

Economic Planning:

Production Cost Model Benchmark Results

Jason Frasier

Manager, Economic Planning

Electric System Planning Working Group (ESPWG)

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Agenda

- **Benchmark Overview**
- **Benchmark Results**
- **Next Steps**

Benchmark Overview

Benchmarking Process Overview

■ Goal

- To validate, test, and tune production cost model performance
- To initialize database for 2021 System & Resource Outlook modelling

■ Process

1. Perform production cost model simulation with actual 2019 historic data as input
2. Compare simulation output with actual system performance for the year 2019 to test model accuracy
3. Adjust model parameters as needed to align simulated output with actual
4. Iterate #1-#3

Assumptions & Model Adjustments

■ Assumptions

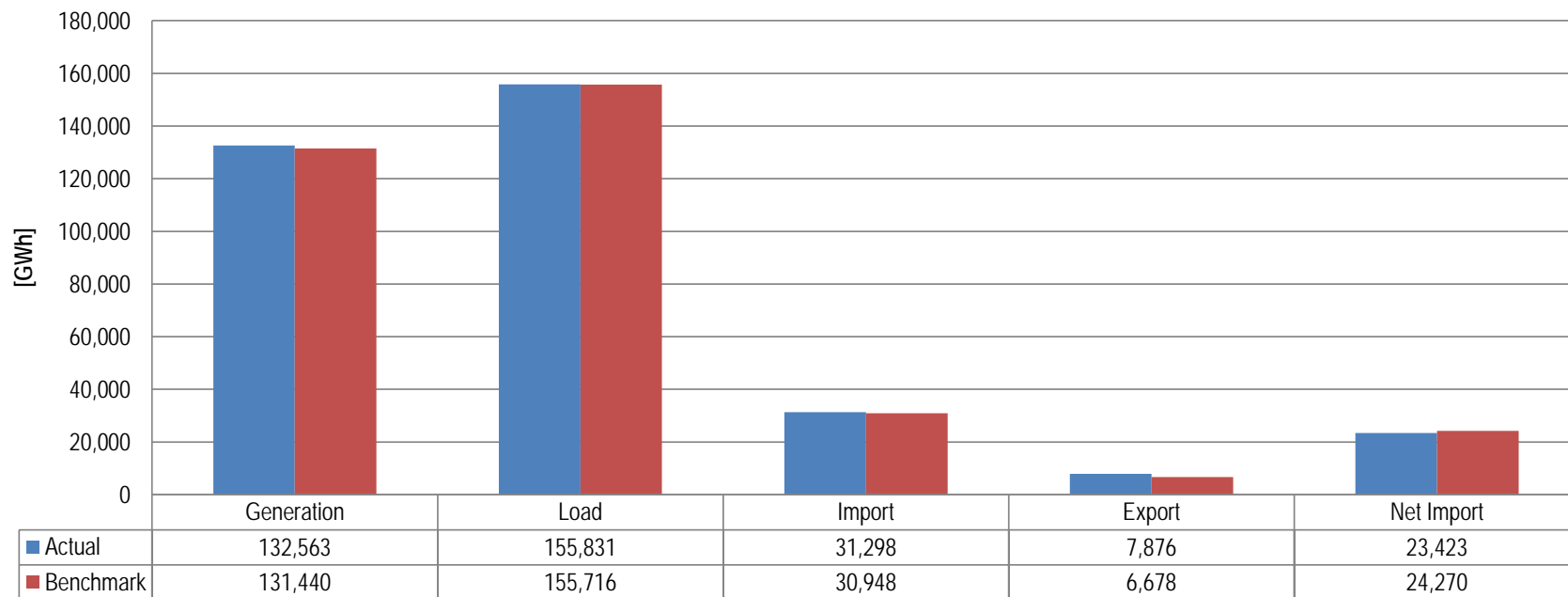
- 2020 Economic Planning approved database
- 2019 historic year simulated
- 2019 FERC 715 powerflow case

