

2019 CARIS 1 Benchmark Results: Preliminary

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Background

- **NYISO will test the model on one or more historical years utilizing actual data to the extent feasible in order to assess the performance of the production cost model.**
 - Economic Planning Process Manual Section 2.1.4 ^[1]
 - Benchmark year is 2017
- **The results of this benchmarking exercise will be reviewed and discussed with ESPWG including the rationale for any deviations between the modeled outputs and the historical actual.**

[1] https://www.nyiso.com/documents/20142/2924447/epp_caris_mnl.pdf/

MAPS Modeling update

■ Generation

- Utilize 2017 historical daily natural gas price
- Review and update heat rate and emission rate

■ Transmission

- Model Seasonal (winter) by-pass of the Marcy South Series Compensation(MSSC)
- Model constraints which are binding in 2017 per SCUC

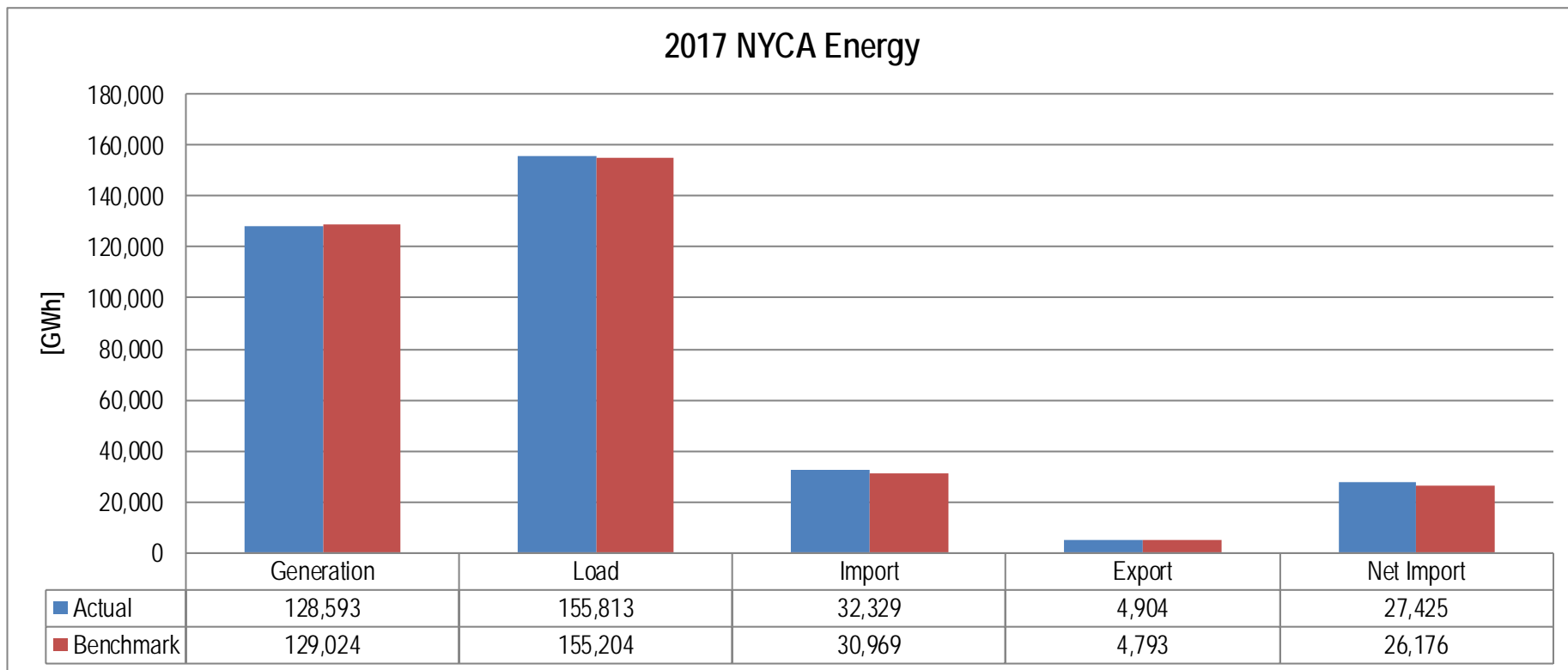
NYCA Summary

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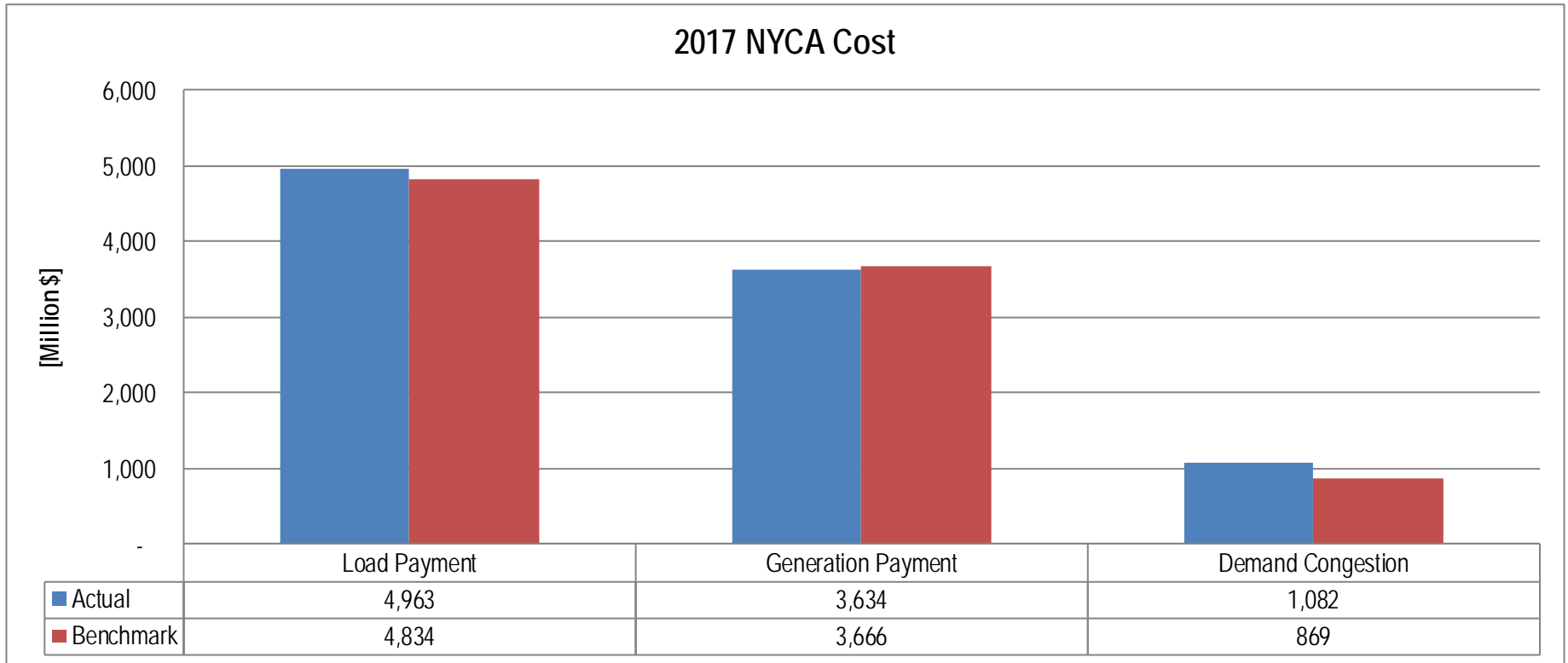


2017 NYCA Energy Summary



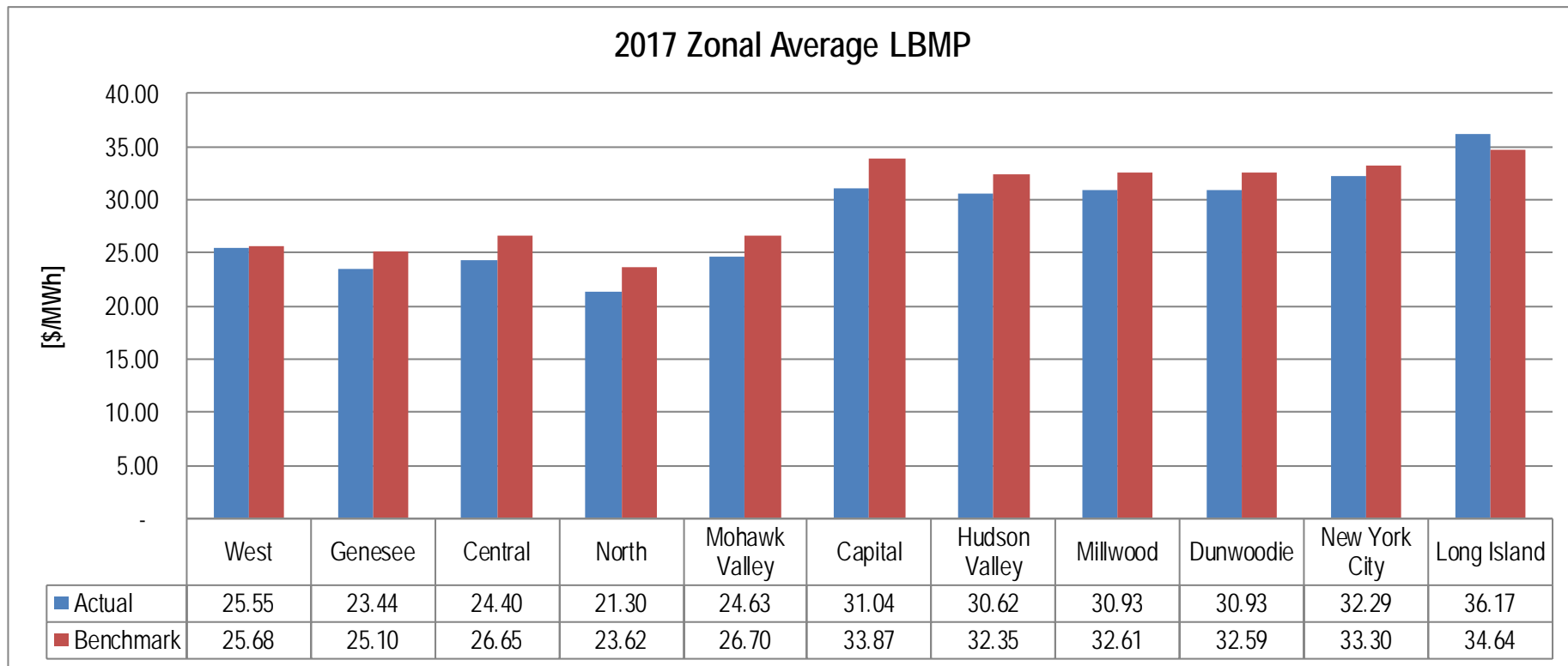
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2017 NYCA Cost Summary



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2017 NYCA Annual Zonal Average LBMP



