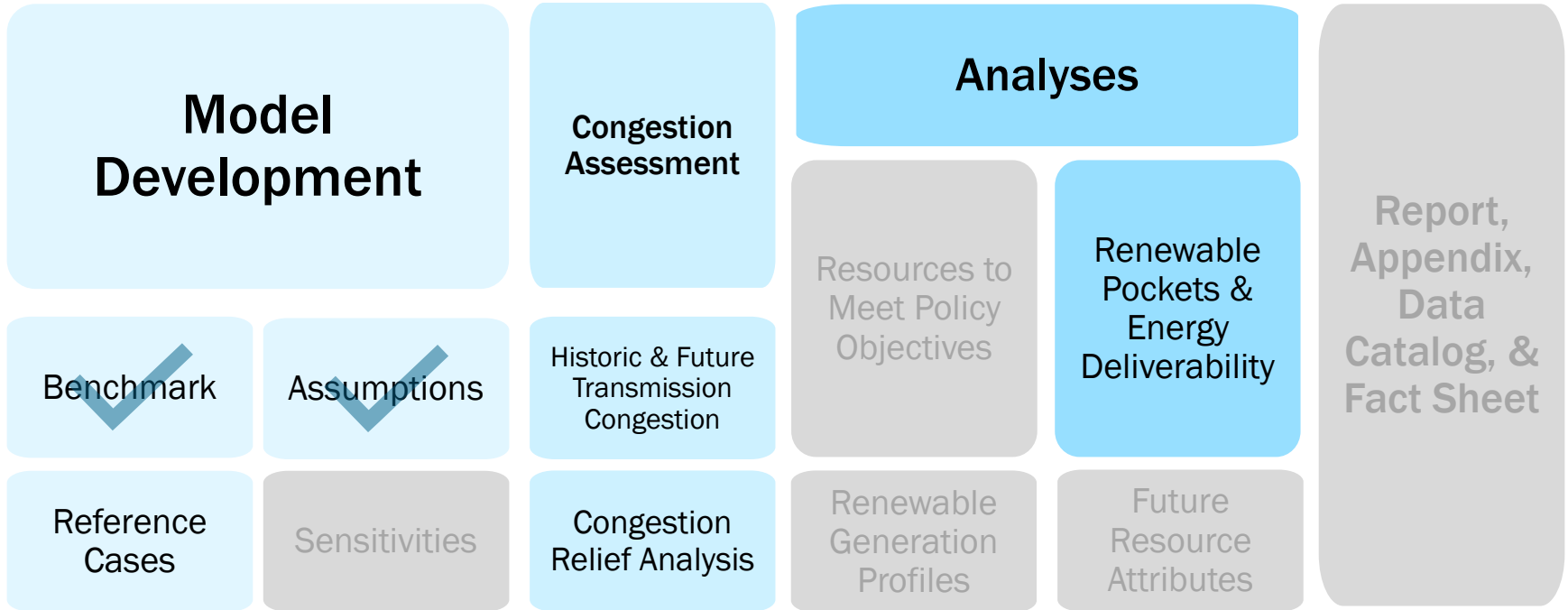
January 23, 2024, NYISO

Agenda

- **Scope & Schedule Review**
- **Reference Case Updates**
 - Contract Case
 - Policy Case
- **Next Steps**
- **Outlook Data Catalog**
- **Appendix**

Scope & Schedule Review

System & Resource Outlook Scope



Preliminary Targeted Study Schedule

2024 Q1	Month	January					February				March			
	Week	1	2	3	4	5	1	2	3	4	1	2	3	4
	Benchmarking													
	Assumptions Development													
	CapEx Model Development	X	X	X	X	X								
	CapEx Results & Analyses						X	X	X	X	X	X	X	X
	Production Cost Model Development	X	X	X	X	X	X	X	X	X	X	X	X	X
	Production Cost Results & Analyses	X	X	X	X	X	X	X	X	X	X	X	X	X

2024 Q2	Month	April					May				June			
	Week	1	2	3	4	5	1	2	3	4	1	2	3	4
	CapEx Model Development													
	CapEx Results & Analyses													
	Production Cost Model Development													
	Production Cost Results & Analyses	X	X											
	Report	X	X	X	X	X	X	X	X	X	X	X	X	X

Contract Case

Contract Case Results

- **Contract Case lockdown date 10/30/23**
- **Preliminary Contract Case results were presented at the 12/19/23 ESPWG**
- **The following incremental changes have been made to the Contract Case model:**
 - Ratings updated for certain PARs and transformers
 - Minor updates to the installed capacity and generation shape of certain OSW units
- **Results from the updated Contract Case are consistent with preliminary Contract Case results and trends presented at the 12/19/23 ESPWG meeting**
- **Final Contract Case results for the 2023-2042 Outlook are included in the Appendix of this presentation**

Contract Case: Next Steps

- **Relaxation case with all NYCA internal lines and interface ratings relaxed (unbounded)**
 - Intended to measure the impact of transmission constraints on renewable energy curtailment and other metrics
 - Inter-pool tie lines still have limits enforced along with hurdle rates
- **Renewable pockets analysis for model year 2030**

Policy Case

Policy Case Update

- **Development of the three Policy Case scenarios in the capacity expansion model is ongoing**
 - Development of the production cost model for the Policy Case will begin following the completion of the Contract Case
- **The NYISO is in the process of finalizing the enhancements to the three capacity expansion model scenarios, as compared to the 2021-2040 Outlook model**
 - See slide 25 of the [12/19/23 ESPWG presentation](#) for the complete list of enhancements

Hydro Quebec Import Assumptions

- **As noted in the assumptions matrix documents for the 2023-2042 Outlook, HQ imports will be modeled with a fixed hourly schedule and Policy Case scenarios will include adjustments for firm future contracts**
 - Preserve total level of historic exports from HQ
 - Firm contracts (e.g., Champlain Hudson Power Express and New England Clean Energy Connect) will be prioritized (~19 TWh)
 - Remaining exports from HQ to neighboring regions (NYISO, IESO, and ISO-NE) that do not have a contract will be proportionally reduced to maintain total historic level of exports
- **Based on stakeholder feedback, the NYISO proposes to conduct a sensitivity in the Policy Case on the HQ import assumptions to provide information on potential future conditions**
 - Sensitivity in the capacity expansion model with zero net imports into Zone D
- **NYISO is requesting stakeholder feedback on this sensitivity and will return to future ESPWG meetings with additional information on potential Policy Case sensitivities**

Policy Case: Next Steps

- **Continue model development**
 - Complete capacity expansion model development
 - Start production cost model development for Policy Case
- **Return to upcoming ESPWG with additional detail on capacity expansion model implementation**
 - E.g., final capacity expansion model topology (including interface limits), proxy LCRs for capacity expansion scenarios, generator firm capacity, etc.