■ Model Adjustments

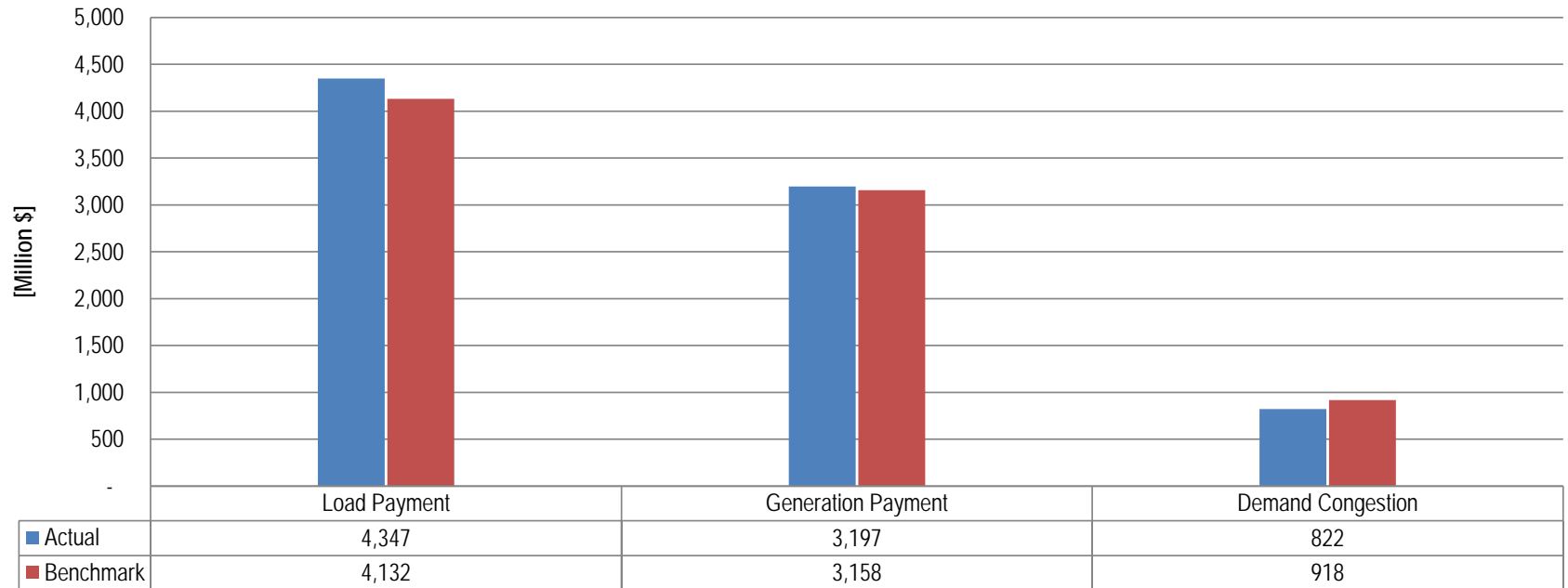
- 2019 actual daily natural gas prices
- 2019 actual zonal hourly load shapes
- 2019 actual emission prices
- Marcy South series compensation bypassed entire year
- Con Edison series reactor seasonal bypass
- St. Lawrence L33 PAR on outage

