



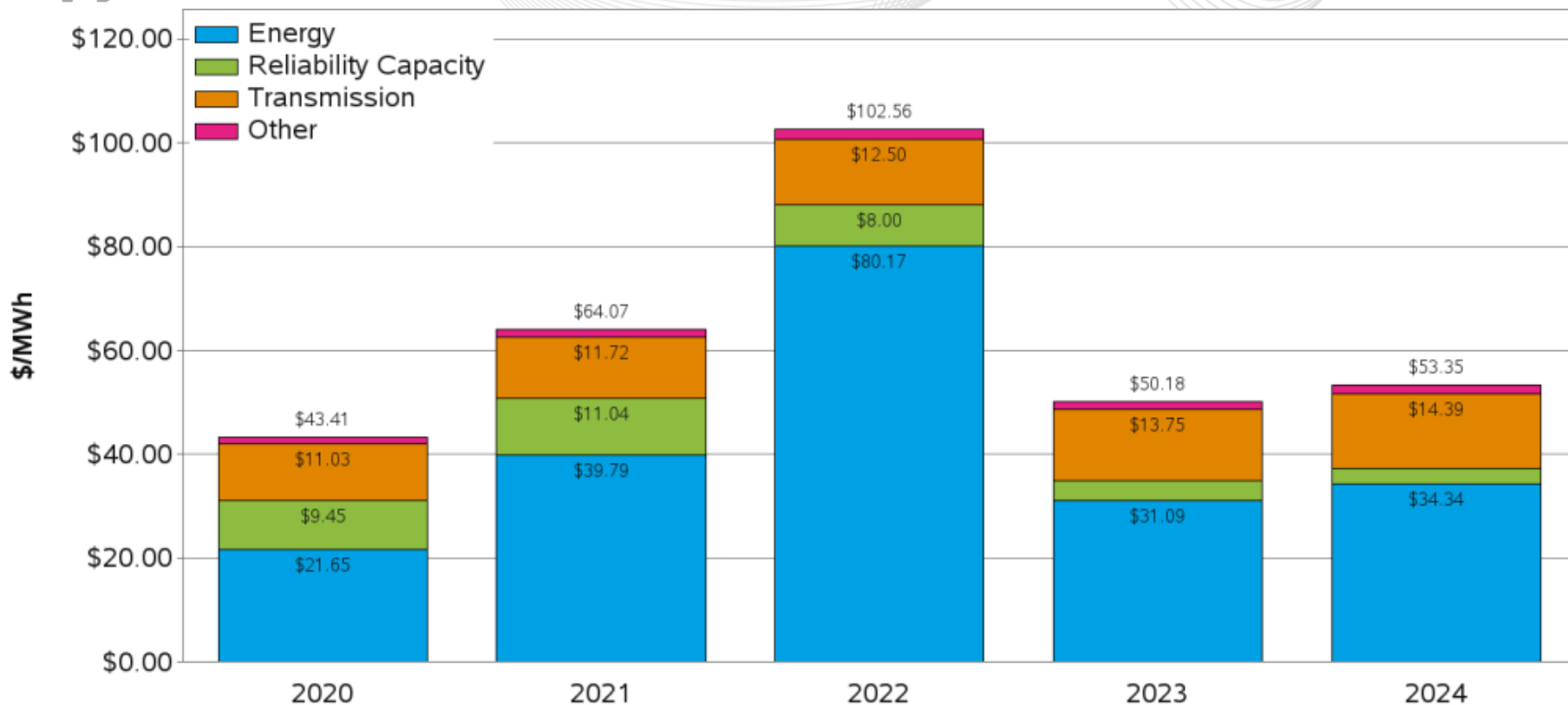
# Markets Report

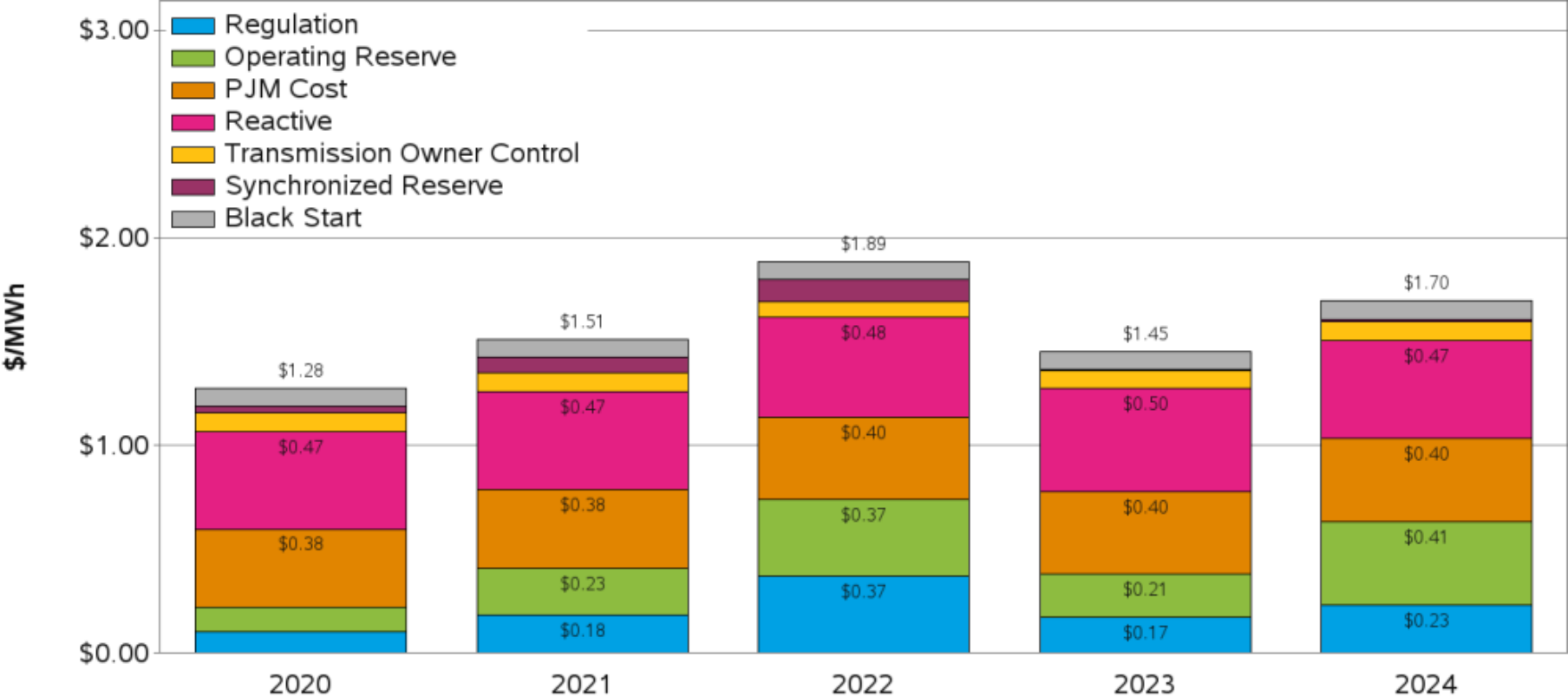
MC Webinar  
Aug 19, 2024

- PJM Wholesale Cost in 2023 is \$53.35/MWh, up from full-year 2022 costs of \$50.18/MWh . ([Slides 5 & 6](#))
- 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 7- 22](#))
- In July, temperatures were above average for most of the month. The sum of Heating and Cooling Degree Days was above its historic average. ([Slides 8-10](#))
- Energy use was also above its historic average for July. ([Slides 8-10](#))
- In July, uplift exceeded \$800,000 on 10 days. ([Slides 26 & 27](#))

- Load-weighted average LMP for 2024 is \$34.34/MWh: ([Slides 35-37](#))
  - July 2024 was \$47.20/MWh, which is higher than July 2023 (\$37.20/MWh) but much lower than July 2022 (\$92.50/MWh).
- There were two 5-minute intervals that experienced shortage pricing in July. ([Slide 34](#), Report Appendix)
- FTR revenue adequacy for the month of July is 100% and the 2024-2025 Planning Year is currently funded at 100%. ([Slides 52-55](#))
- Congestion values have been similar to those seen in 2023 and lower than 2022. ([Slide 53](#))
- Regulation and Synchronized Reserve market costs have generally tracked with energy prices over time. ([Slides 69-71](#))

# Markets Report



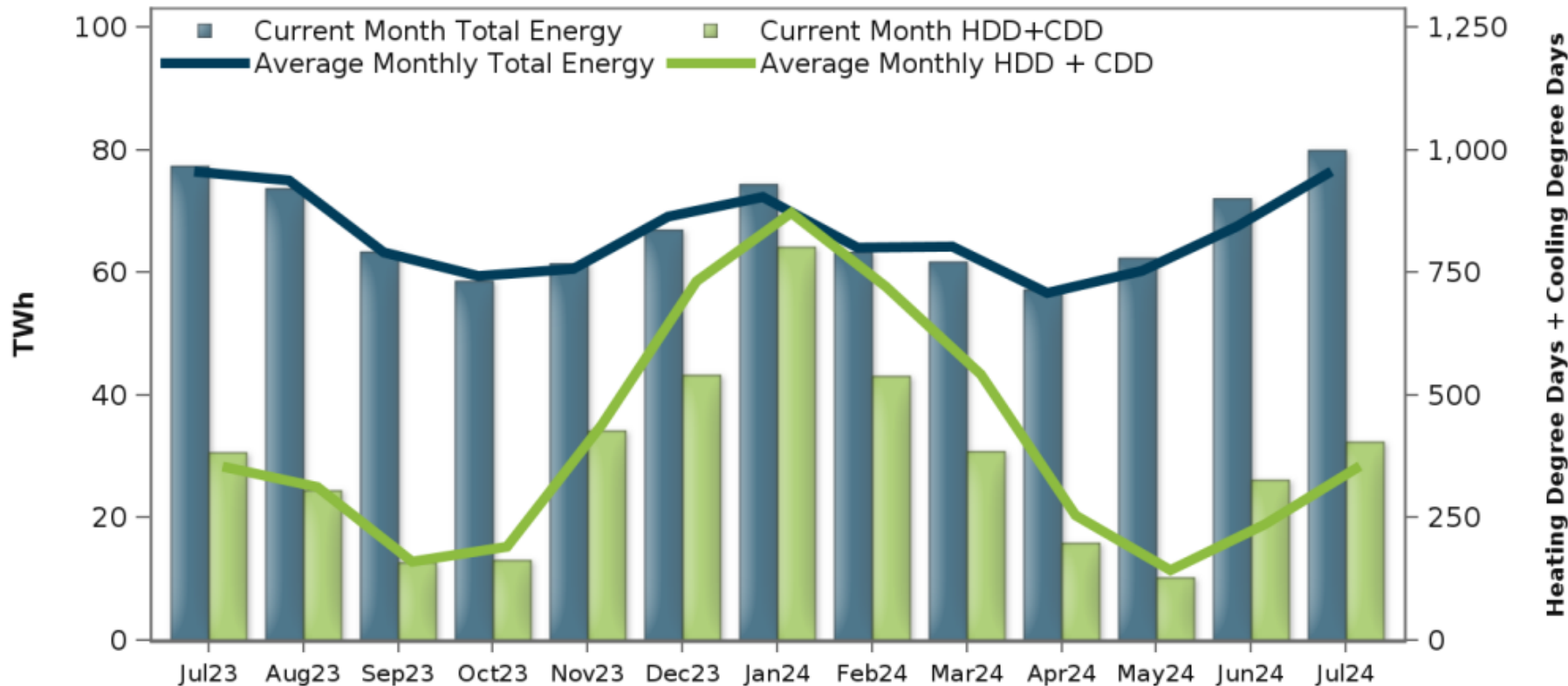


# Market Conditions

- 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, 2023. Averages include load data for all of TO zones in the current RTO footprint.