Next Steps

Next Steps

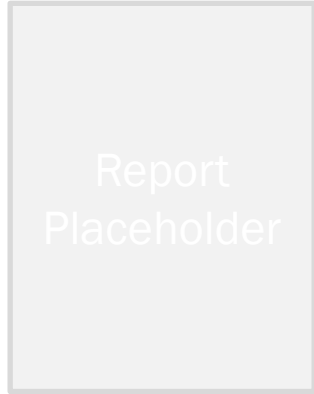
- **Continue model development of production cost and capacity expansion models for Policy Case**
- **Contract Case analyses: transmission relaxation case and renewable pockets analysis**
- **Preliminary capacity expansion model results for Policy Cases**
- **Post excel spreadsheet with final results for Base & Contract Cases at an upcoming ESPWG**
- **Continue stakeholder engagement**
 - Next presentation: February 22, 2024 ESPWG

Questions, Comments, & Feedback?

Email additional feedback to:
SCarkner@nyiso.com
one week prior the next ESPWG

2023-2042 System & Resource Outlook Data Catalog

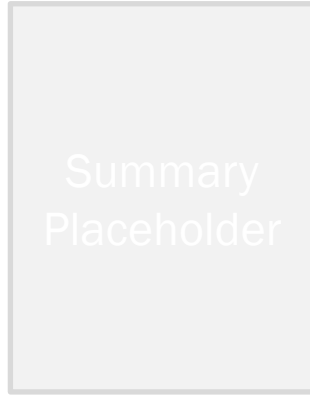
Report



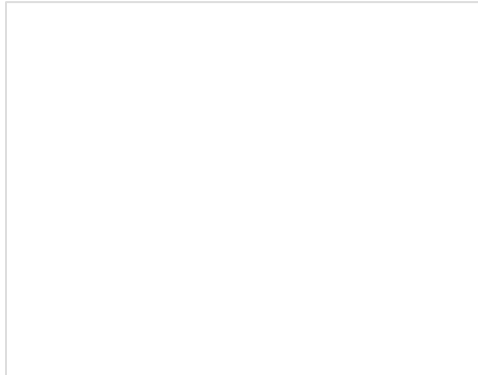
Report Appendices

[Production Cost Model Benchmark DRAFT](#)
[Production Cost Assumptions Matrix DRAFT](#)
[Capacity Expansion Assumptions Matrix DRAFT](#)

Study Summary



Data Documents



Stakeholder Presentations

November 18, 2022

[2021 Outlook Lessons Learned](#)
[NYSERDA Outlook Suggestions](#)

June 16, 2023

[2023-2042 Outlook Kickoff](#)

July 17, 2023

[2023-2042 Outlook Benchmark](#)
[2023-2042 Outlook Update](#)

August 22, 2023

[2023-2042 Outlook Preliminary Reference Case Assumptions](#)

September 21, 2023

[2023-2042 Outlook Reference Case Assumptions Update](#)

October 24, 2023

[2023-2042 Outlook Reference Case Assumptions Update](#)

November 2, 2023

[2023-2042 Outlook Reference Case Assumptions Update & Preliminary Base Case Results](#)

November 21, 2023

[2023-2042 Outlook Reference Case Updates & Final Base Case Results](#)

December 19, 2023

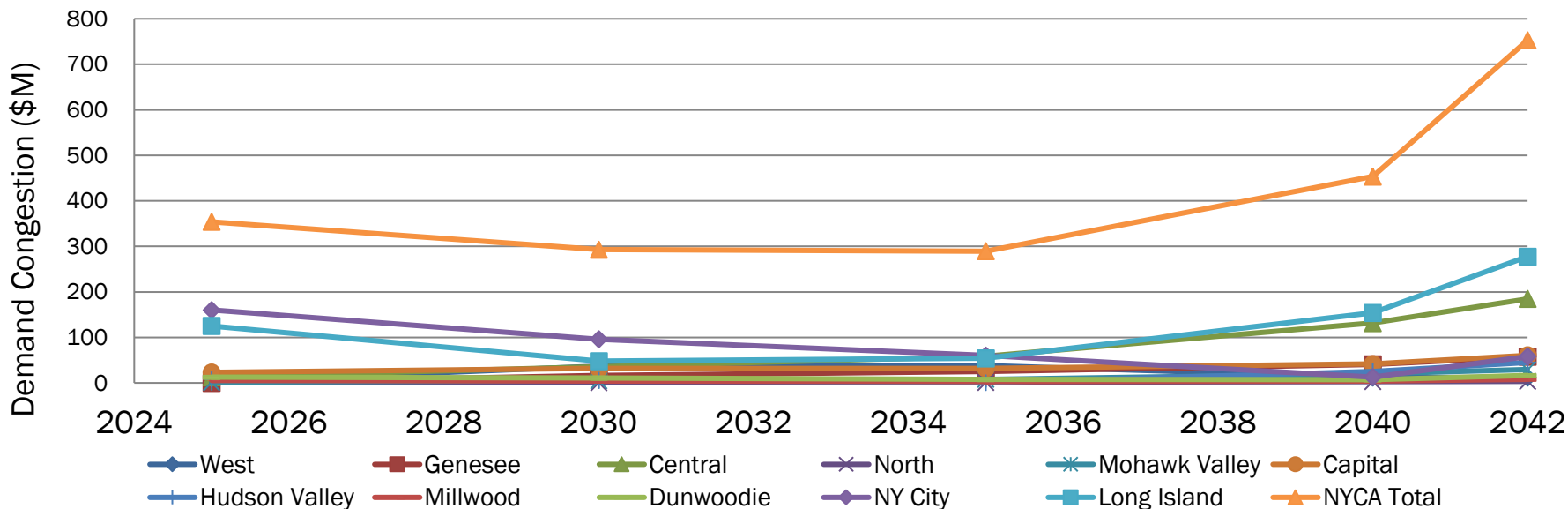
[2023-2042 Outlook Reference Case Updates & Preliminary Contract Case Results](#)

