



Markets Report

Member Committee

April 23, 2025

- PJM Wholesale Cost is now being calculated exclusively by Monitoring Analytics. ([Slide 4](#))
- Slides pertaining to weather conditions, in addition to slides showing average fuel prices, generation on-line fuel mixes, and System Marginal Prices have been combined into a **Market Conditions** section. ([Slides 6-19](#))
- In March, temperatures averaged out to a typical level. The sum of Heating and Cooling Degree Days was approximately equal to the historic average. ([Slides 7-8](#))
- Energy use was slightly above its historic average for March. ([Slides 7-8](#))
- In March, uplift exceeded \$800,000 on 20 days. ([Slides 24 & 25](#))

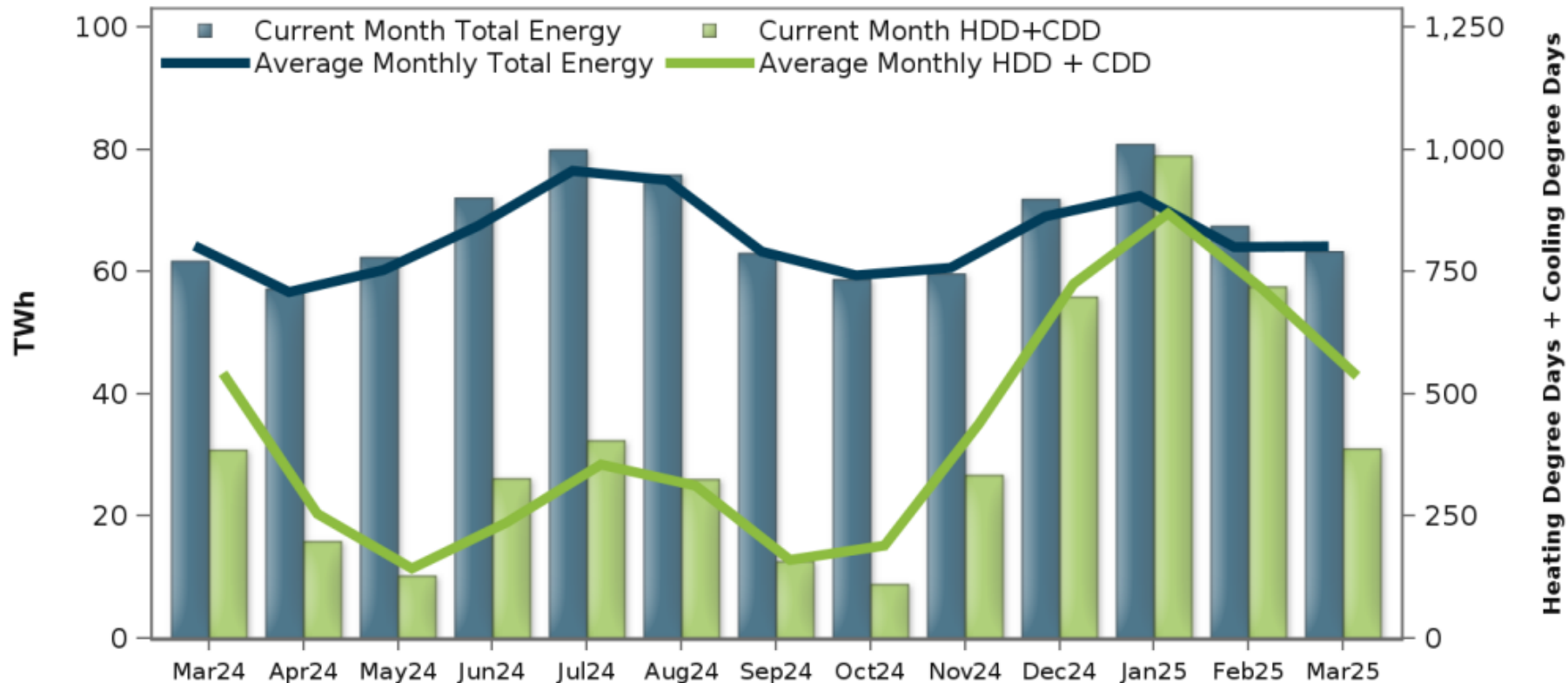
- Load-weighted average LMP for 2025 is \$52.50/MWh: ([Slides 33-34](#))
 - March 2025 was \$42.10/MWh, which is higher than March 2024 (\$23.10/MWh) and March 2023 (\$28.40/MWh).
- There were eleven 5-minute intervals that experienced shortage pricing in March. ([Slide 32](#), Report Appendix)
- FTR revenue adequacy for the month of March is 73% and the 2024-2025 Planning Year is currently funded at 98%. ([Slides 50-53](#))
- Congestion values in 2025 thus far have been higher than those seen in 2024. ([Slide 51](#))
- Regulation and Synchronized Reserve market costs have generally tracked with energy prices over time. ([Slides 67-69](#))

- PJM Wholesale Cost is now being calculated and published exclusively by Monitoring Analytics (IMM).
- Annual and quarterly updates can be found in the IMM's State of the Market Reports:
 - https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2024.shtml
- Monthly updates can be found in Excel format on the IMM's website:
 - https://www.monitoringanalytics.com/data/pjm_price.shtml
- Year-to-Date updates will be presented by the IMM at the monthly MC Webinar.
- PJM will continue to monitor the IMM's Wholesale Cost calculation.

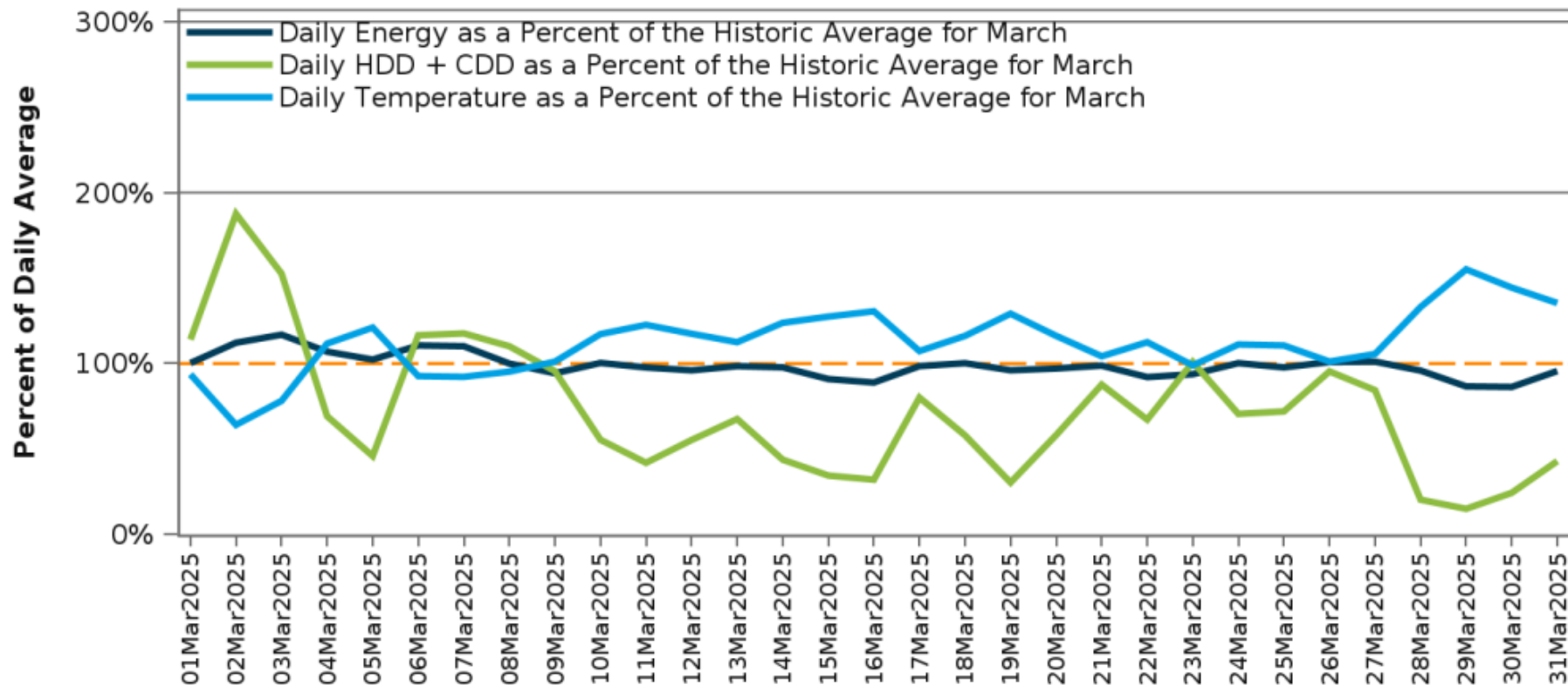
Market Conditions

- The weather parameter shown in the following slide is a monthly sum of daily Heating Degree Days (HDD) and Cooling Degree Days (CDD).
- Degree days represent a deviation from a baseline temperature, in this case 60 degrees for HDD and 65 degrees for CDD. As temperatures get more extreme, colder or hotter, either HDDs or CDDs, respectively, will increase.
- Typically, winter months will only record HDDs, while summer months will only record CDDs. Shoulder months may have both HDDs and CDDs.
- Degree Days are calculated using a daily load weighting that weights values from stations in each TO zone according to the zonal contribution to the RTO peak on that day.
- Average values use data from 1998 to the most recent complete year, in this case, 2024. Averages include load data for all of TO zones in the current RTO footprint.

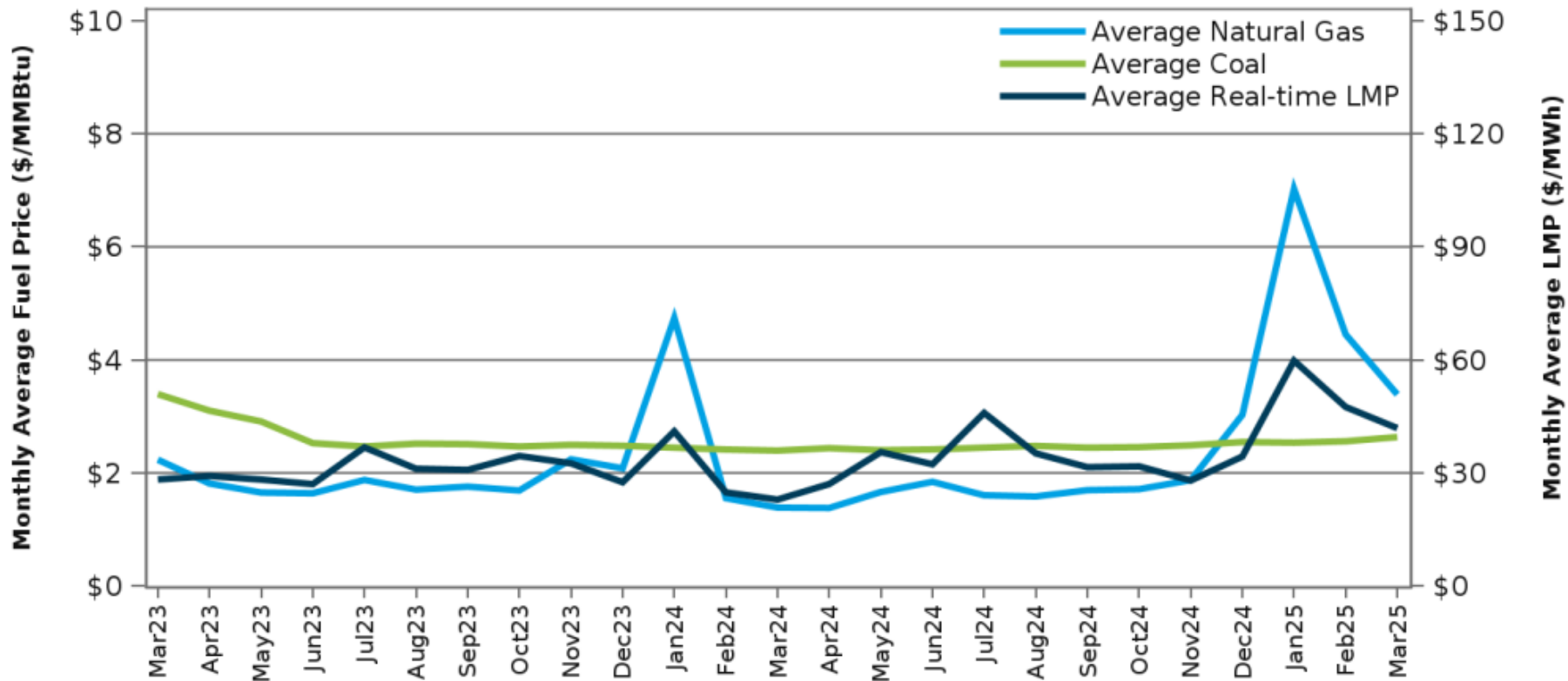
Historic Average Weather and Energy versus Current Month



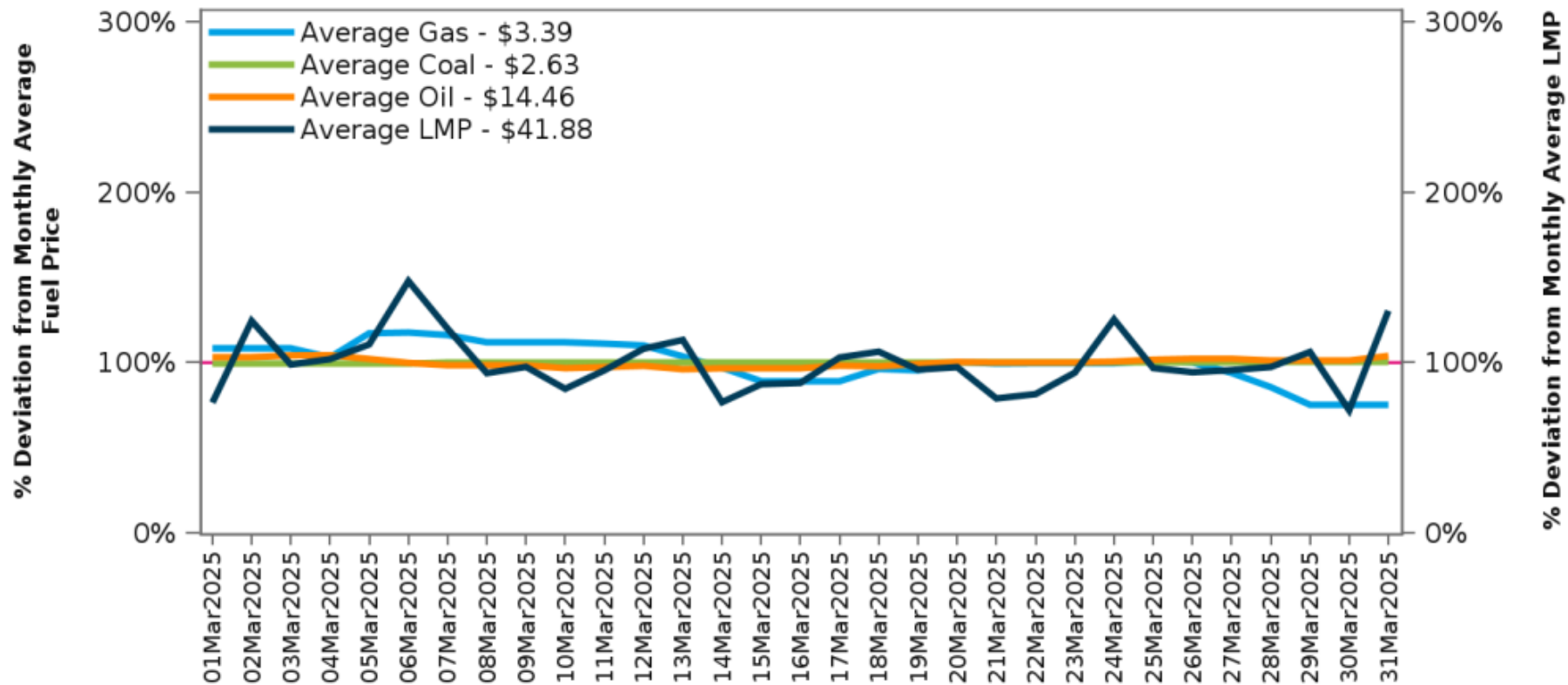
Historic Average Weather and Energy versus Current Month - Daily



Average Fuel Prices - Monthly

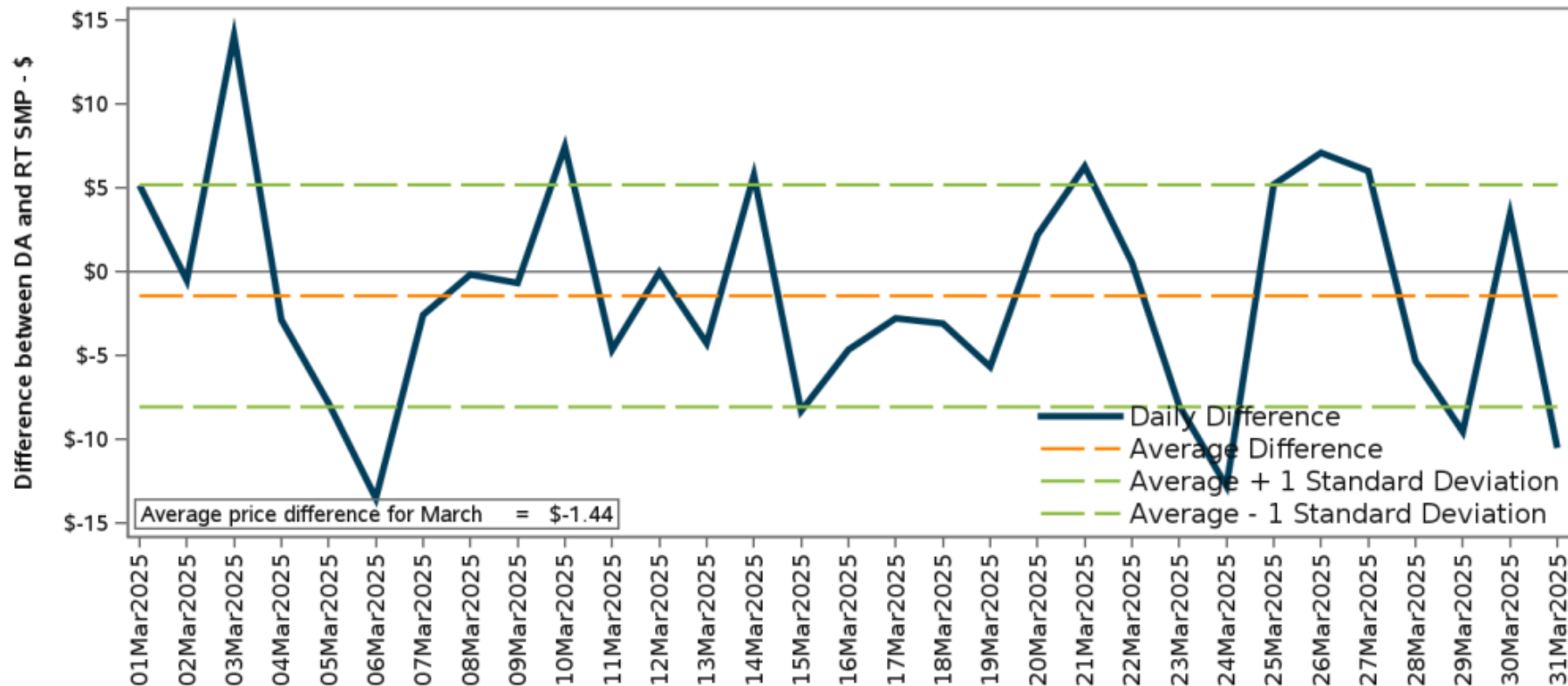


Fuel Price Source: S&P Global Platts



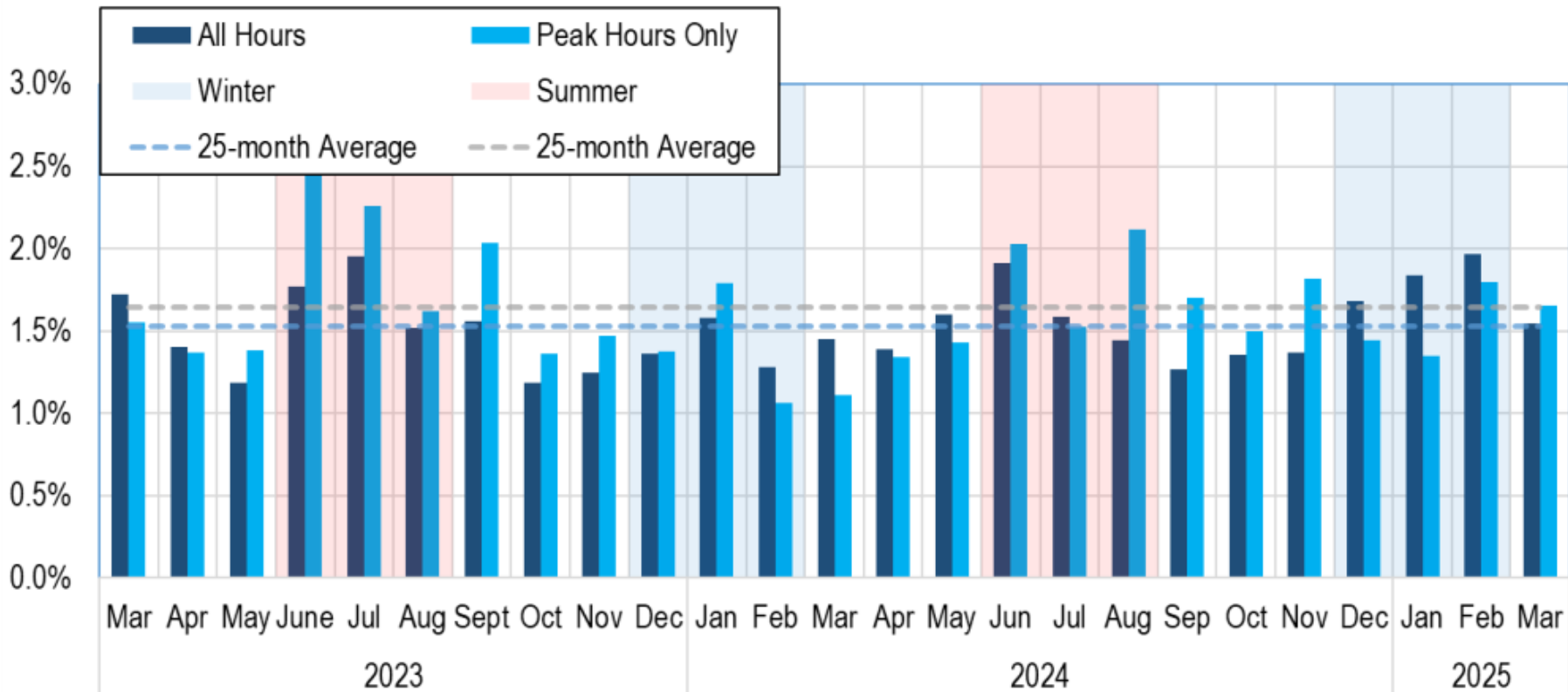
Fuel Price Source: S&P Global Platts

Daily Difference Between Day-Ahead and Real-Time System Marginal Prices

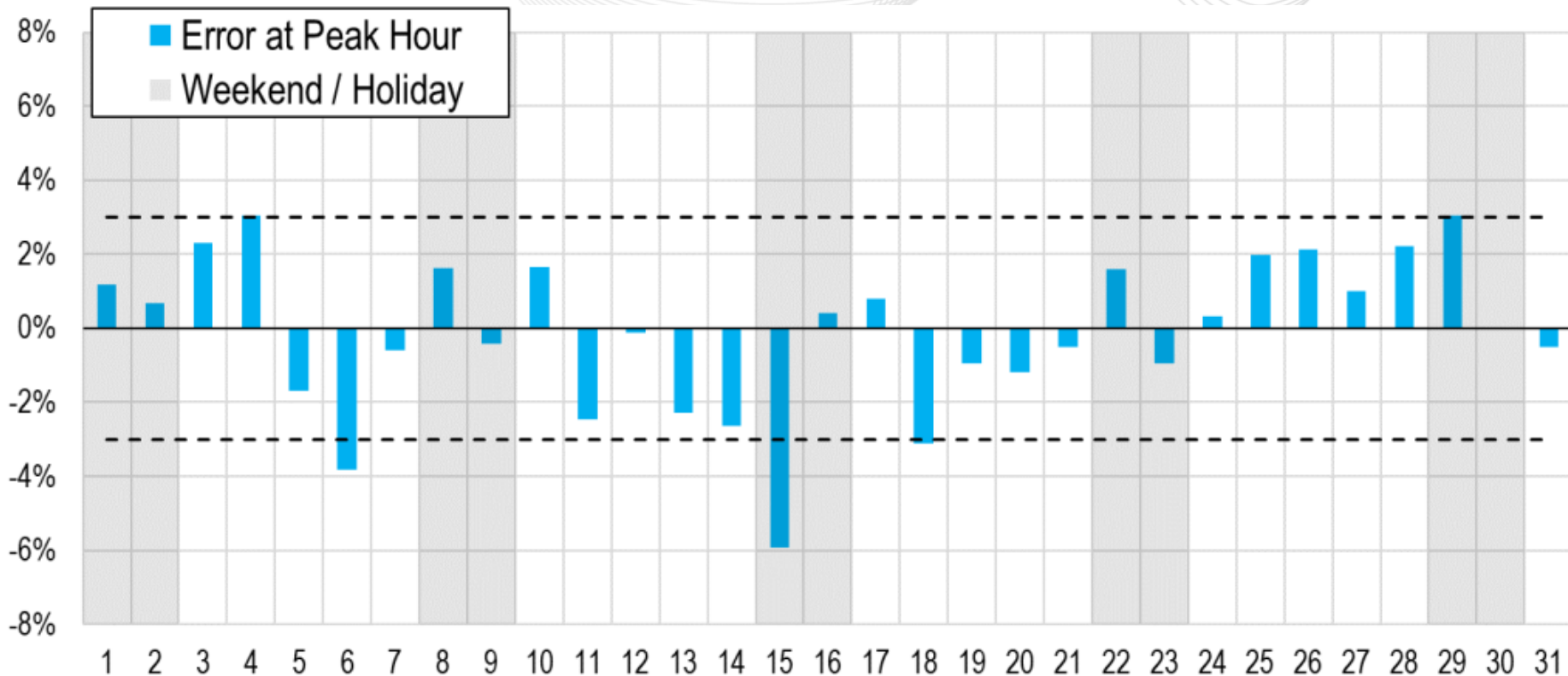


Positive values represent days when the DA daily average price was higher than RT. Negative values represent days when the DA price was lower.