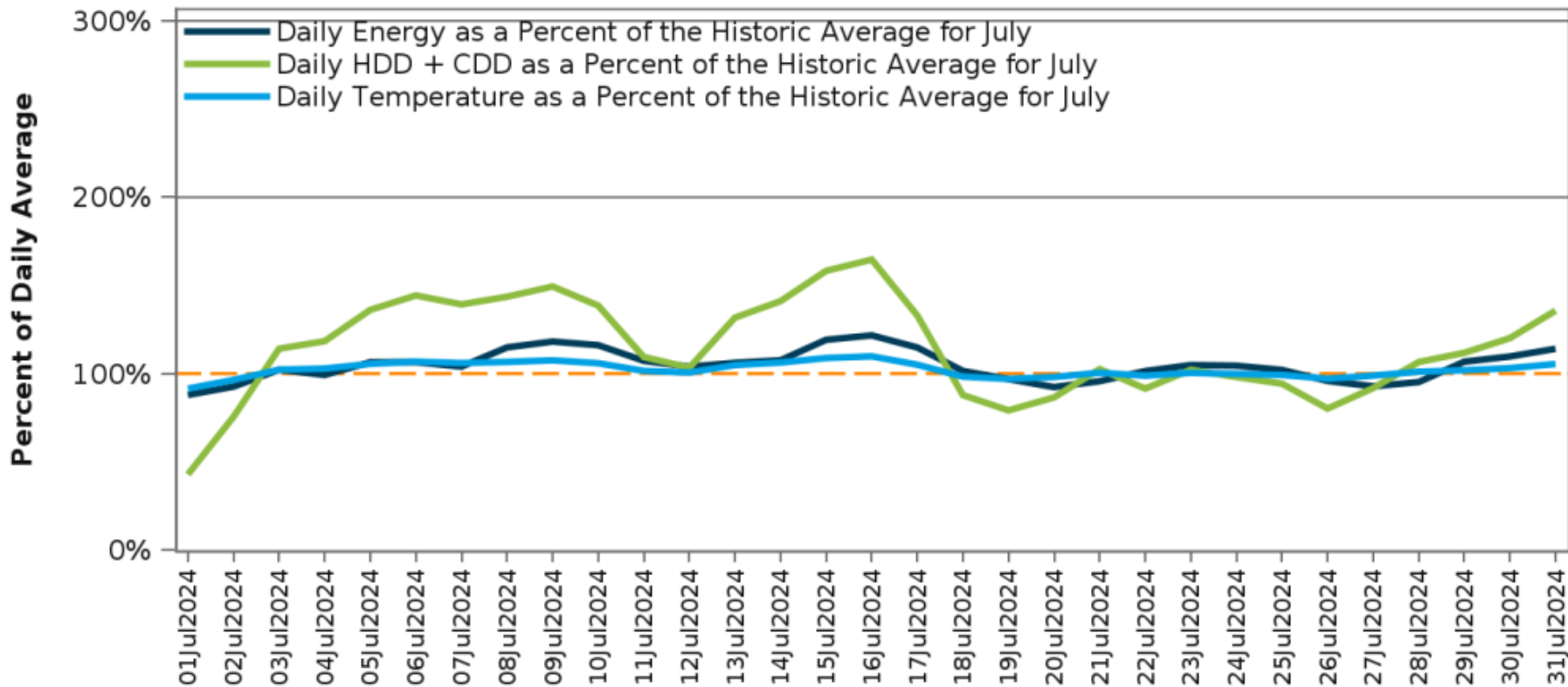


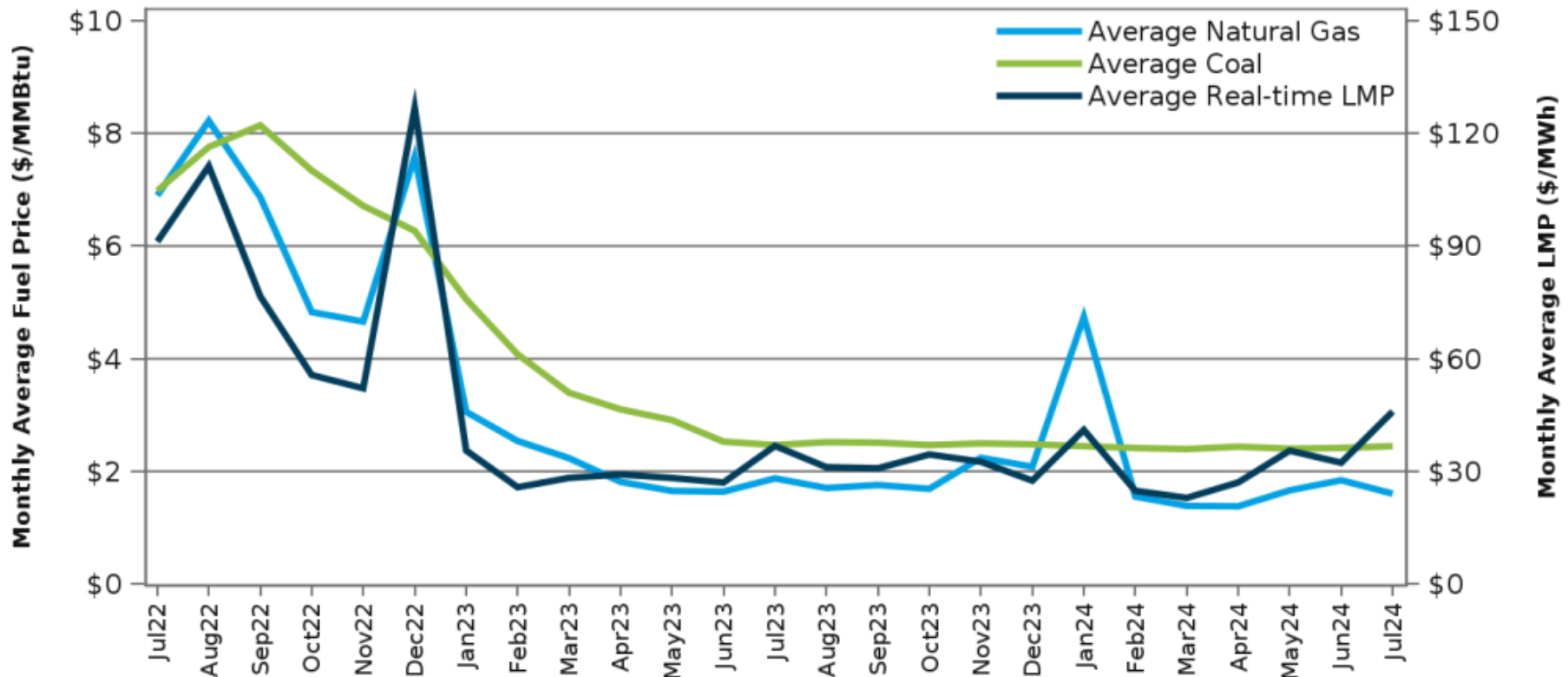
# Historic Average Weather and Energy versus Current Month



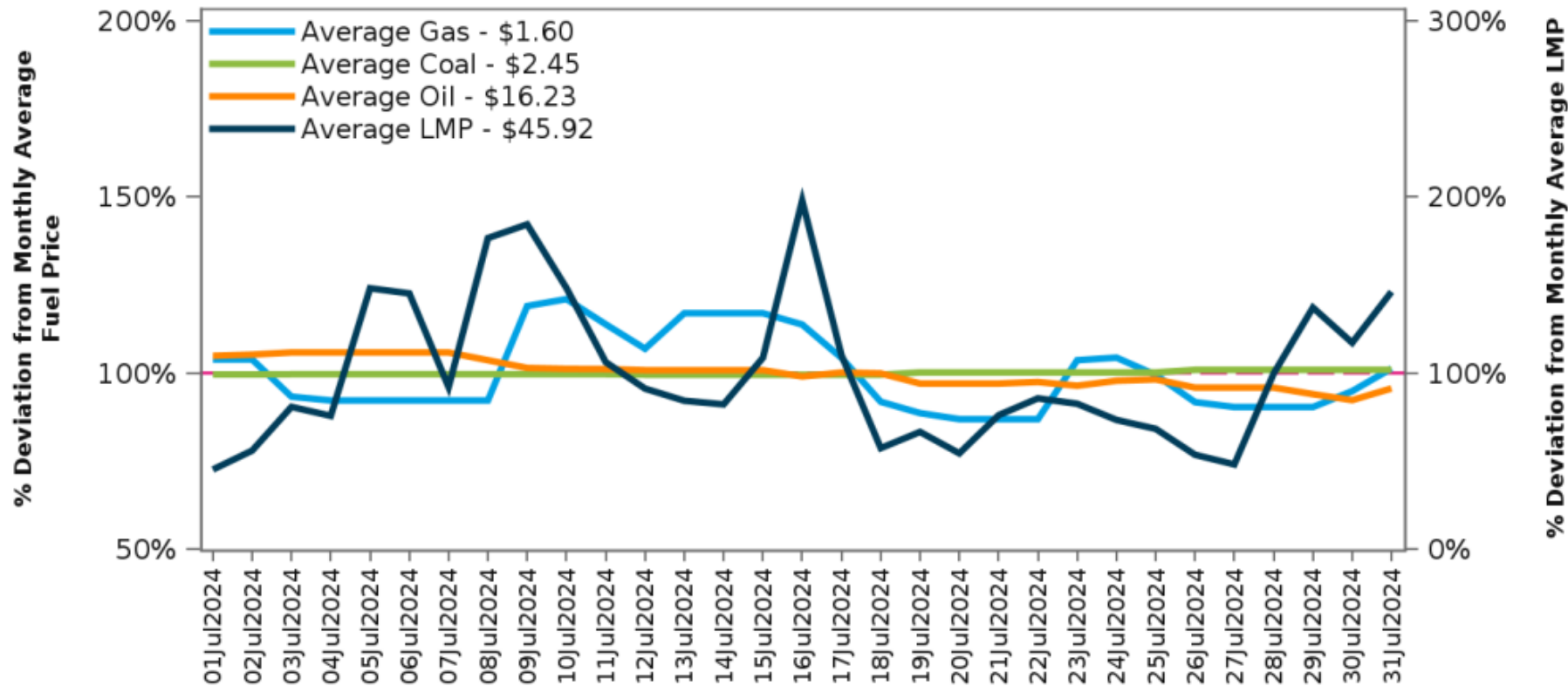


# Historic Average Weather and Energy versus Current Month - Daily





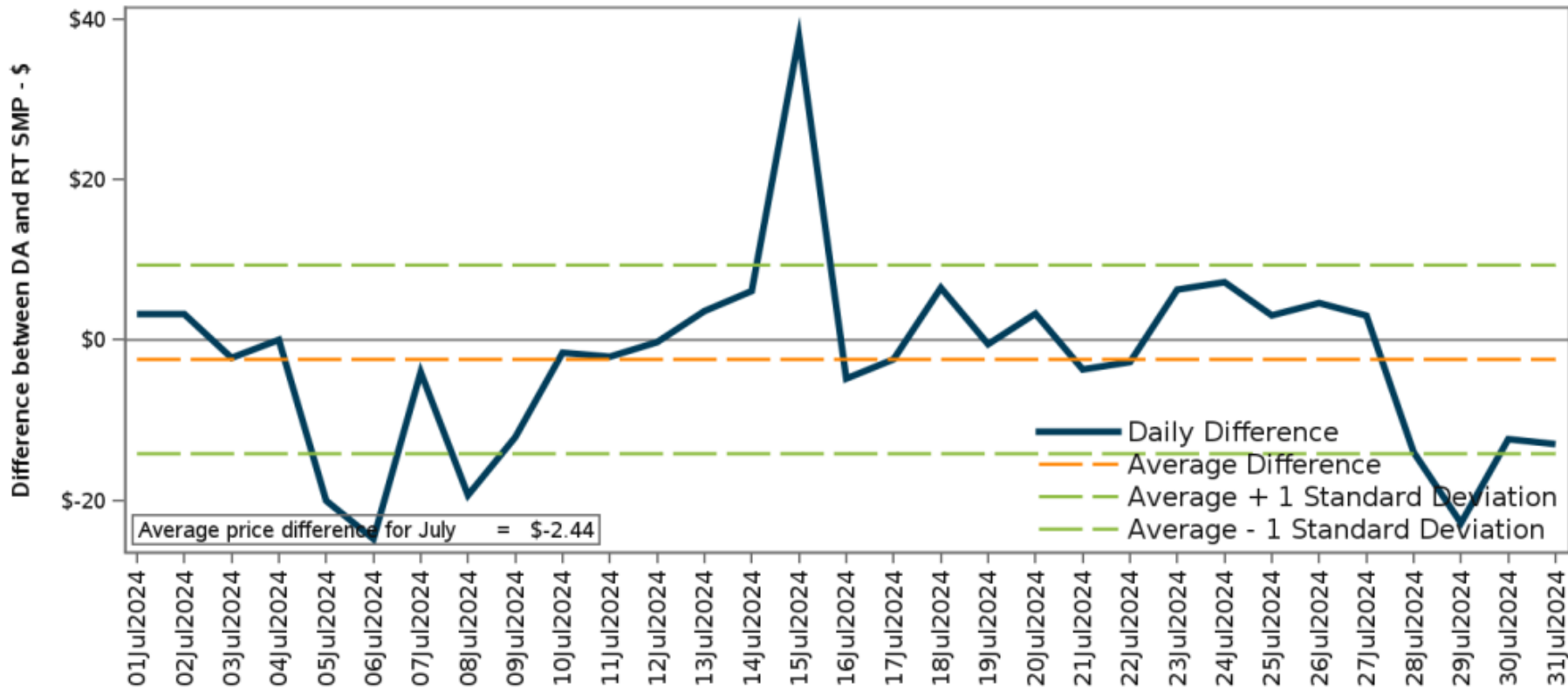
Fuel Price Source: S&P Global Platts



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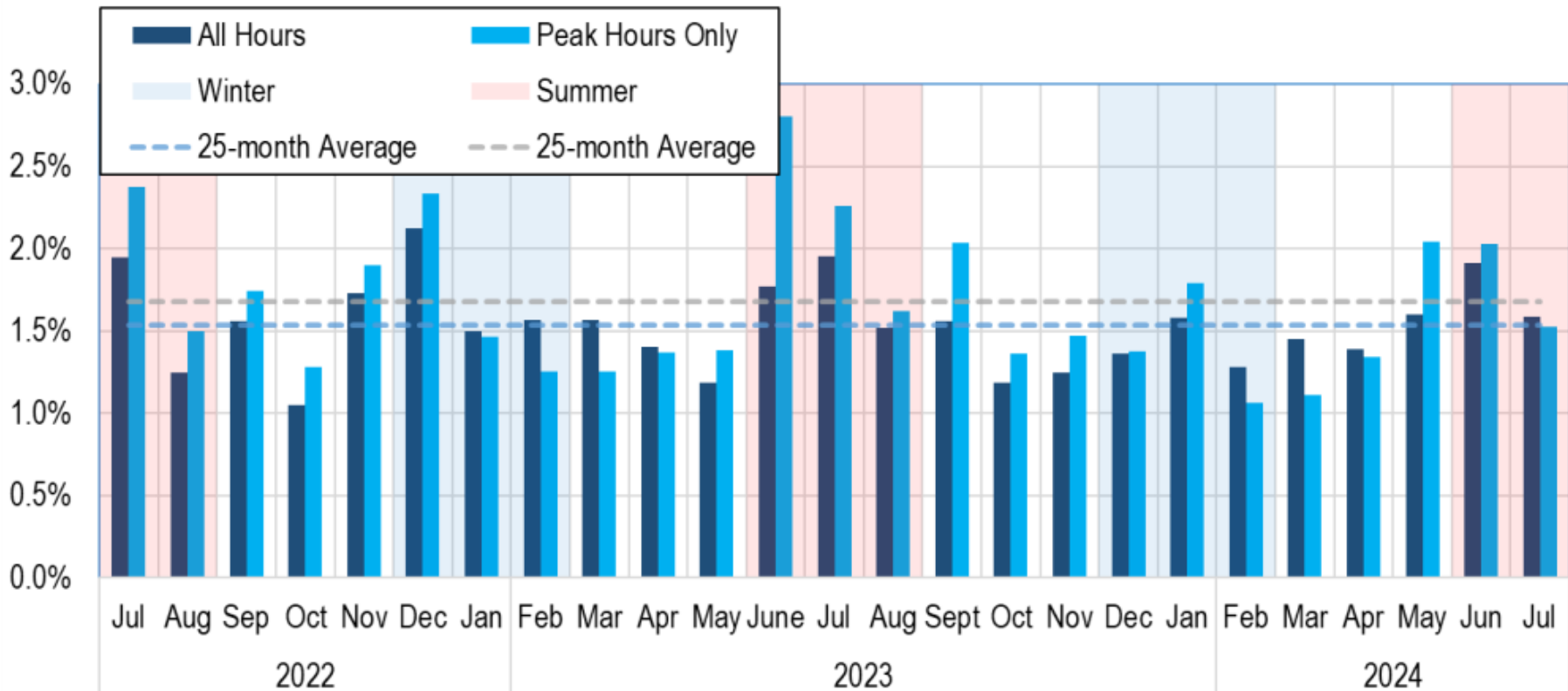


# Daily Difference Between Day-Ahead and Real-Time System Marginal Prices

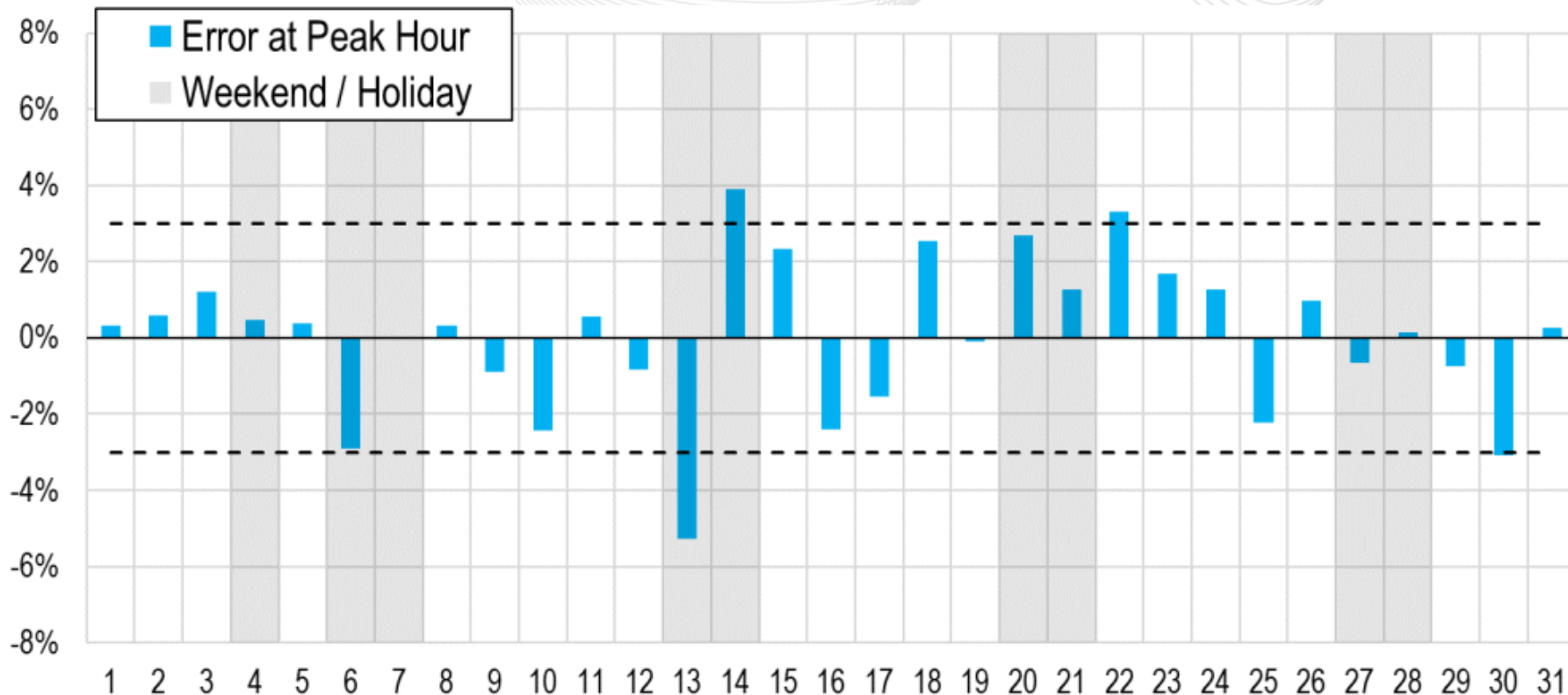


Positive values represent days when the DA daily average price was higher than RT. Negative values represent days when the DA price was lower.