Appendix

Key Considerations for Contract Case

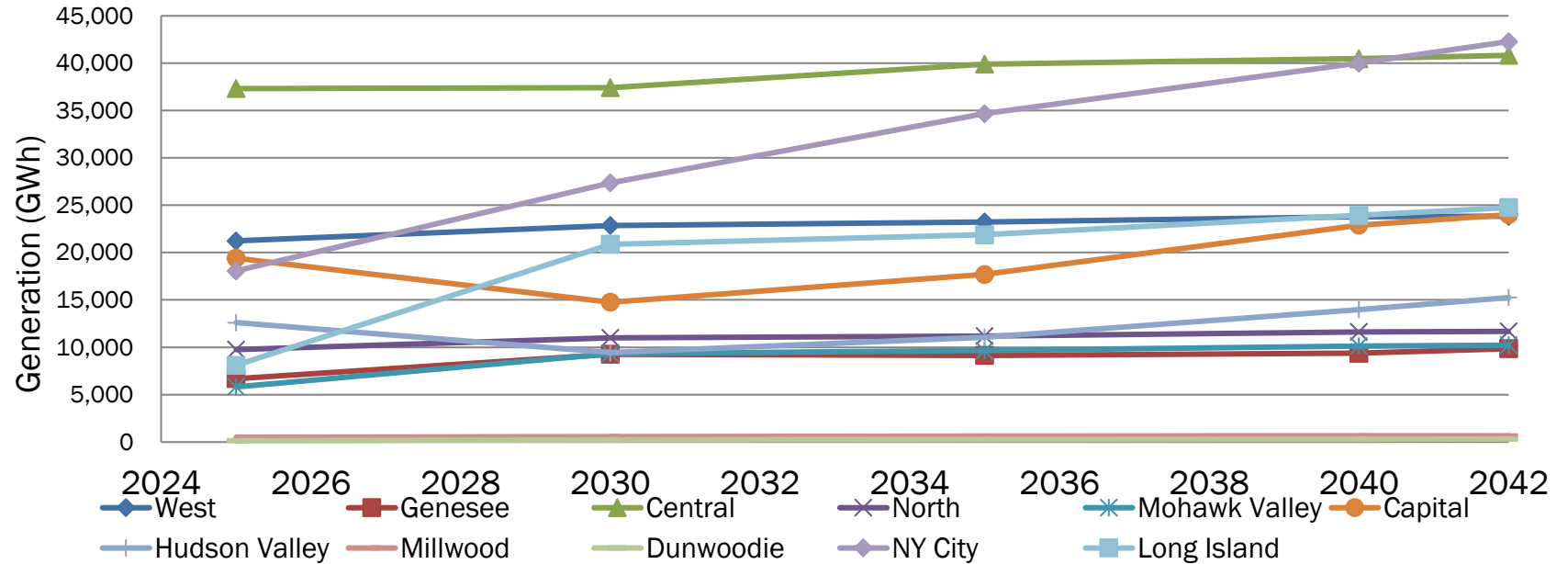
- Large amounts of LBW and UPV resources added to the model in upstate zones and awarded OSW resources modeled in New York City and Long Island
- Clean Path NY HVDC line modeled as in-service in 2027
- Local upgrades that are part of CLCPA Phase 1 and 2 projects modeled as per information provided by TOs
 - See [11/21/23 ESPWG](#) for additional detail
- Load, fuel price, and emissions price forecast and retirement assumptions consistent with the Base Case
- The Contract Case is not intended to meet full achievement of CLCPA policy objectives

Zonal Demand Congestion (nominal \$M)