Benchmark Results

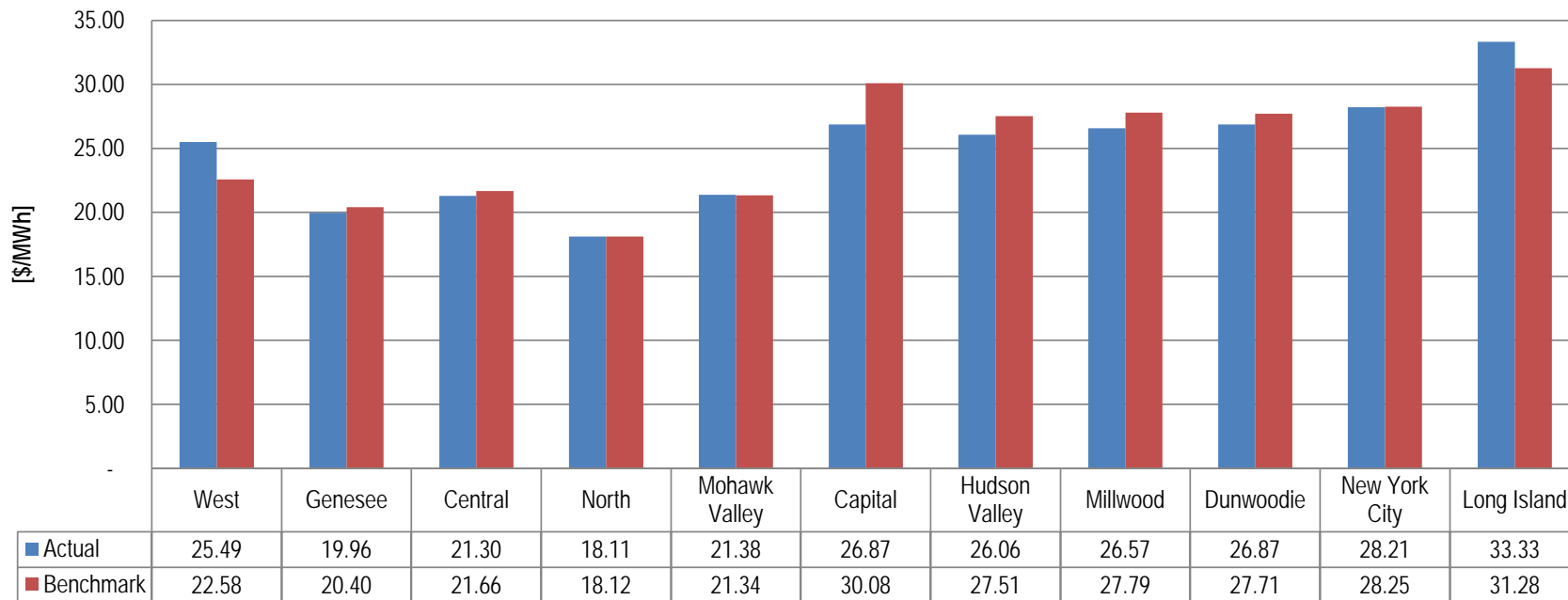
NYCA Summary



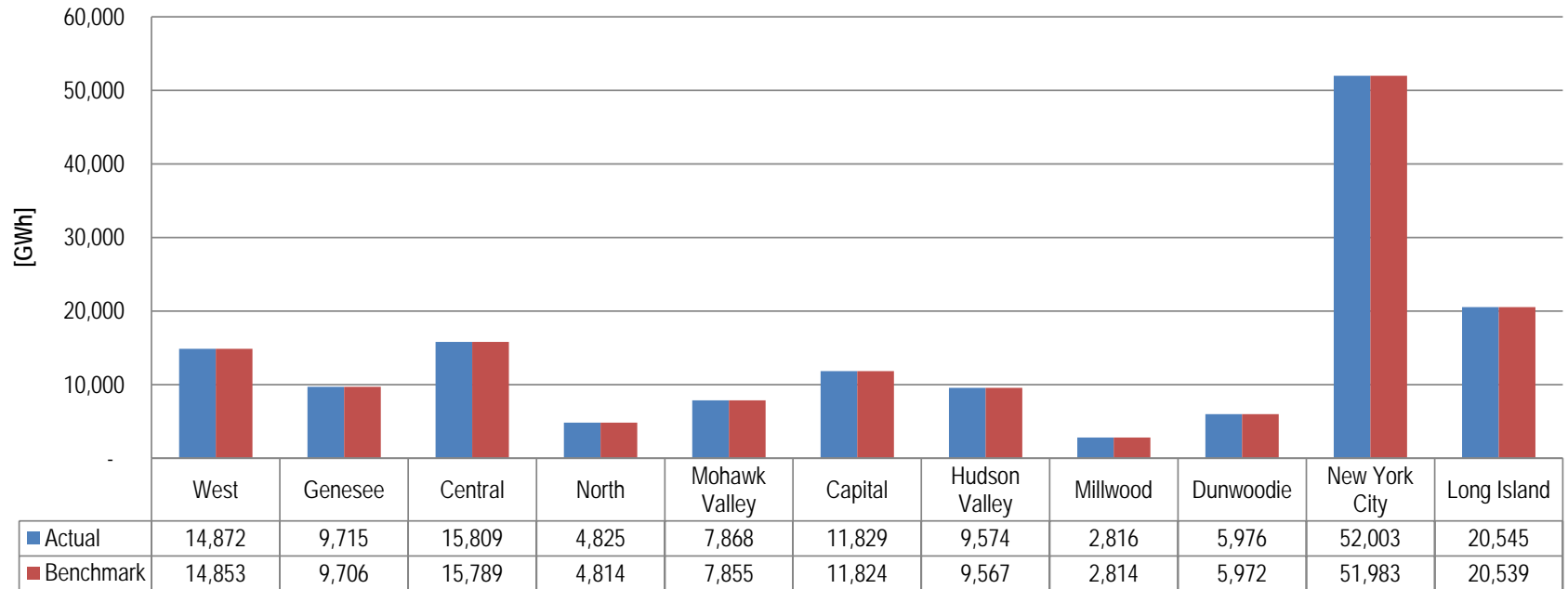
NYCA Cost Summary



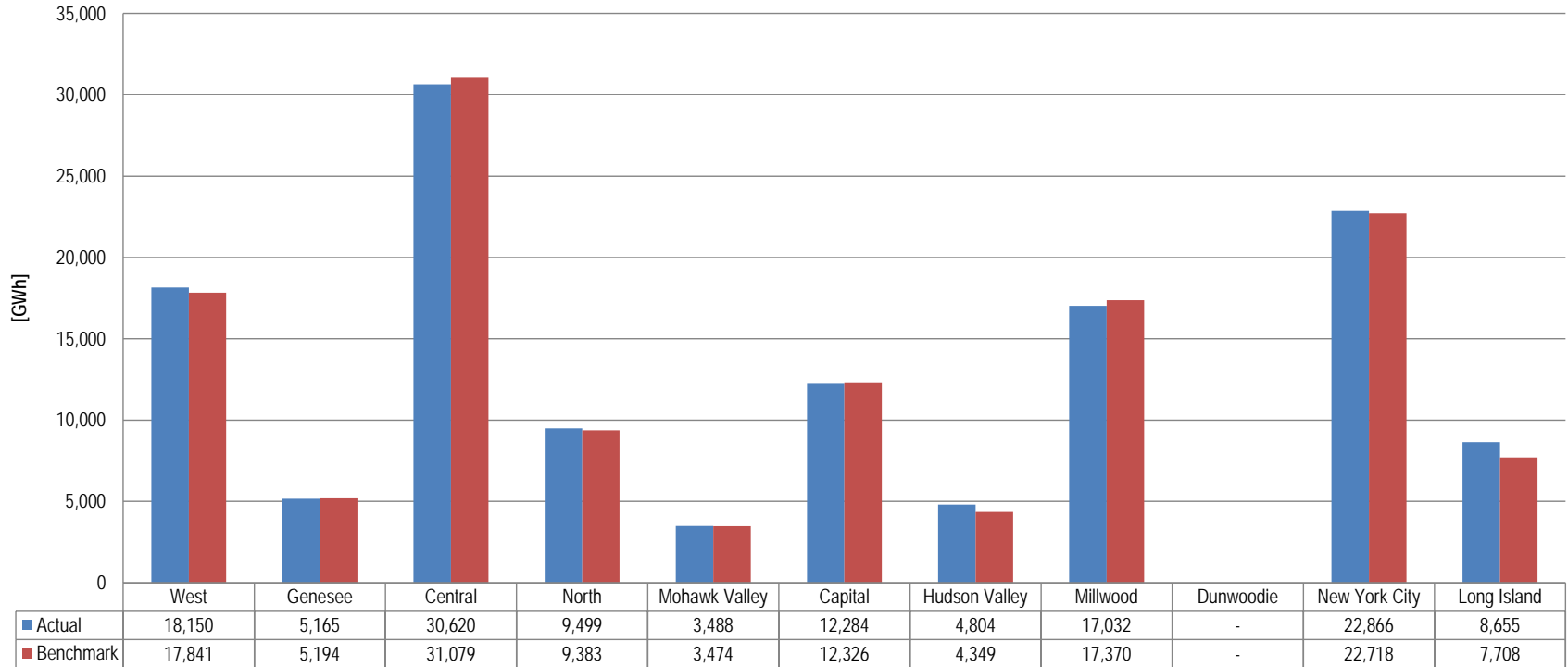
NYCA Annual Zonal Average LBMP



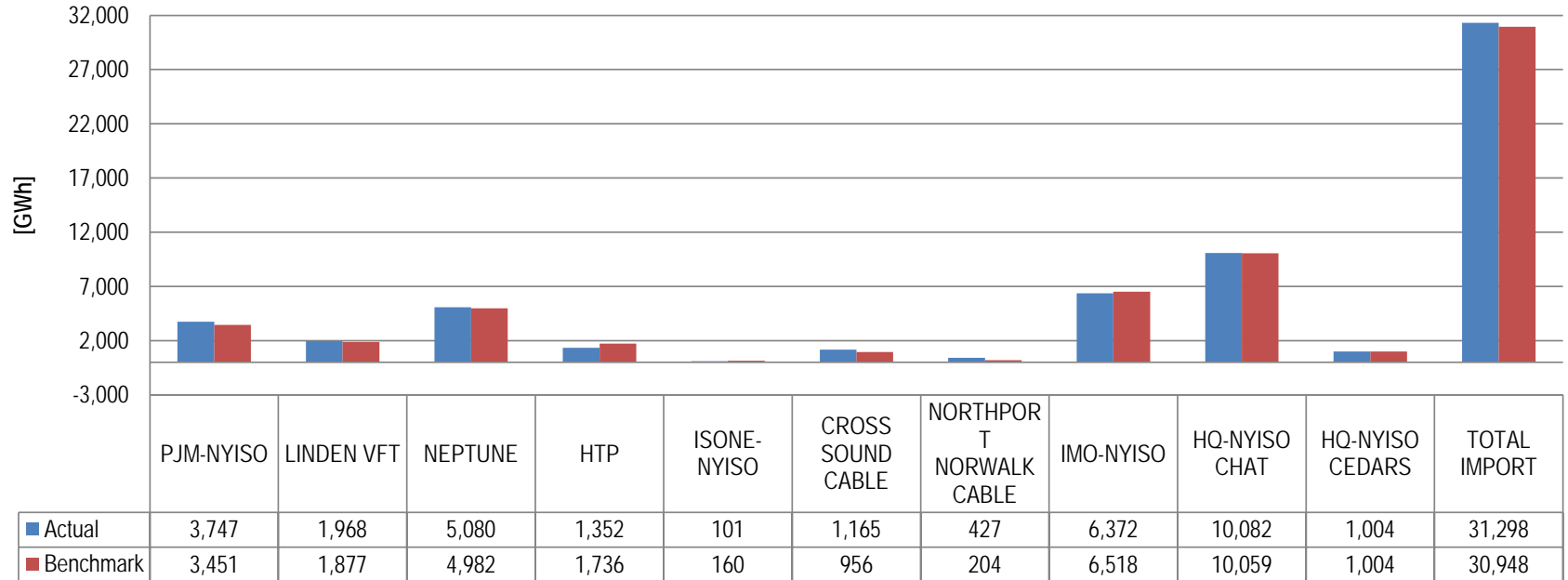