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

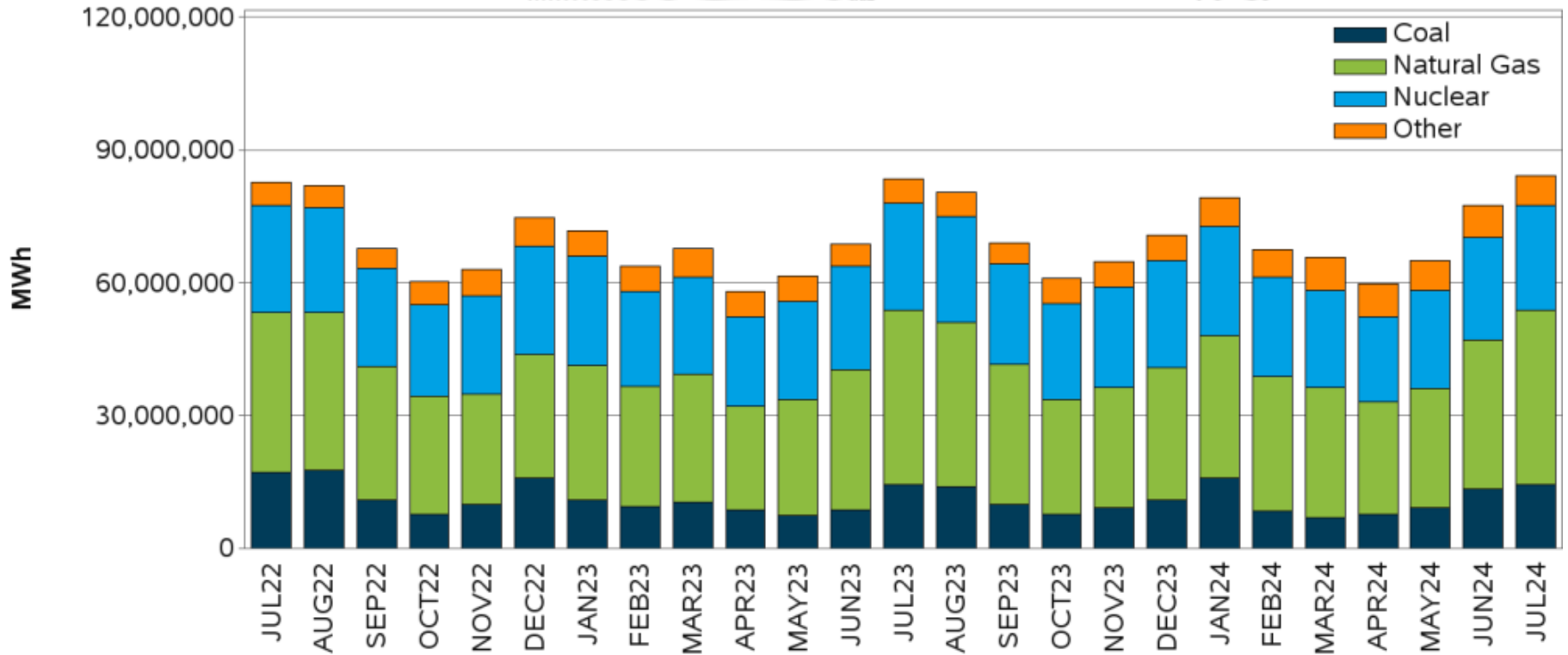


# Load Forecast Error - July Daily Peaks, 10:00 Forecast

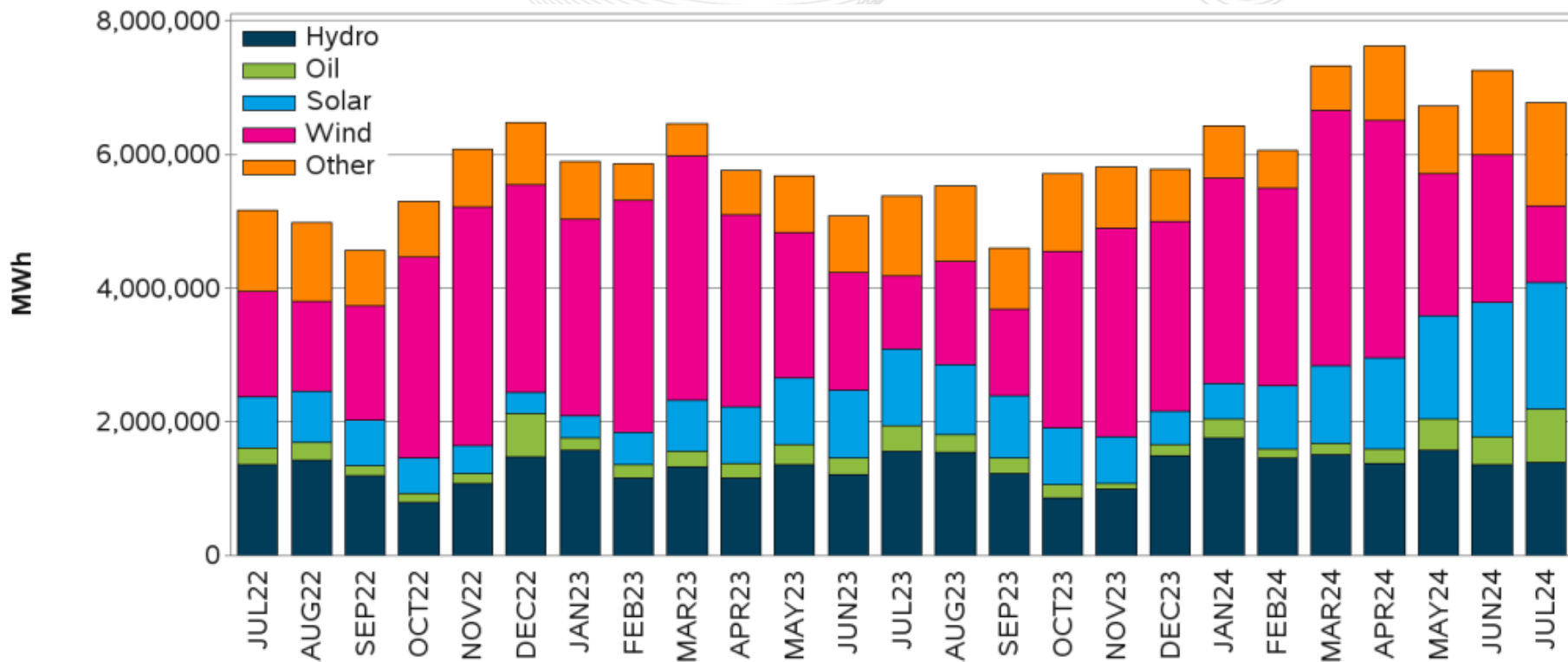


- PJM prepares a day-ahead load forecast at 10:00 am for use by our members.
- This forecast is not used to clear the day-ahead market and is not utilized for the reliability tools that run subsequent to the day-ahead market.
  - July 13 (*Saturday*): temperatures came in several degrees warmer than forecast for several forecast zones, leading to higher loads and under-forecasting
  - July 14 (*Sunday*): an organized storm system moved through the western portion of the footprint, dropping temperatures as much as 14°F. This led to lower loads and led to over-forecasting. There were also isolated storms that moved through load centers in PJM that had a similar impact.
  - July 22 (*Monday*): scattered showers and storms throughout the day led to cooler than forecast temperatures and impacts to load in much of the footprint. This led to over-forecasting.
  - July 30 (*Tuesday*): temperatures came in warmer than forecast in most of the forecast zones. This led to higher loads and under-forecasting.

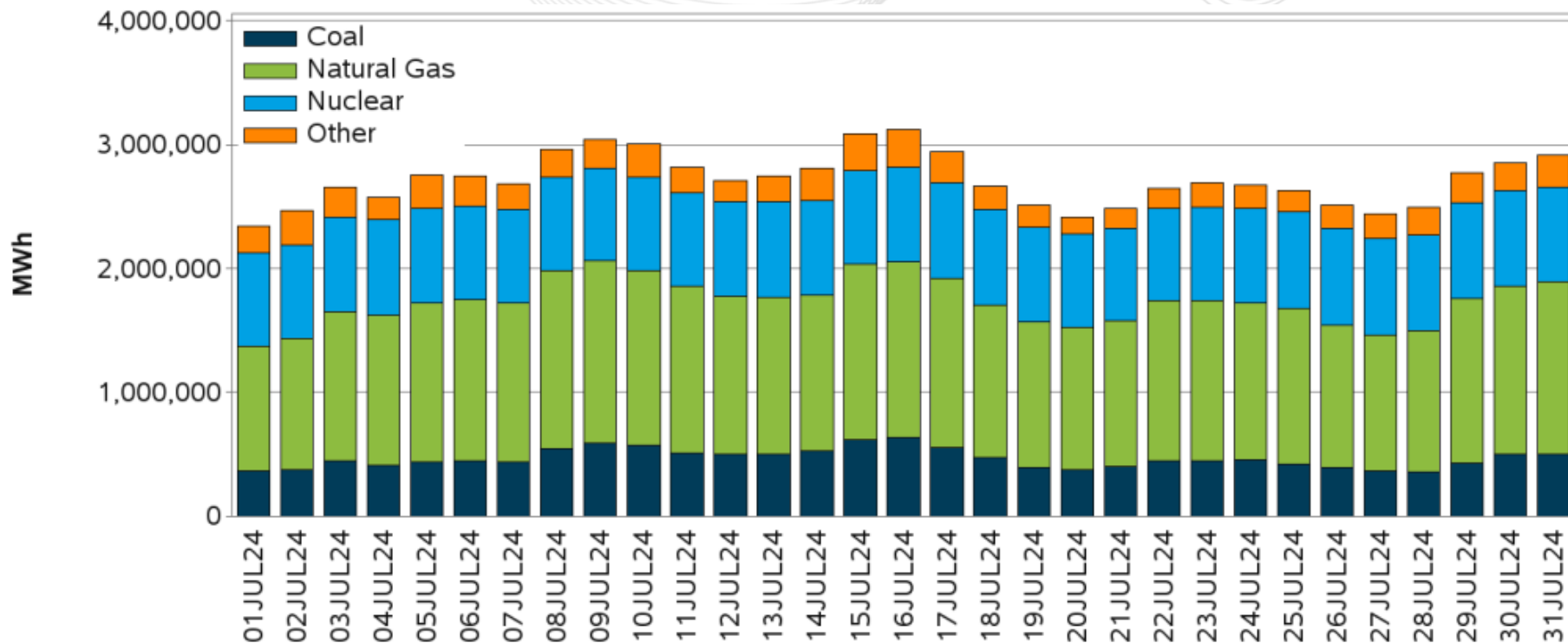




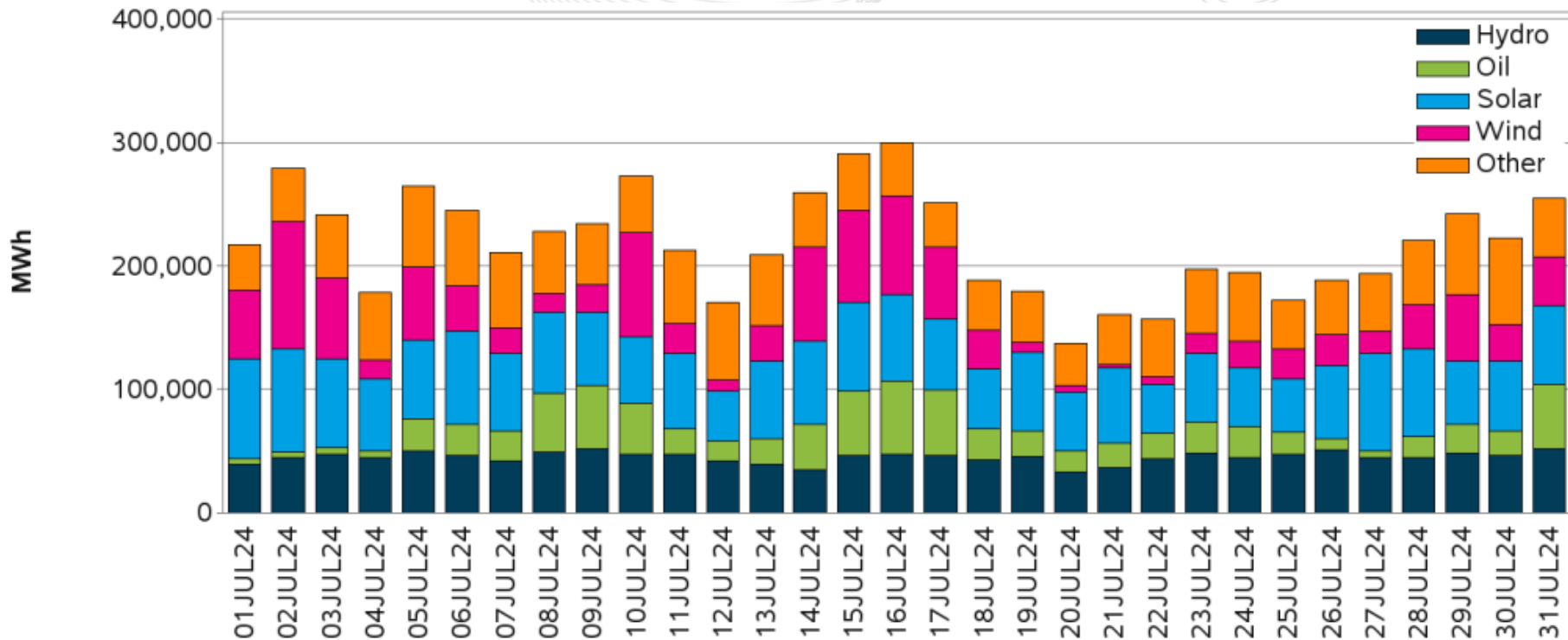
\*Other\* includes Hydro, Oil, Solar, Wind, and Other