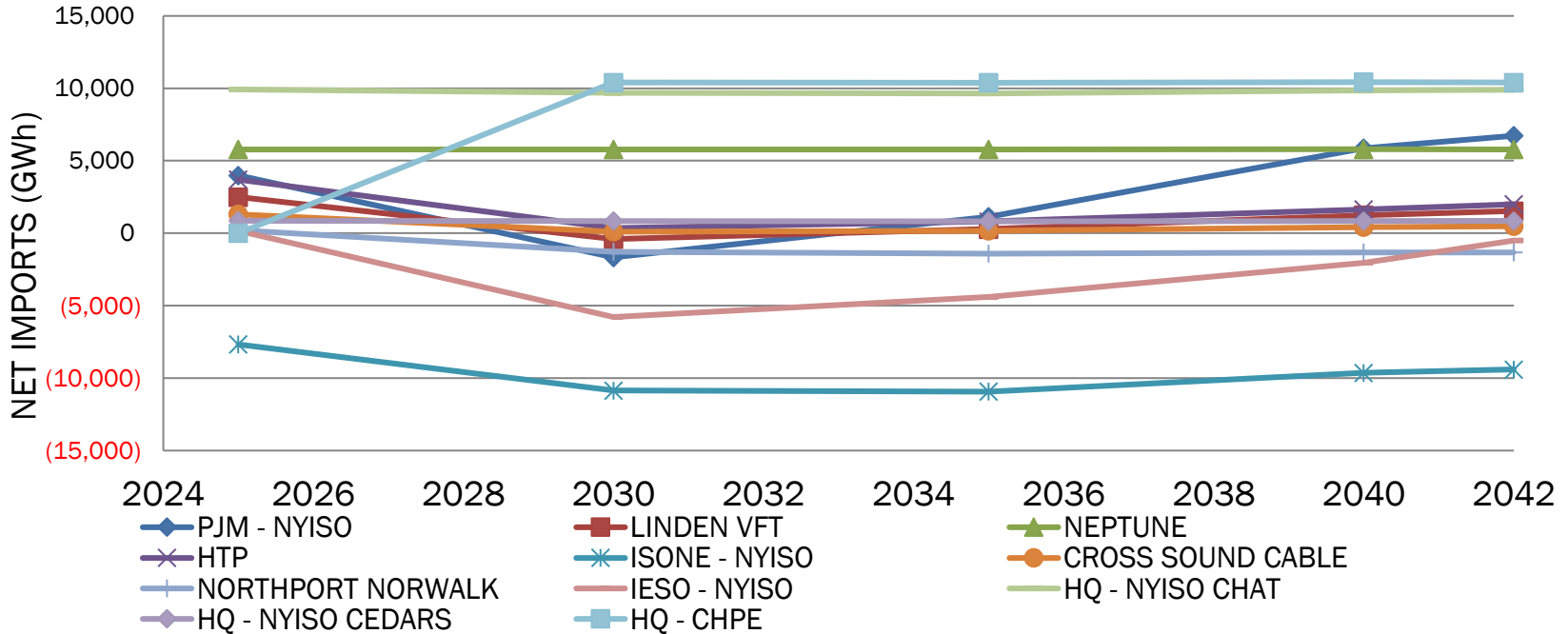


$$\text{Zonal Demand Congestion} = \sum_{\text{hour } 1}^{8760} \left[\sum_{\text{constraint } j}^n \text{Shadow Price}_j \times \text{Zone GSF} \times \text{Zone Load} \right]$$

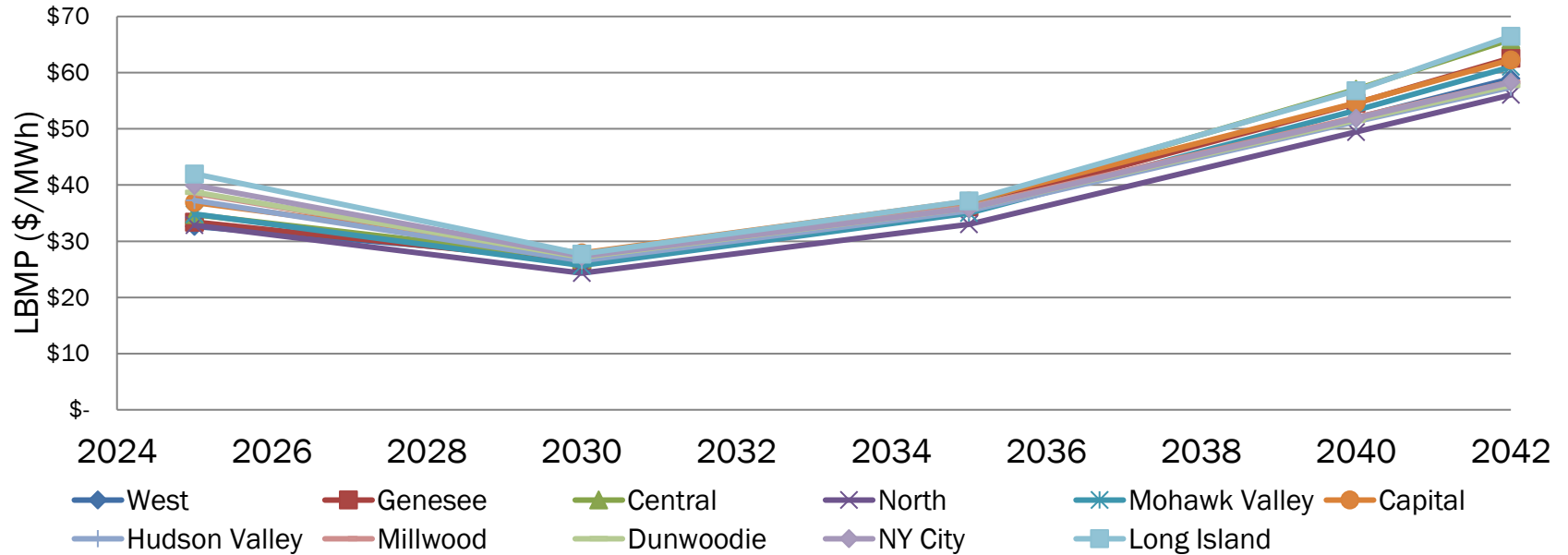
Zonal NYCA Generation (GWh)



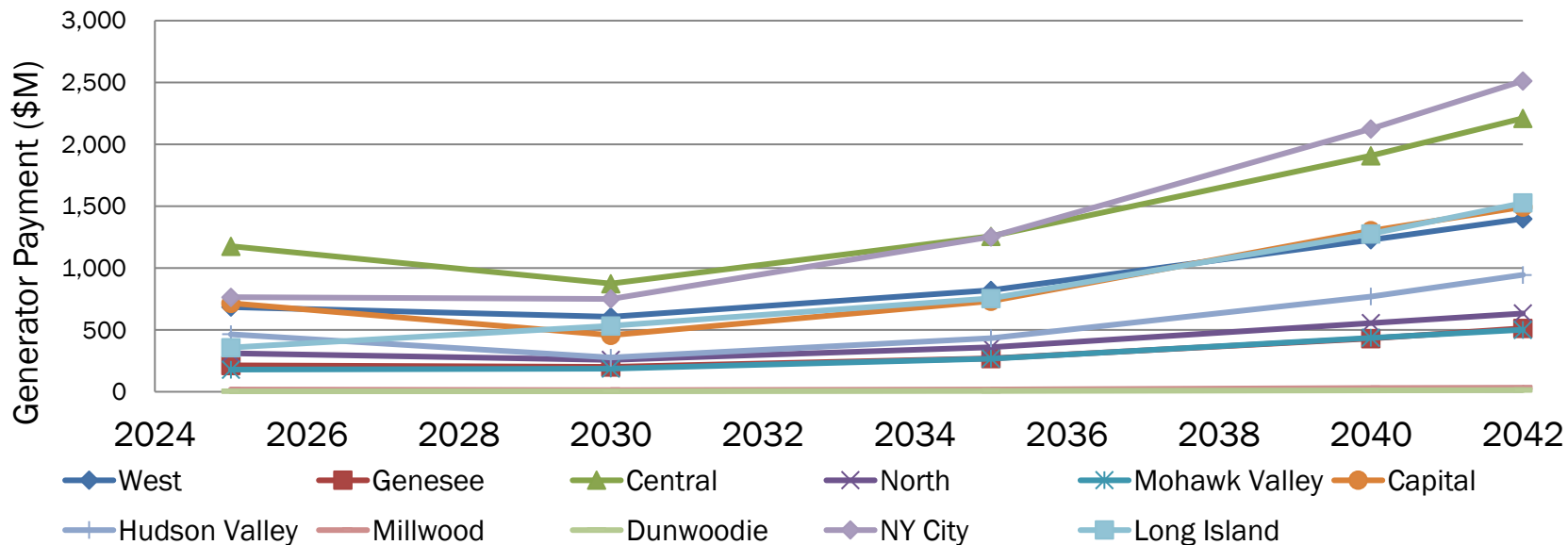
Projected Net Imports (GWh)