Load Forecast Error - Monthly Absolute Error, 10:00 Forecast

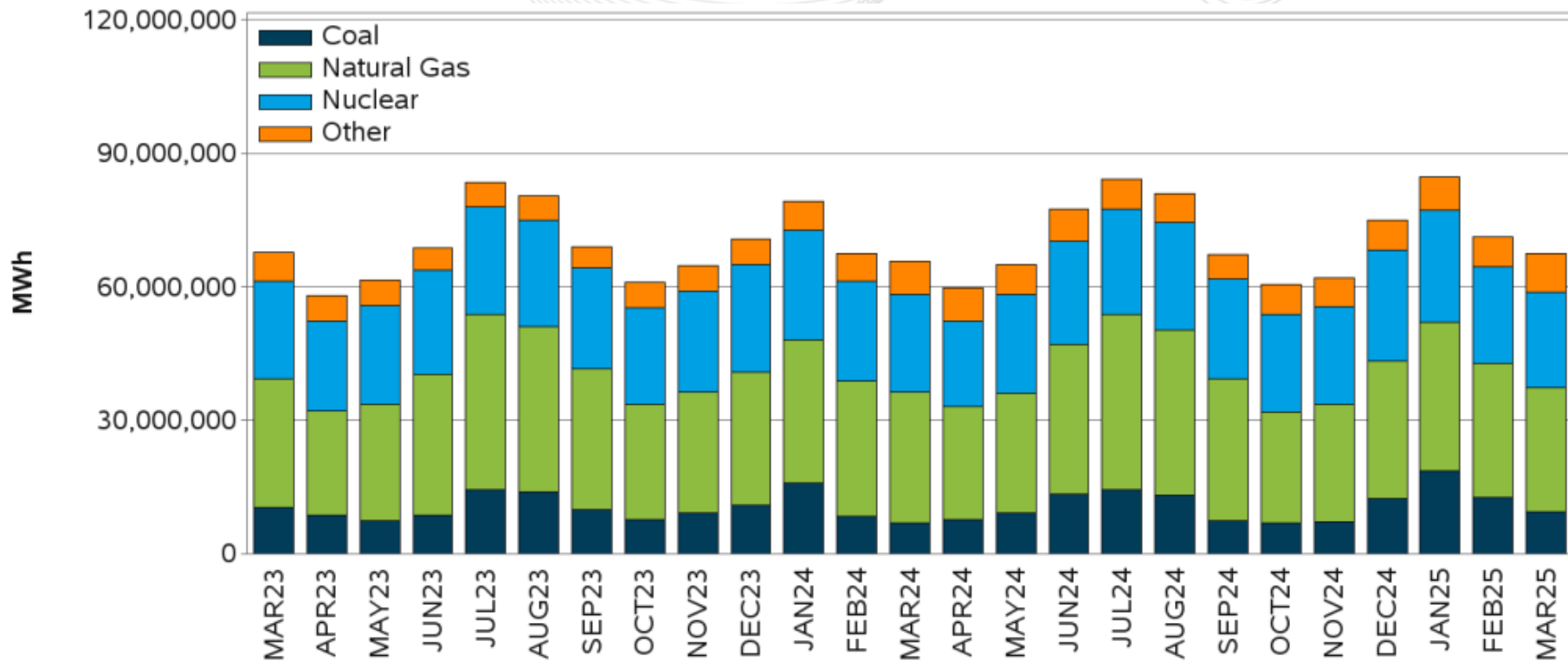


Load Forecast Error - March Daily Peaks, 10:00 Forecast

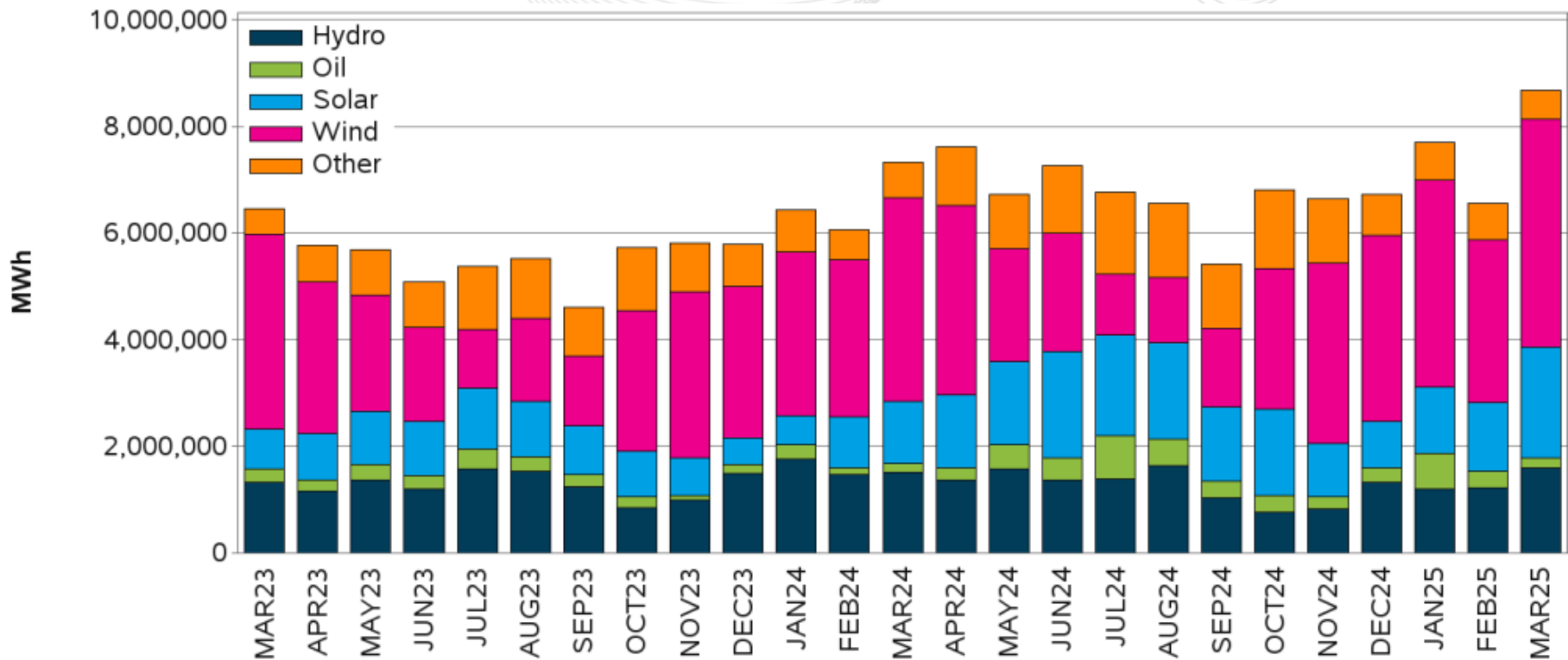


- PJM prepares a day-ahead load forecast at 10:00 am for use by our members.
- This forecast is not used to clear the day-ahead market and is not utilized for the reliability tools that run subsequent to the day-ahead market.

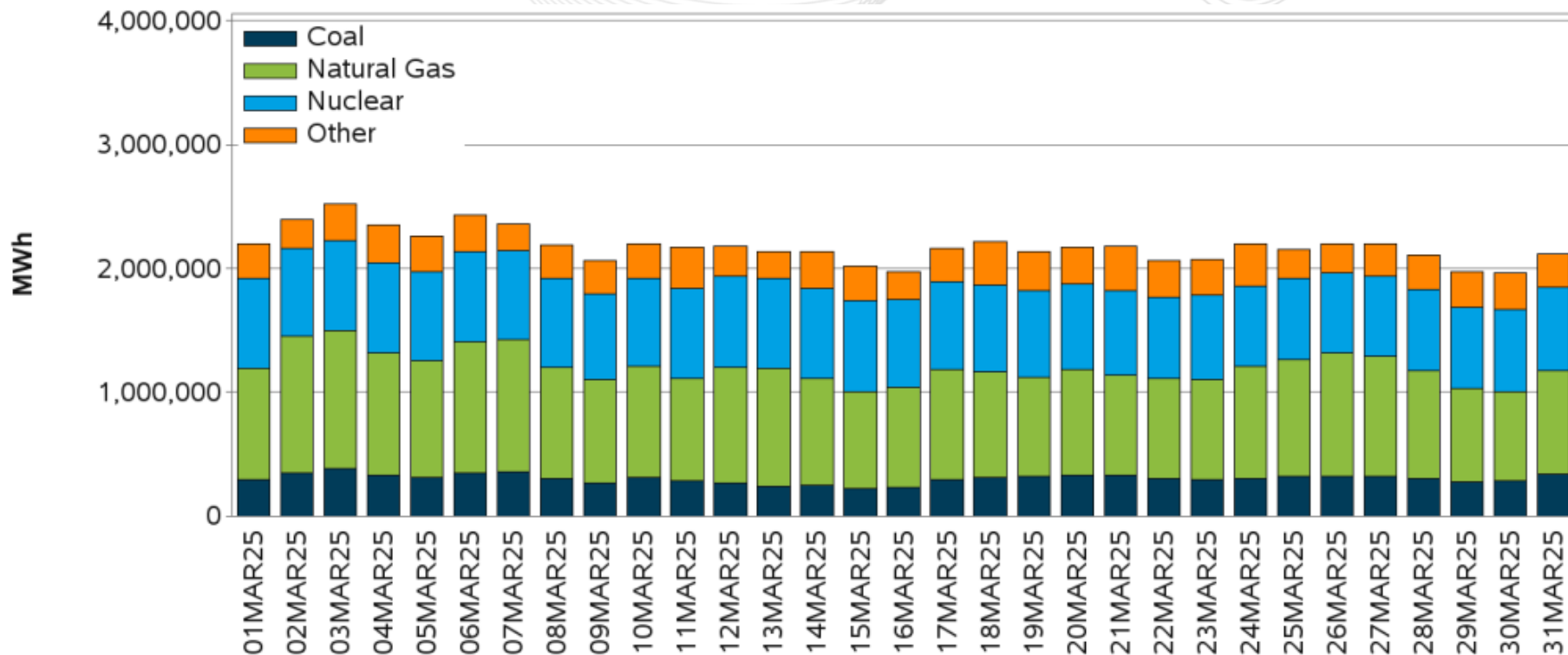
Day:	Reason:
3/4/2025	Temperatures came in 4-7°F warmer than forecast across many regions, leading to lower loads and over-forecasting
3/6/2025	A period of mild temperatures ended with colder conditions, leading to higher load response and under-forecasting.
3/15/2025	Temperatures in the east came in ~10°F cooler than forecast, leading to higher loads and under-forecasting by models.
3/18/2025	A period of mild temperatures ended with colder conditions, leading to higher load response and under-forecasting.
3/29/2025	Warm temperatures across RTO after a series of colder days led to behavior of lower loads, and under-forecasting.



Other includes Hydro, Oil, Solar, Wind, and Other

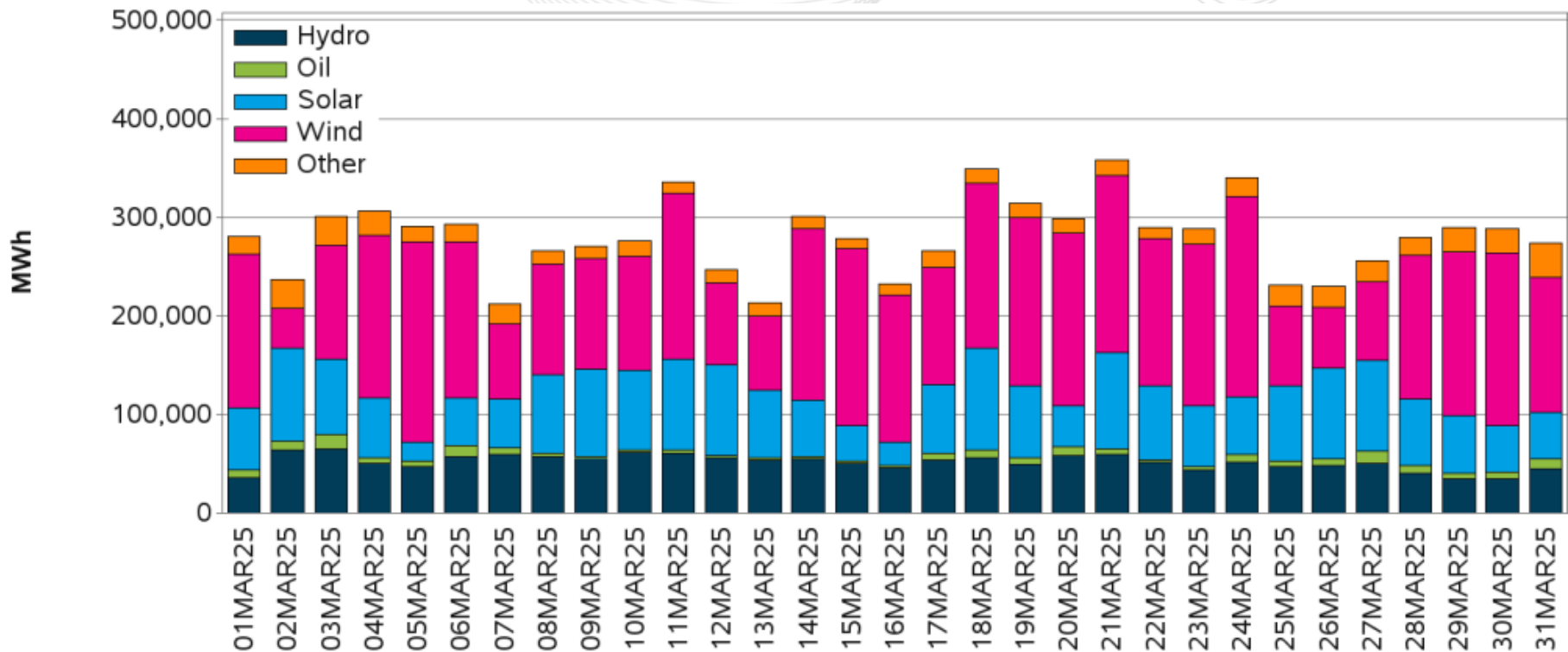


'Other' includes Flywheels, Multiple Fuels, Storage, and Other Renewables



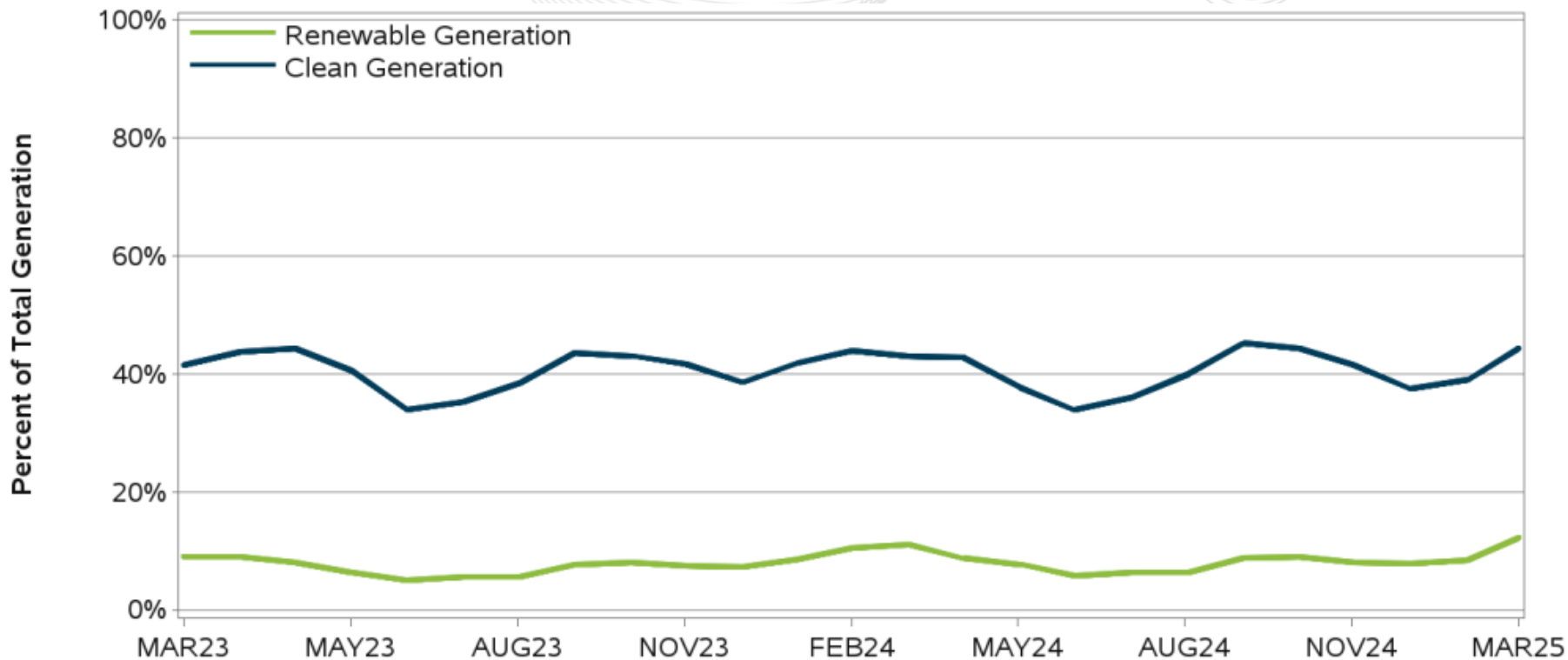
Other includes Hydro, Oil, Solar, Wind, and Other

Daily Generation by Fuel, Other - March



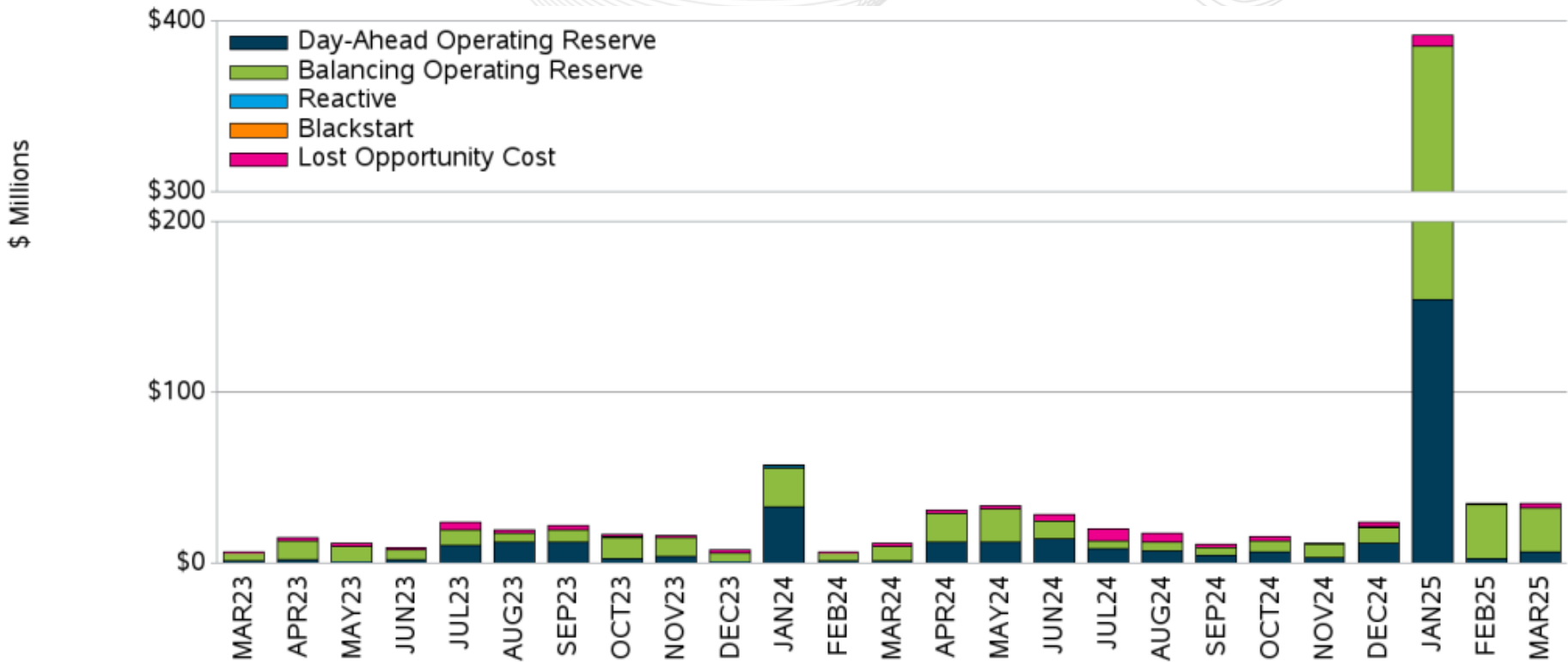
'Other' includes Flywheels, Multiple Fuels, Storage, and Other Renewables