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

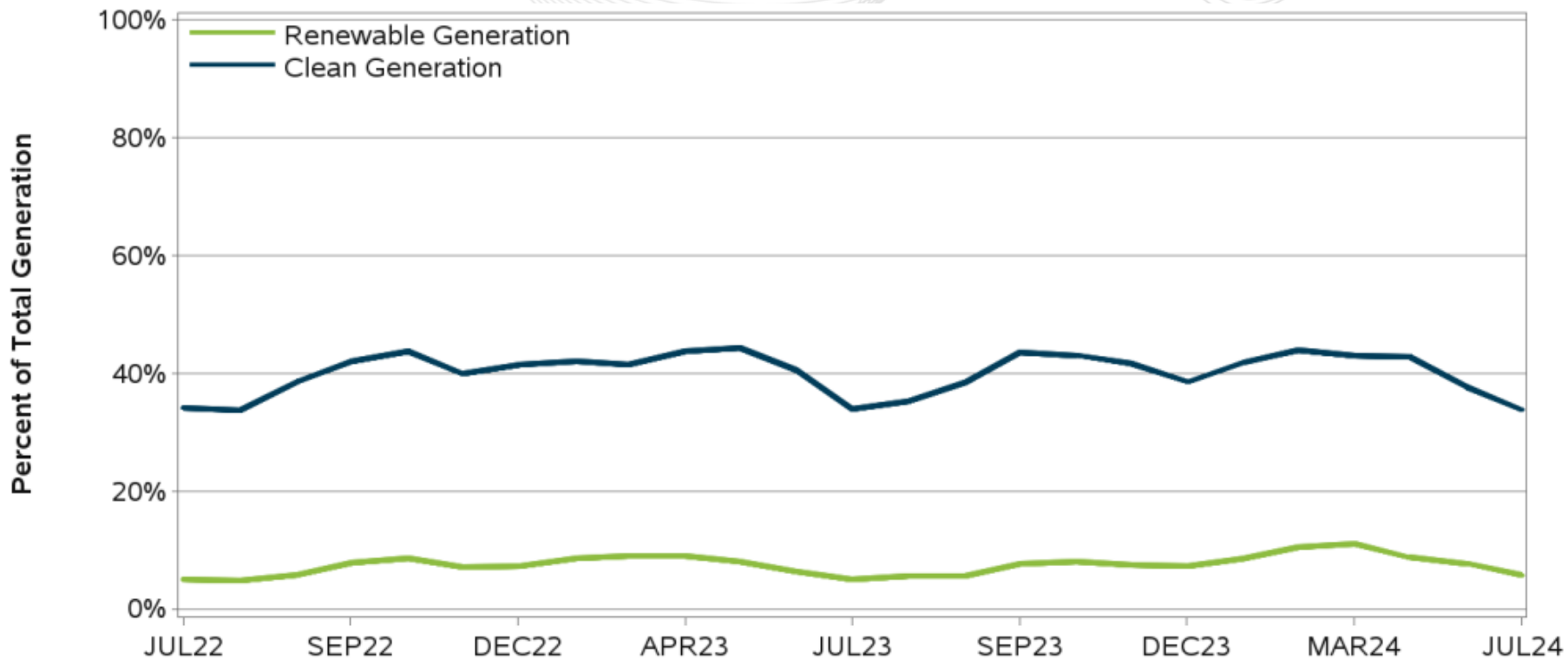


\*Other\* includes Hydro, Oil, Solar, Wind, and Other



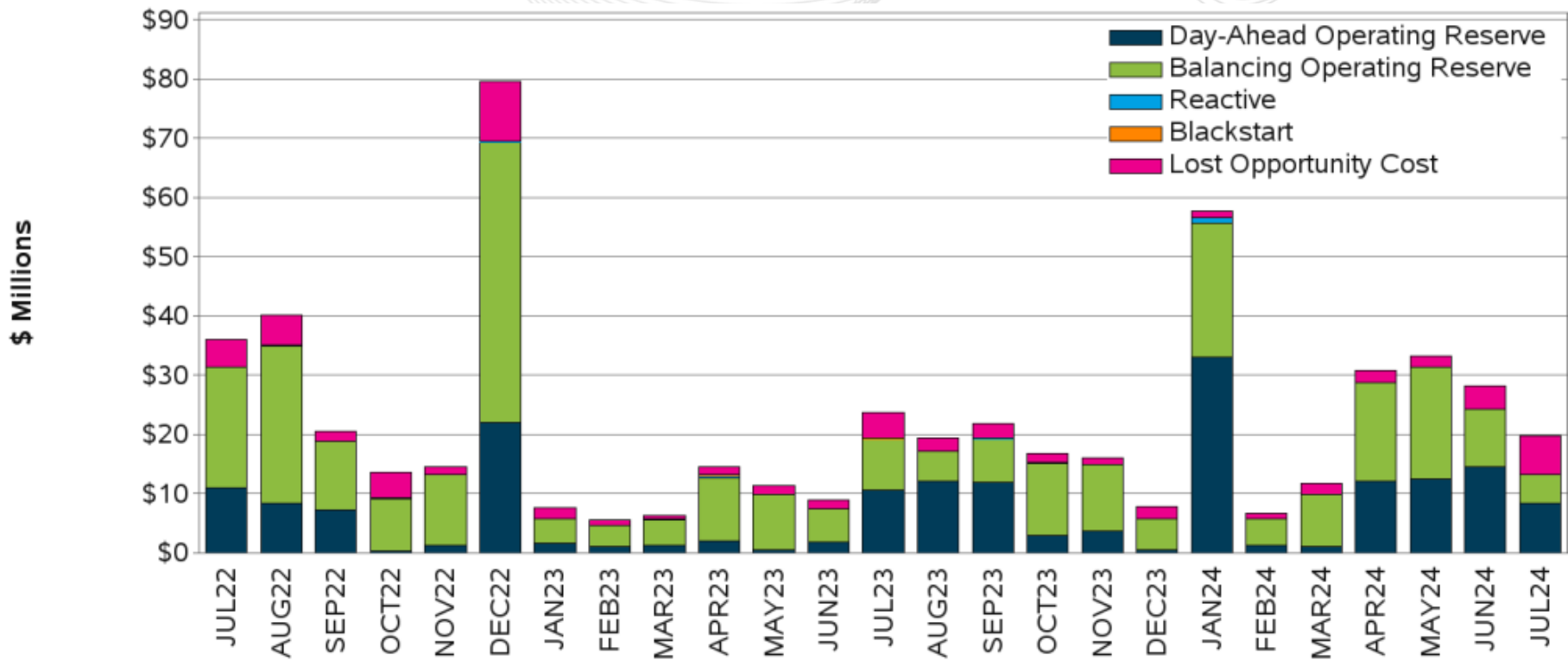
'Other' includes Flywheels, Multiple Fuels, Storage, and Other Renewables

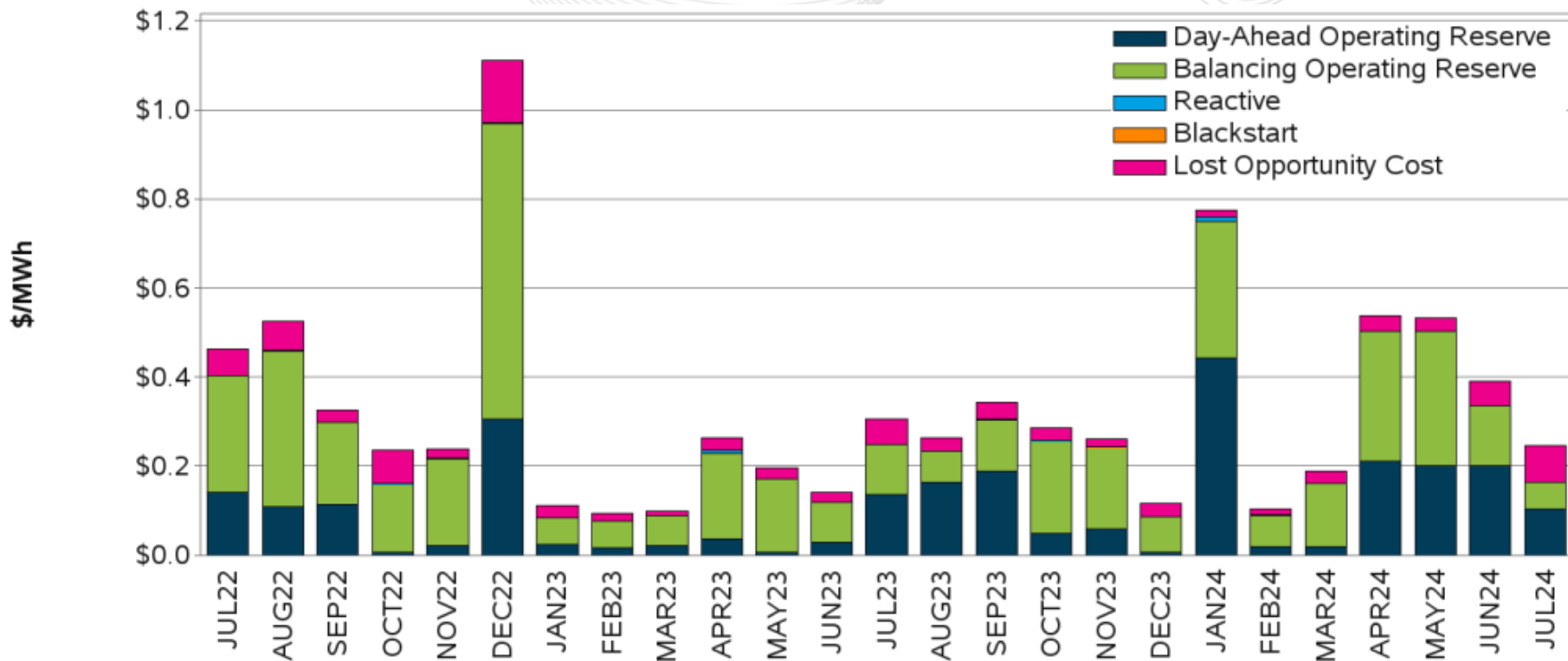
# Percent of Renewable and Clean Generation



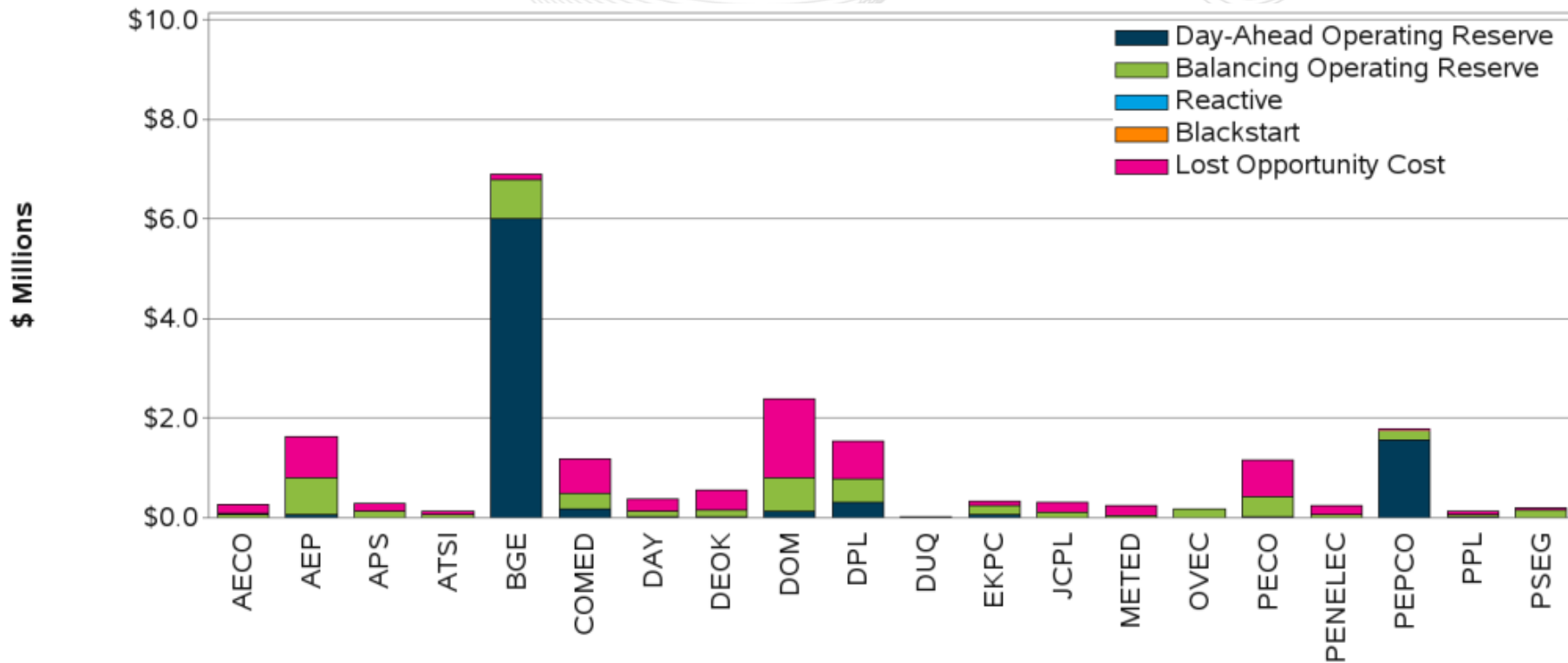
'Renewable' includes Wind, Solar, Hydro, and Other Renewables. 'Clean' includes Renewable and Nuclear.