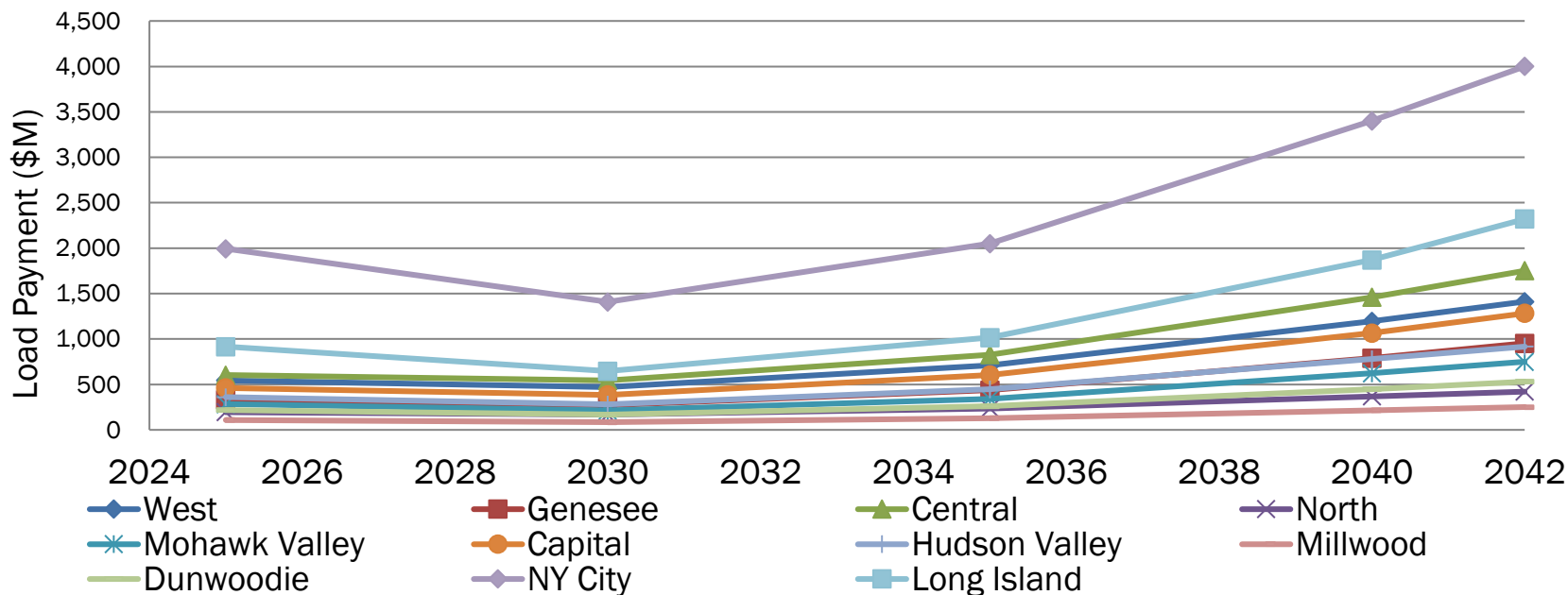
Zonal NYCA LBMP (\$/MWh)



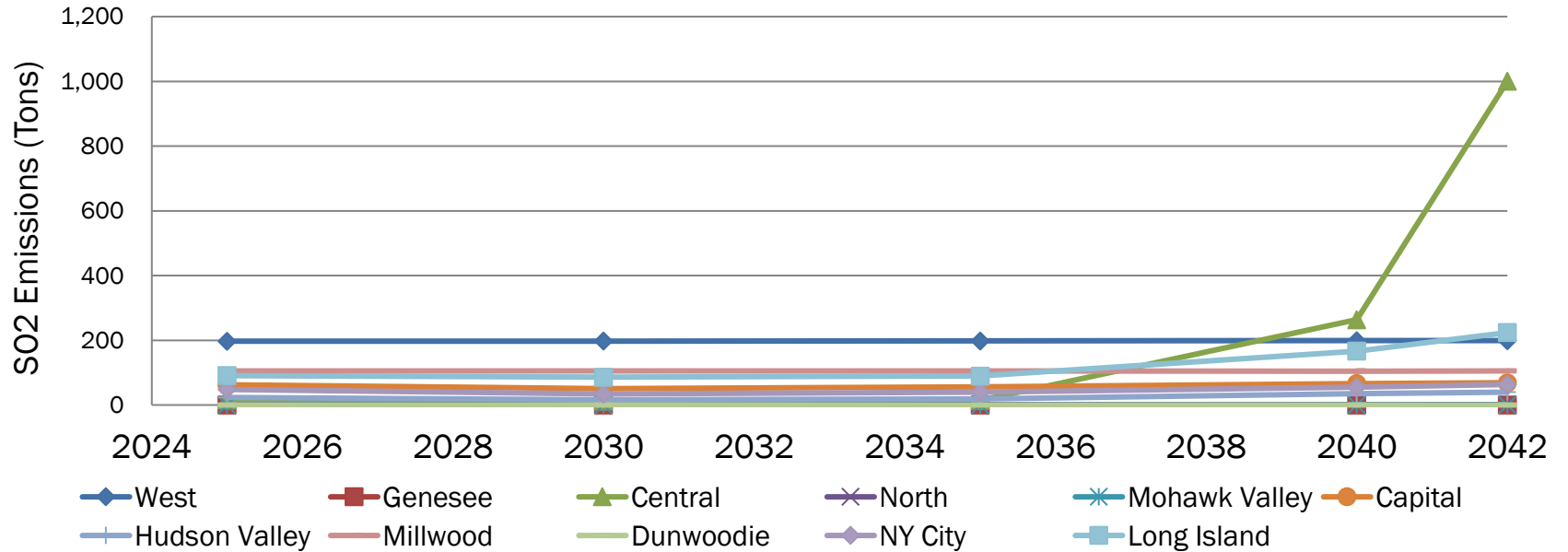
Zonal Generator Payments (nominal \$M)