Zonal Load Summary



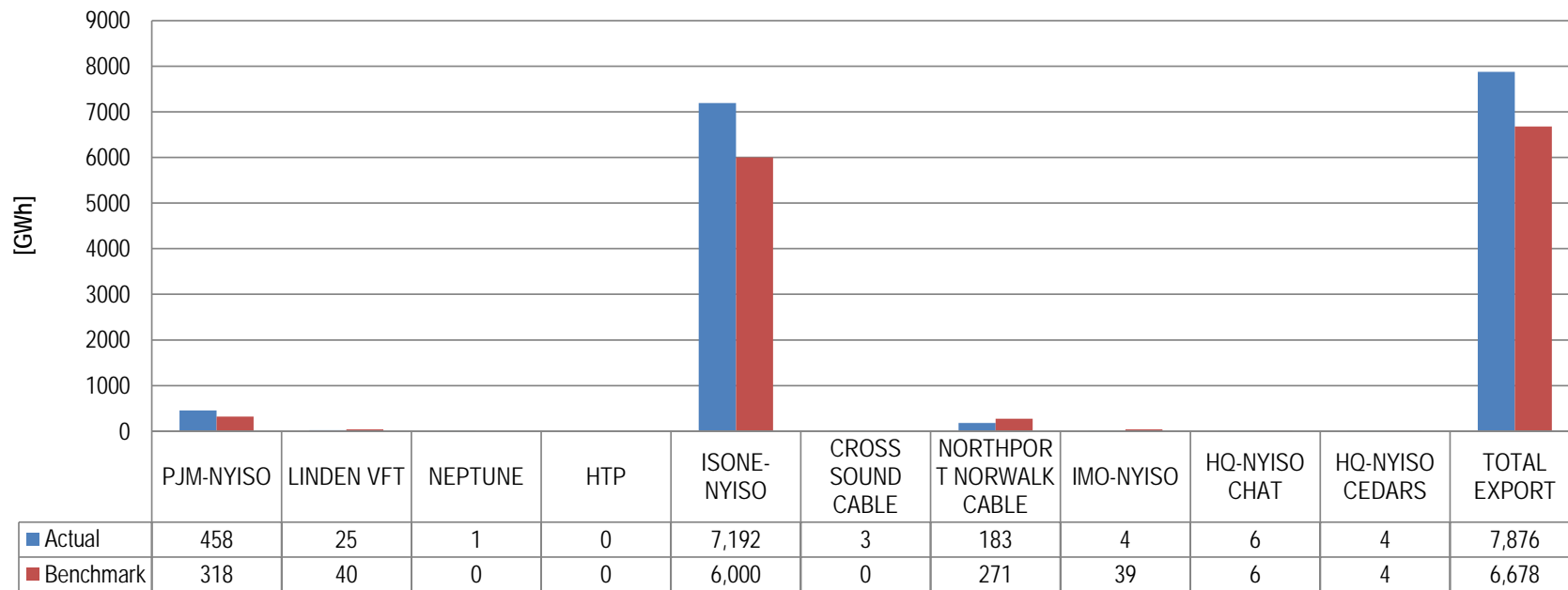
Zonal Generation Summary



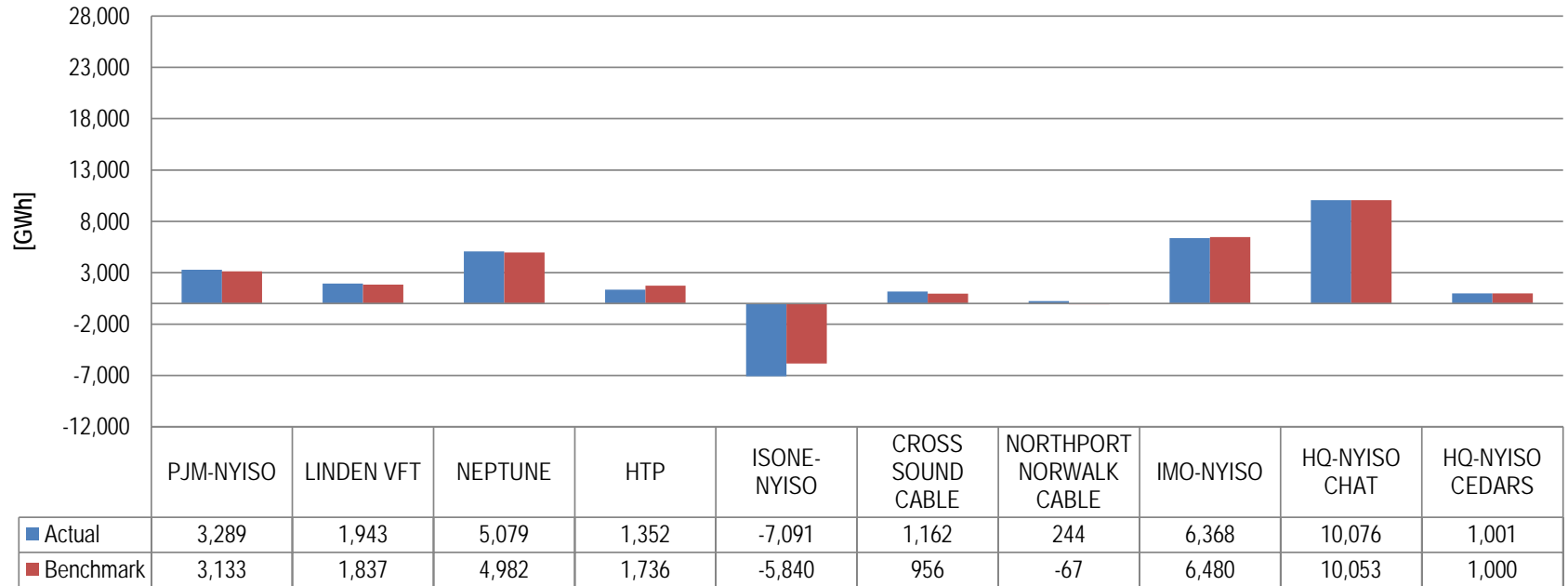
Import Energy Summary



Export Energy Summary



Net Import Energy Summary



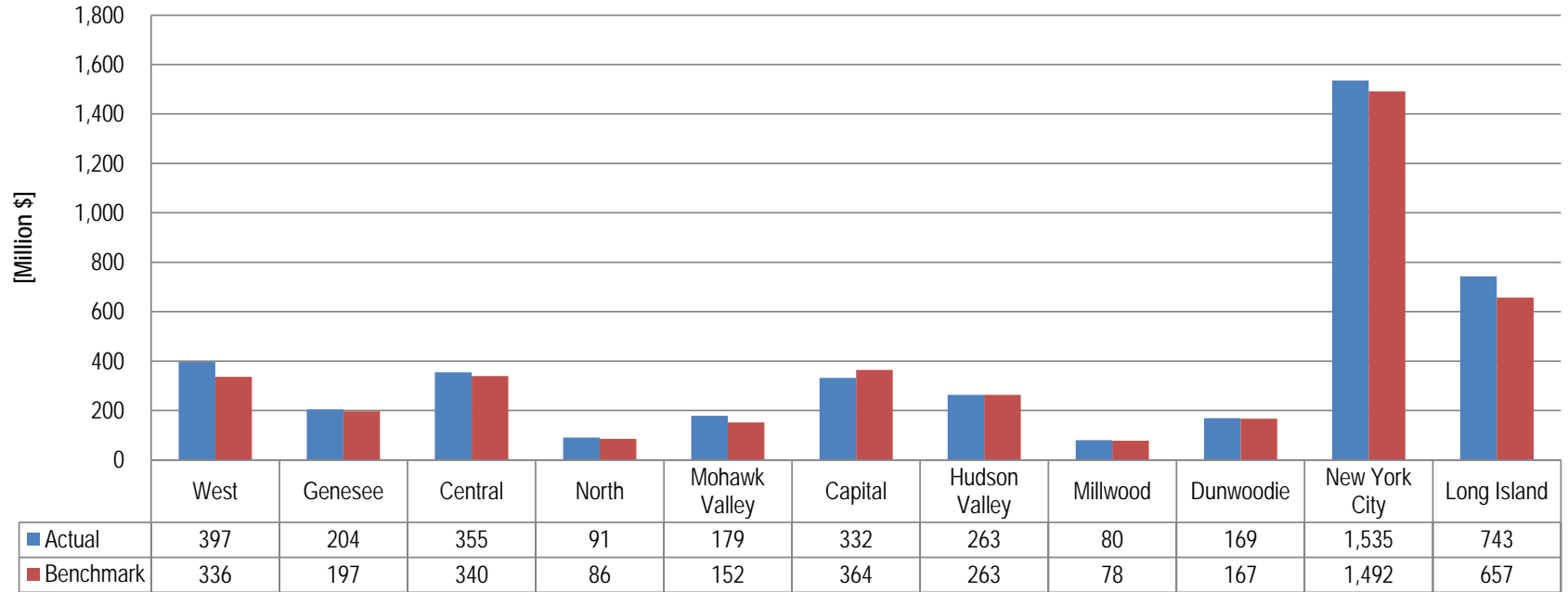
Commitment Hurdle Rates

Commitment Hurdle Rate	Export (from NYCA)		Import (into NYCA)	
	2020 Database	2021 Database	2020 Database	2021 Database
PJM	\$ 5.00	\$ 4.00	\$ 2.00	\$ 2.00
Linden VFT	\$ 5.00	\$ 5.00	\$ 4.00	\$ 2.50
Neptune	\$ 8.00	\$ 8.00	\$ 1.80	\$ 1.80
HTP	\$ 8.00	\$ 8.00	\$ 9.00	\$ 3.00
ISONE	\$ 2.50	\$ 3.00	\$ 2.50	\$ 2.00
Cross Sound Cable	\$ 2.00	\$ 2.00	\$ 2.00	\$ 1.00
Northport Norwalk Cable	\$ 4.00	\$ 4.00	\$ 3.00	\$ 2.00
IMO	\$ 6.00	\$ 6.00	\$ 3.00	\$ 3.00