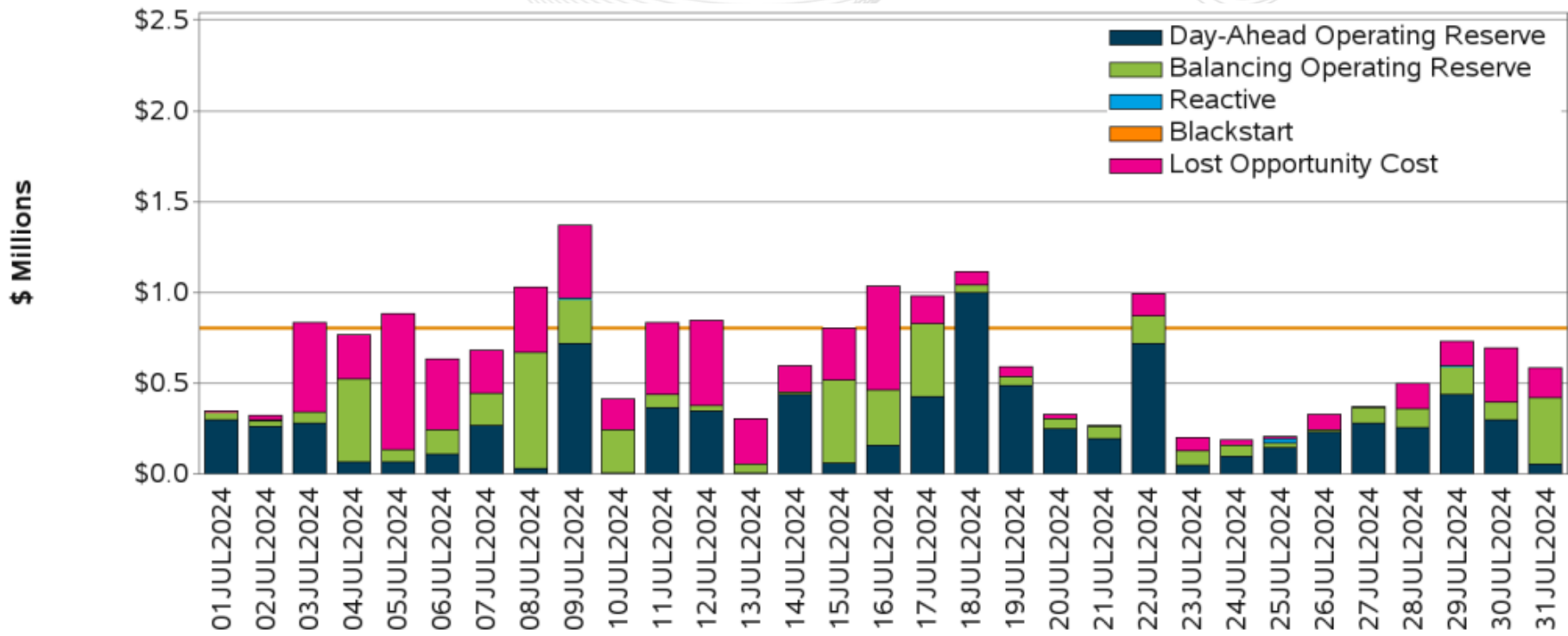
# Operating Reserve (Uplift)



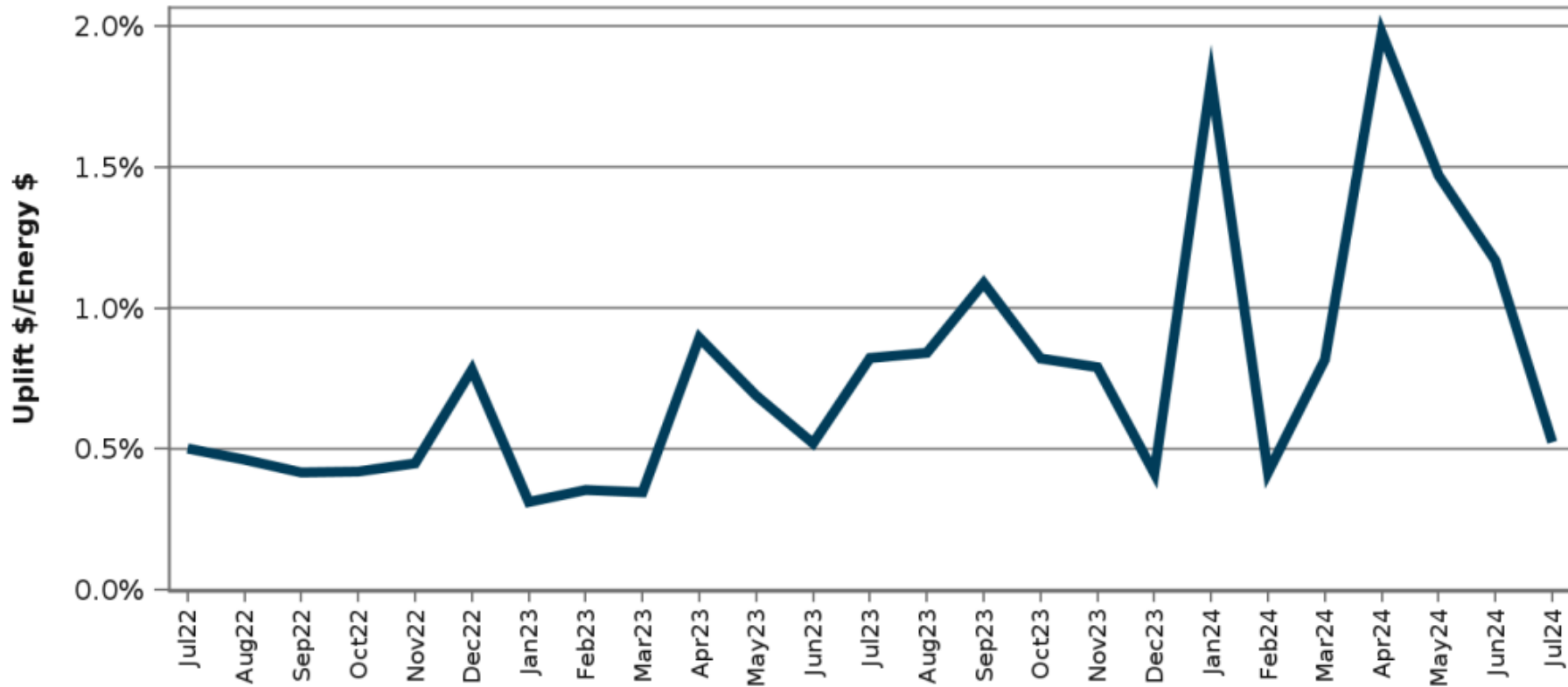




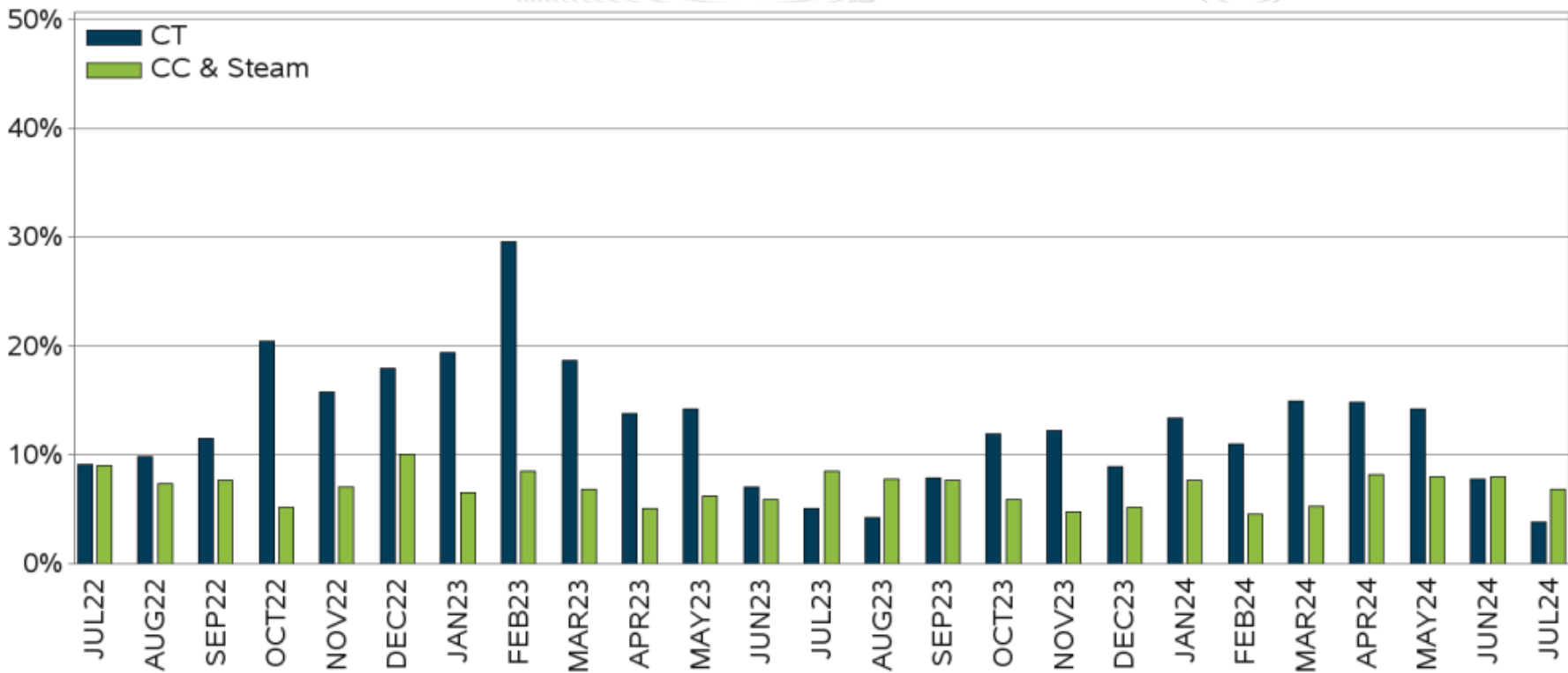




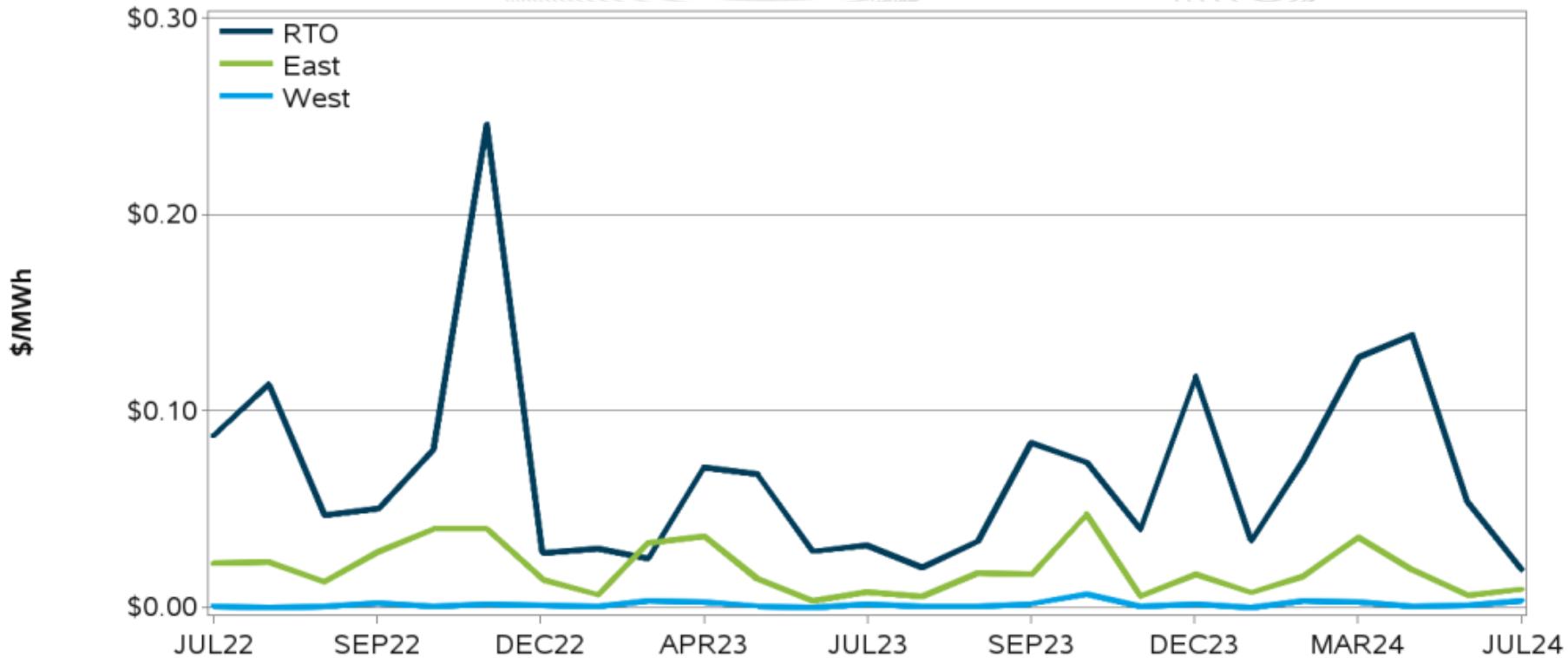
- In July, uplift exceeded \$800,000 on 10 days -
- Contributing factors to uplift were:
  - Higher load days
  - Hot weather alerts
  - Steam needed to support north/south flows
  - Localized congestion
- More information on Uplift can be found on the PJM website at [Drivers of Uplift](#)



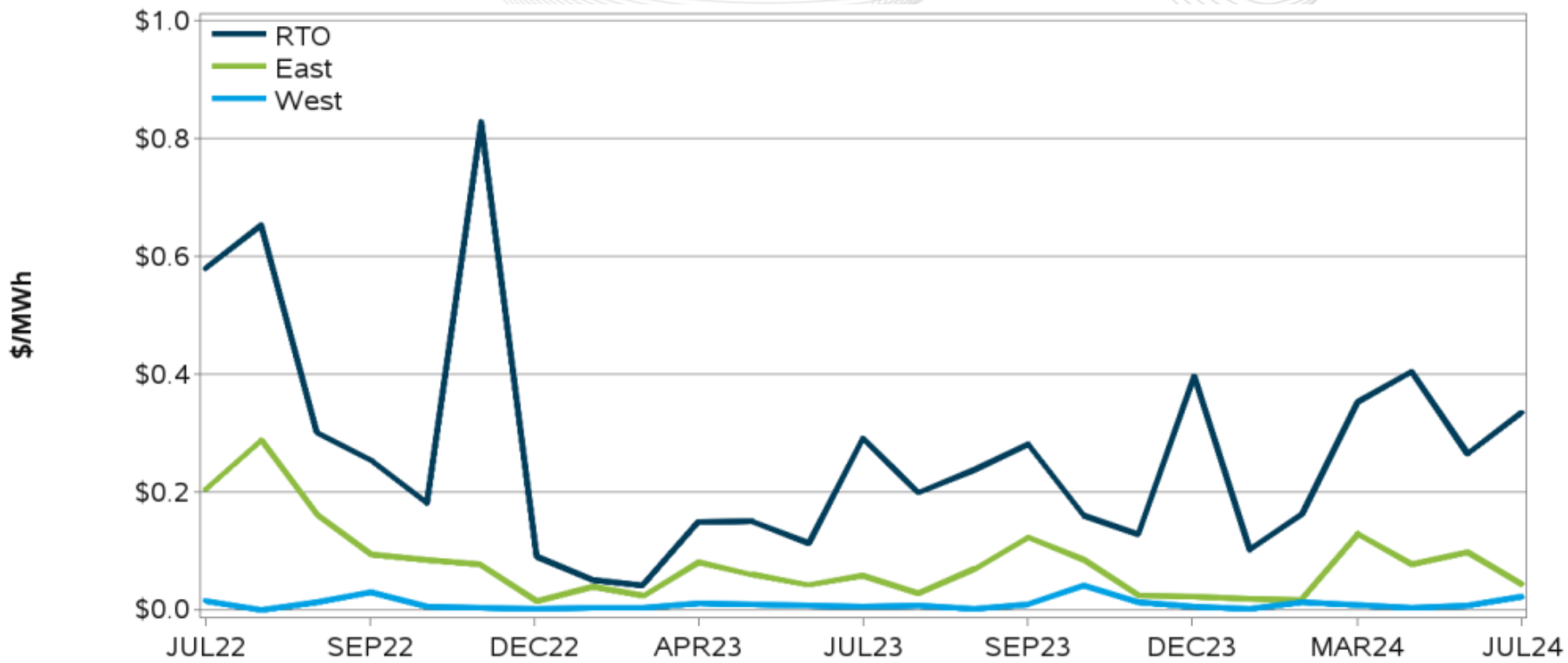
# Percent of Total CT, CC and Steam Hours with LMP < Offer



- 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.