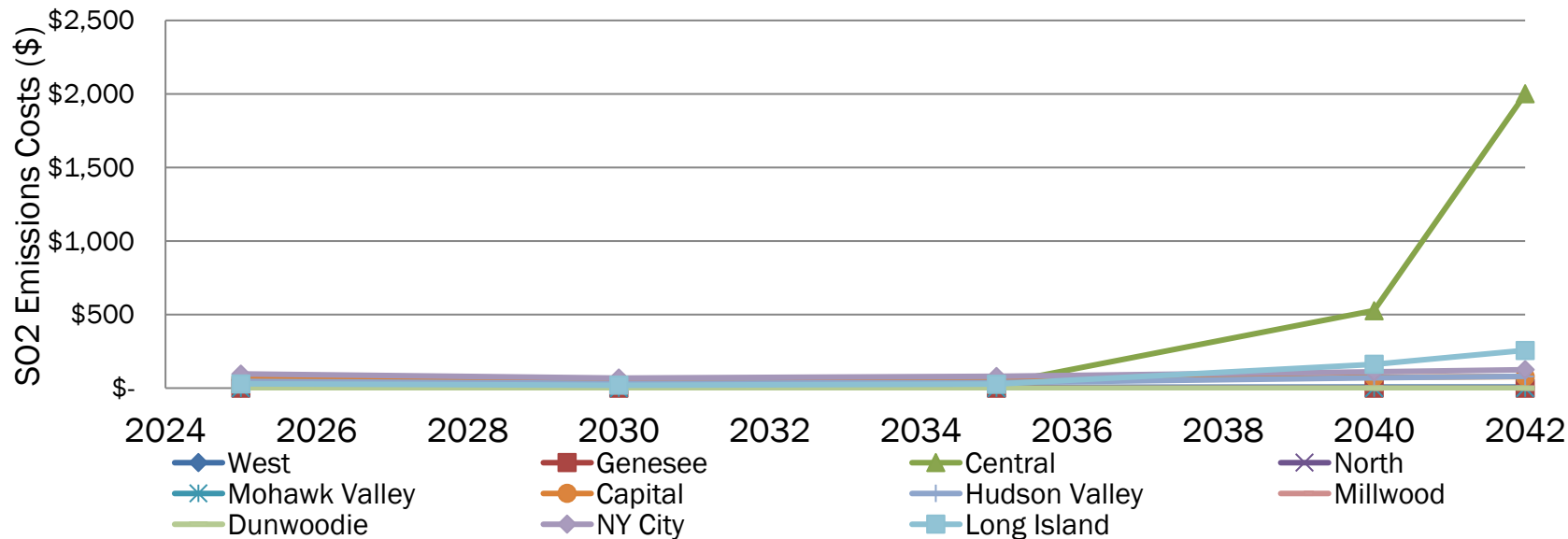
Zonal Load Payments (nominal \$M)



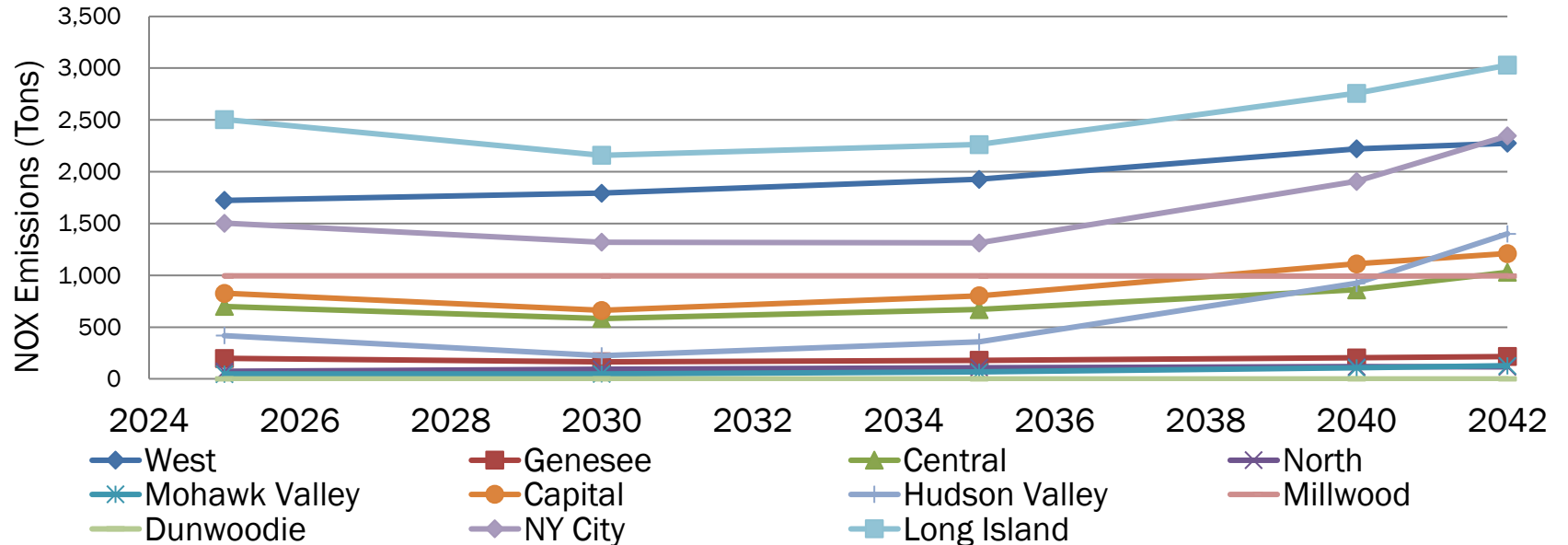
Zonal SO2 Emissions (Tons)