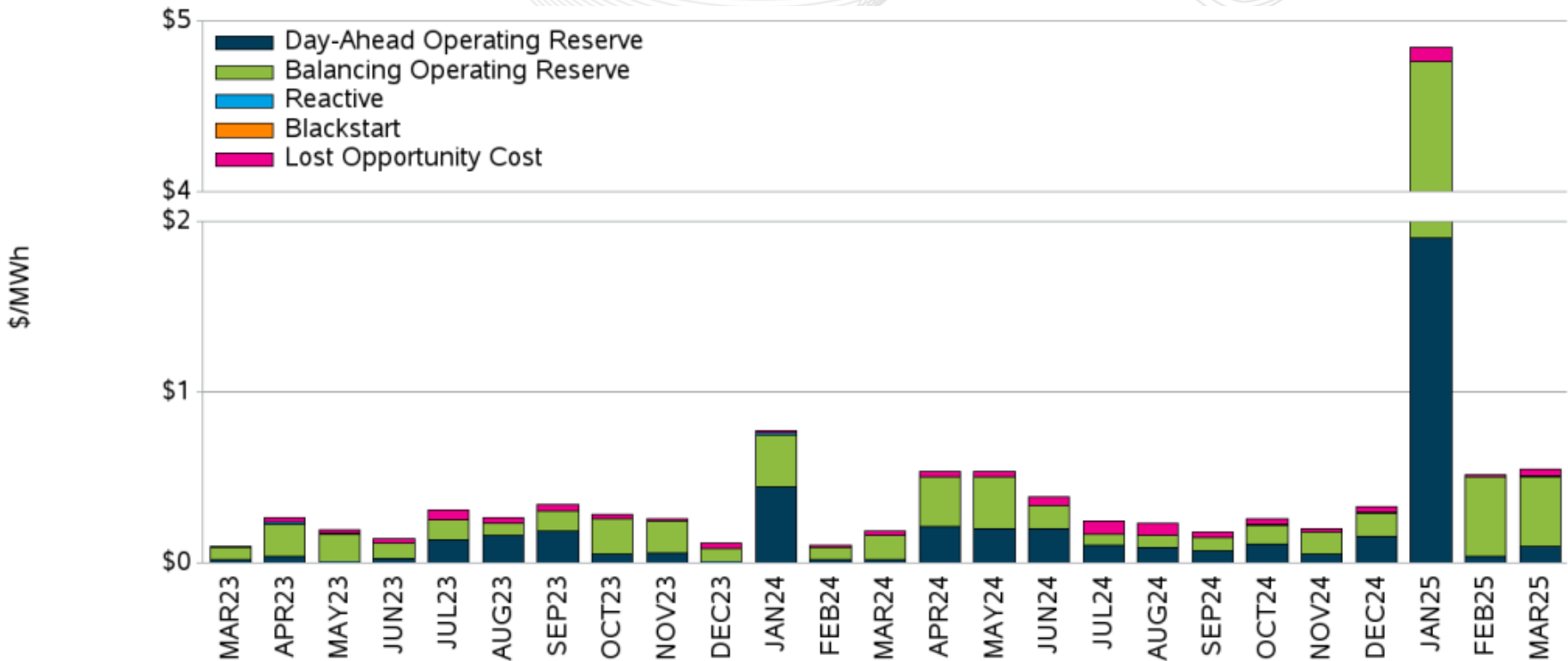
Percent of Renewable and Clean Generation

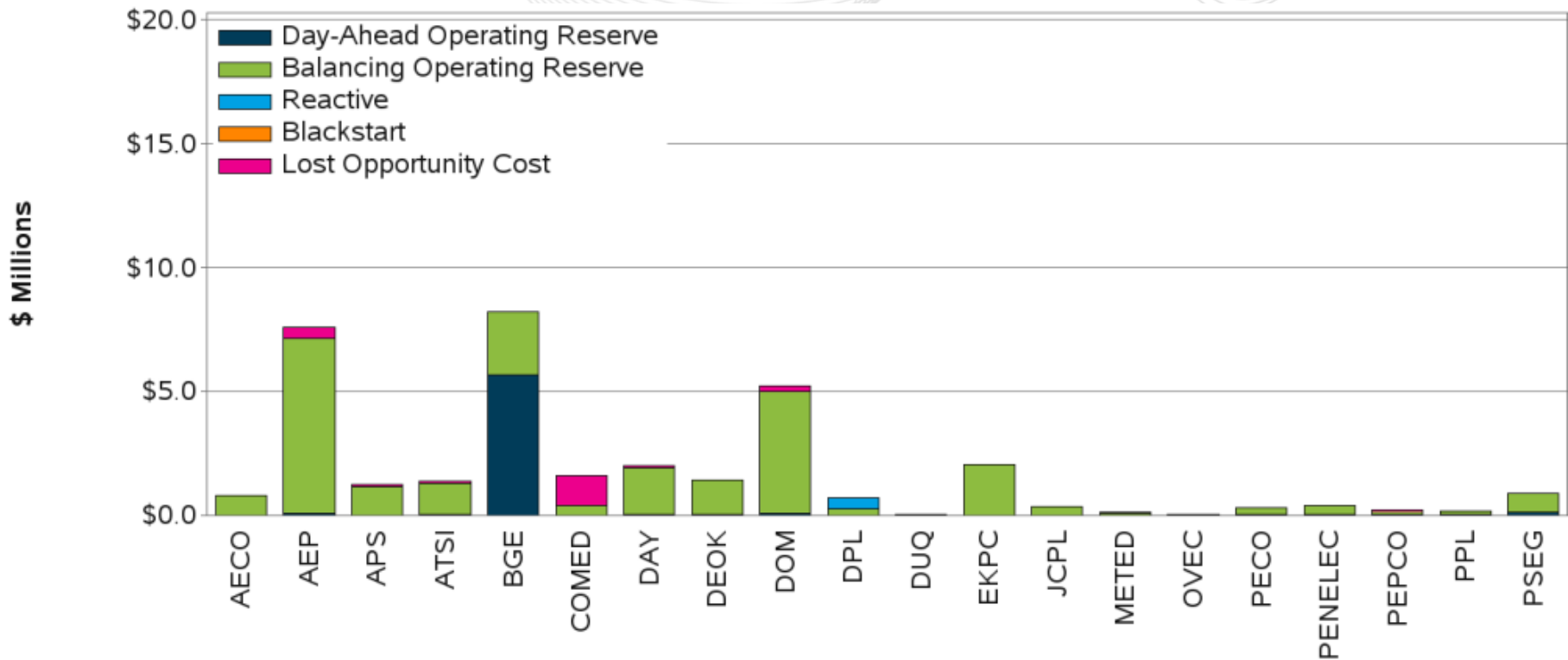


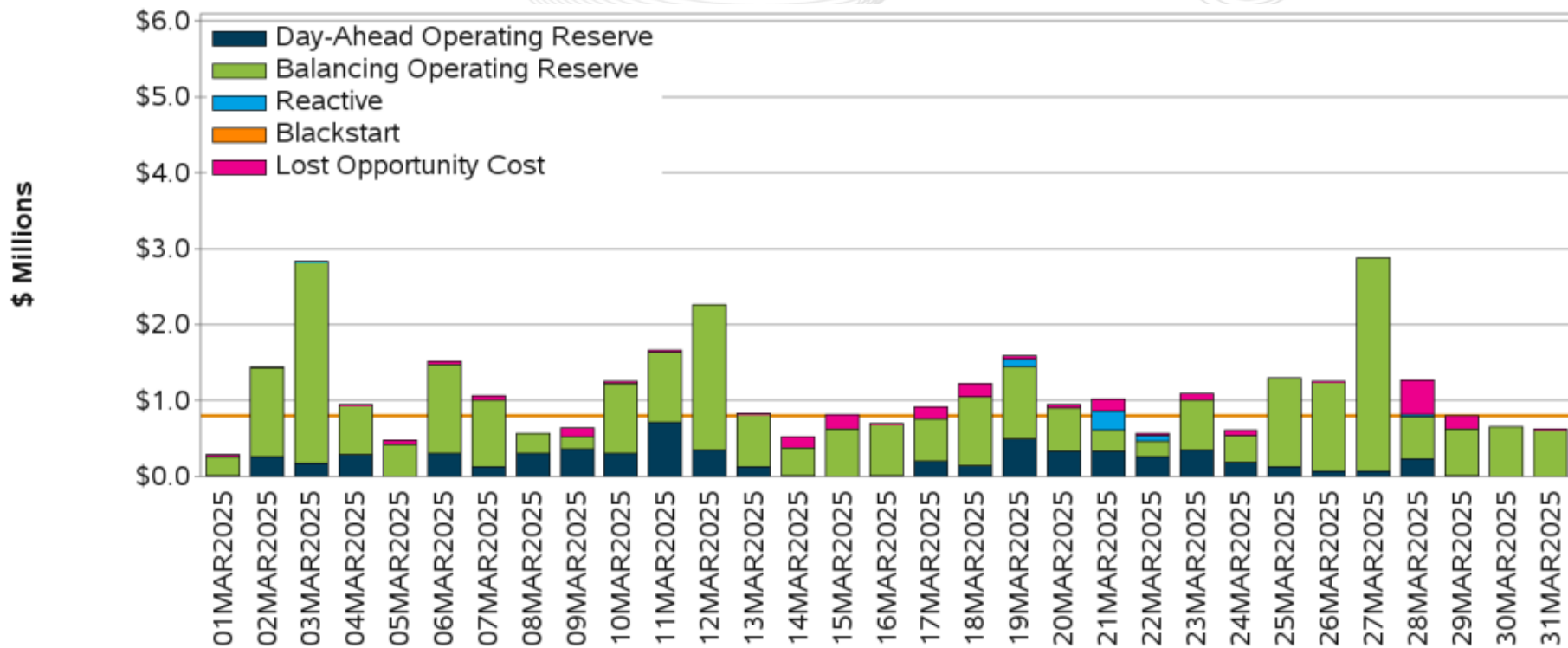
'Renewable' includes Wind, Solar, Hydro, and Other Renewables. 'Clean' includes Renewable and Nuclear.

Operating Reserve (Uplift)

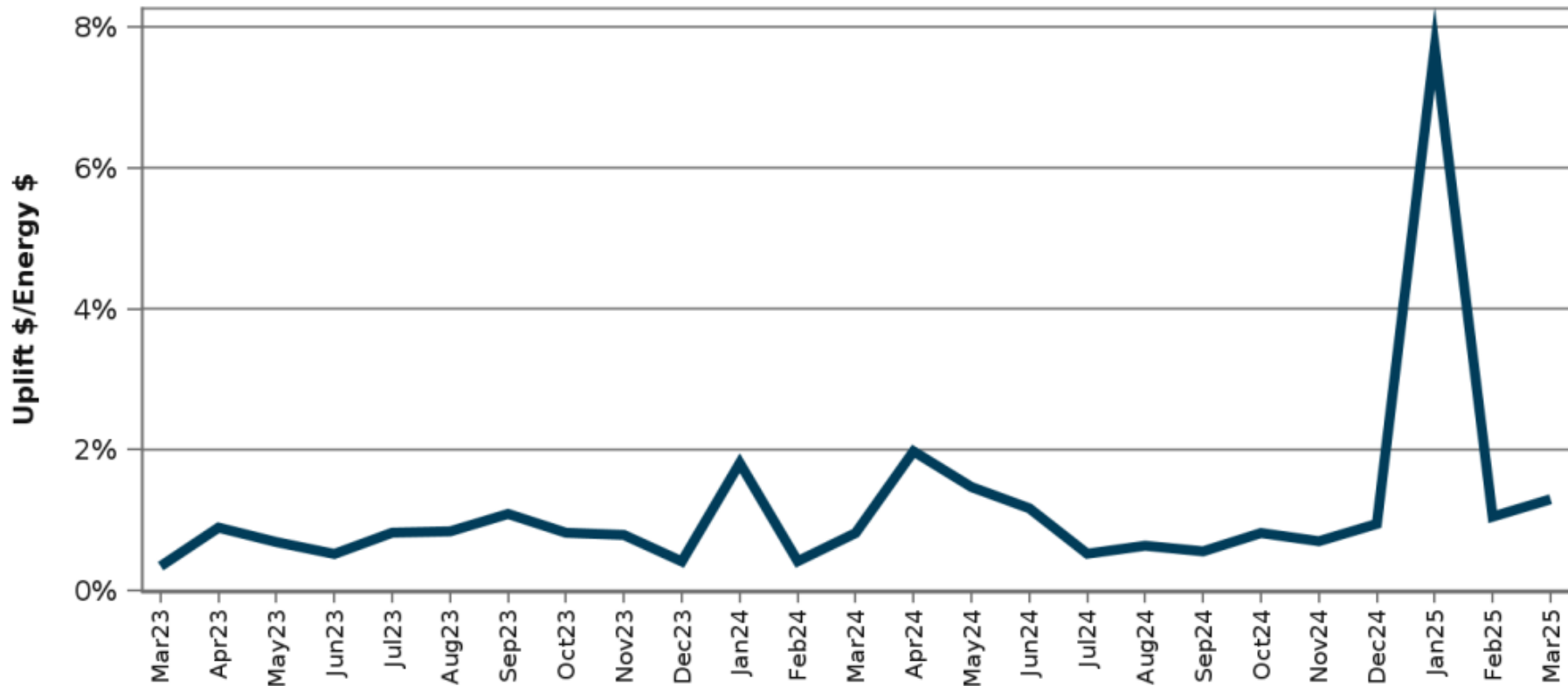




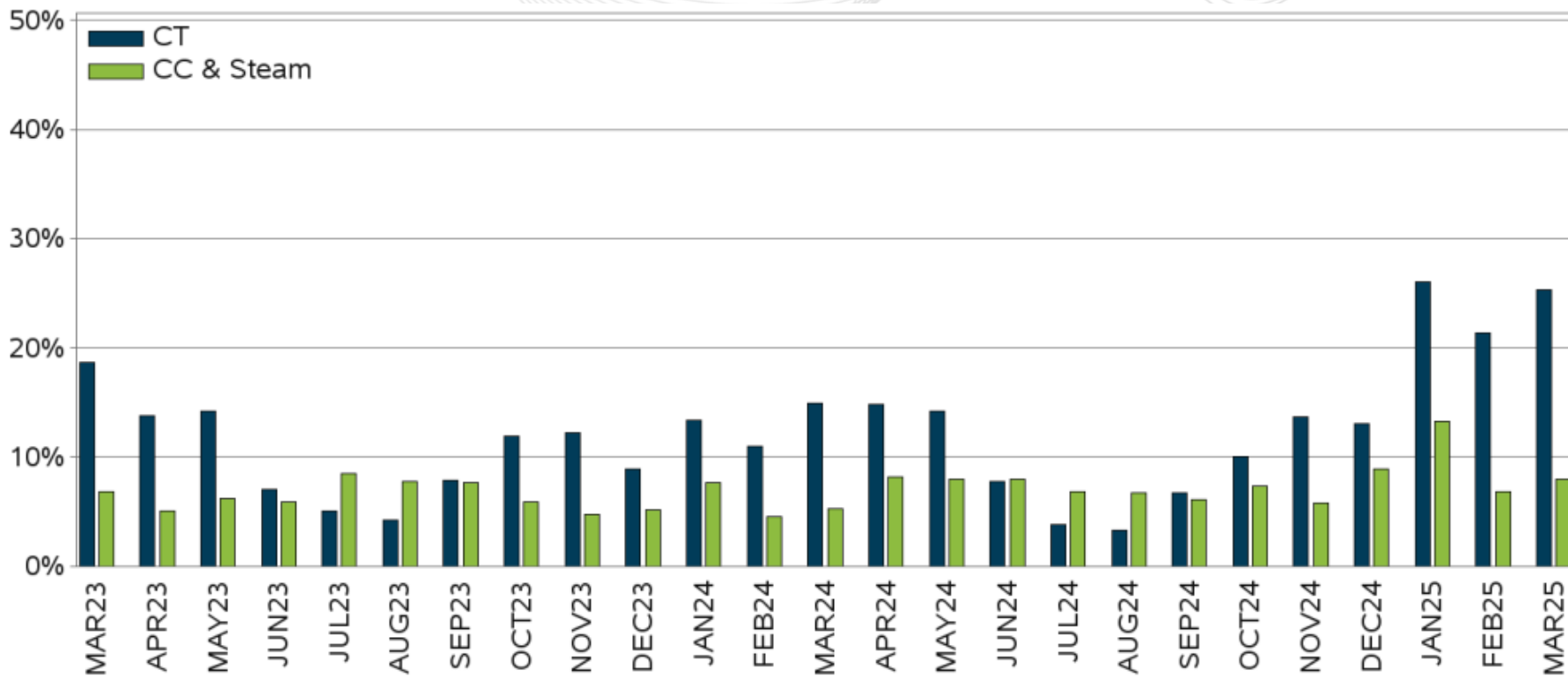




- In March, uplift exceeded \$800,000 on twenty days -
- Contributing factors to uplift were:
 - Uplift was high throughout the month of March because of out of market CTs and Steam units being needed to cover the load
 - Units committed in Day-Ahead for congestion that did not materialize in Real-Time
- More information on Uplift can be found on the PJM website at [Drivers of Uplift](#)

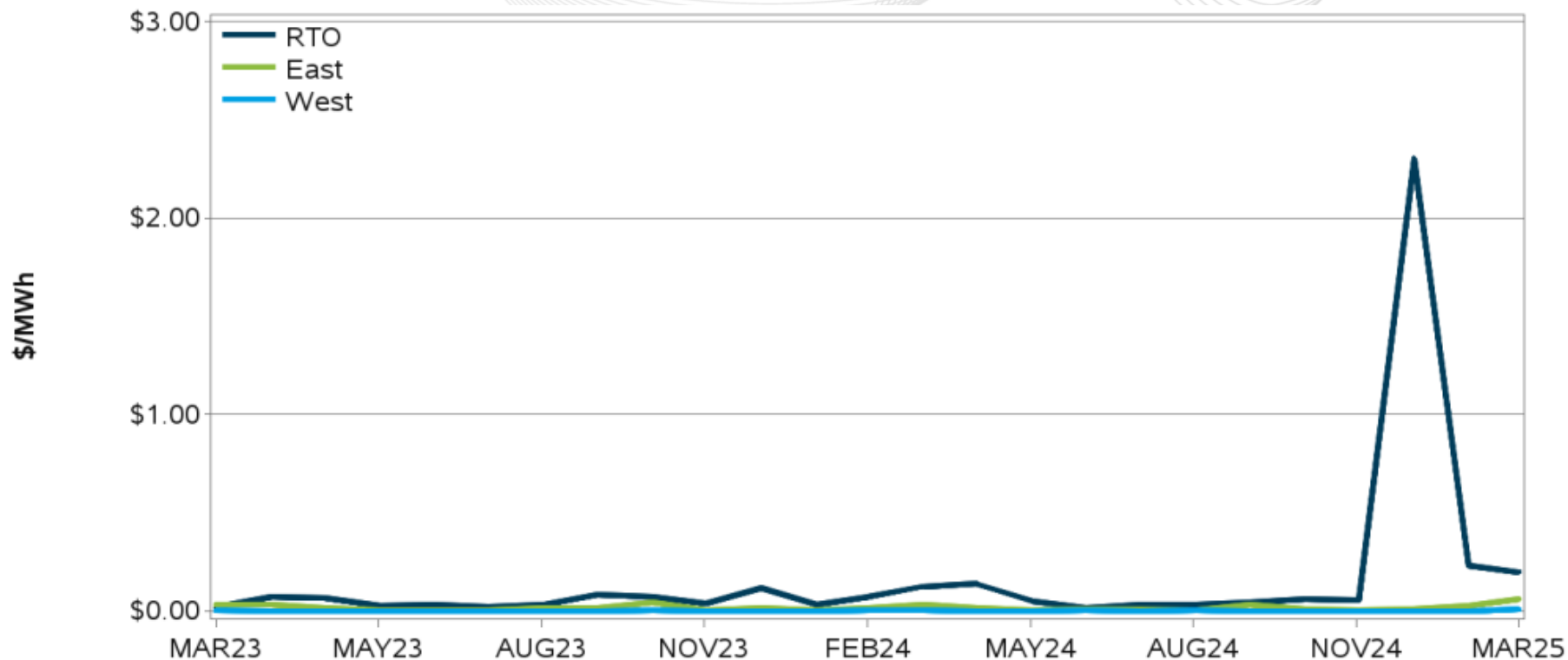


Percent of Total CT, CC and Steam Hours with LMP < Offer

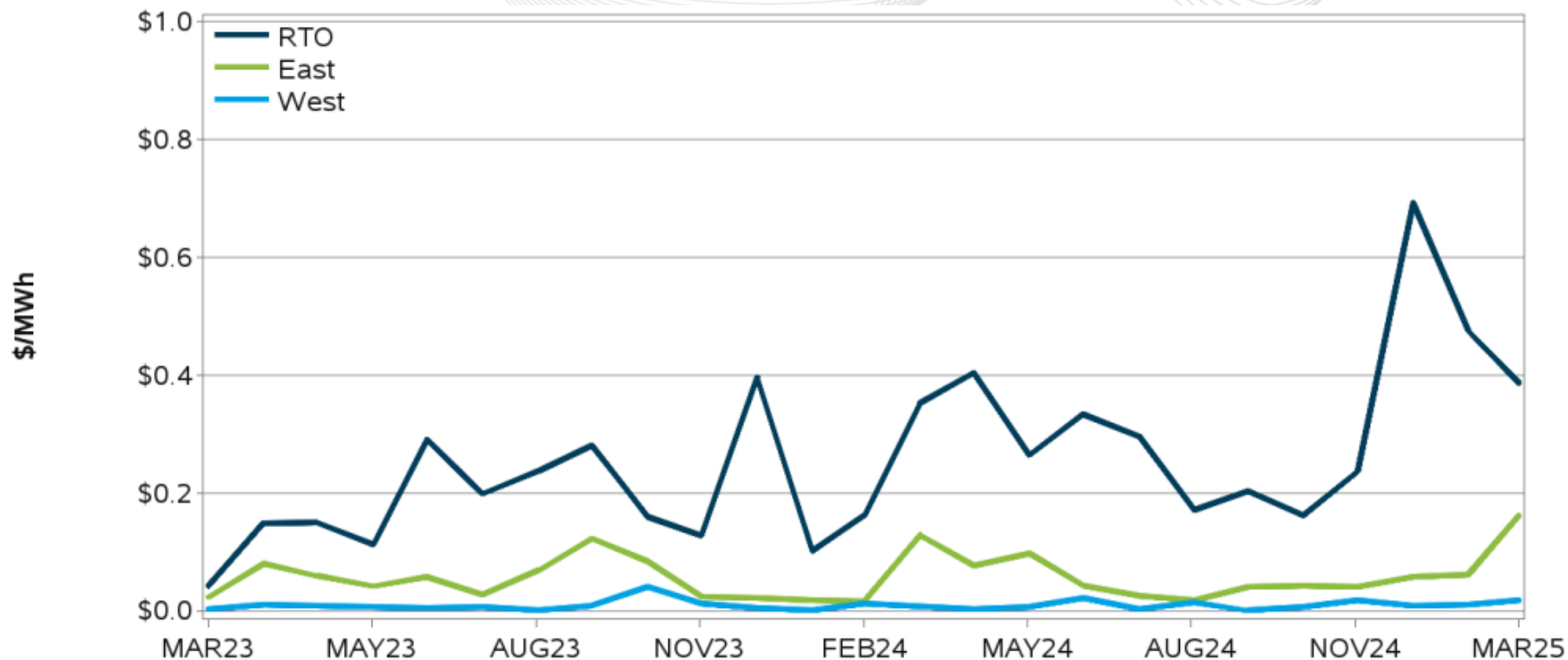


- Beginning in December 2008, the daily Balancing Operating Reserves (BOR) rate was replaced with six different BOR rates: RTO BOR for Reliability Rate, RTO BOR for Deviations Rate, East BOR for Reliability Rate, East BOR for Deviations Rate, West BOR for Reliability Rate, West BOR for Deviations Rate.
- Reliability rates are charged to all real-time load and exports, whereas deviation rates, as before, are charged only to real-time deviations. RTO rates are charged to the whole footprint, whereas East and West rate adders are charged based on location.