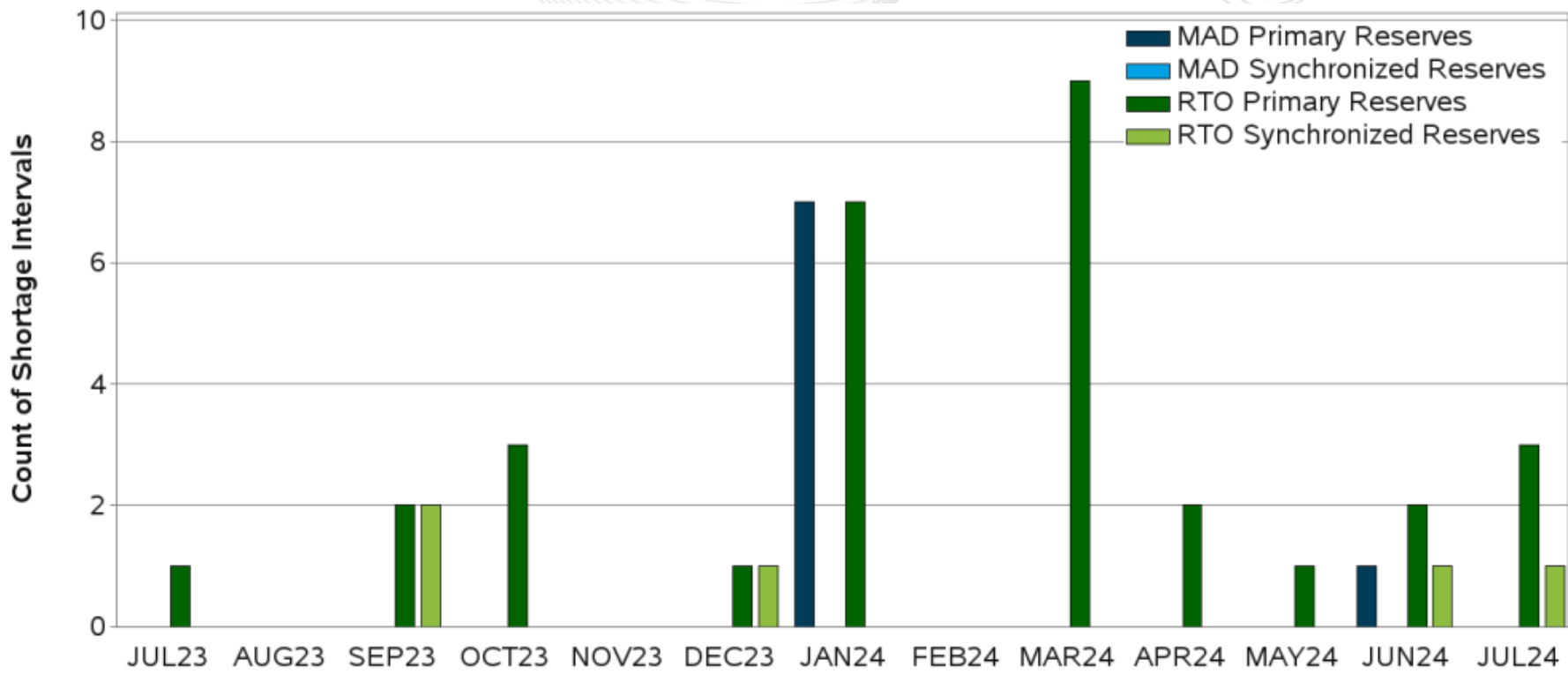


# Deviations Balancing Operating Reserve Rates

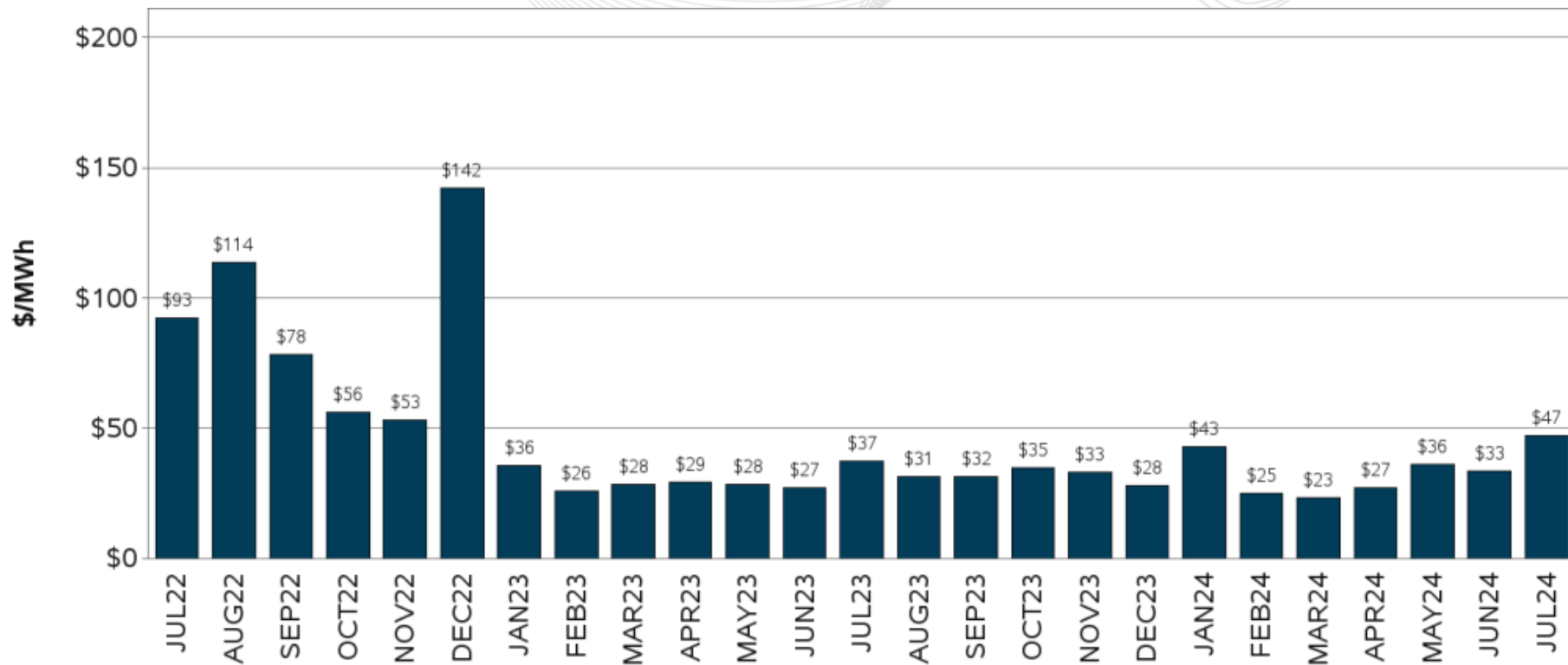




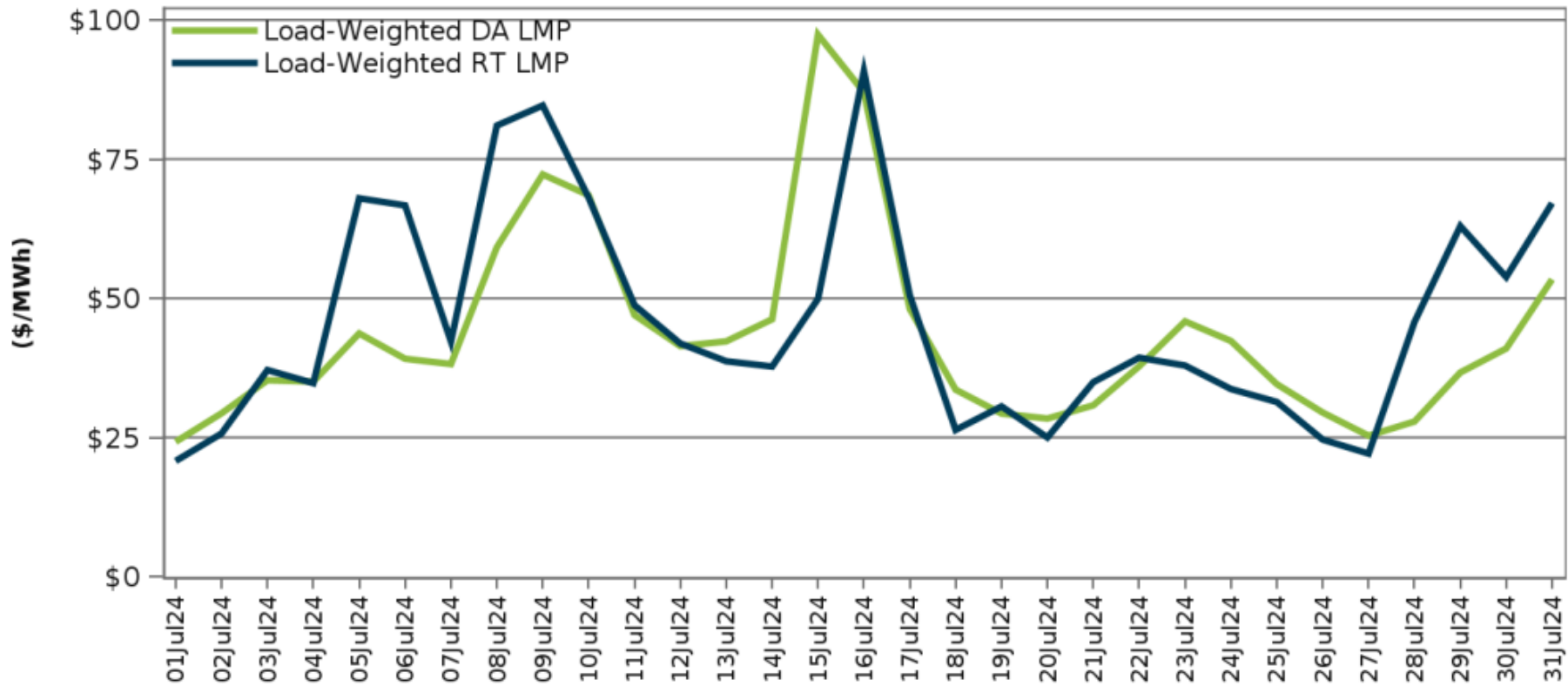
# Energy Market LMP Summary



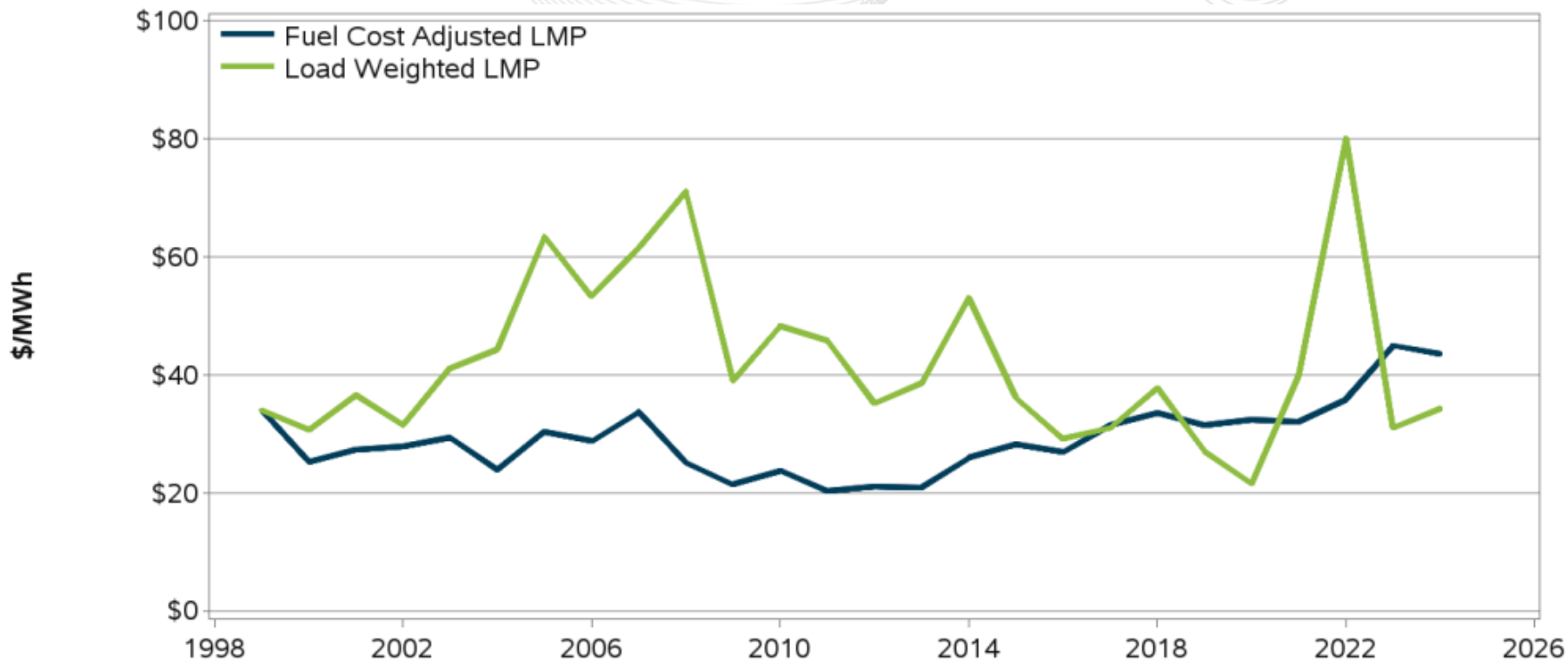
[Information on constraints and shadow prices can be found here](#)