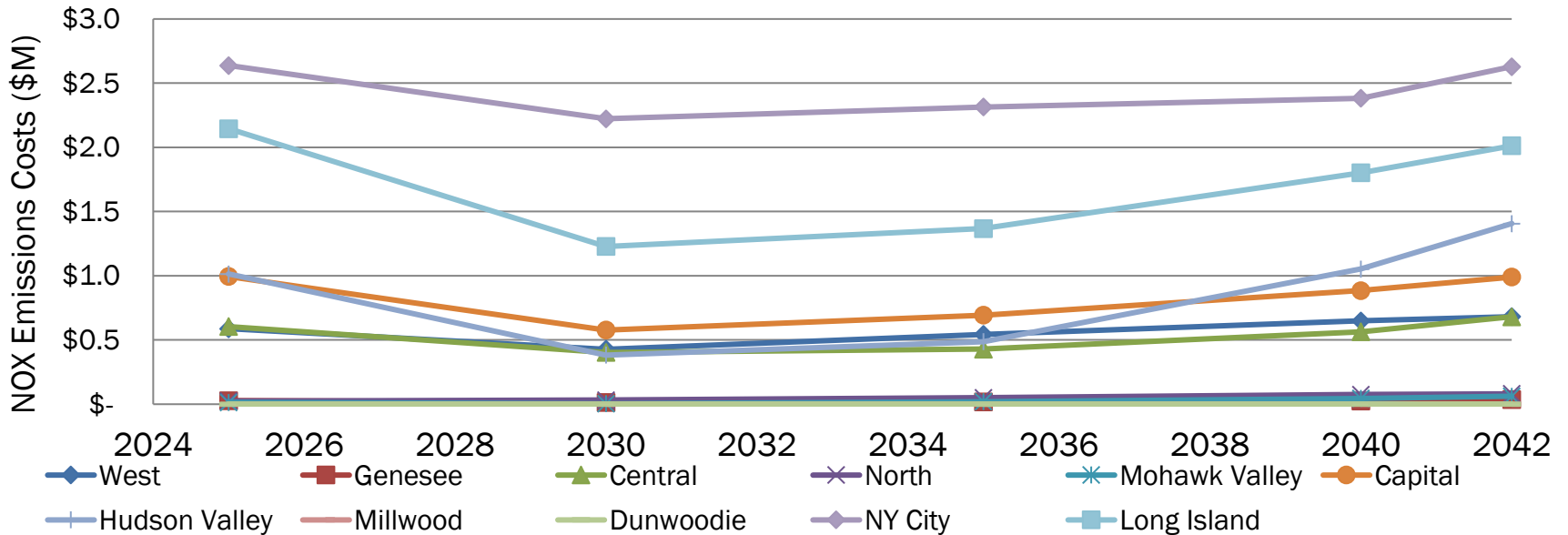
Zonal SO2 Emissions Costs (nominal \$)



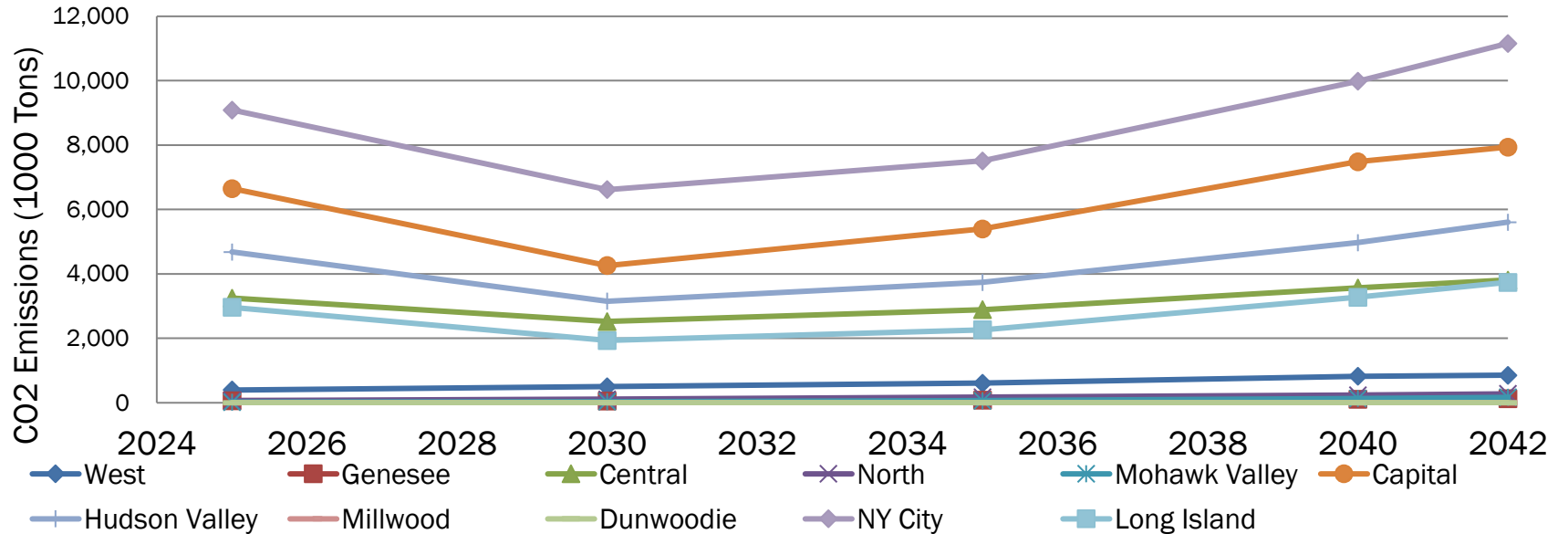
Zonal NOX Emissions (Tons)