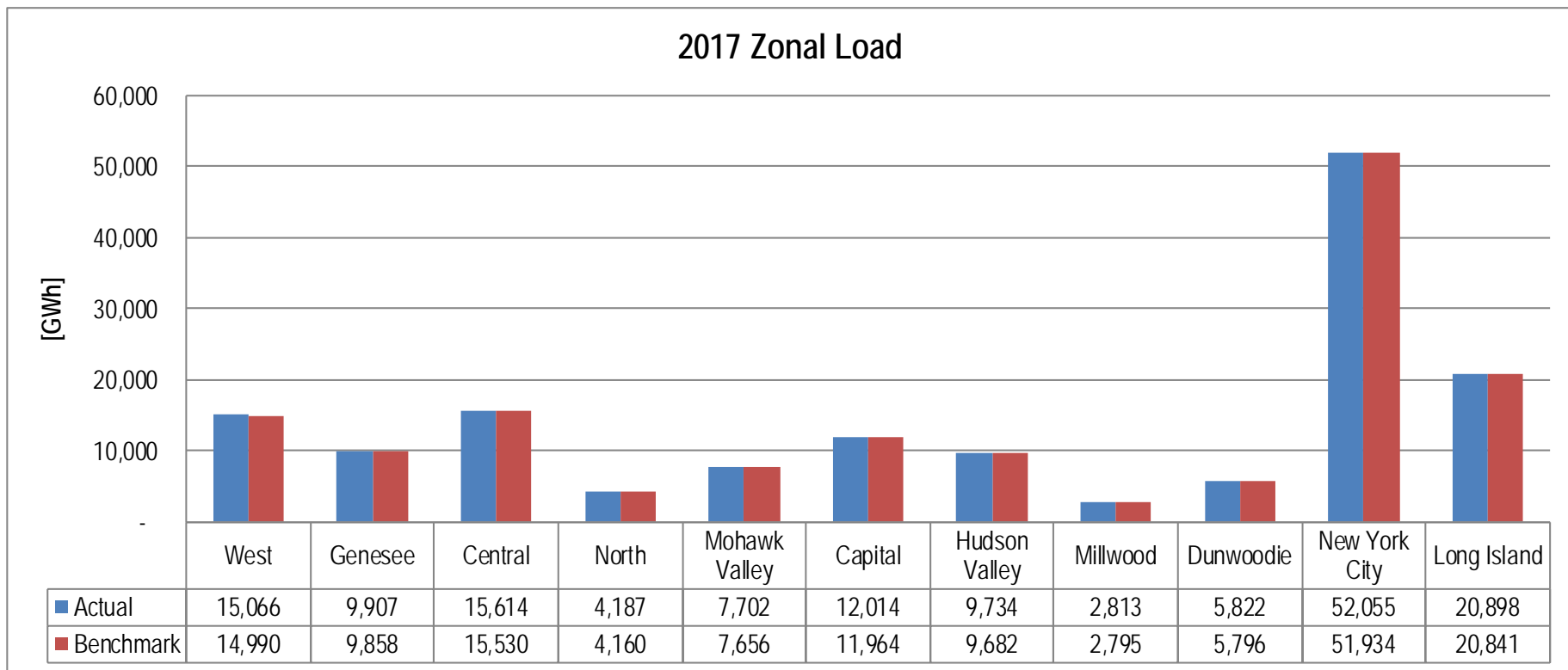
NYCA Zonal Loads, Generation, Imports, and Hurdle Rates