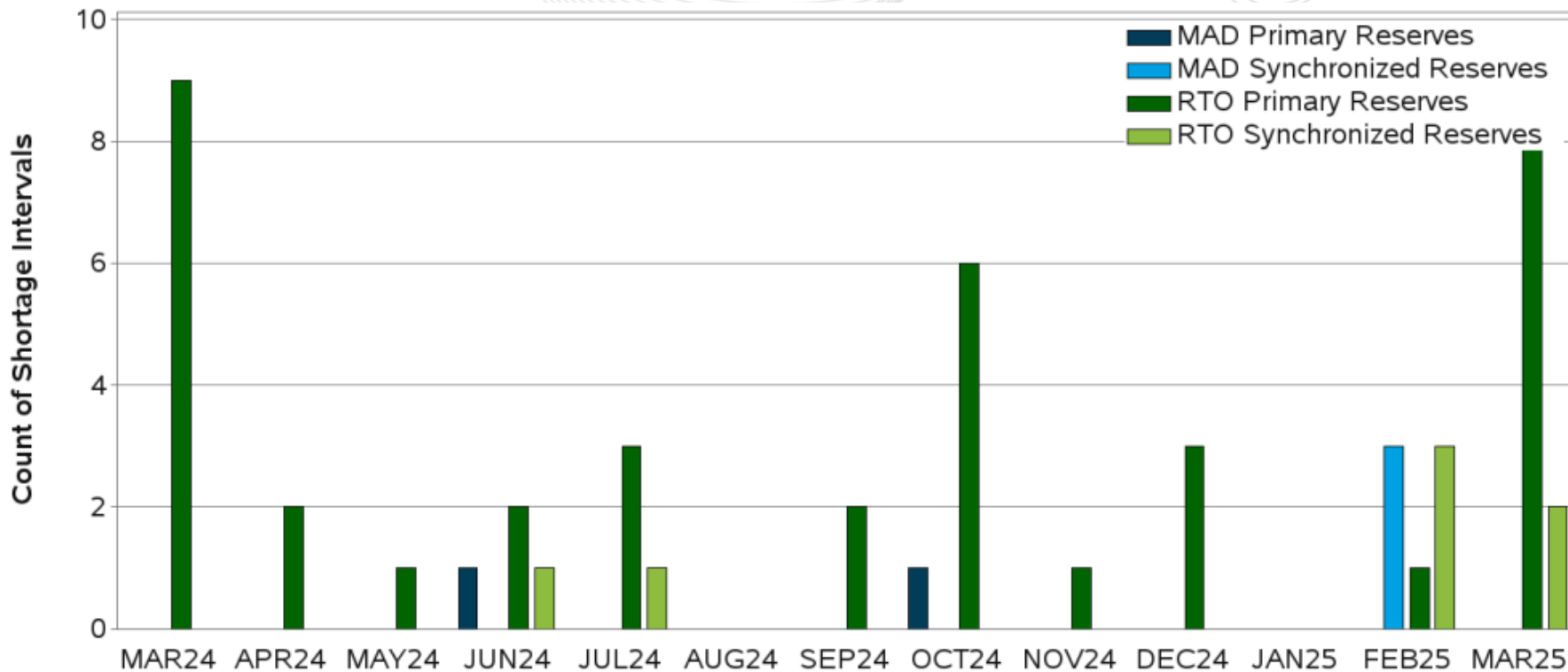
Reliability Balancing Operating Reserve Rates



Deviations Balancing Operating Reserve Rates

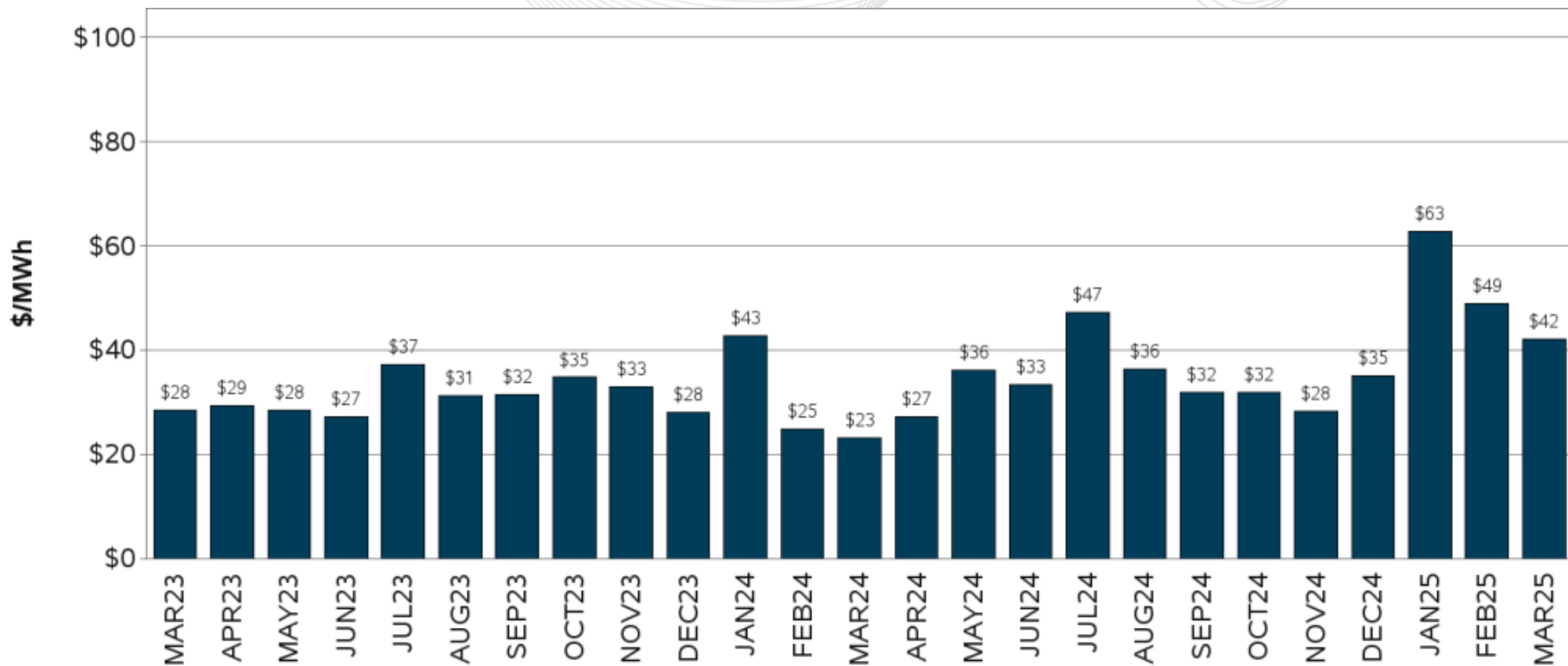


Energy Market LMP Summary

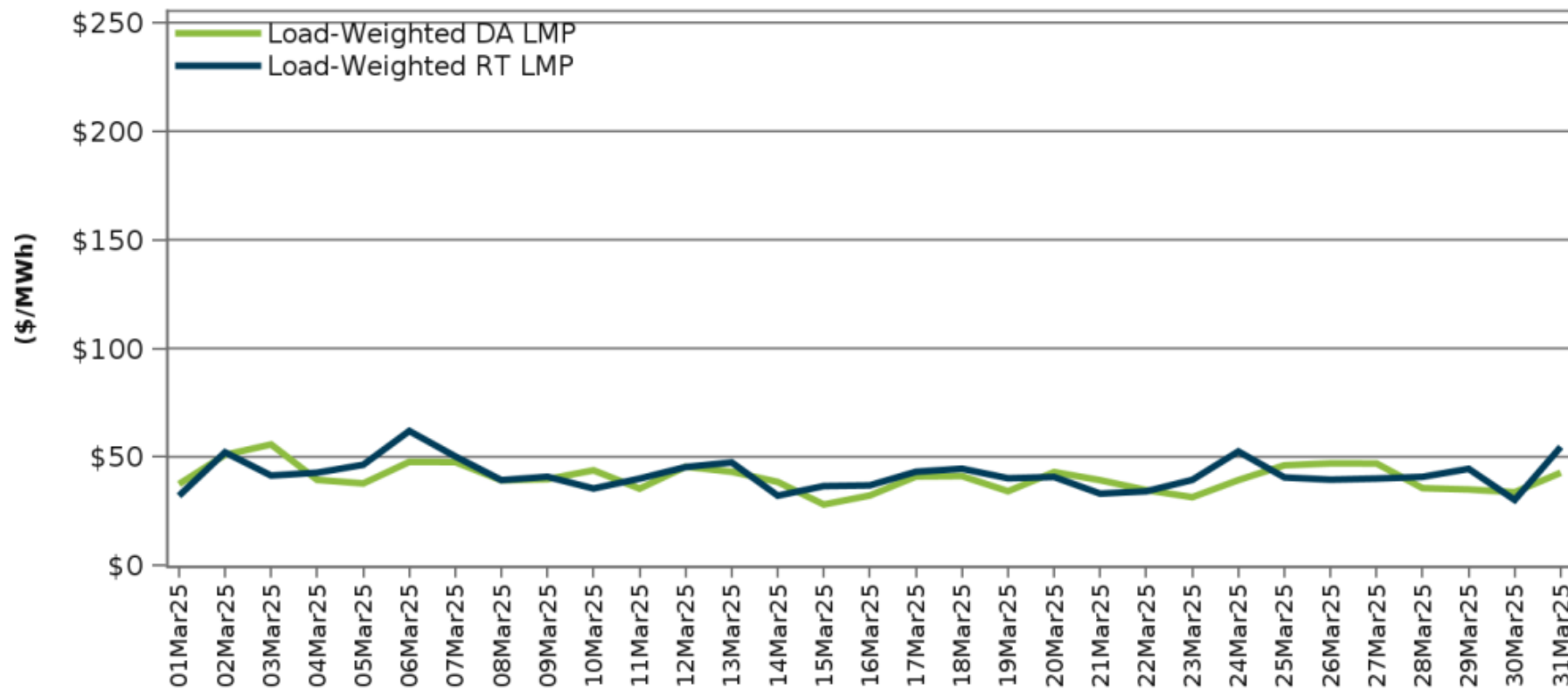


[Information on constraints and shadow prices can be found here](#)

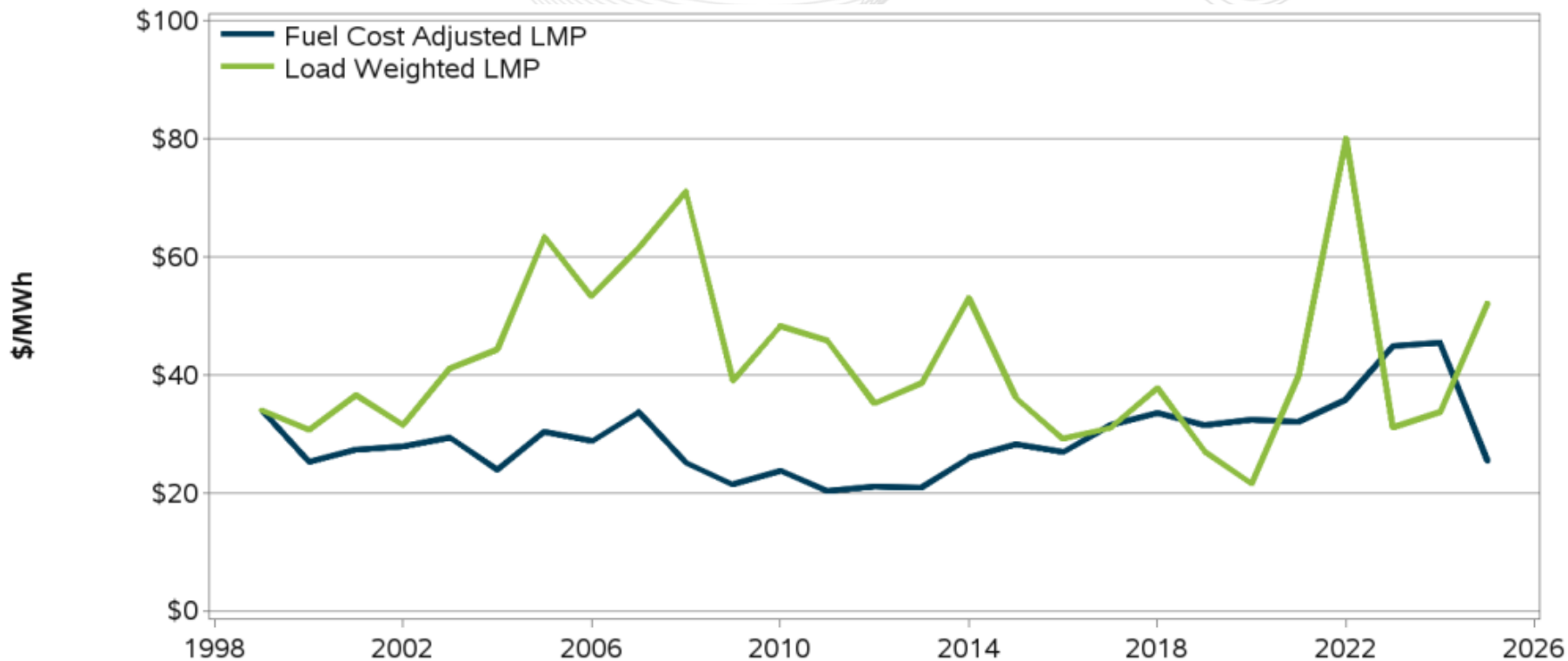
Monthly Load-Weighted Average Real-time LMP

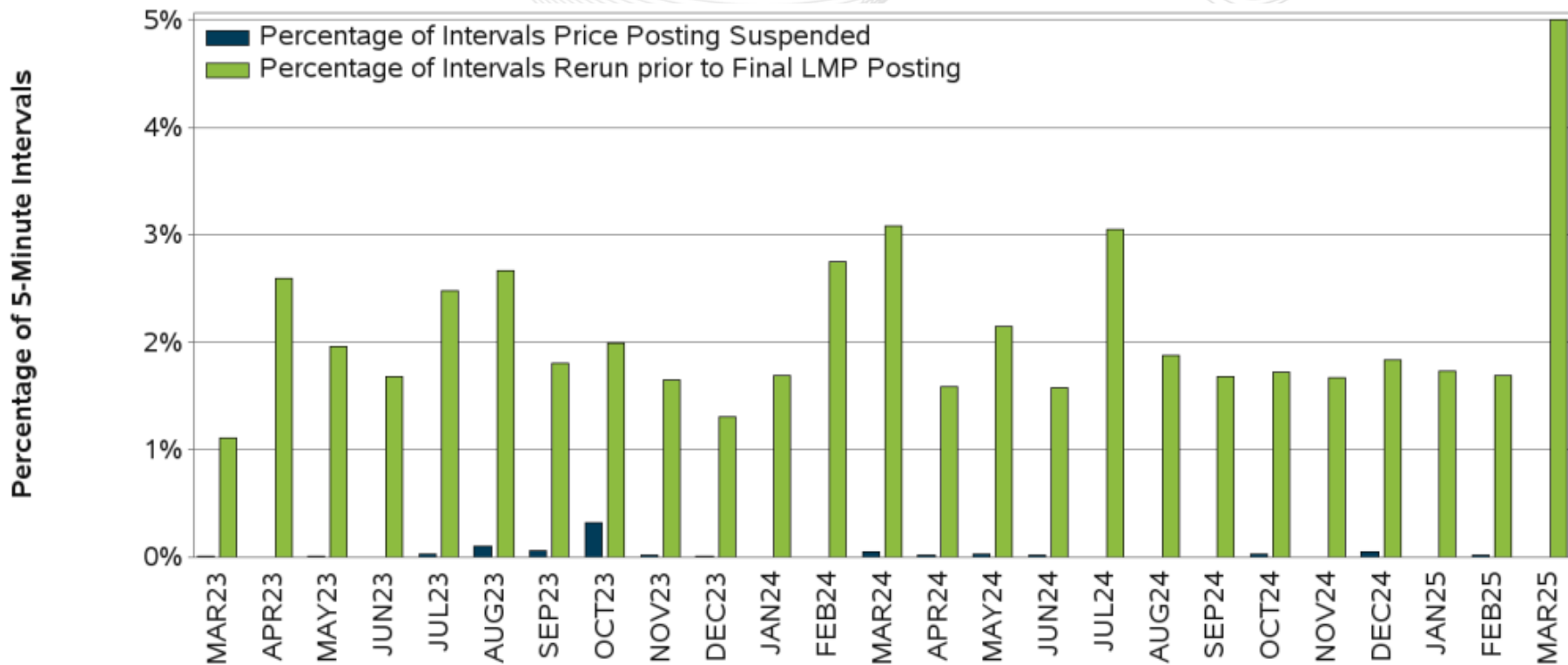


Daily Load-Weighted Average DA & RT LMP



Fuel Cost Adjusted LMP (Referenced to 1999 Fuel Prices)

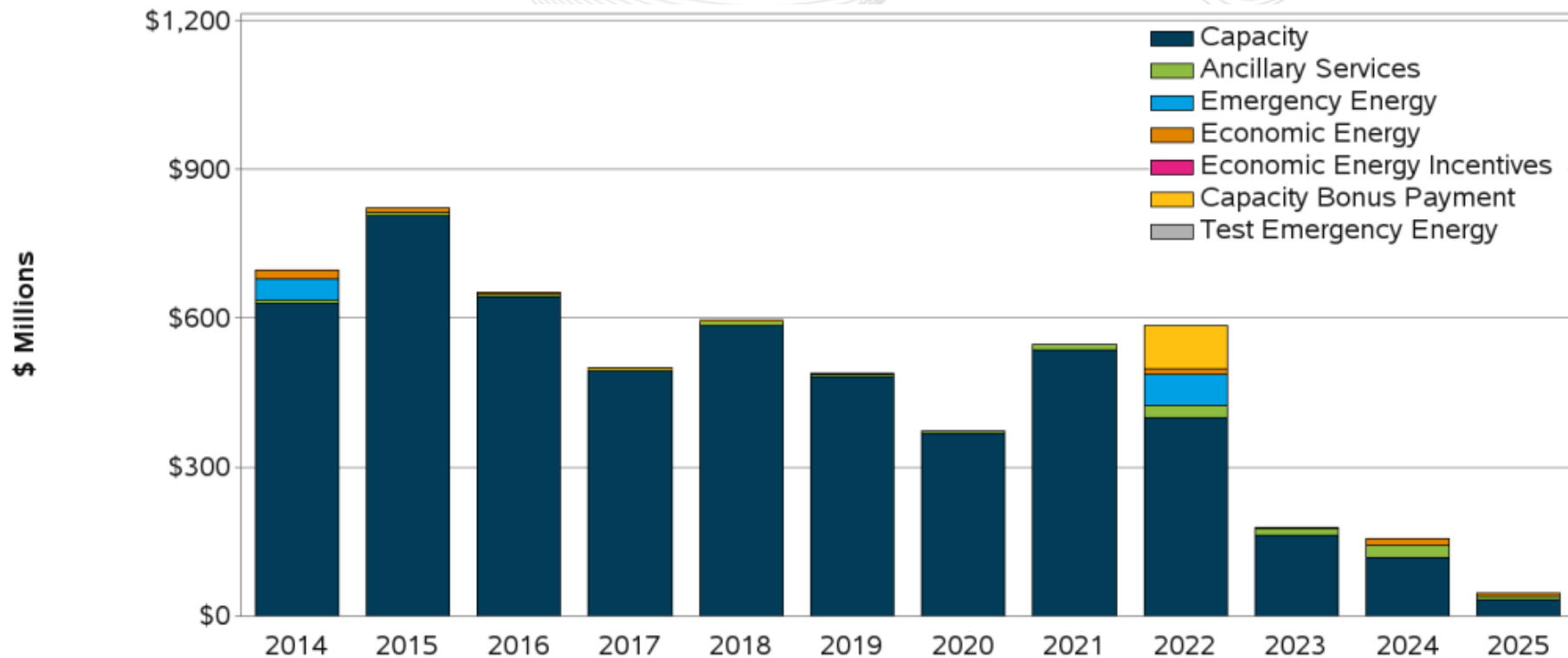


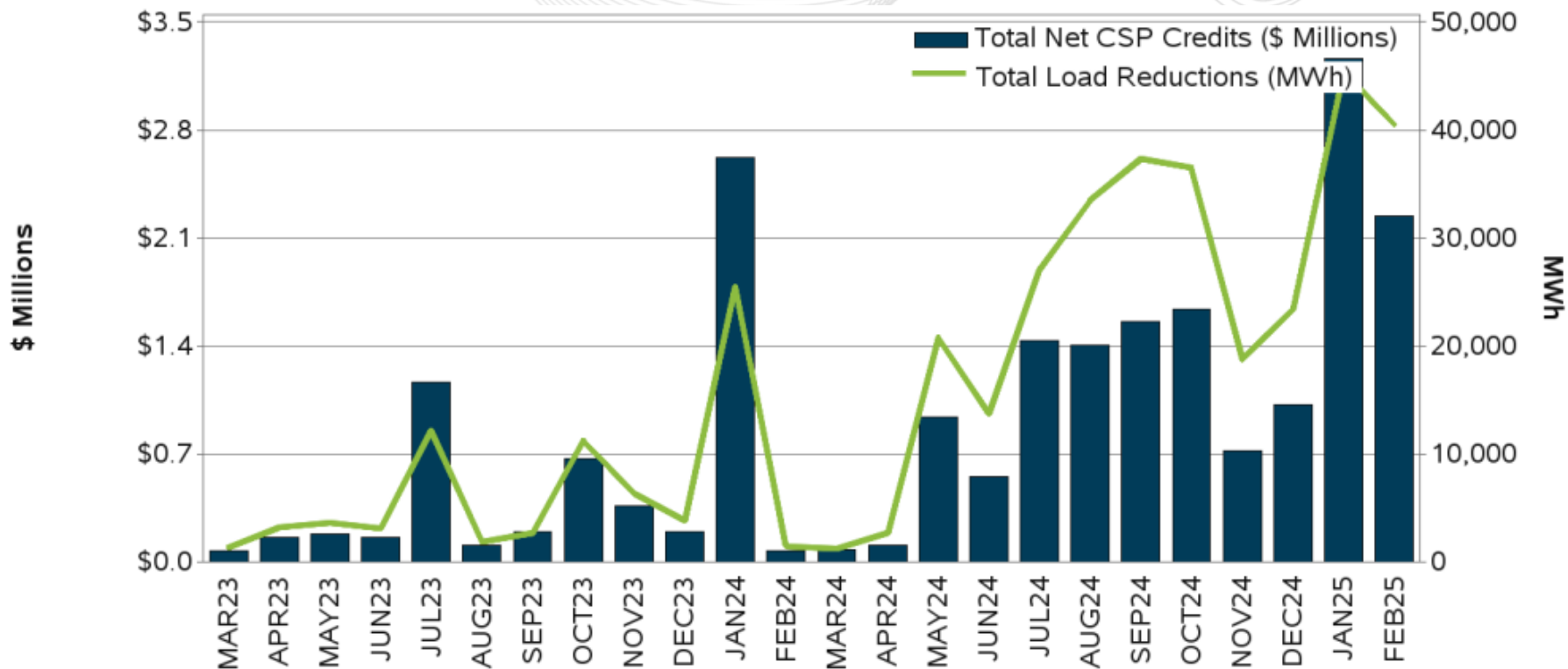


Energy Market

Demand Response Summary

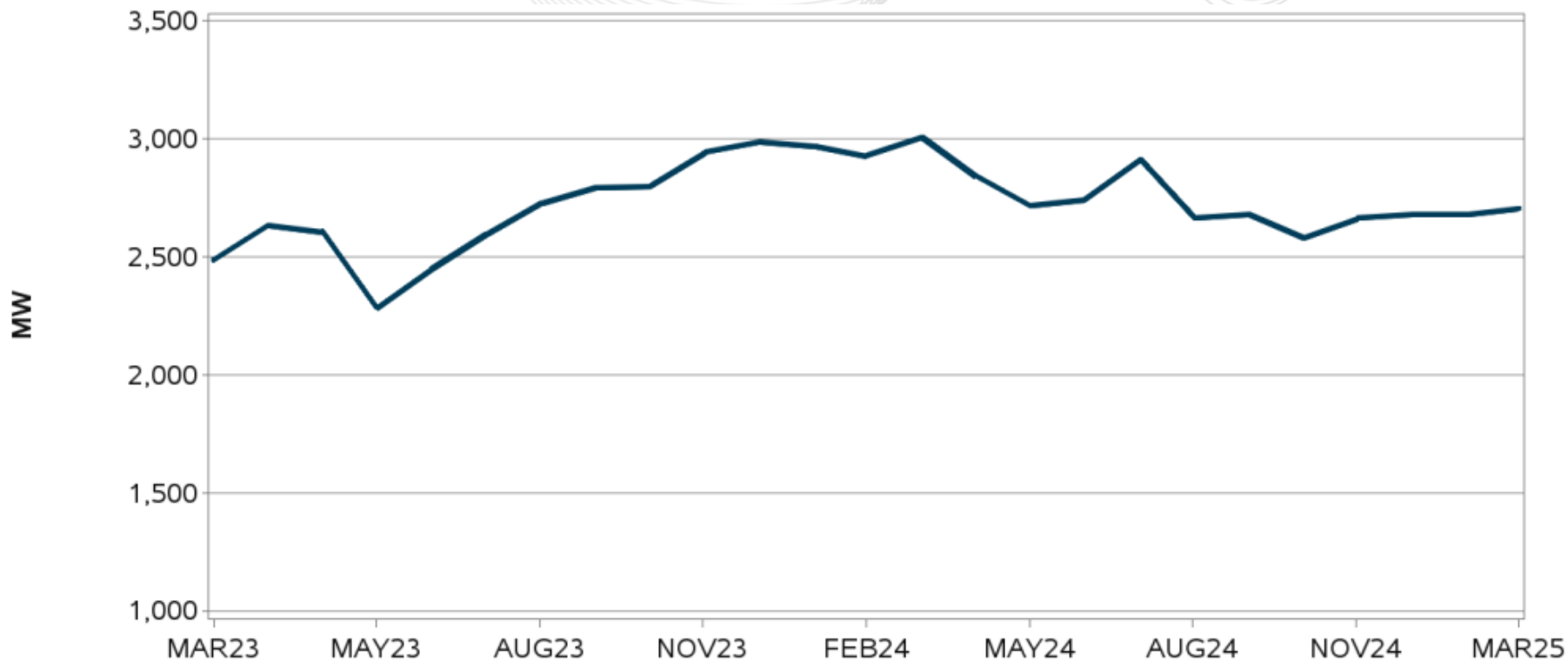
Demand Side Response Estimated Revenue





*Data for the last few months are subject to significant change due to the settlement window.