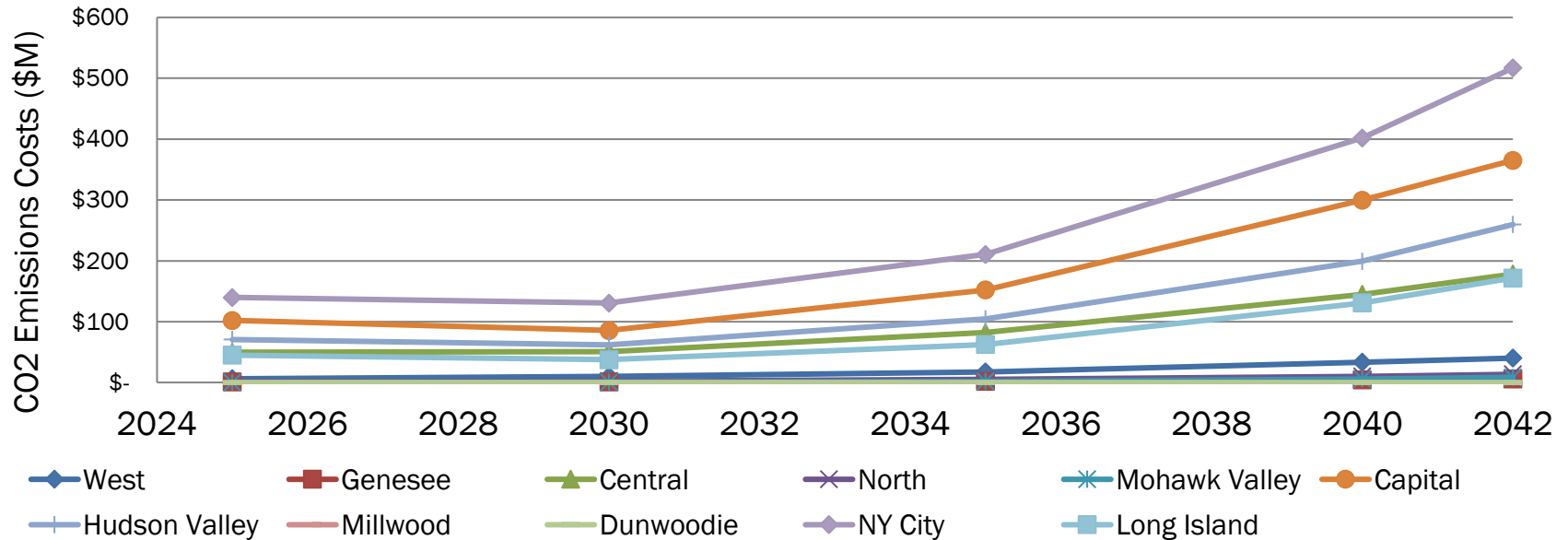
Zonal NOX Emissions Costs (nominal \$M)



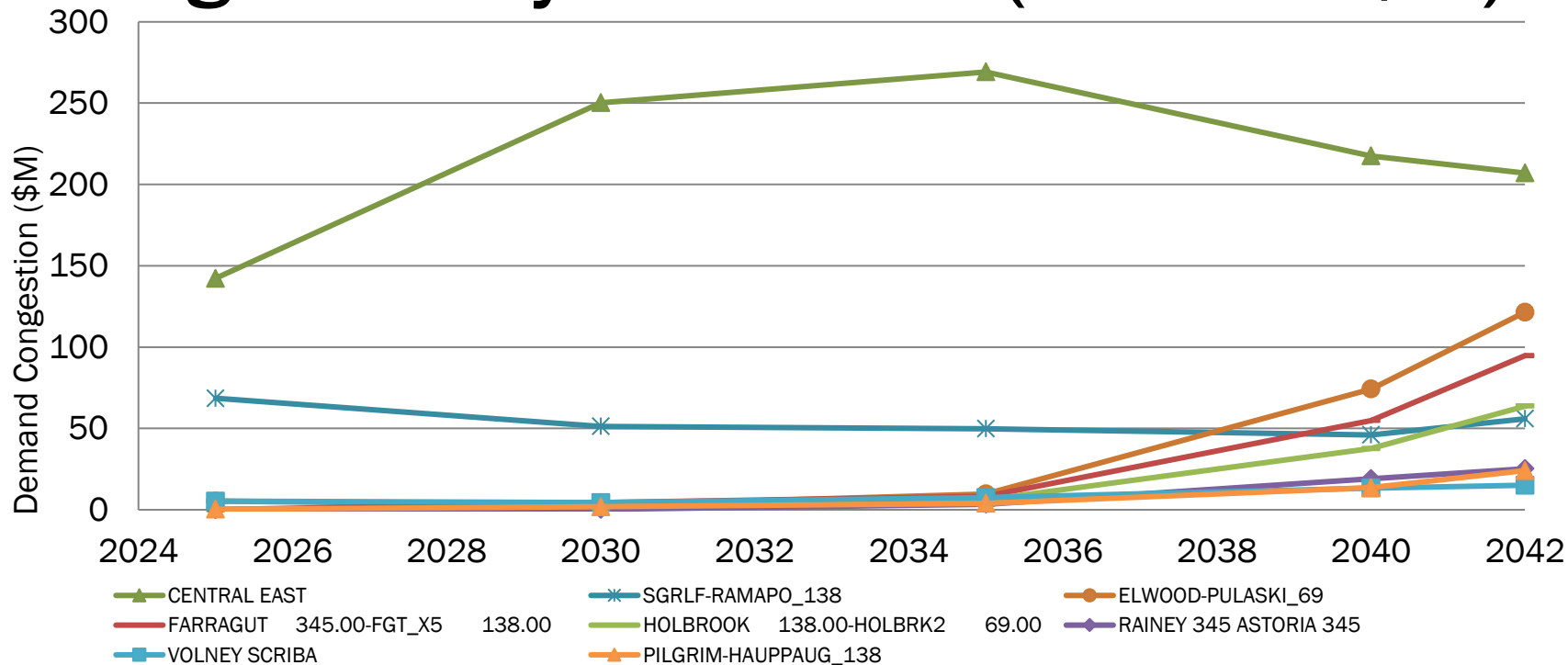
Zonal CO2 Emissions (1000 Tons)




Zonal CO2 Emissions Costs (nominal \$M)



Projected NYCA-Wide Demand Congestion by Constraint (nominal \$M)



*Note - North Waverly - E. Sayre 115 kV and IESO-NY: North-Tie lines not shown on this chart as operations protocols would dictate the operation of the lines. 

Key Contract Case Takeaways

- Approximately 16 GW of renewable generation added to the Contract Case compared to Base Case displaces internal fossil fuel generation and net imports
- Additional generation in upstate zones increases congestion on Central East compared to the Base Case
- Additional generation in downstate zones (e.g., OSW) leads to a reduction in net imports and demand congestion in those zones compared to the Base Case
- Additional renewable generation results in overall decrease of emissions in NY
- LBMP decreases across the state due to lower cost resources displacing higher cost resources throughout NY

Our Mission & Vision



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