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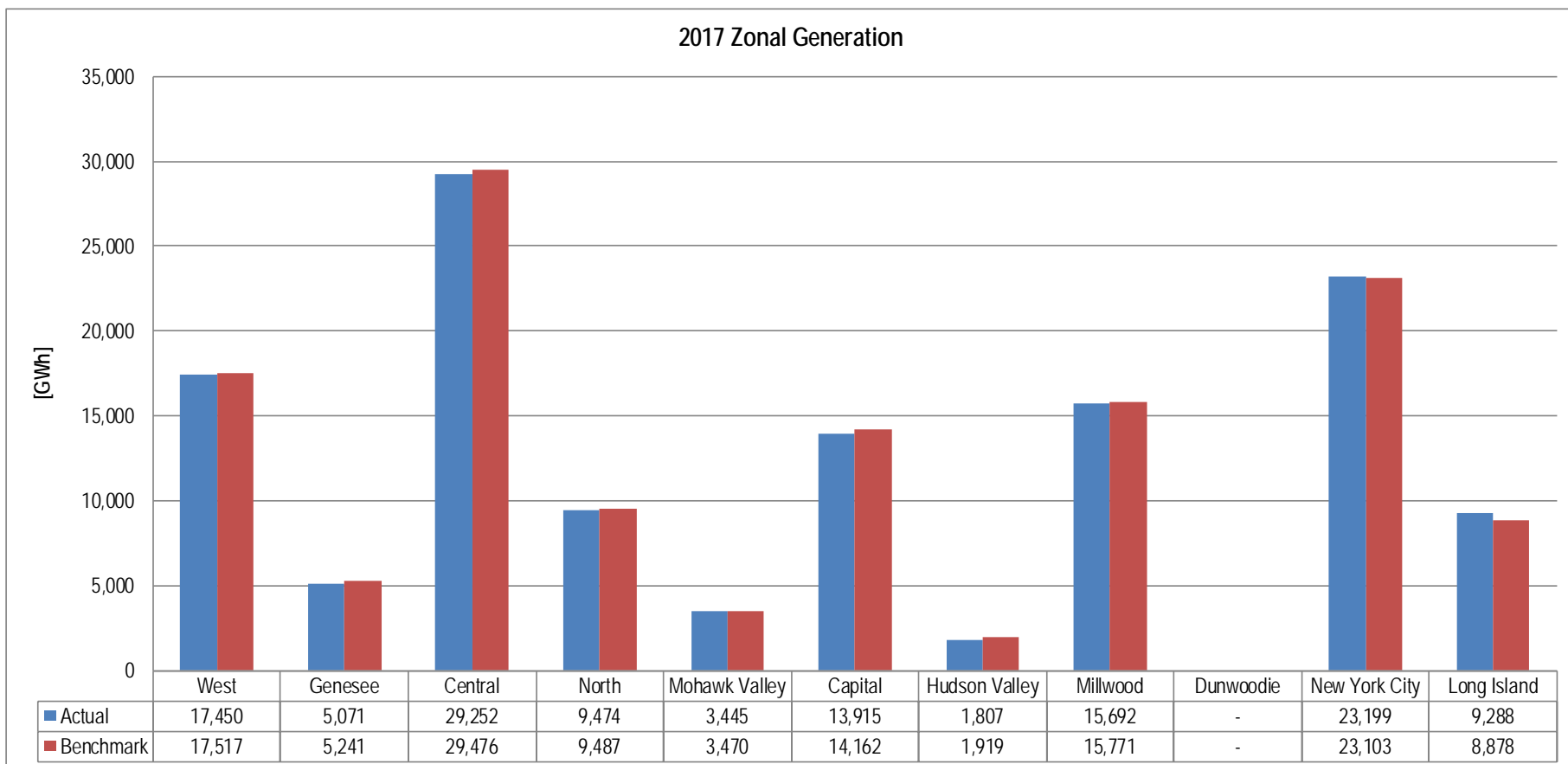
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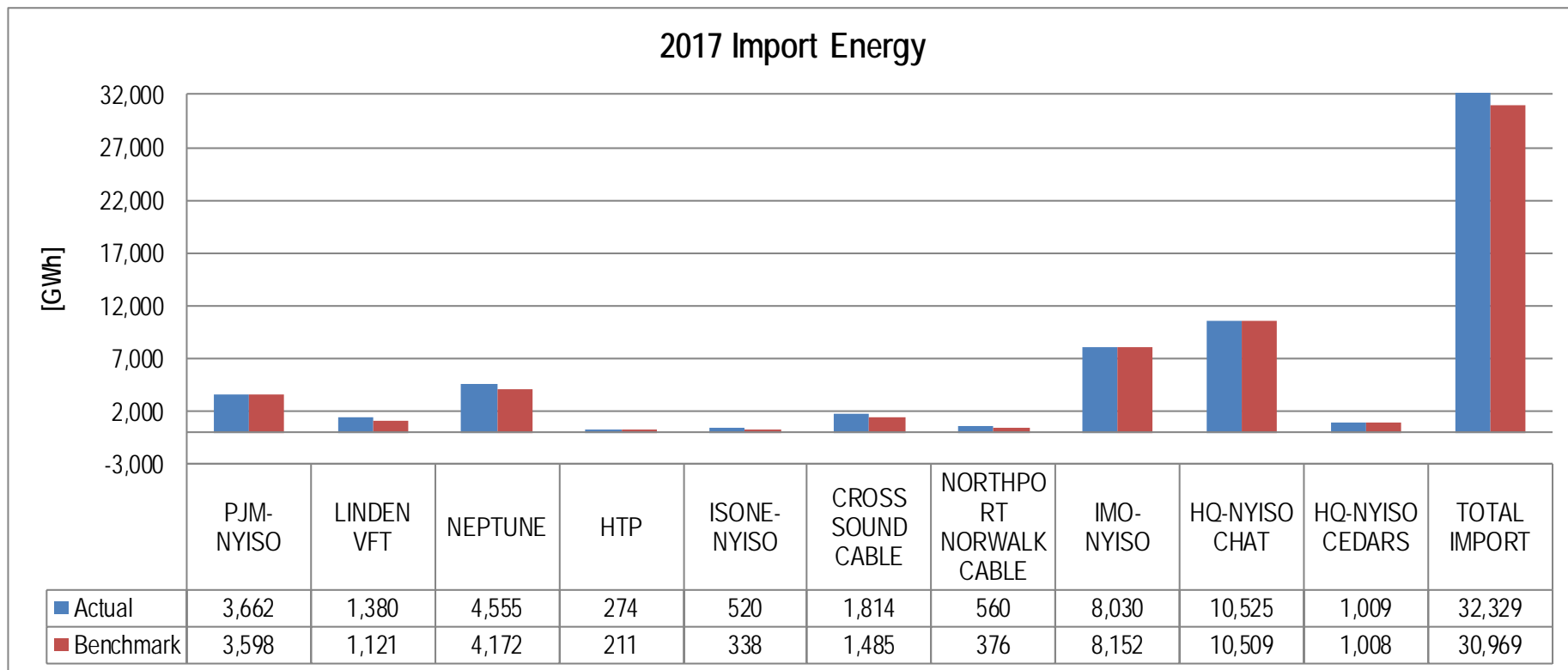
2017 Zonal Load Summary