Total Registered MW in PJM's Economic Demand Response

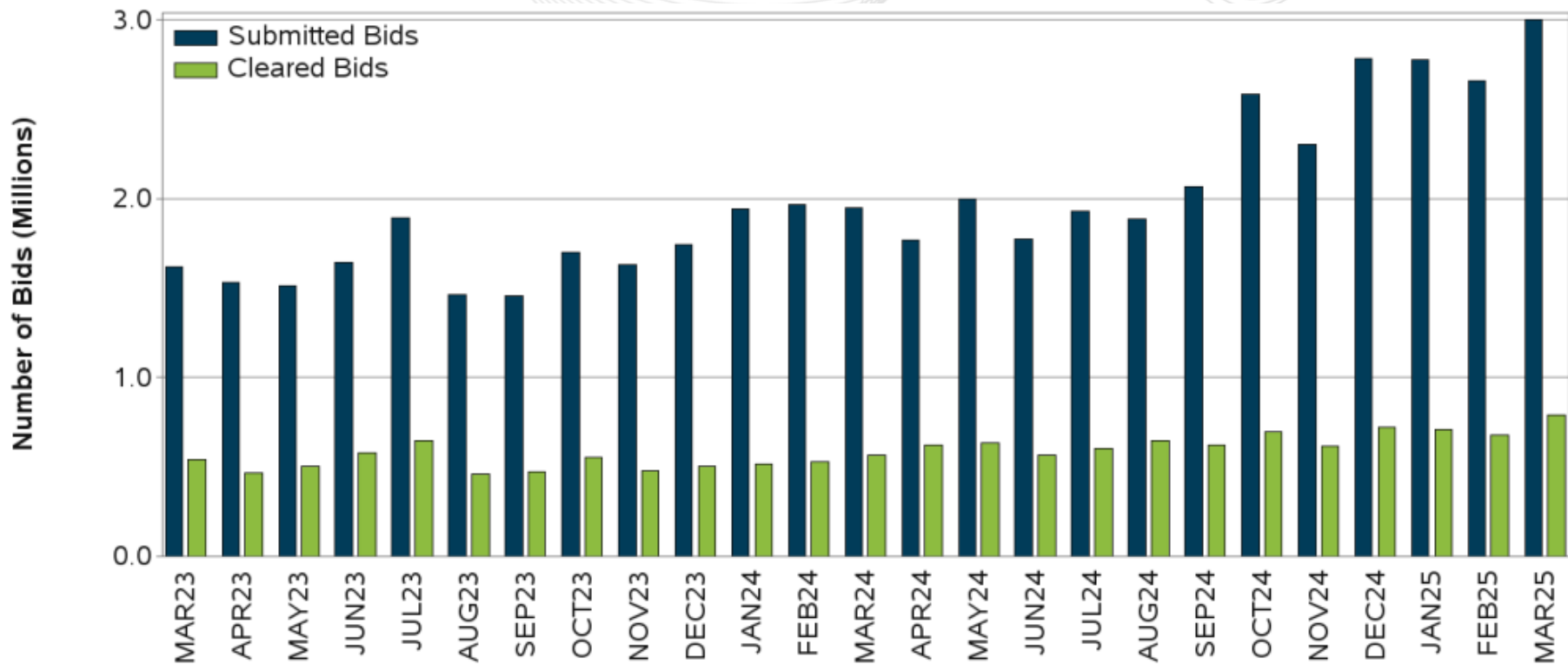


Energy Market

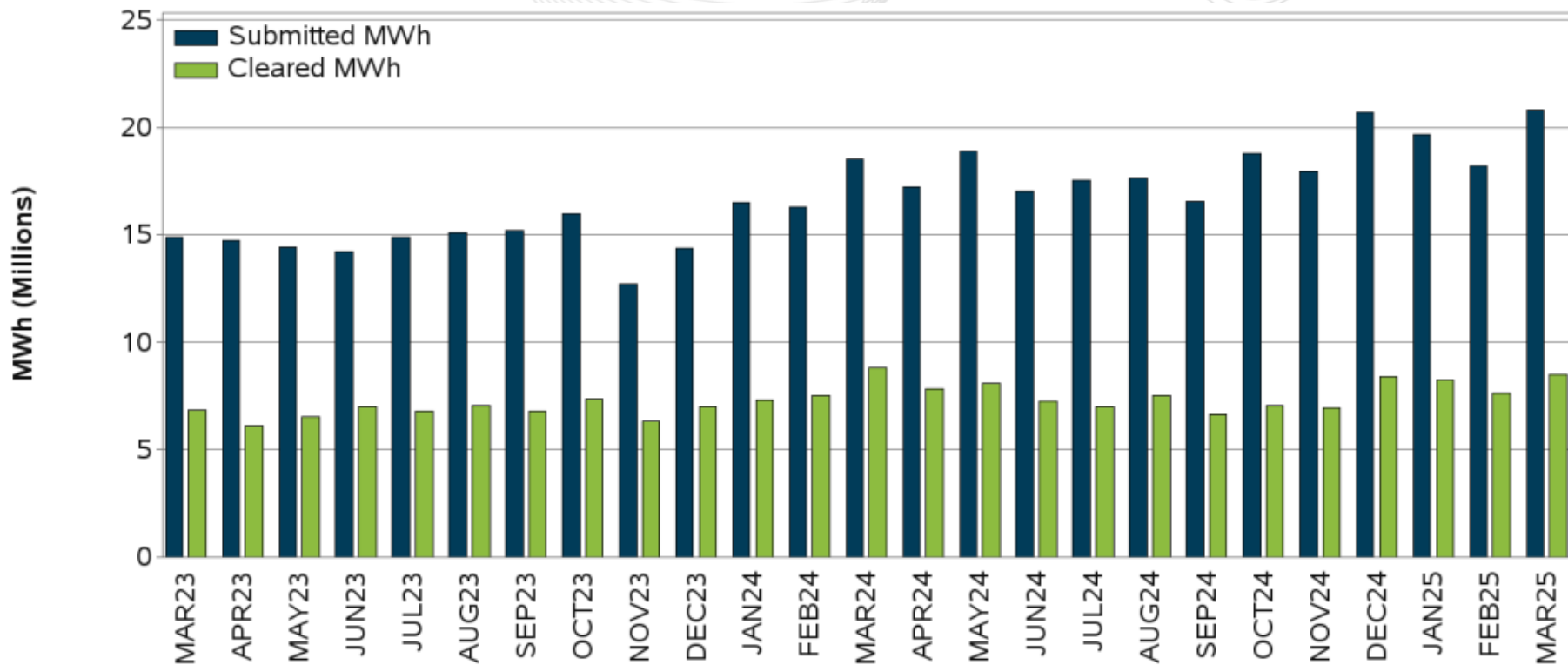
Virtual Activity Summary

- The following six charts depict trends in submitted and cleared virtual and up-to-congestion transactions, in terms of number and volume, into the PJM Energy Market. The first two of these charts show the submitted and cleared increment and decrement bids (virtual transactions or virtuals) and they are the same as what was previously being presented in this report. The two charts after them display the trends in submitted and cleared up-to-congestion transactions into the PJM Energy Market. The last two of these six charts combine the virtual and up-to-congestion transactions and show the sum of these two categories.
- To clarify what a bid or transaction is, please consider the following example: An offer (increment, decrement or up-to-congestion) of 10 MW, valid for eight hours for a given day, is captured in the charts as eight submitted bids/transactions and 80 submitted MWh. If this offer fully clears for three of the hours it was submitted for, it shows in the charts as three cleared bids/transactions and 30 cleared MWh.

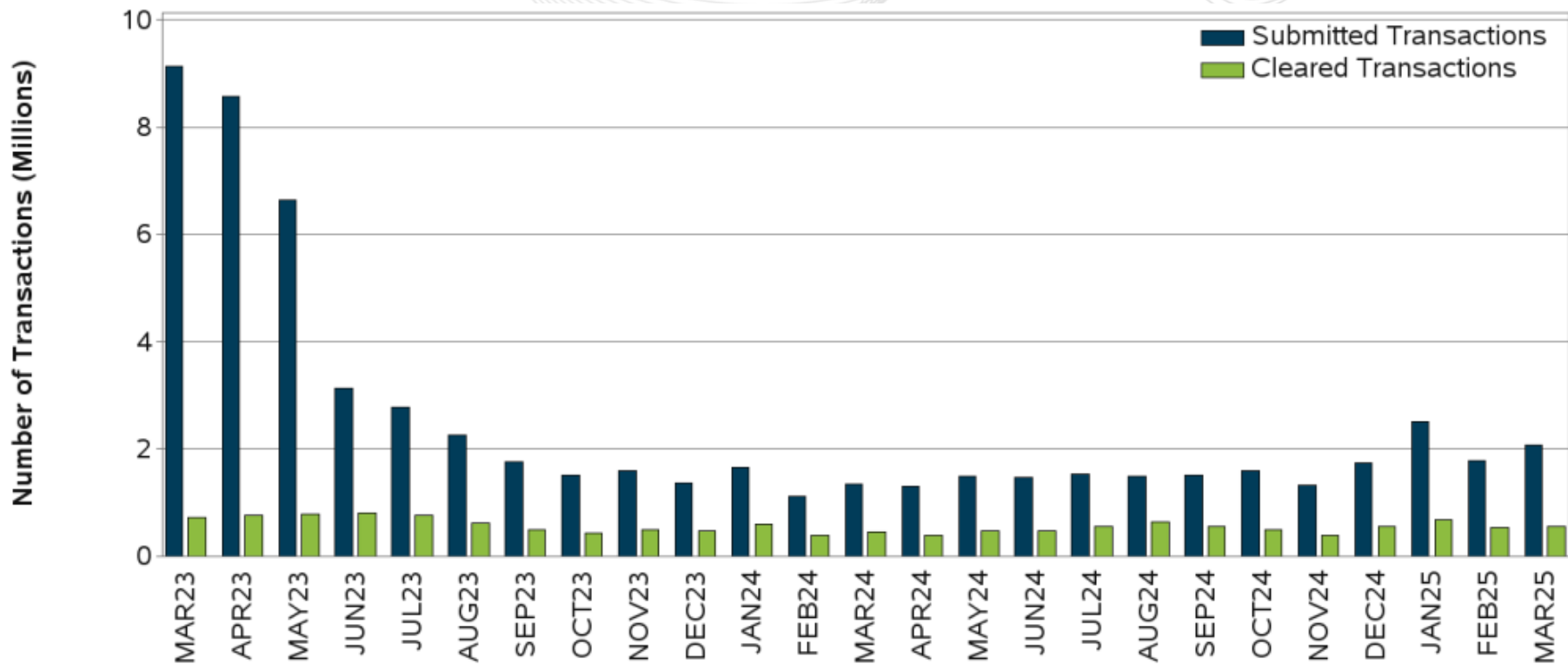
Virtual Bids (INCs & DEC)s - Total Number



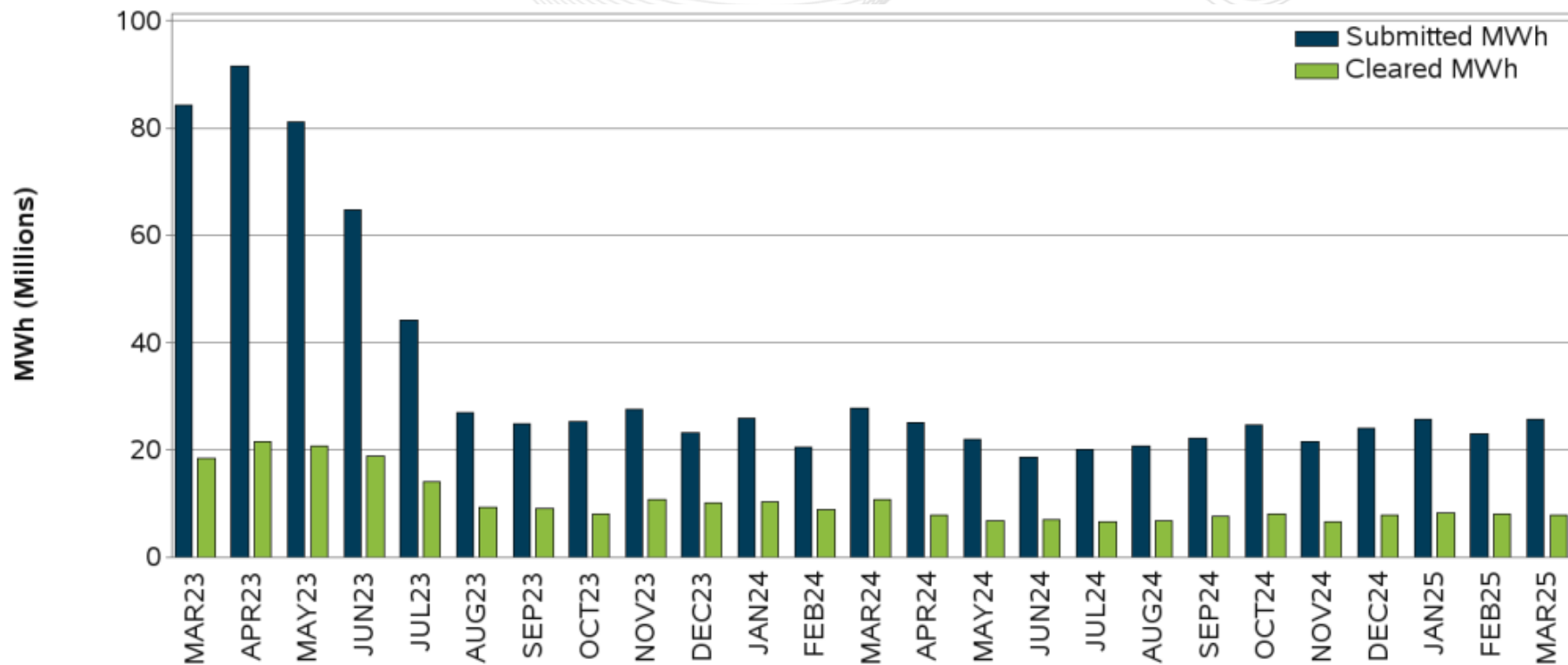
Virtual Bids (INCs & DEC)s - Total Volume



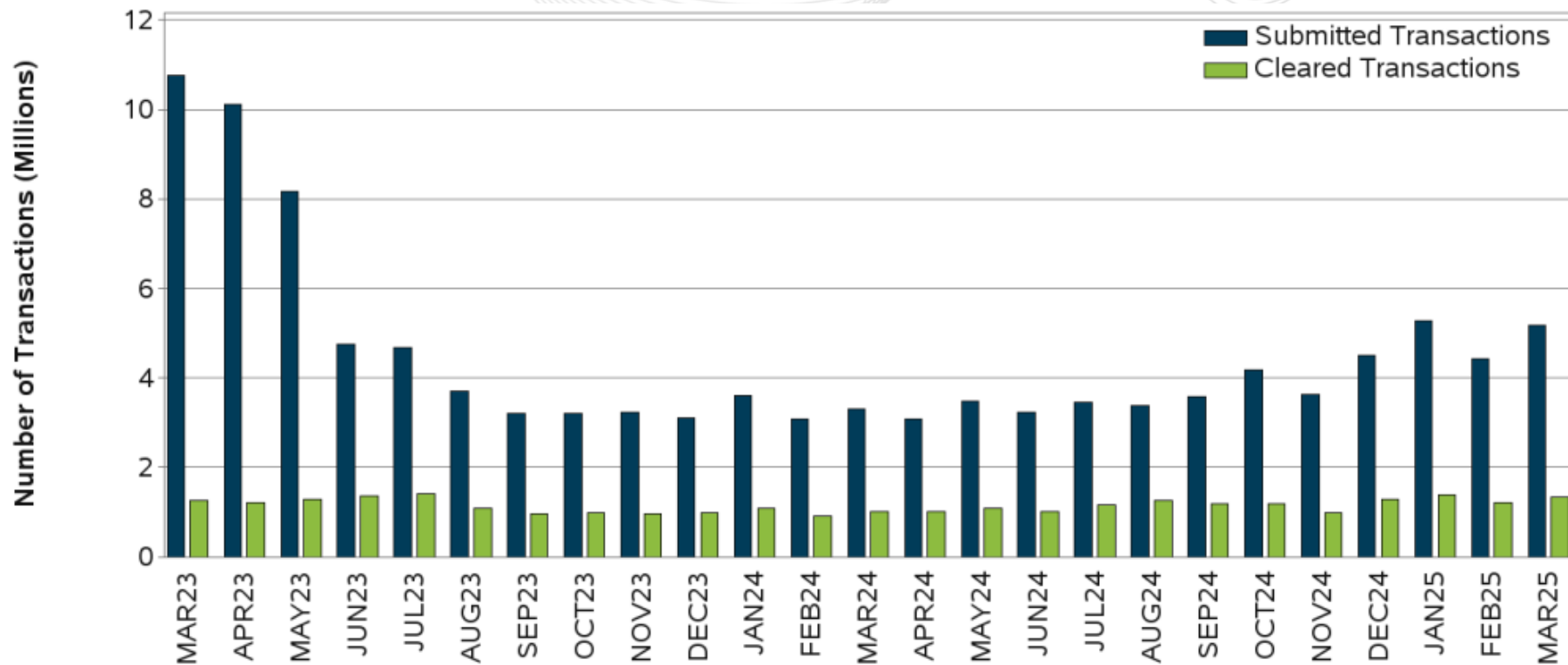
Up-To-Congestion Transactions - Total Number



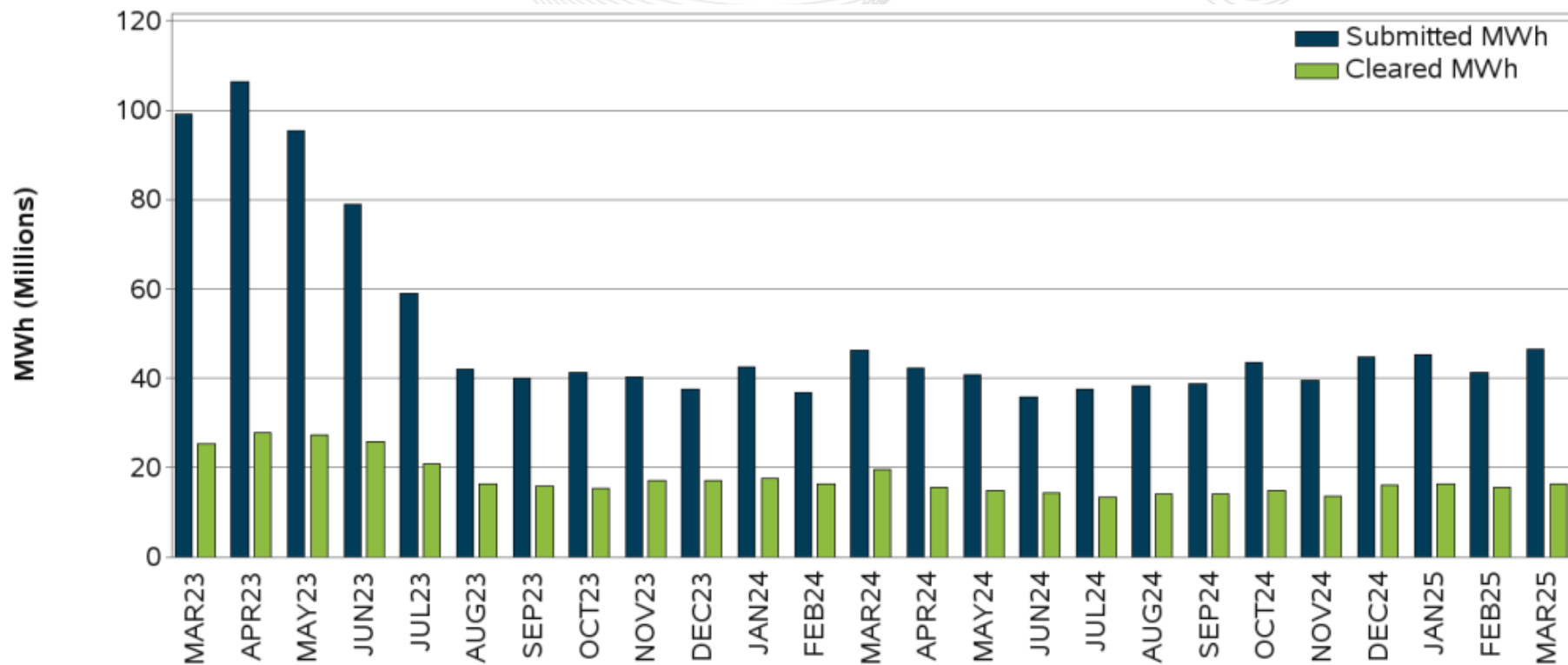
Up-To-Congestion Transactions - Total Volume