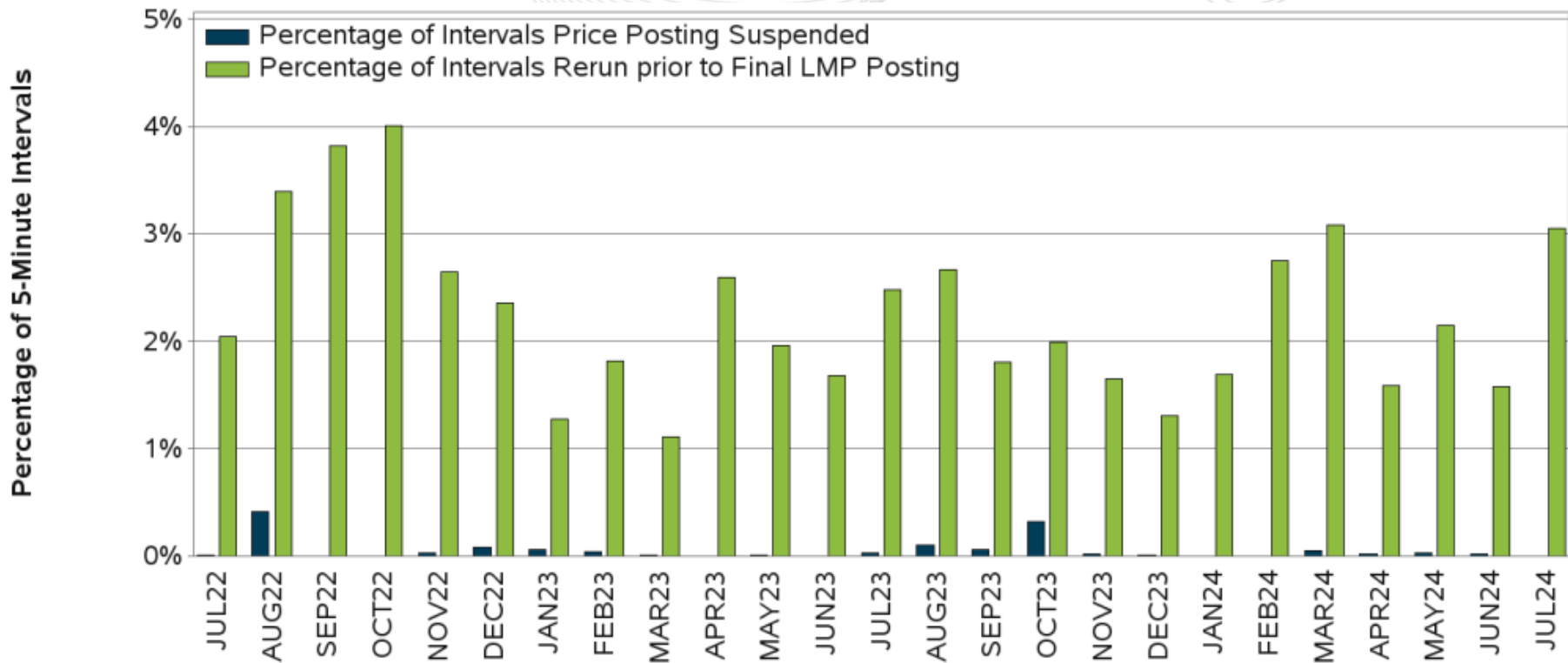


# Daily Load-Weighted Average DA & RT LMP



# Fuel Cost Adjusted LMP (Referenced to 1999 Fuel Prices)

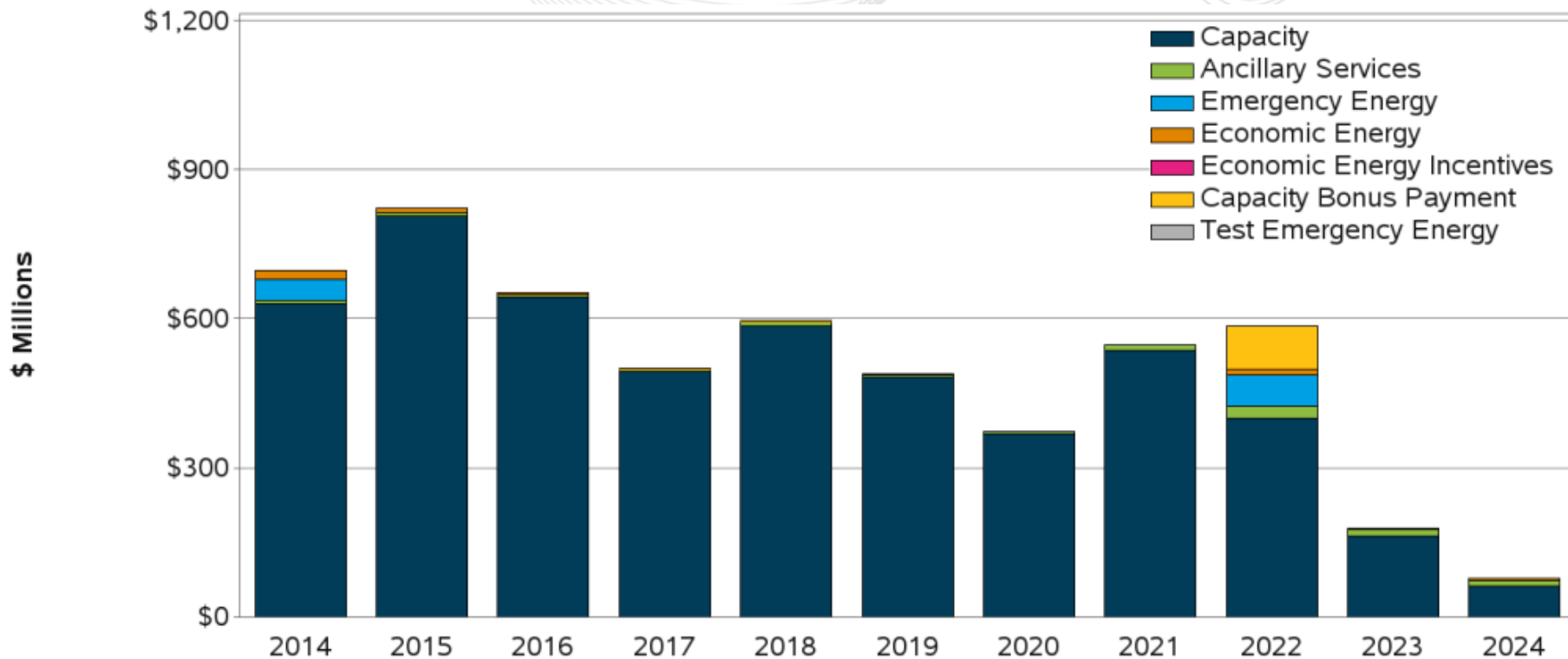




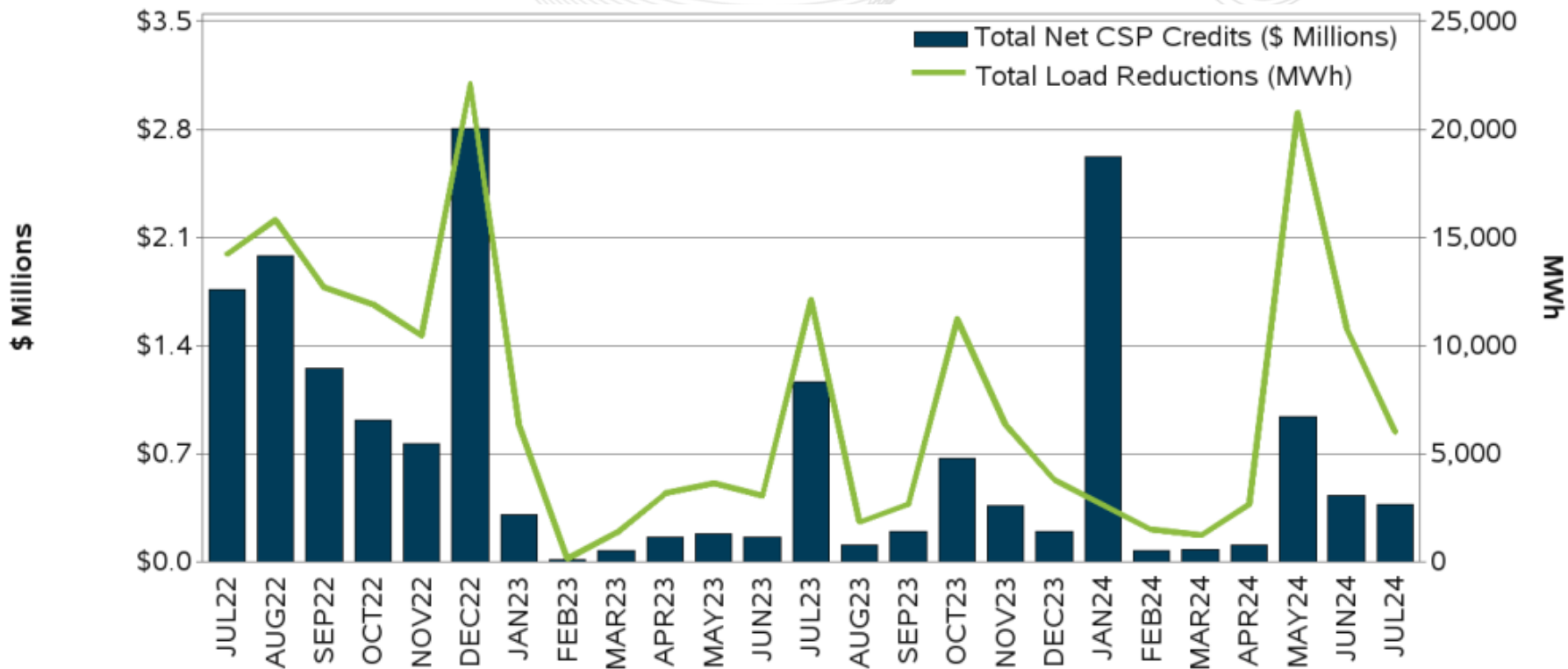
# Energy Market

# Demand Response Summary

# Demand Side Response Estimated Revenue



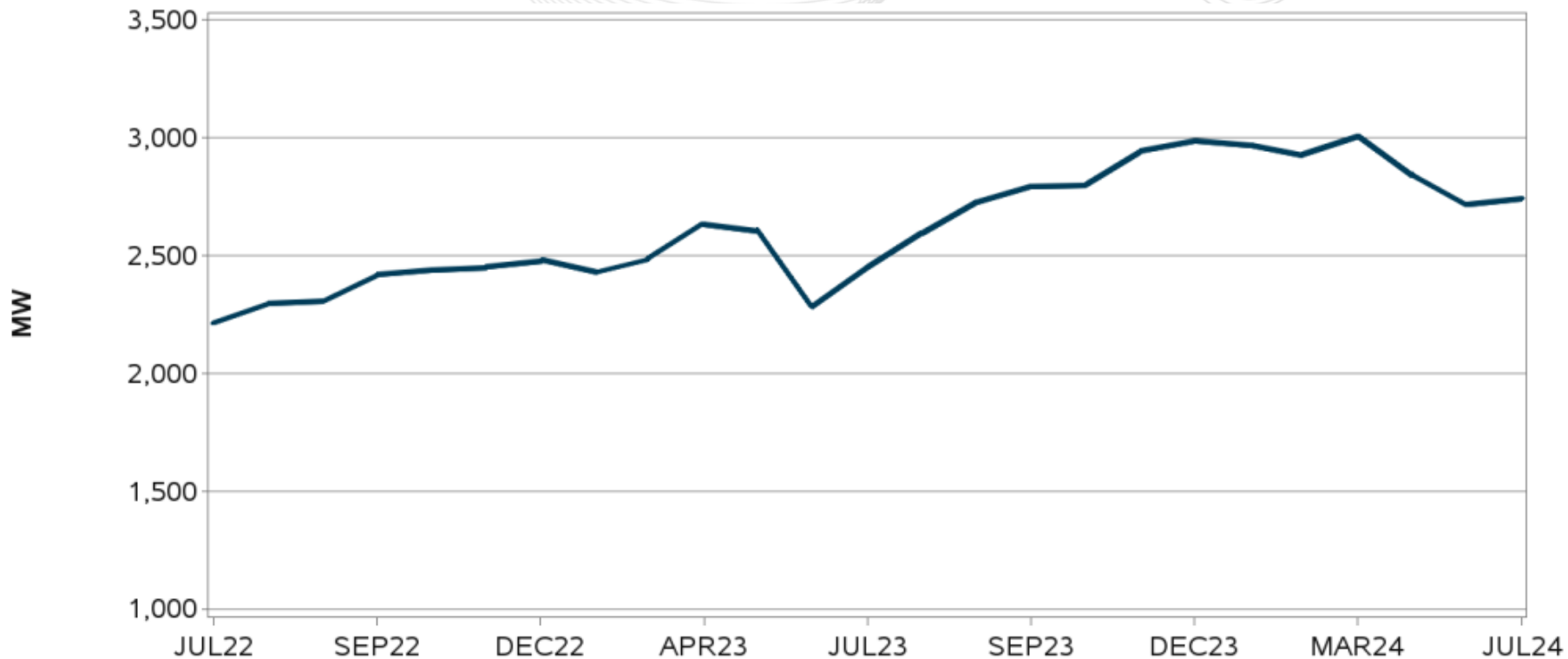




\*Data for the last few months are subject to significant change due to the settlement window.



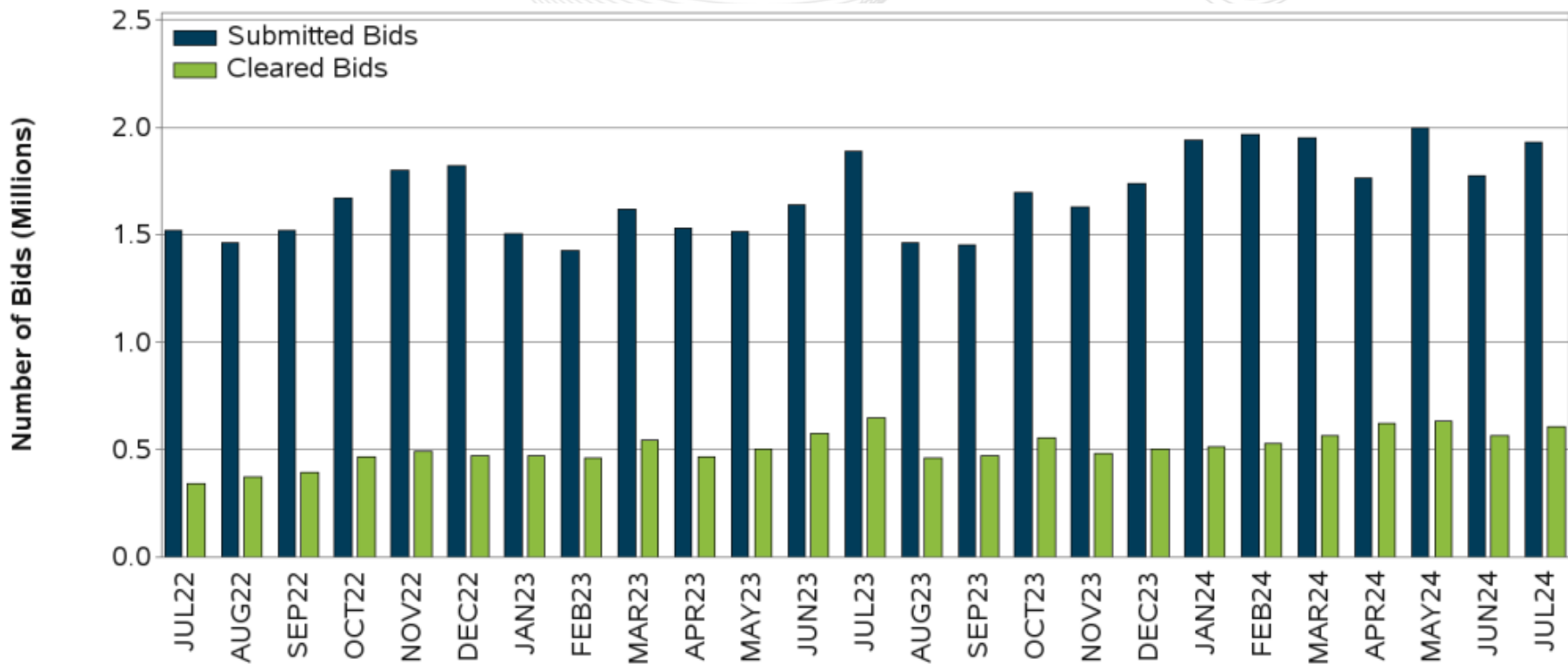
# Total Registered MW in PJM's Economic Demand Response