2017 Zonal Generation Summary

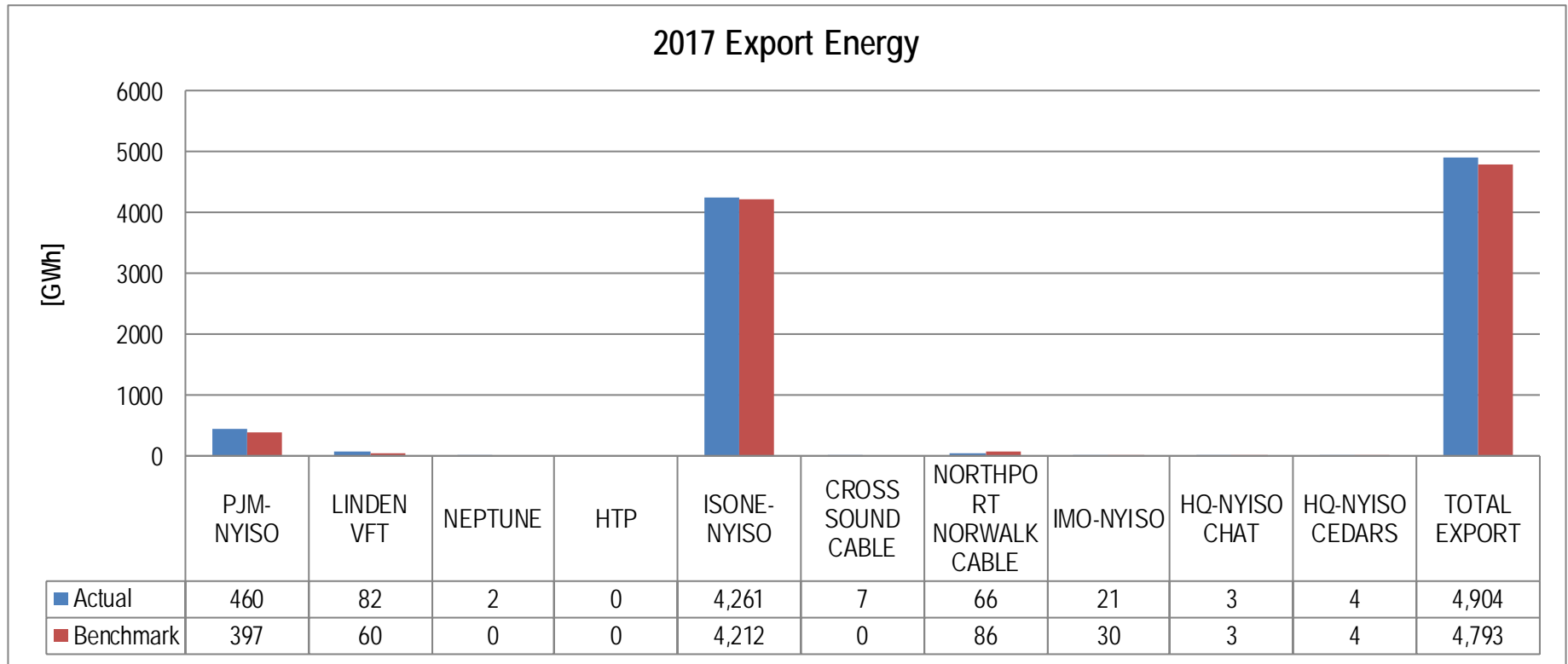


2017 Import* Energy Summary



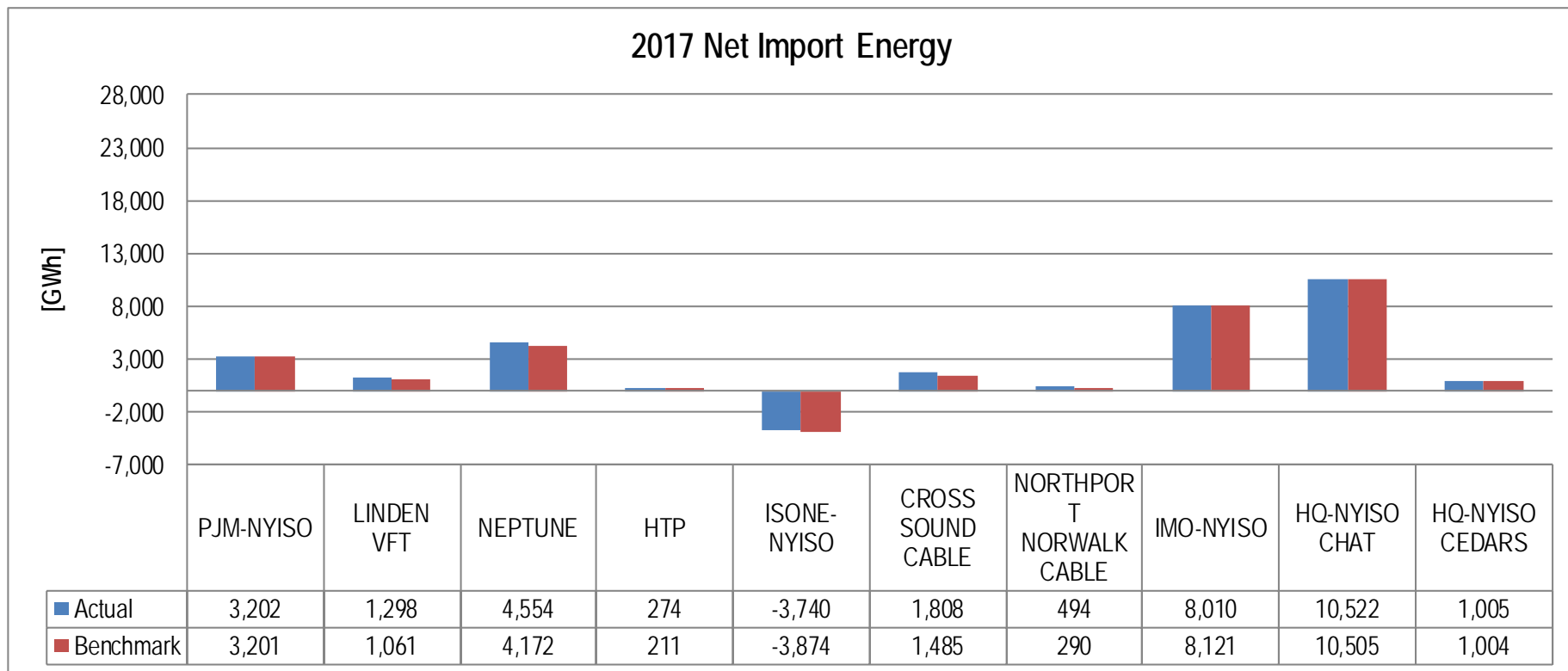
* Sum of hourly imported GWh from Externals to NYCA