INCs, DECs and Up-To-Congestion Transactions - Total Number



INCs, DECs and Up-To-Congestion Transactions - Total Volume

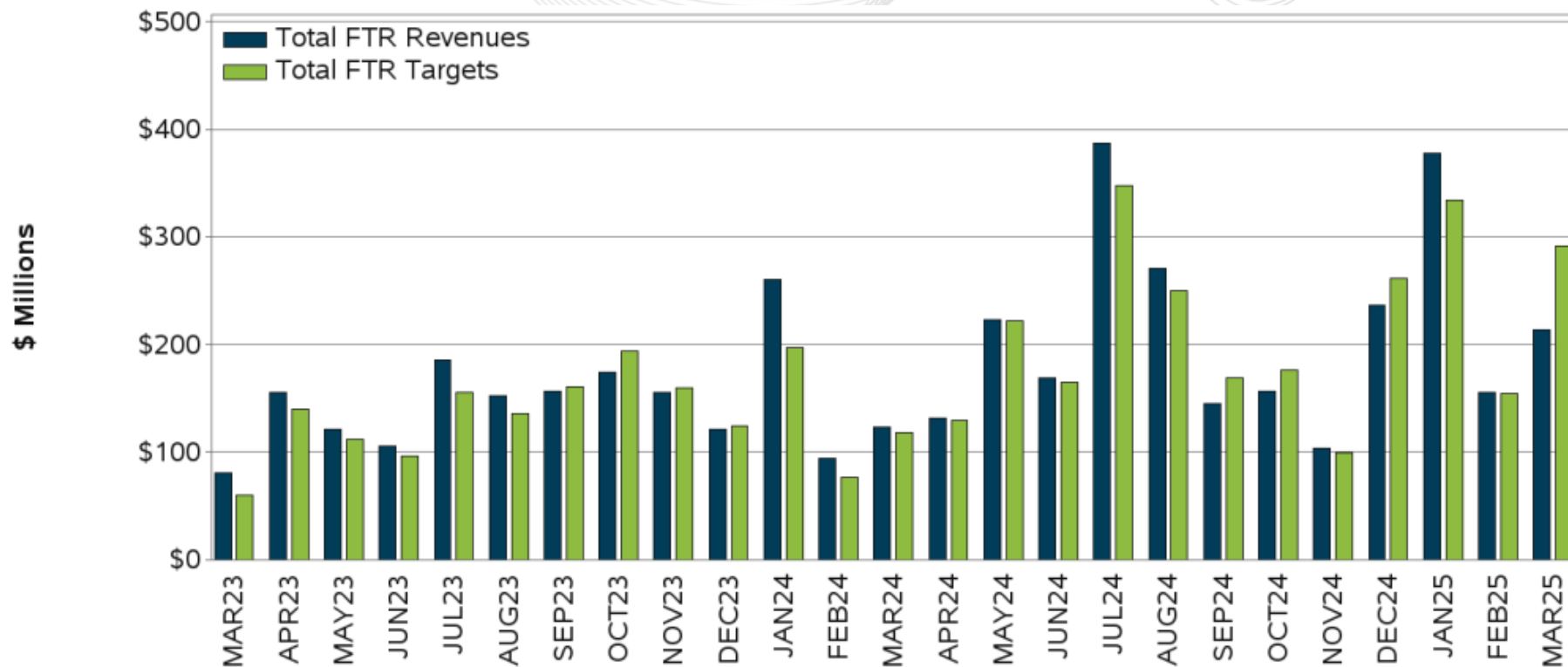


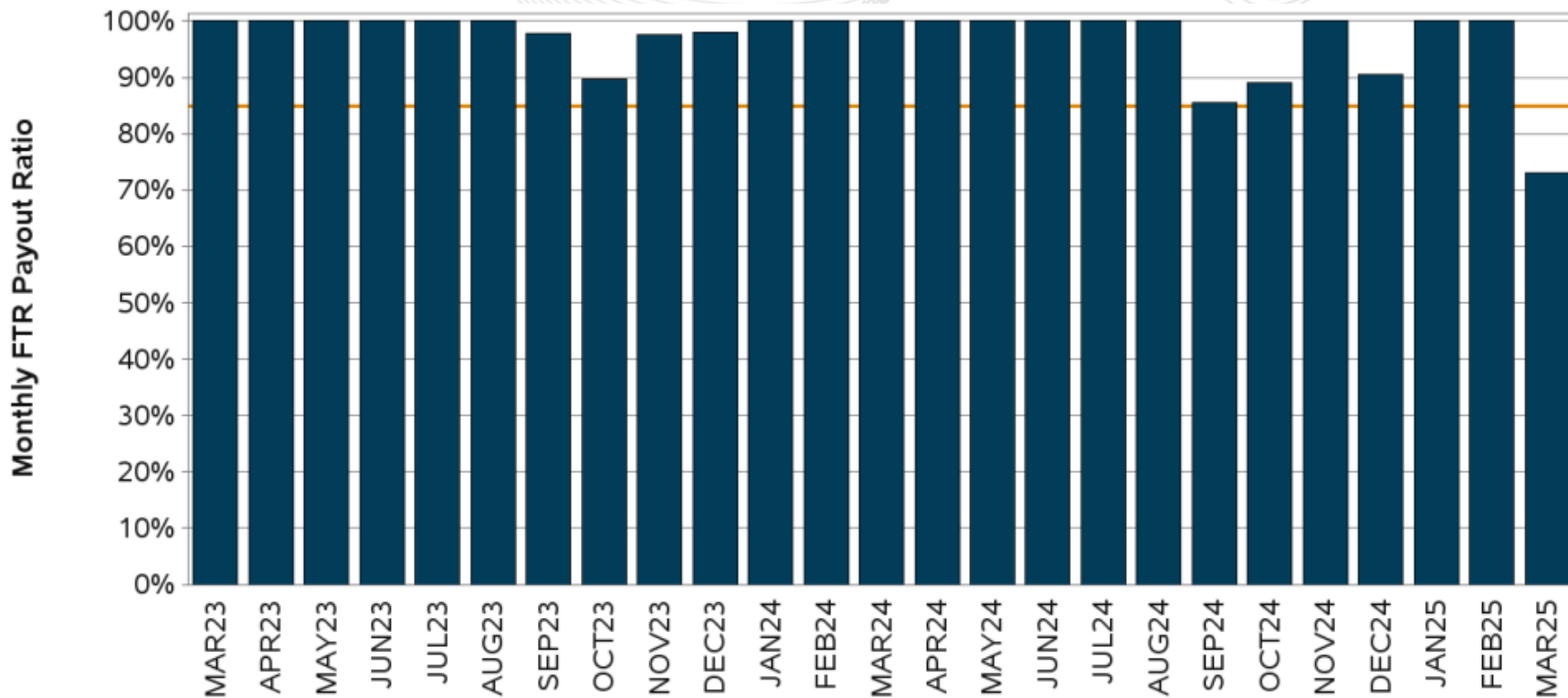
Energy Market

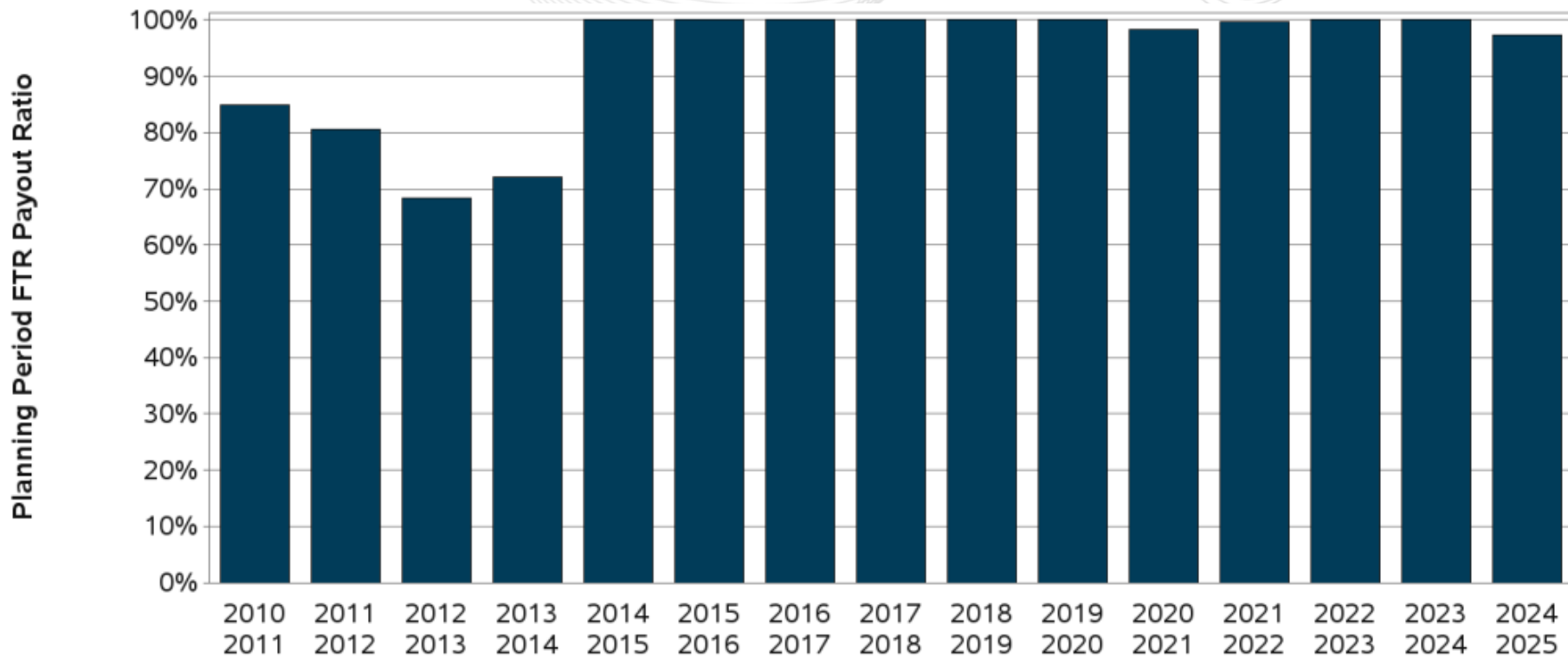
Congestion and FTR Summary

Period	Surplus / Underfunding	Payout Ratio
March 2025	\$-78,483,283	73%
2025	\$-34,488,663	96%
2024/2025	\$-34,287,904	98%

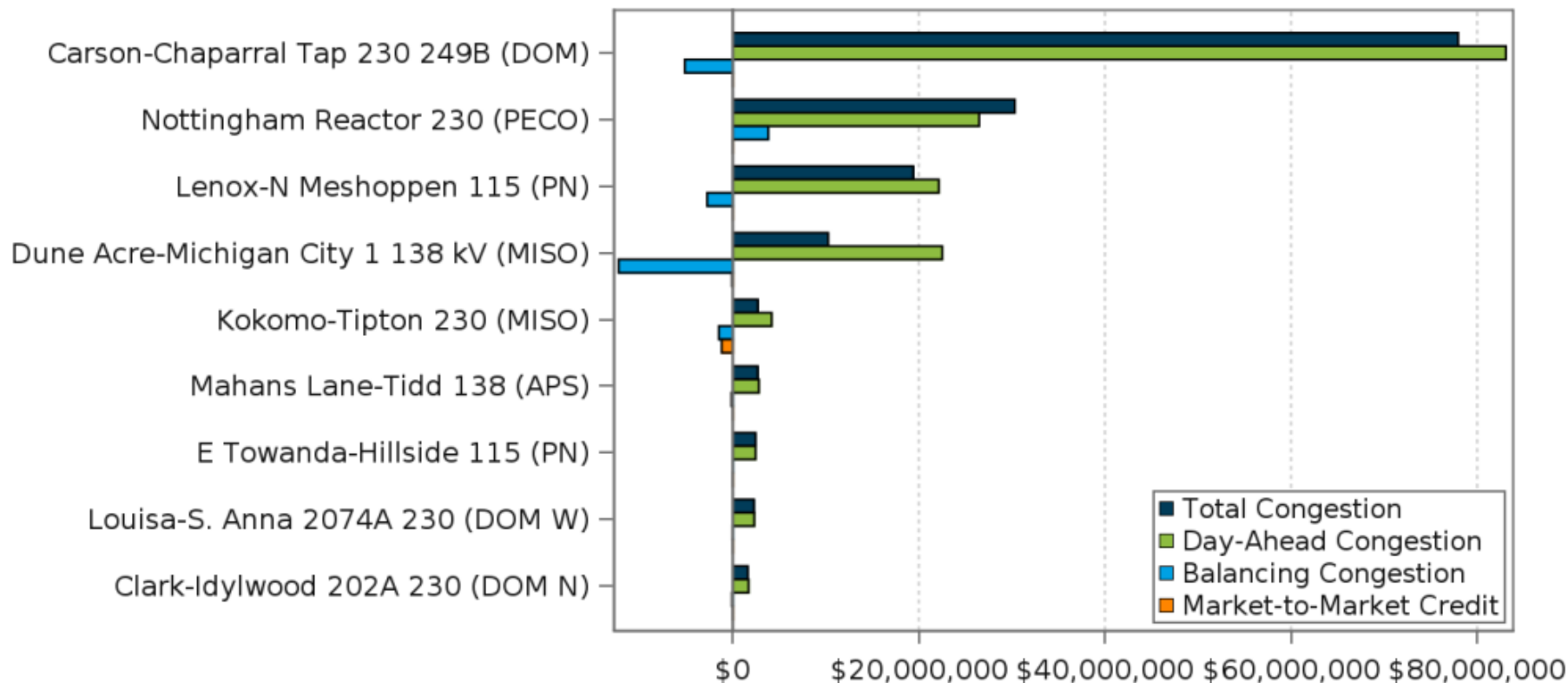
FTR Revenue vs. FTR Target Allocation





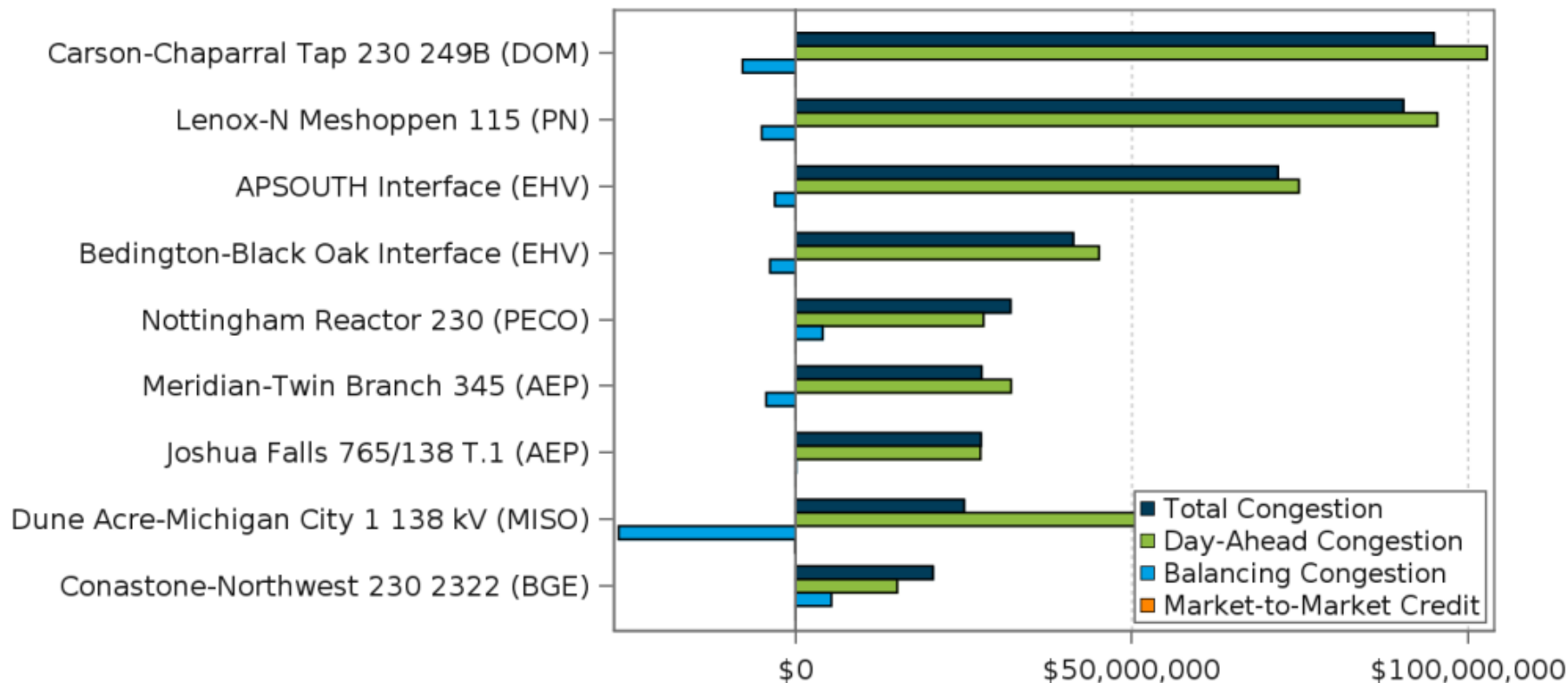


Ten Most Heavily Congested Transmission Facilities - Overall, March



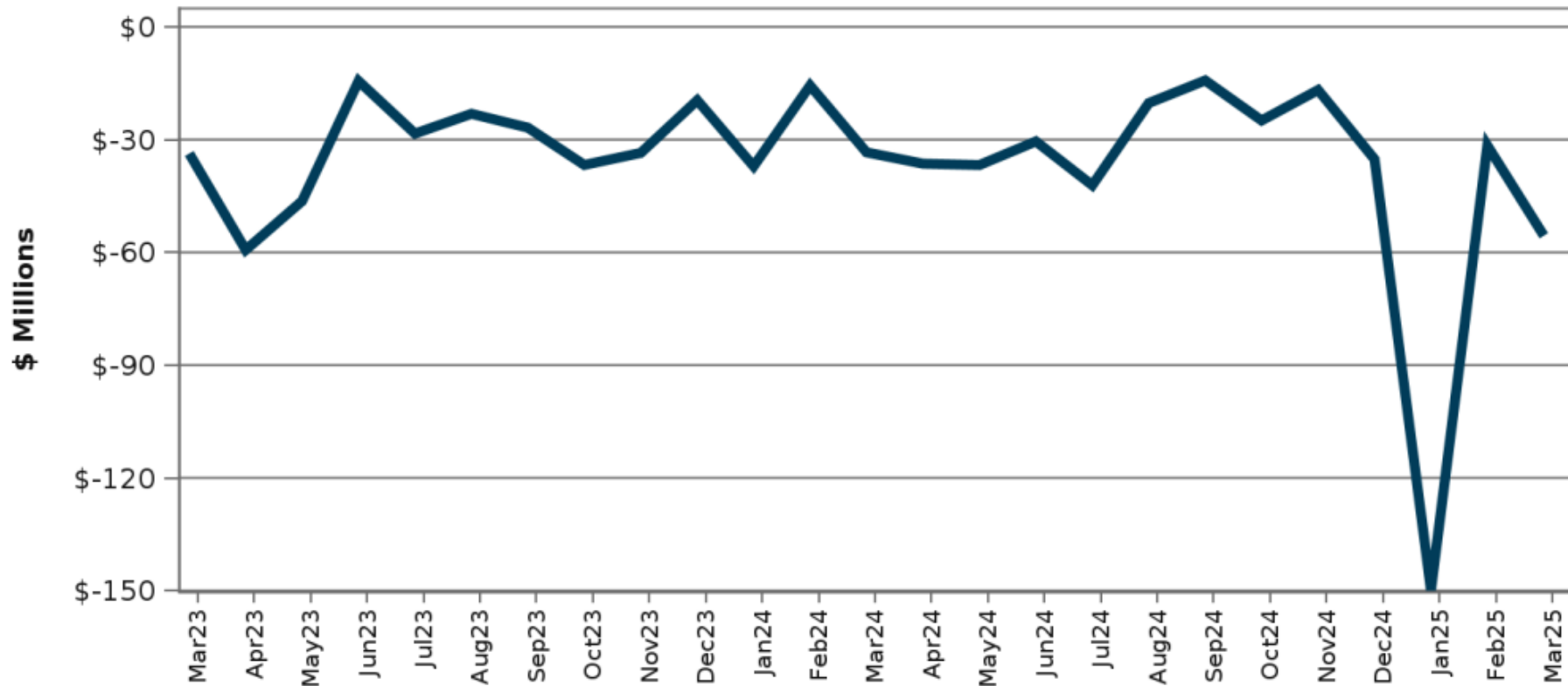
The ten most heavily congested facilities account for 93% of total congestion for March.

Ten Most Heavily Congested Transmission Facilities - Overall, 2025



The ten most heavily congested facilities account for 81% of total congestion for 2025.

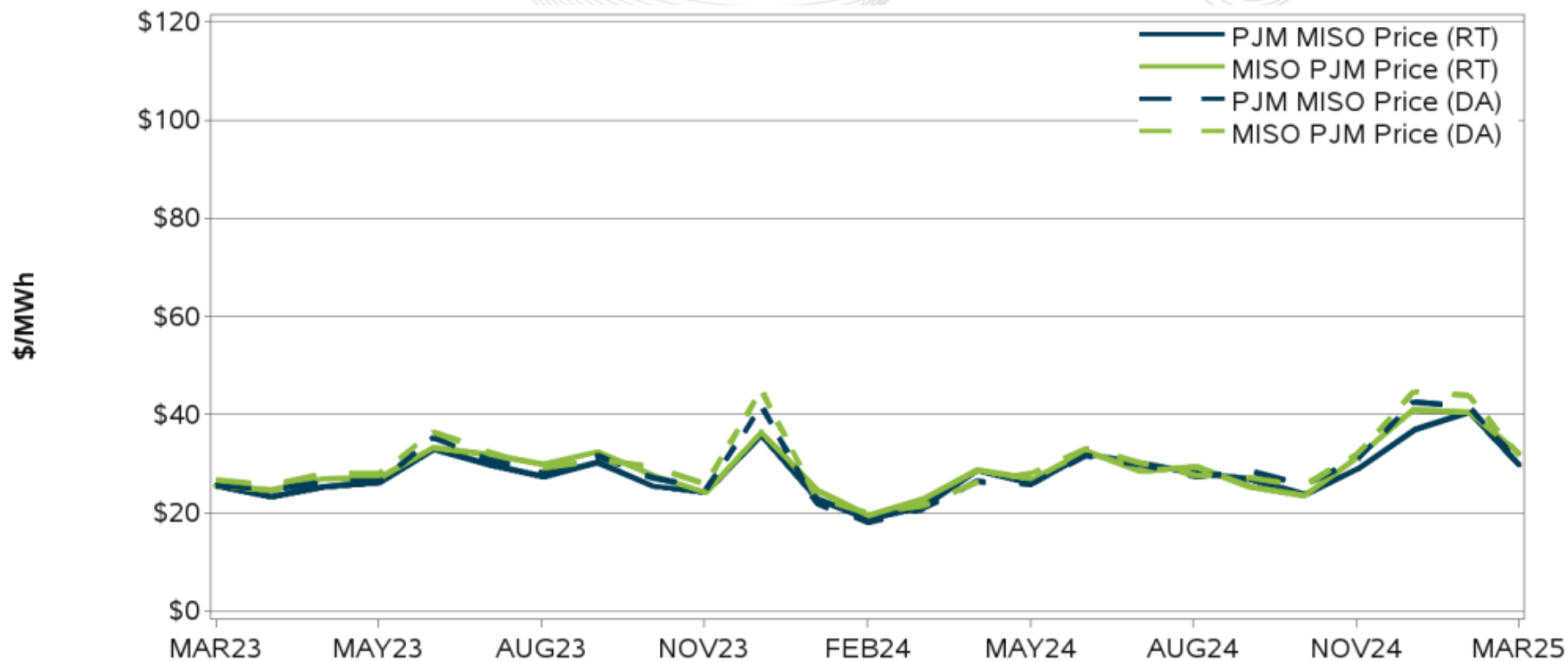
Balancing Congestion Charge Revenues (BLI 2215)