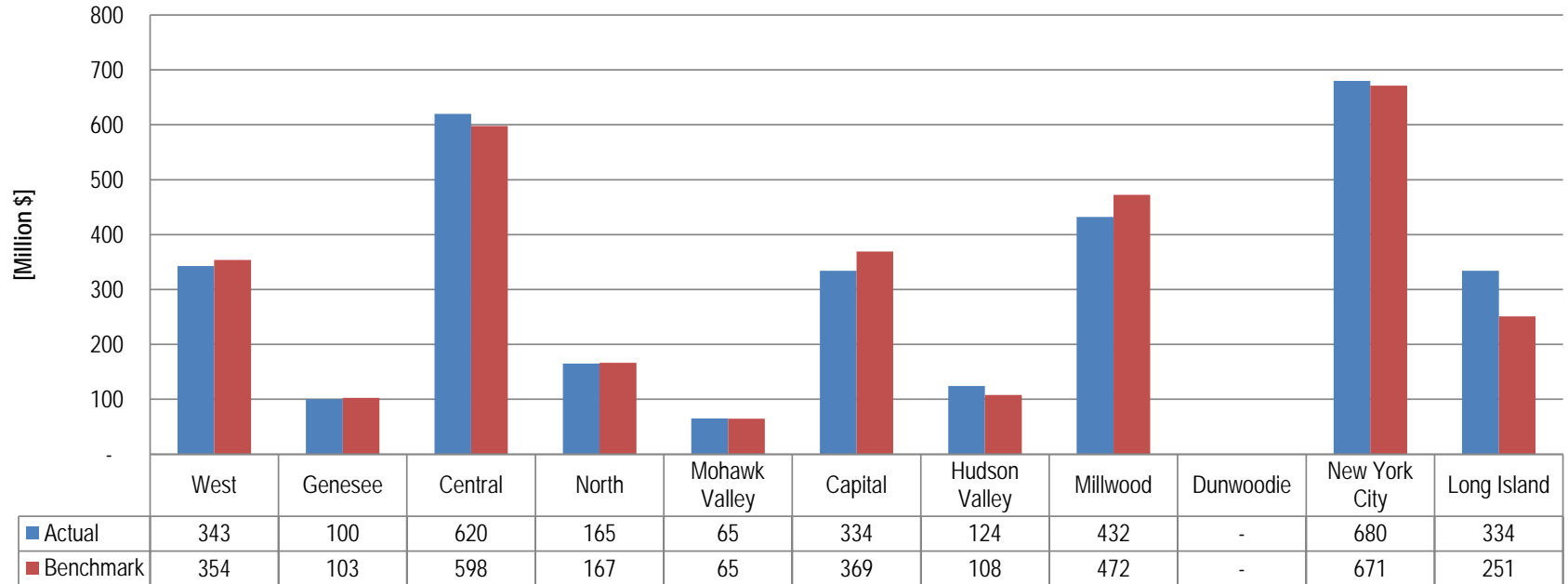
Dispatch Hurdle Rates

Dispatch Hurdle Rate	Export (from NYCA)		Import (into NYCA)	
	2020 Database	2021 Database	2020 Database	2021 Database
PJM	\$ 3.00	\$ 2.00	\$ 1.00	\$ 0.50
Linden VFT	\$ 3.00	\$ 3.00	\$ 2.00	\$ 0.50
Neptune	\$ 6.00	\$ 6.00	\$ 0.80	\$ 0.80
HTP	\$ 6.00	\$ 6.00	\$ 7.00	\$ 1.00
ISONE	\$ 0.80	\$ 1.00	\$ 0.80	\$ -
Cross Sound Cable	\$ -	\$ -	\$ -	\$ -
Northport Norwalk Cable	\$ 2.00	\$ 2.00	\$ 1.00	\$ 1.00
IMO	\$ 4.00	\$ 4.00	\$ 1.00	\$ 1.00