2017 Export** Energy Summary



** Sum of hourly exported GWh from NYCA to Externals

2017 Net Import*** Energy Summary



*** Import - Export

Commitment Hurdle Rates

Commitment Hurdle Rate	Export (from NYCA)			Import (into NYCA)		
	Transaction Cost**	2018 CARIS 2	2019 CARIS 1	Transaction Cost**	2018 CARIS 2	2019 CARIS 1
PJM	\$ 8.0	\$ 5.5	\$ 5.0	\$ 5.0	\$ 3.0	\$ 2.0
Linden VFT	\$ 8.0	\$ 5.0	\$ 5.0	\$ 5.0	\$ 3.0	\$ 4.0
Neptune	\$ 8.0	\$ 8.0	\$ 8.0	\$ 5.0	\$ 4.0	\$ 1.8
HTP	\$ 8.0	\$ 8.0	\$ 8.0	\$ 5.0	\$ 9.0	\$ 9.0
ISONE	\$ 2.0	\$ 3.5	\$ 2.5	\$ 2.0	\$ 5.0	\$ 2.5
Cross Sound Cable	\$ 2.0	\$ 2.0	\$ 2.0	\$ 2.0	\$ 2.5	\$ 2.0
Northport Norwalk Cable	\$ 2.0	\$ 4.0	\$ 4.0	\$ 2.0	\$ 3.5	\$ 3.0
IMO	\$ 6.0	\$ 6.0	\$ 6.0	\$ 4.0	\$ 4.0	\$ 3.0

** Transaction Costs are annual average costs per CRA report

(Export Transmission Service (ETS) Tariff Study, IESO, Charles River Associates, May 16, 2012)

Dispatch Hurdle Rates

Dispatch Hurdle Rate	Export (from NYCA)				Import (into NYCA)			
	Transaction Cost*	2018 CARIS 2	2019 CARIS 1	Transaction Cost*	2018 CARIS 2	2019 CARIS 1		
PJM	\$ 6.0	\$ 3.5	\$ 3.0	\$ 3.0	\$ 1.0	\$ 1.0		
Linden VFT	\$ 6.0	\$ 3.0	\$ 3.0	\$ 3.0	\$ 1.0	\$ 2.0		
Neptune	\$ 6.0	\$ 6.0	\$ 6.0	\$ 3.0	\$ 2.0	\$ 0.8		
HTP	\$ 6.0	\$ 6.0	\$ 6.0	\$ 3.0	\$ 7.0	\$ 7.0		
ISONE	\$ -	\$ 1.5	\$ 0.8	\$ -	\$ 3.0	\$ 0.8		
Cross Sound Cable	\$ -	\$ -	\$ -	\$ -	\$ 0.5	\$ -		
Northport Norwalk Cable	\$ -	\$ 2.0	\$ 2.0	\$ -	\$ 1.5	\$ 1.0		
IMO	\$ 4.0	\$ 4.0	\$ 4.0	\$ 2.0	\$ 2.0	\$ 1.0		