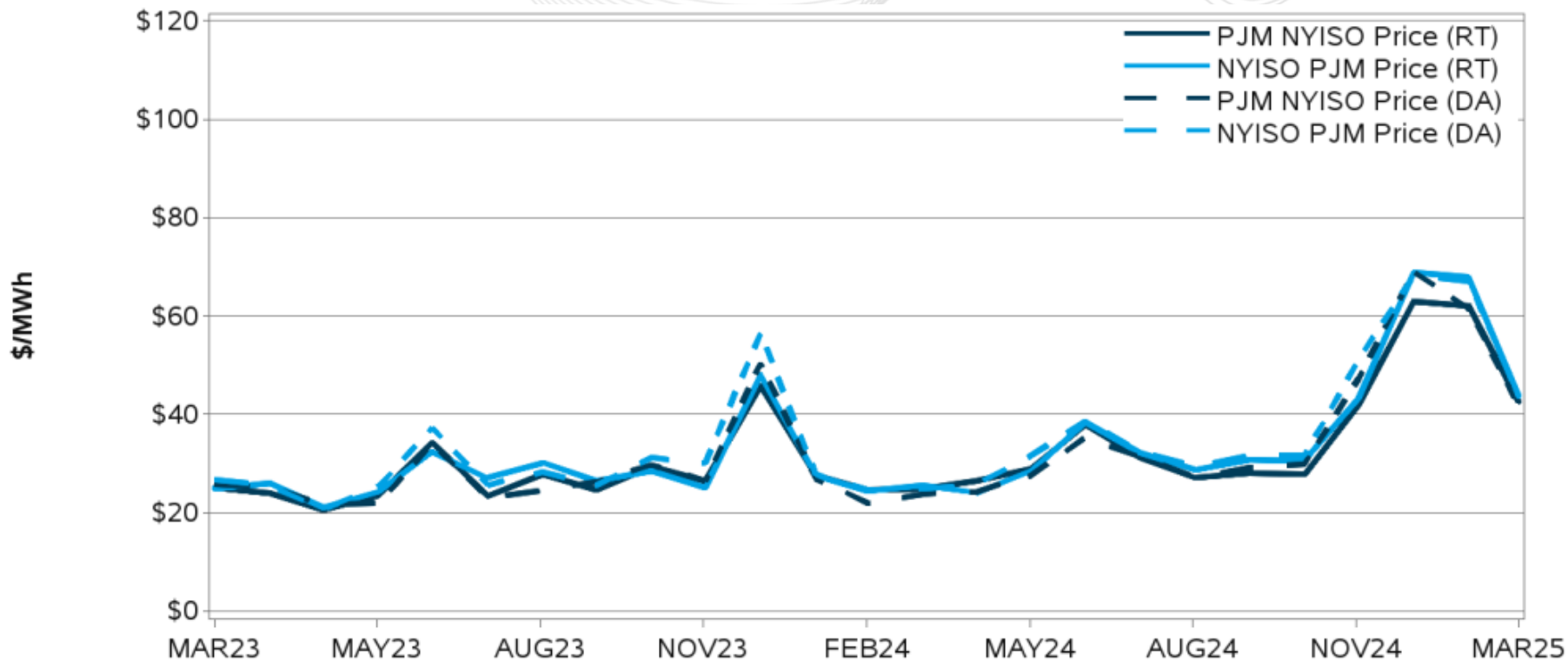
Energy Market

Interchange/Seams Summary

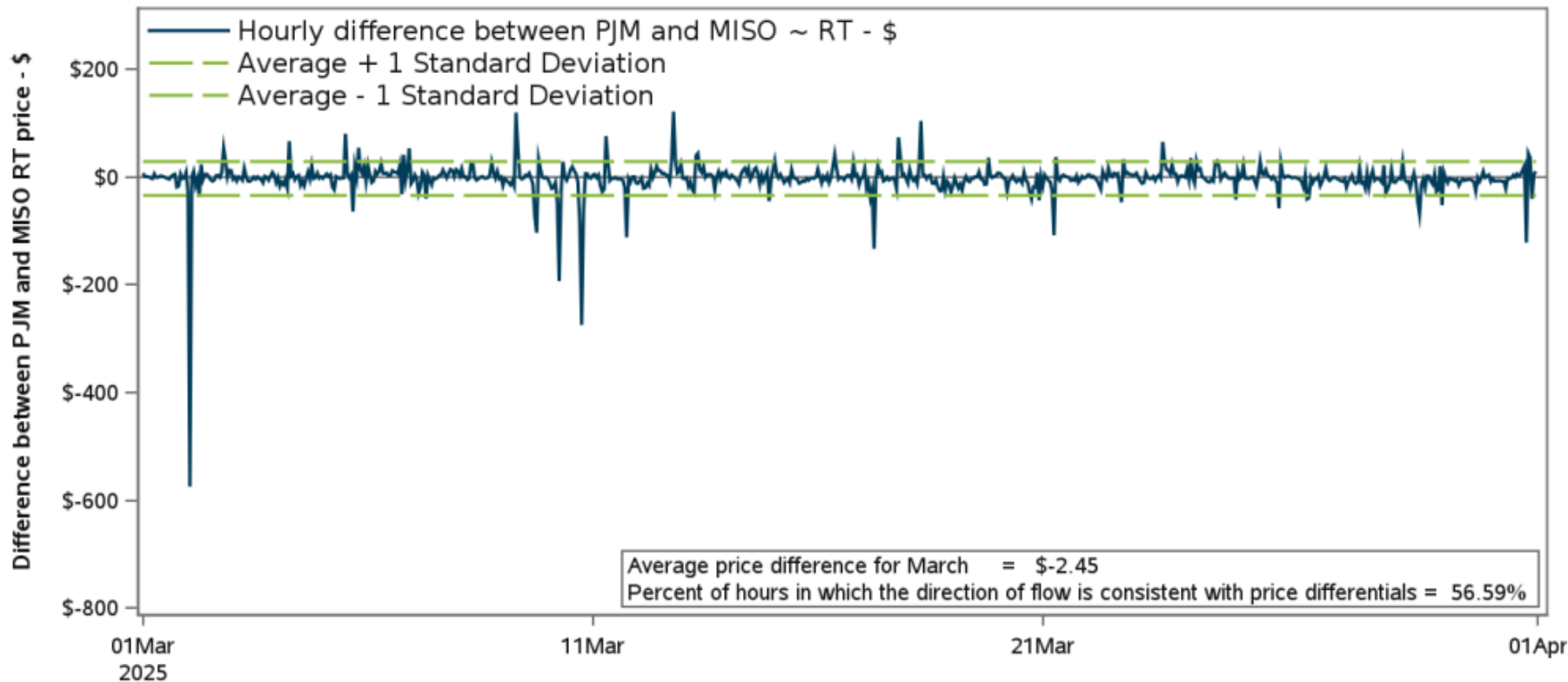
Monthly Average MISO Interface Pricing



Monthly Average NYISO Interface Pricing

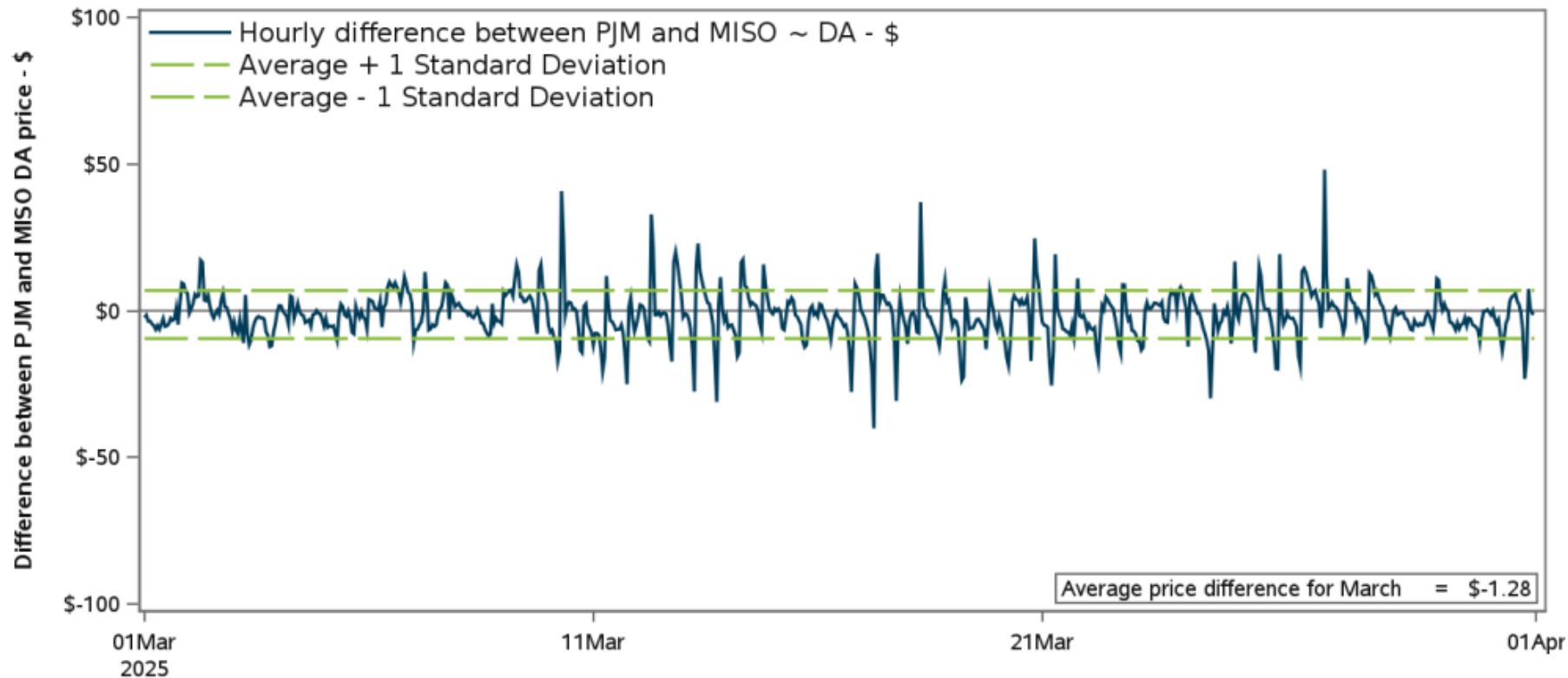


Hourly Difference Between PJM and MISO Real-Time Prices



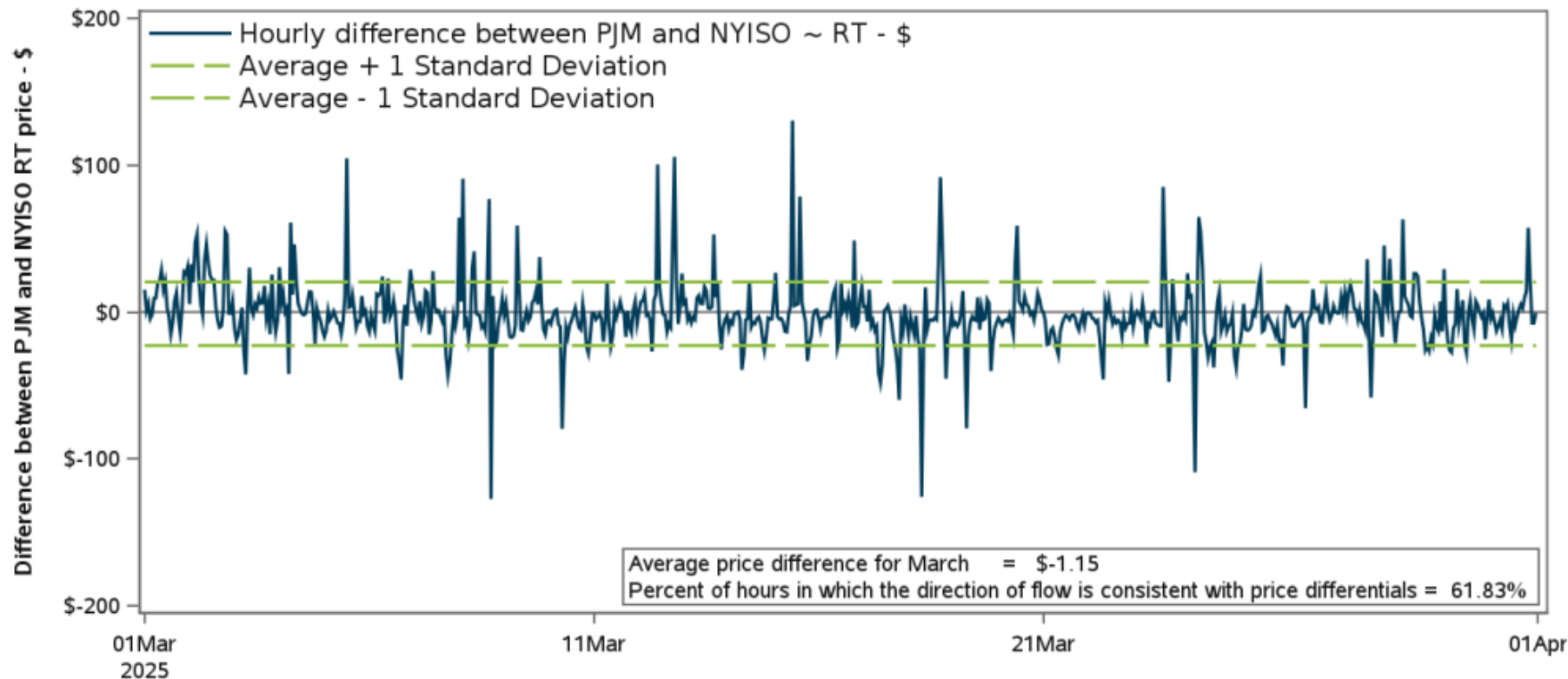
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.

Hourly Difference Between PJM and MISO Day-Ahead Prices



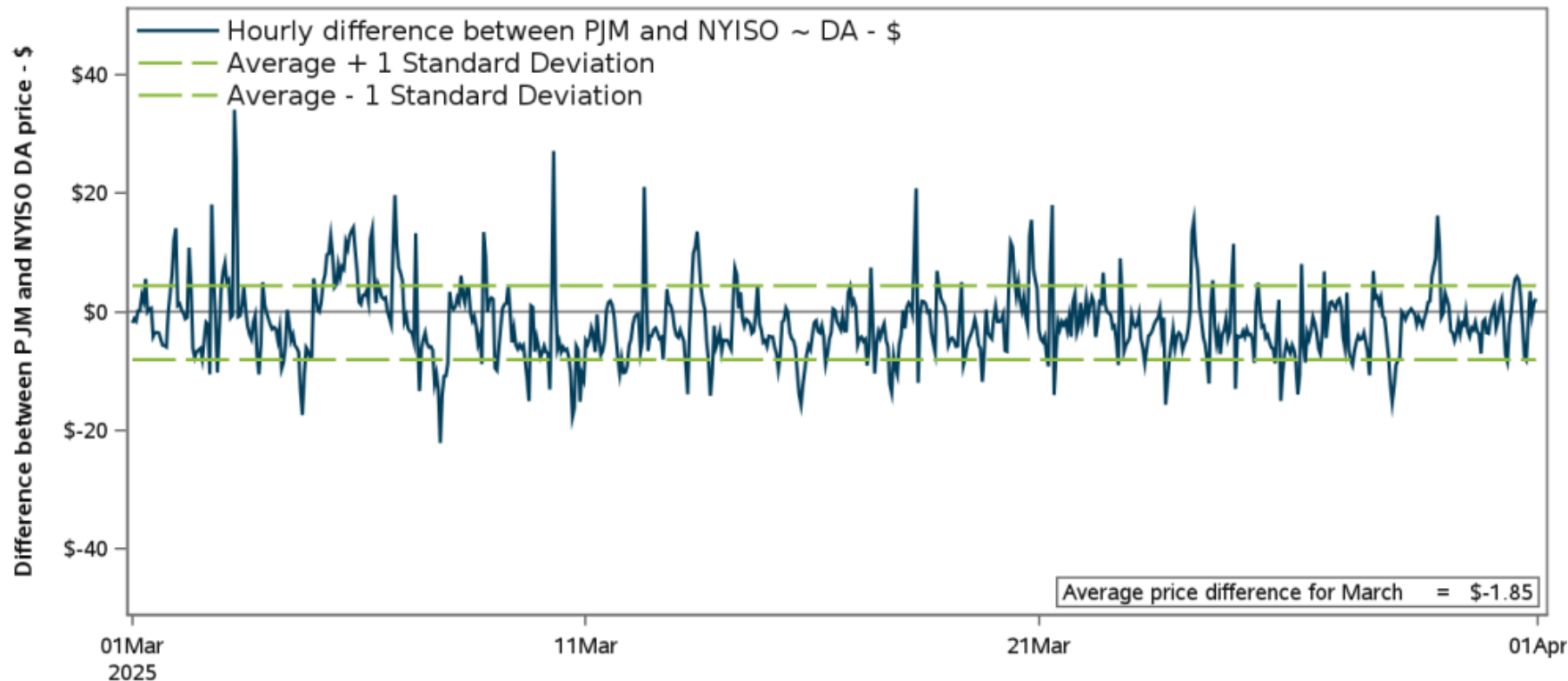
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.

Hourly Difference Between PJM and NYISO Real-Time Prices



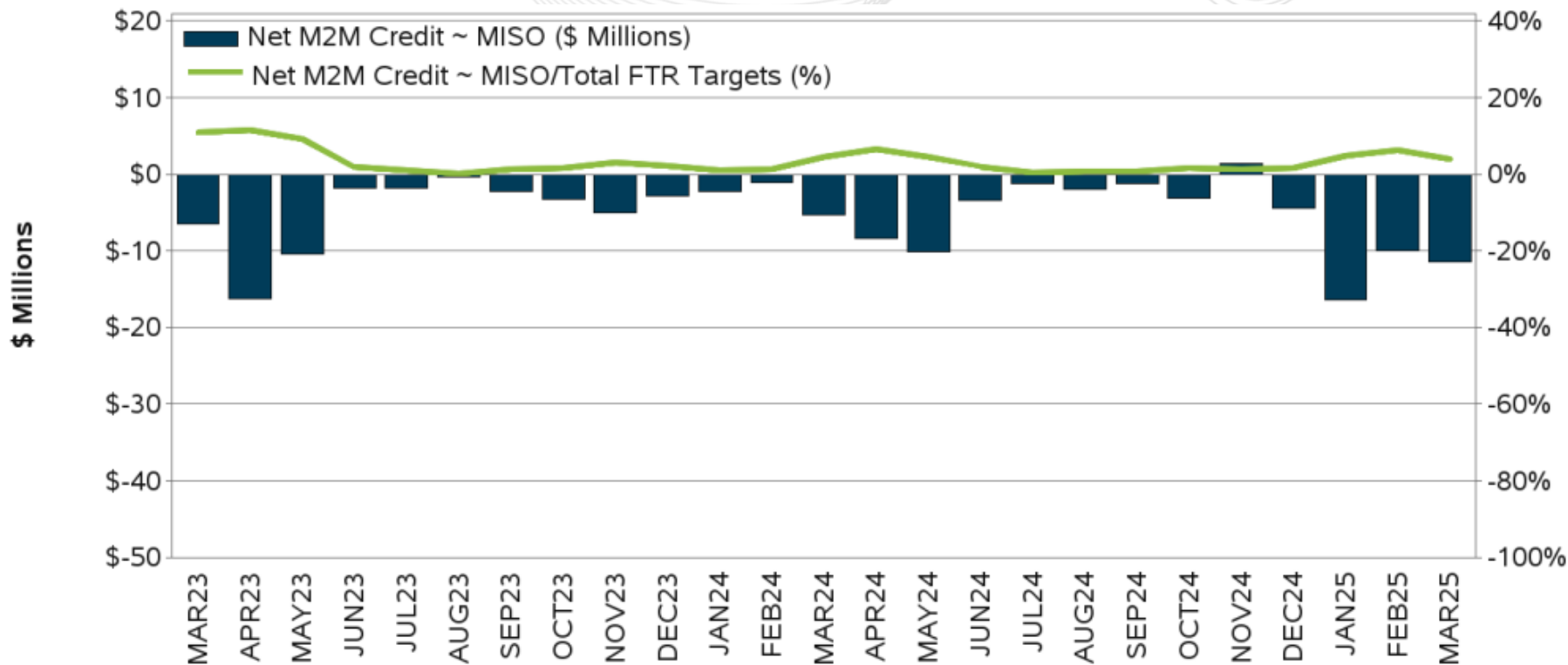
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.

Hourly Difference Between PJM and NYISO Day-Ahead Prices



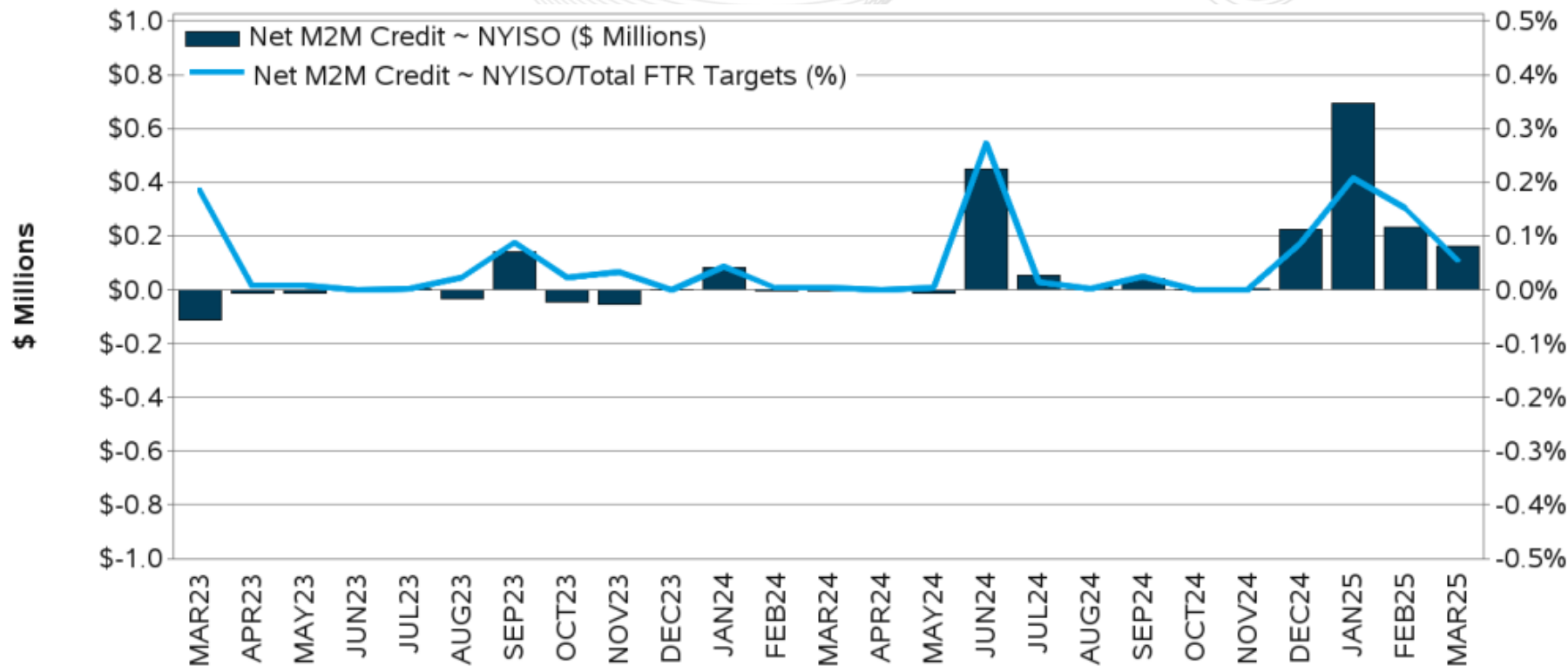
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.