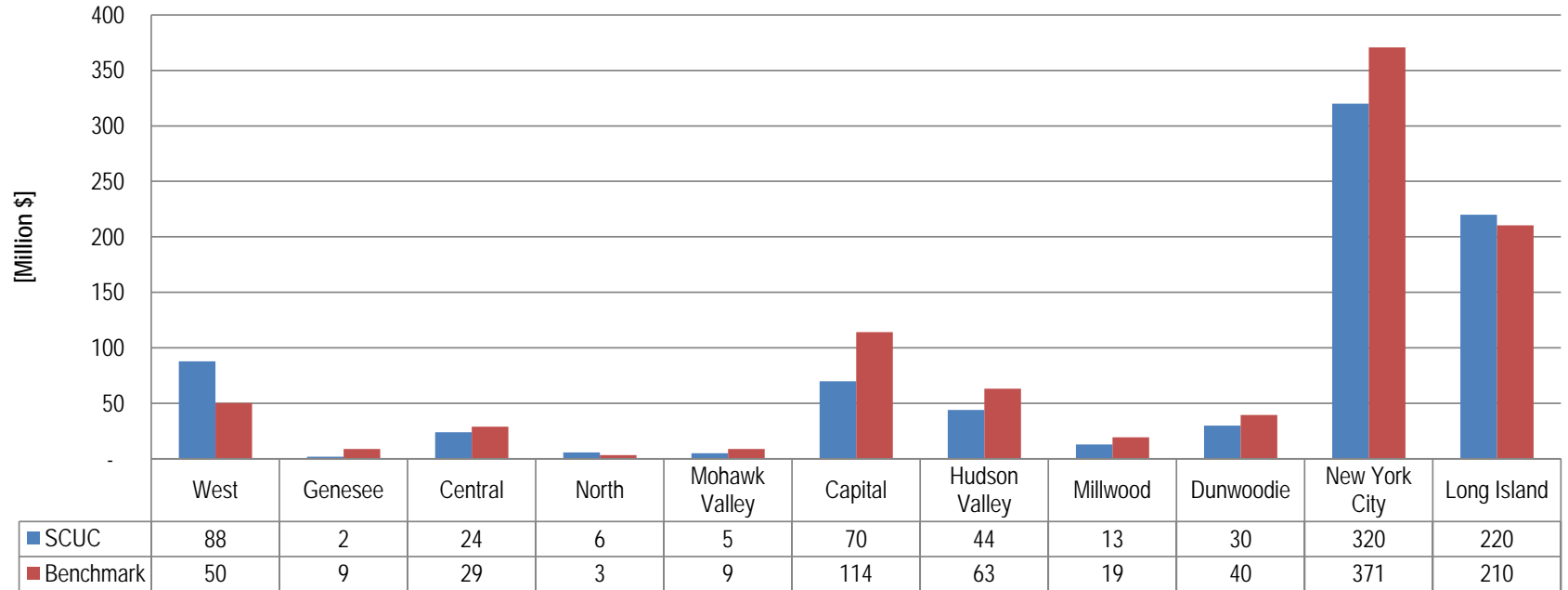
Load Payment Summary



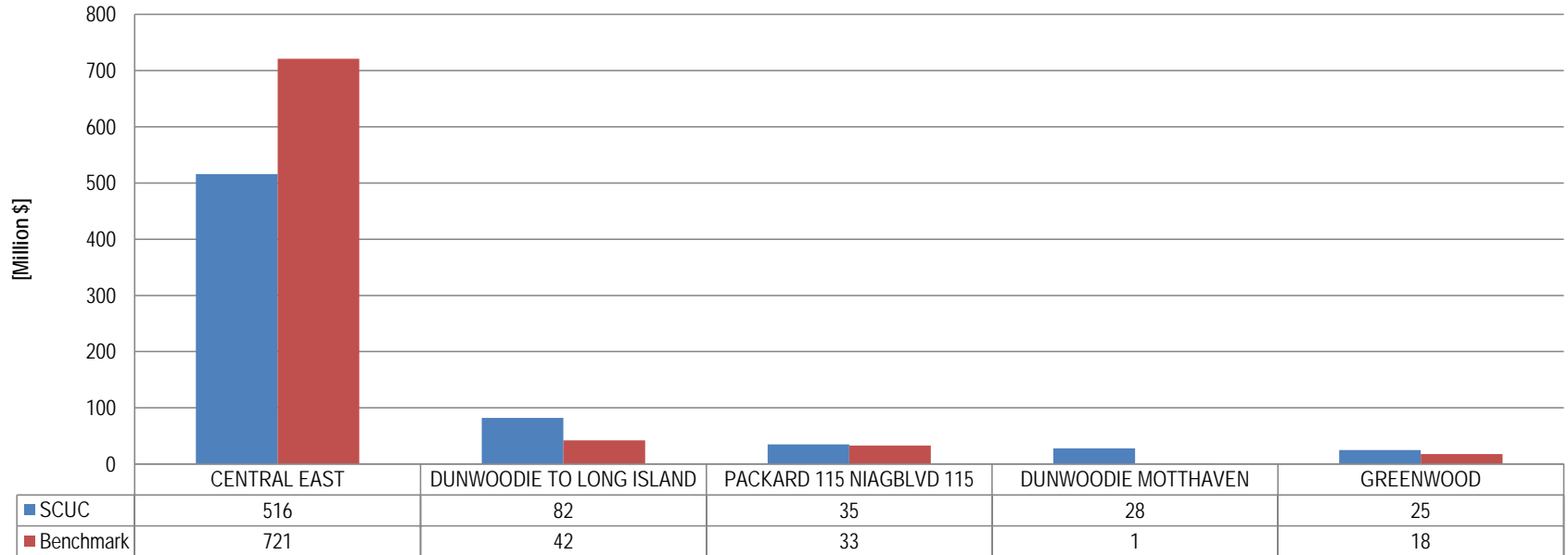
Generation Payment Summary



Demand Congestion Summary



Demand Congestion by Constraint



Metric Definitions

$$\text{Load Payment} = \sum_{\text{hour } 1}^{8760} \text{Load} \times \text{LBMP}$$

$$\text{Generator Payment} = \sum_{\text{hour } 1}^{8760} \text{Generation} \times \text{LBMP}$$

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

Next Steps

Next Steps

- **Economic Planning Manual Update (6/1 ESPWG-TPAS)**
- **System & Resource Outlook Study**

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