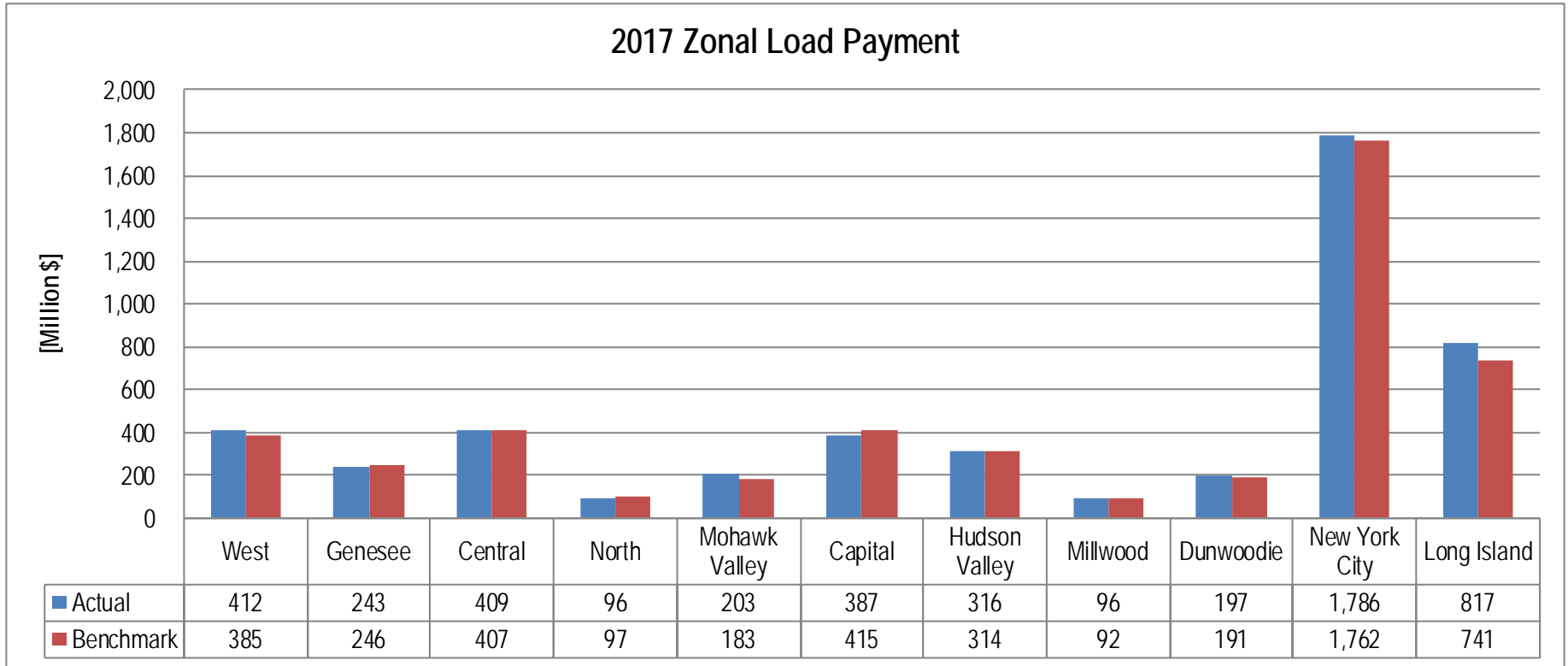
NYCA Revenue and Congestion

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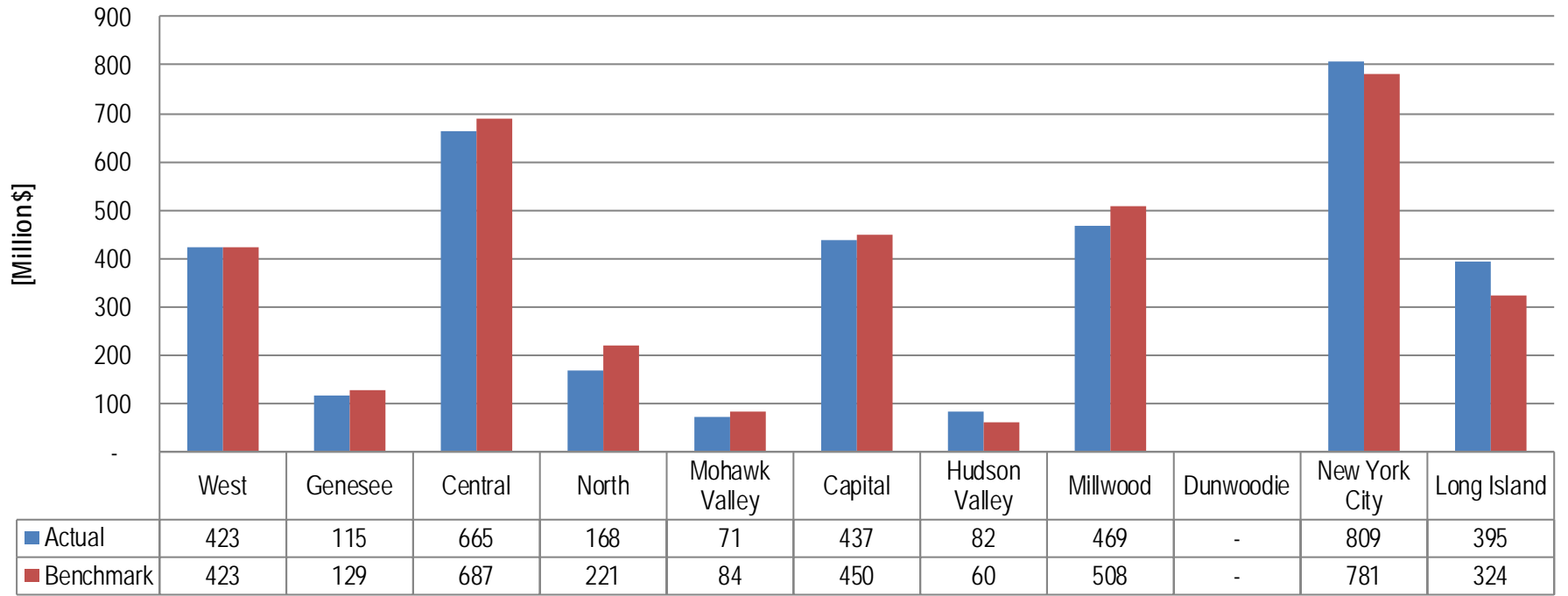