PJM-MISO Market-to-Market Coordination Settlement



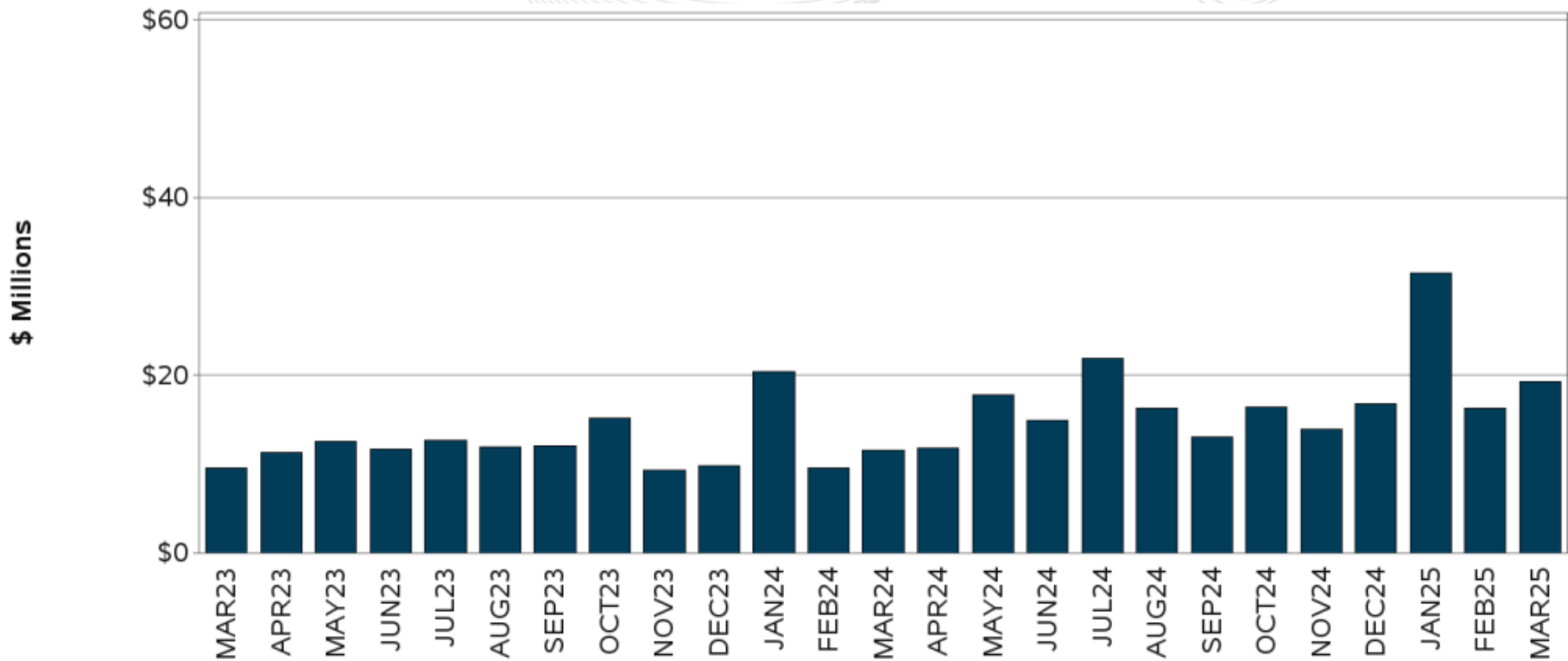
Negative M2M Credit represents PJM payment to MISO

PJM-NYISO Market-to-Market Coordination Settlement

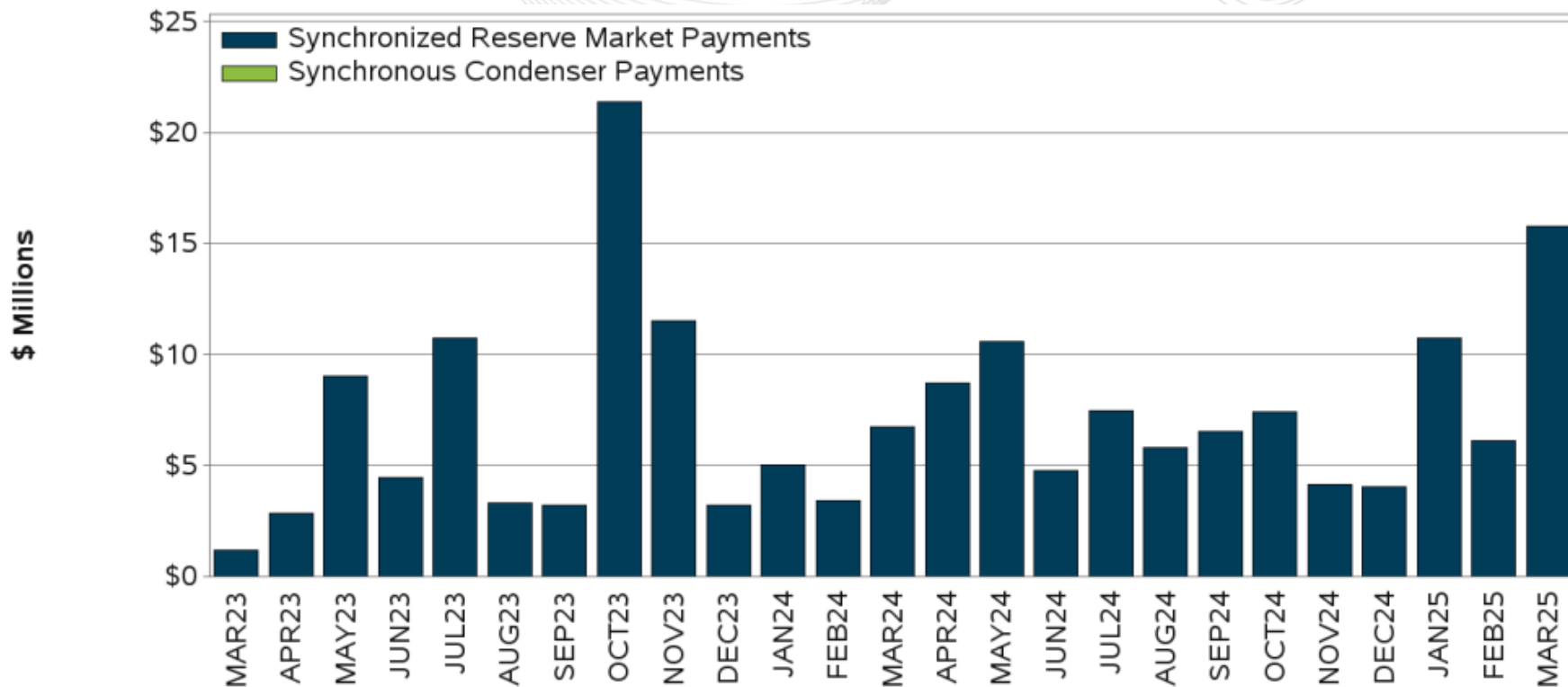


Negative M2M Credit represents PJM payment to NYISO

Ancillary Service Market Summary

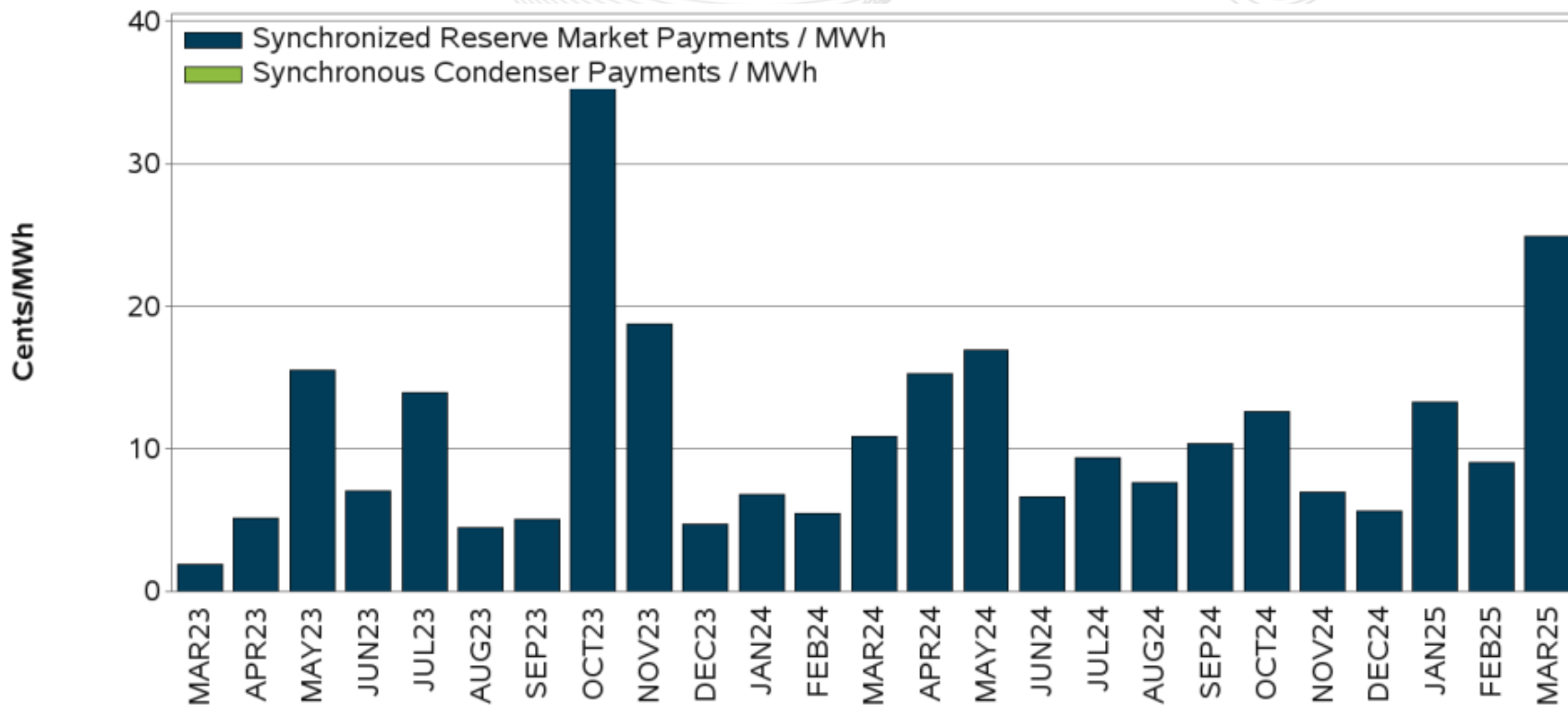


Synchronized Reserve and Synchronous Condenser Costs

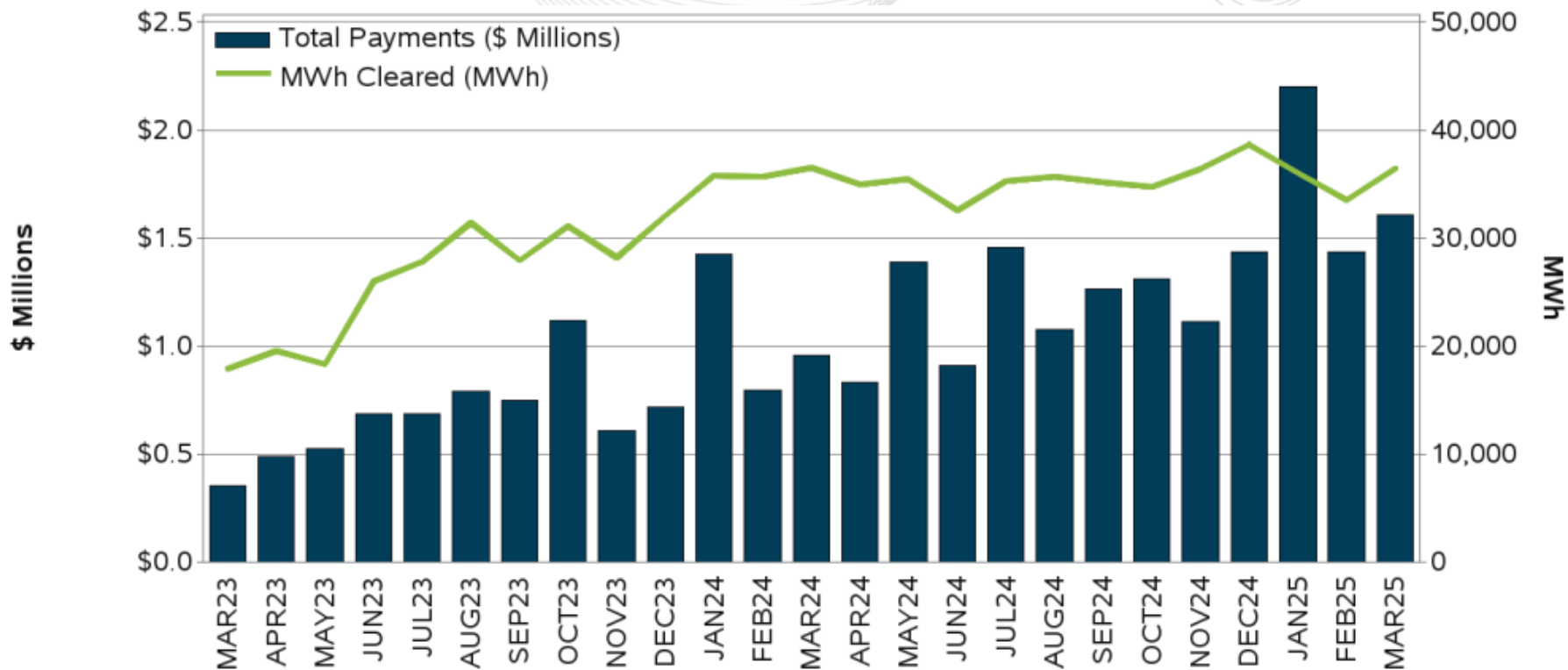




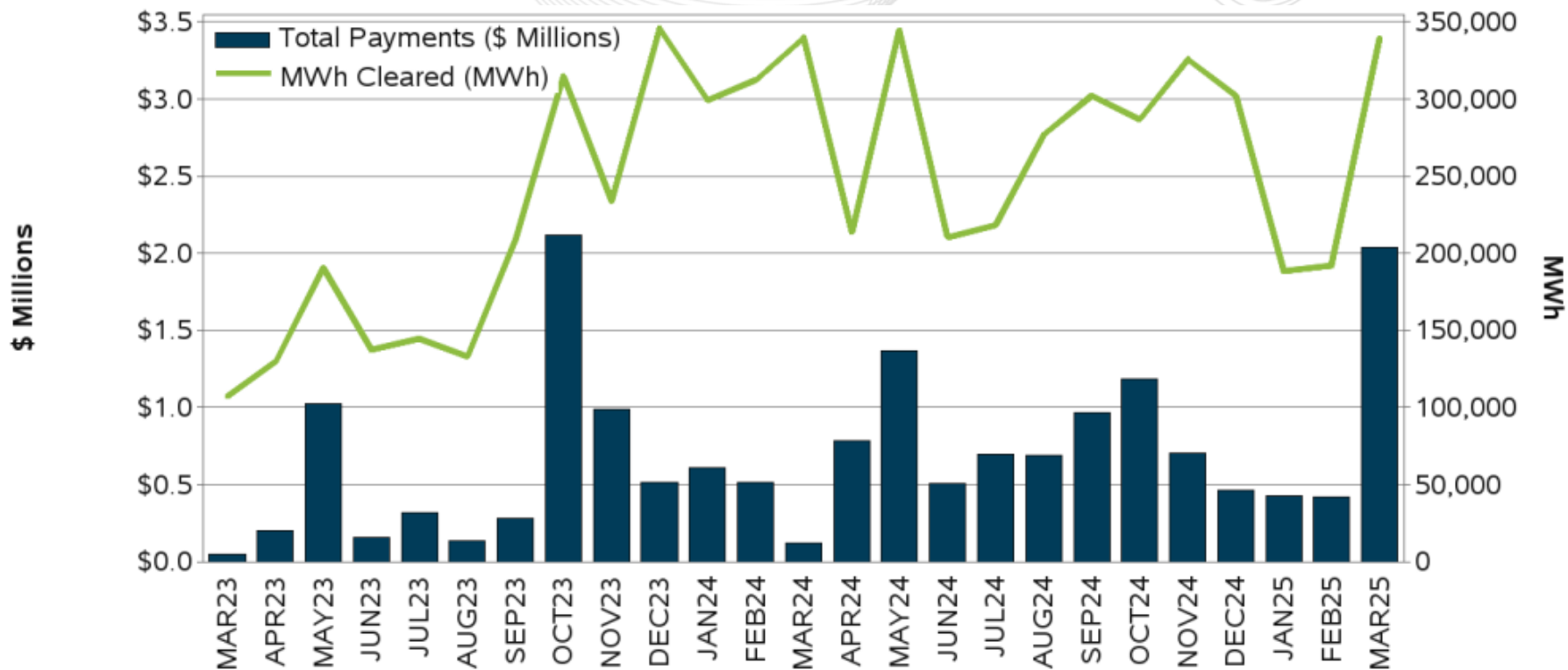
Load-Adjusted Synchronized Reserve and Synchronous Condenser Costs



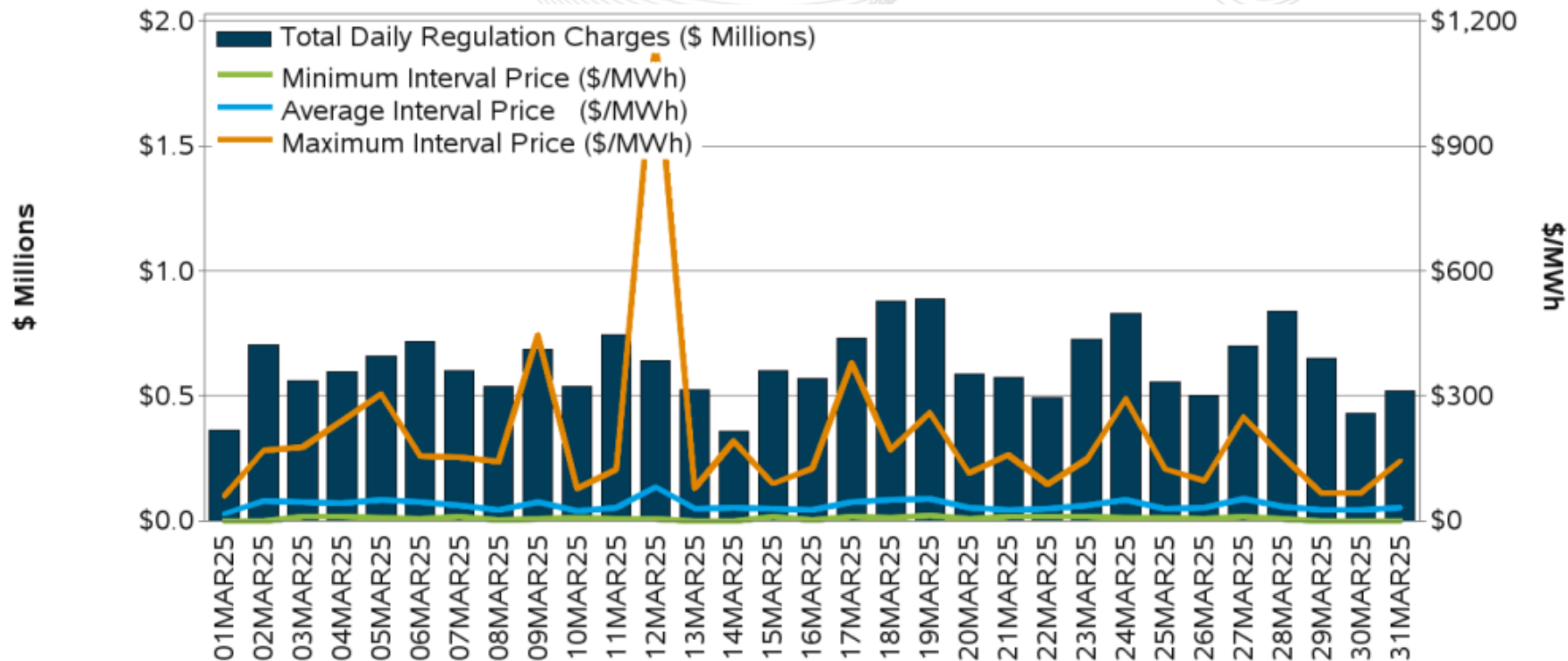
DR Participation in PJM Regulation Markets



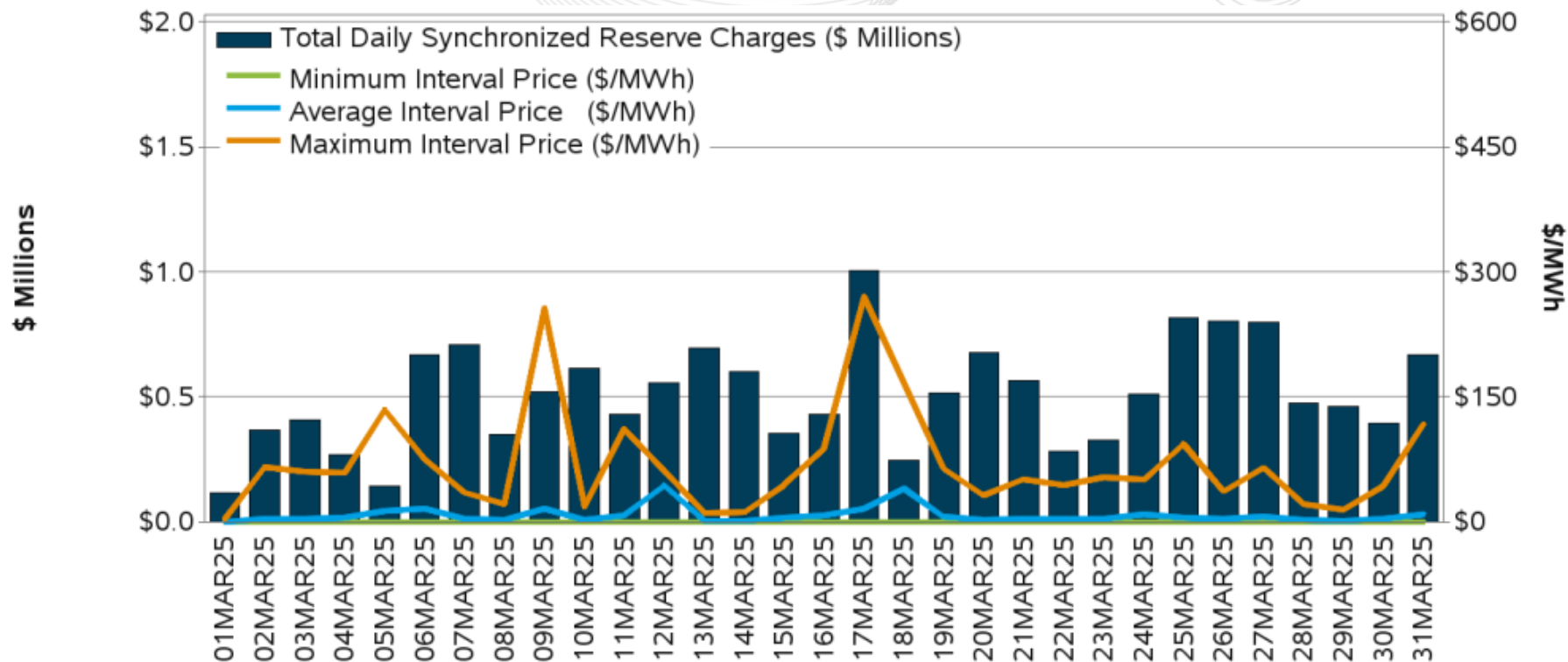
DR Participation in PJM Synchronized Reserve Markets



Regulation Market Daily Prices and Charges



Synchronized Reserve Market Daily Prices and Charges



Jennifer Warner-Freeman
Jennifer.Freeman@pjm.com

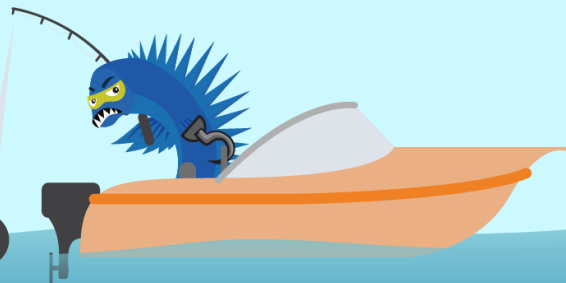


Member Hotline
(610) 666 – 8980
(866) 400 – 8980
custsvc@pjm.com

PROTECT THE POWER GRID THINK BEFORE YOU CLICK!



BE ALERT TO
MALICIOUS PHISHING
EMAILS



Report suspicious email activity to PJM.
Call (610) 666-2244 or email it_ops_ctr_shift@pjm.com