2017 Load Payment Summary

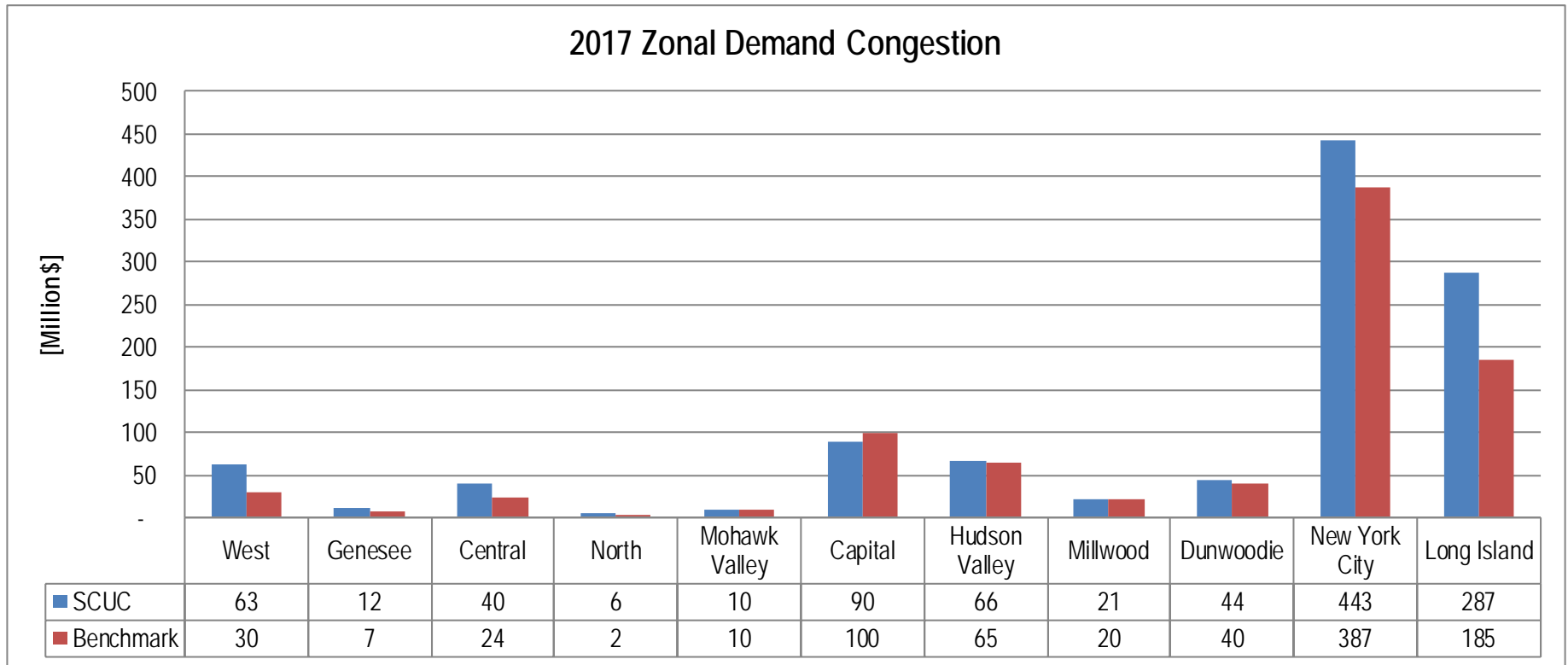


2017 Gen Payment Summary

2017 Zonal Generation Payment

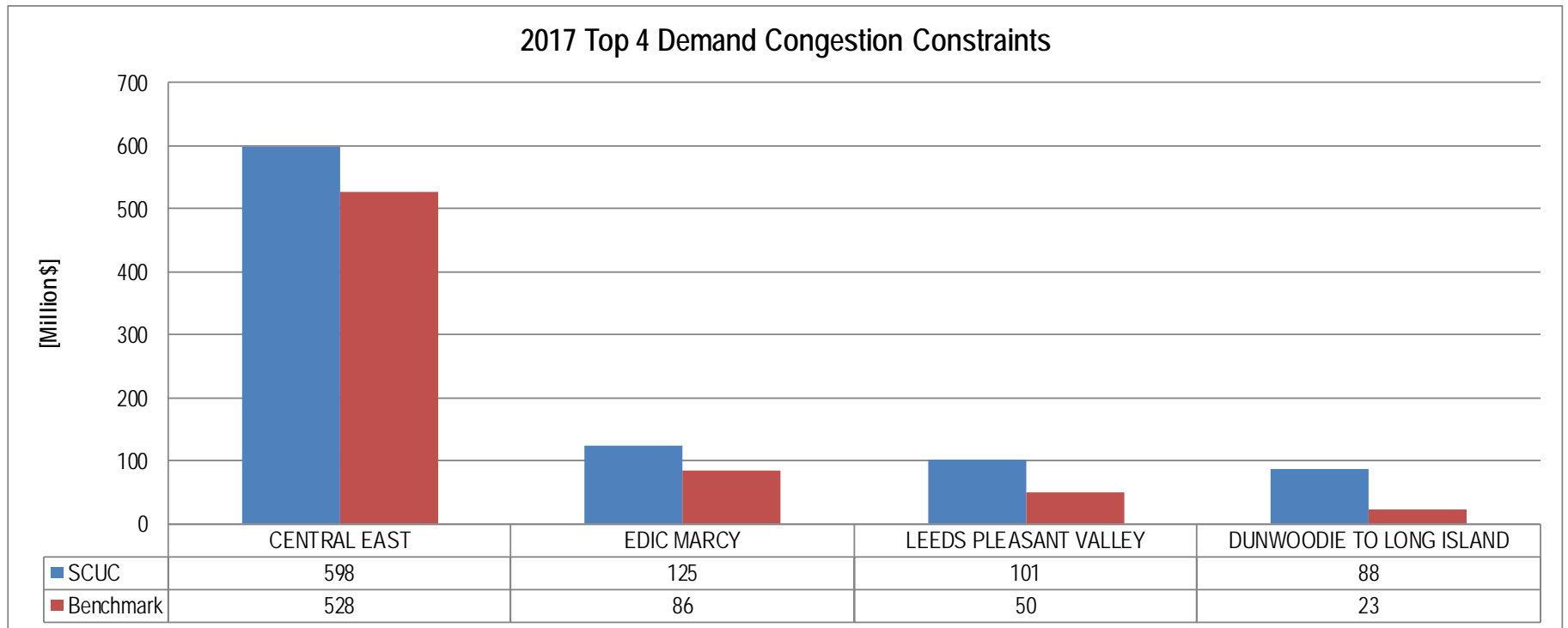


2017 Demand Congestion Summary



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2017 Demand Congestion by Constraints (Top 4)



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Conclusions

- **Preliminary benchmark result is aligned well with 2017 historical actual**
 - NYCA Cost(generation payment and load payment) metrics are within 3% versus 2017 actual
 - NYCA Energy(generation, import, export) metrics are within 5% versus 2017 actual
- **Future improvement to the benchmark model would require enhancements to modeling historical transmission outages**

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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