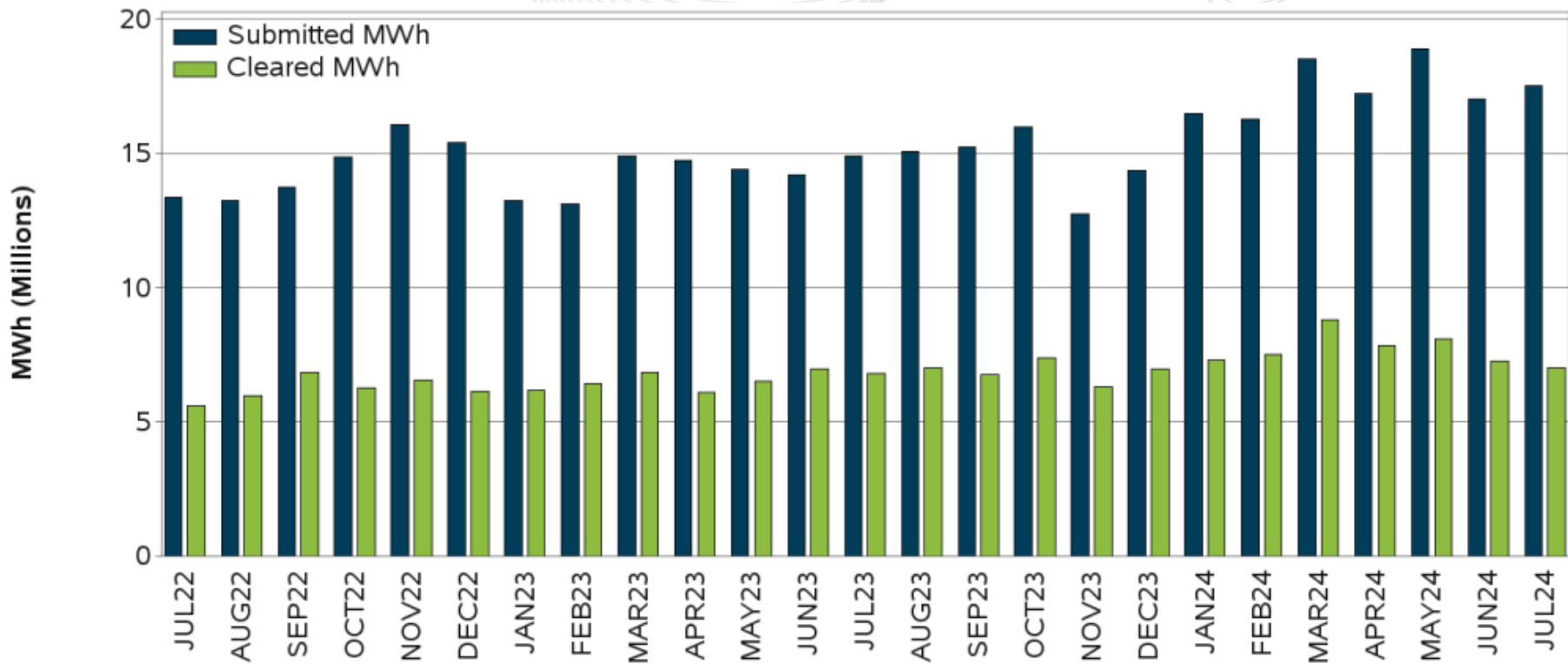


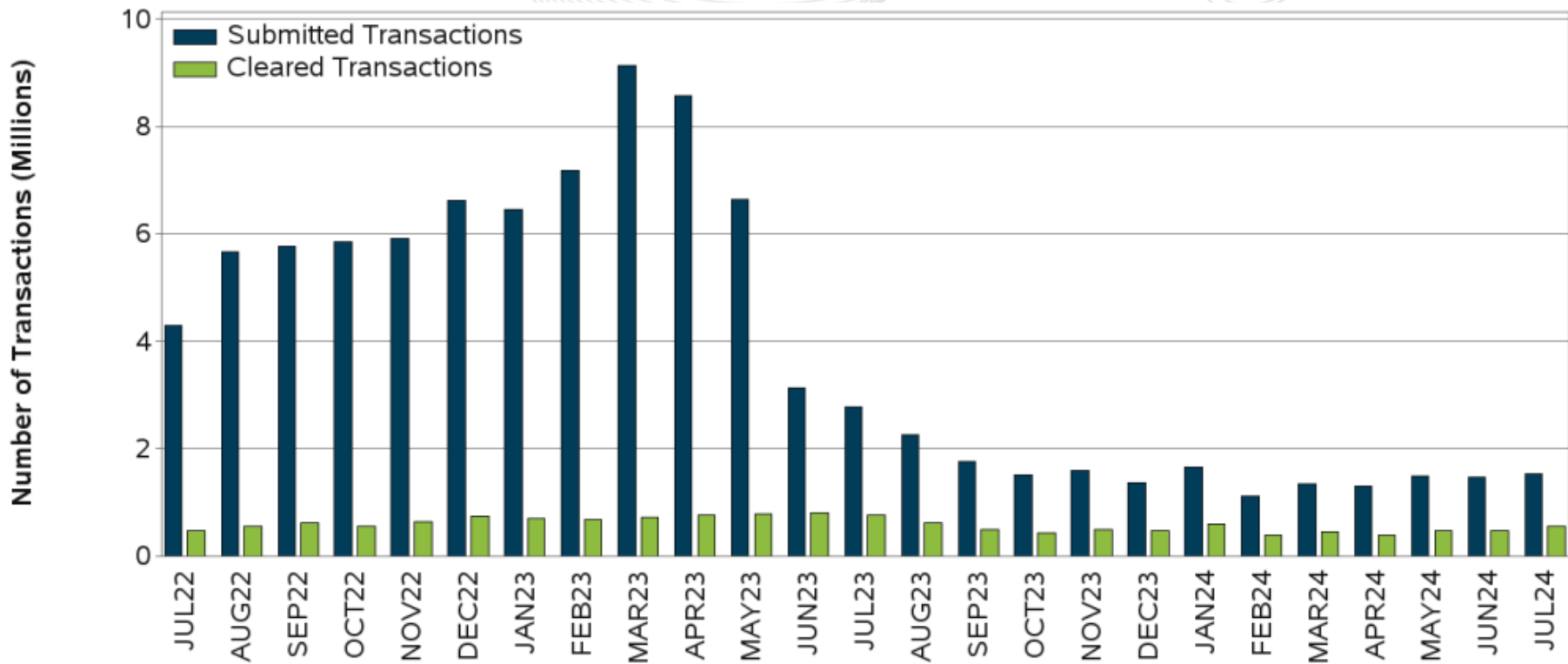
# Energy Market

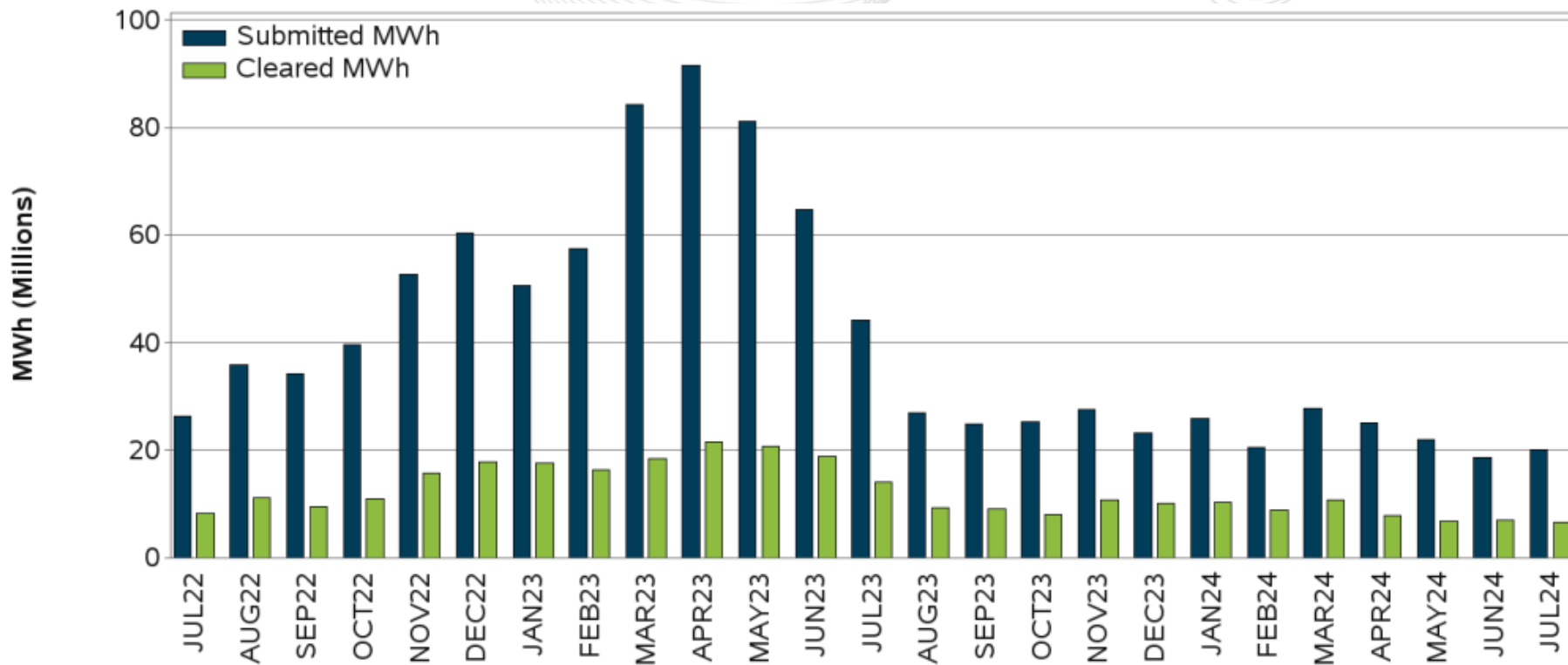
# Virtual Activity Summary

- 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.



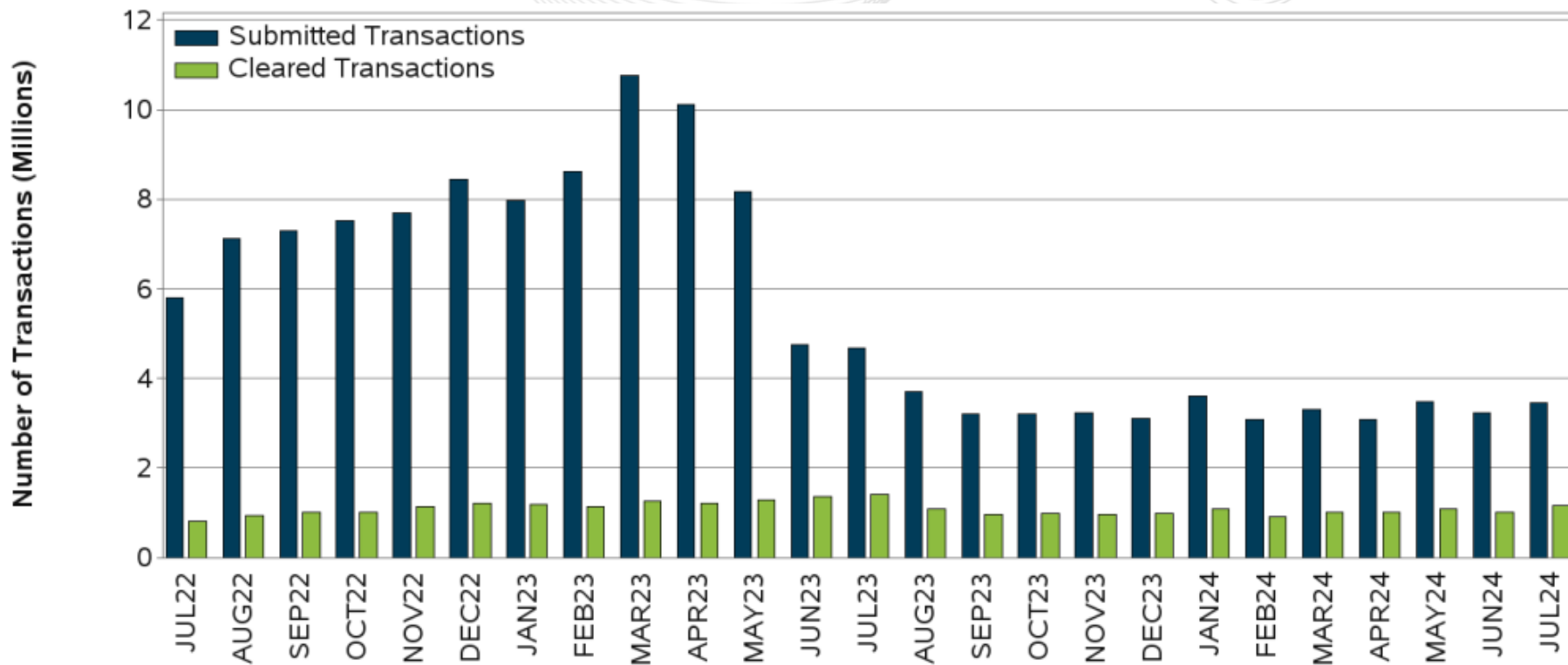




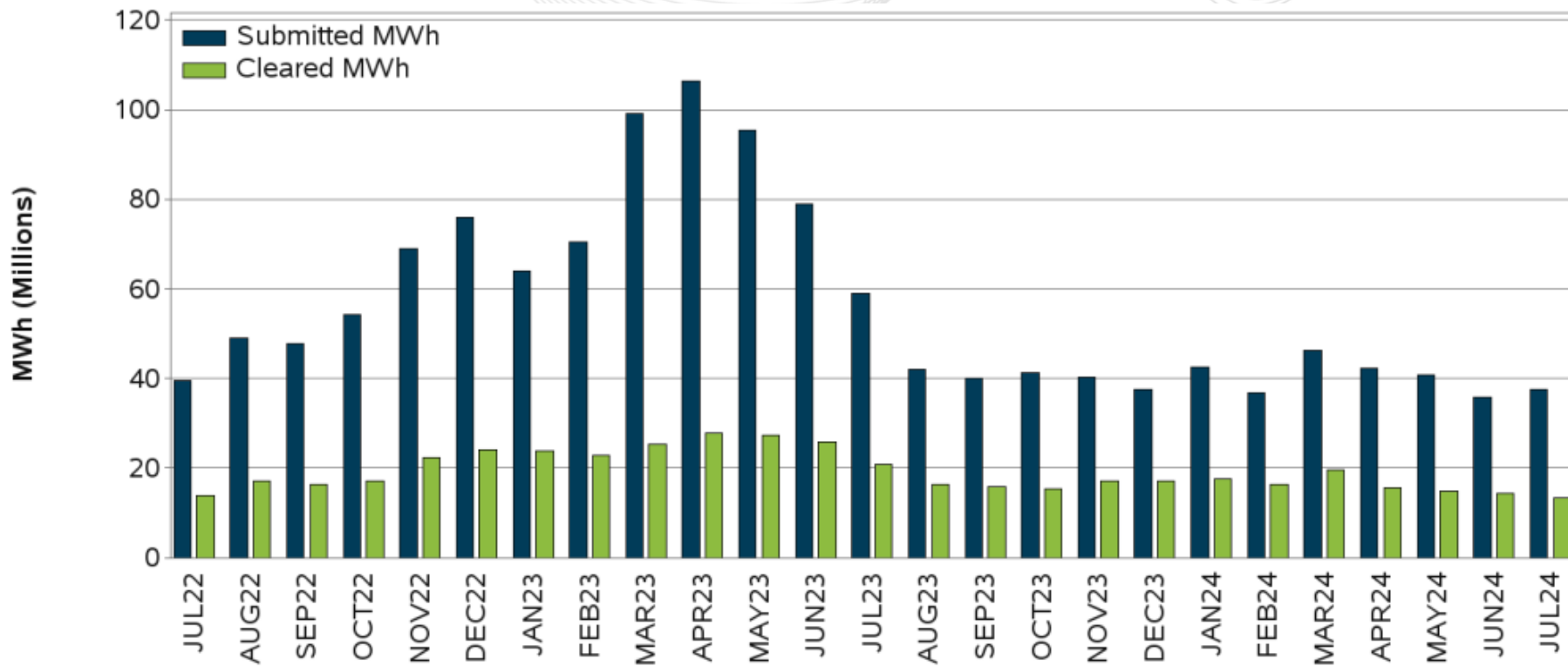




# INCs, DECIs and Up-To-Congestion Transactions - Total Number



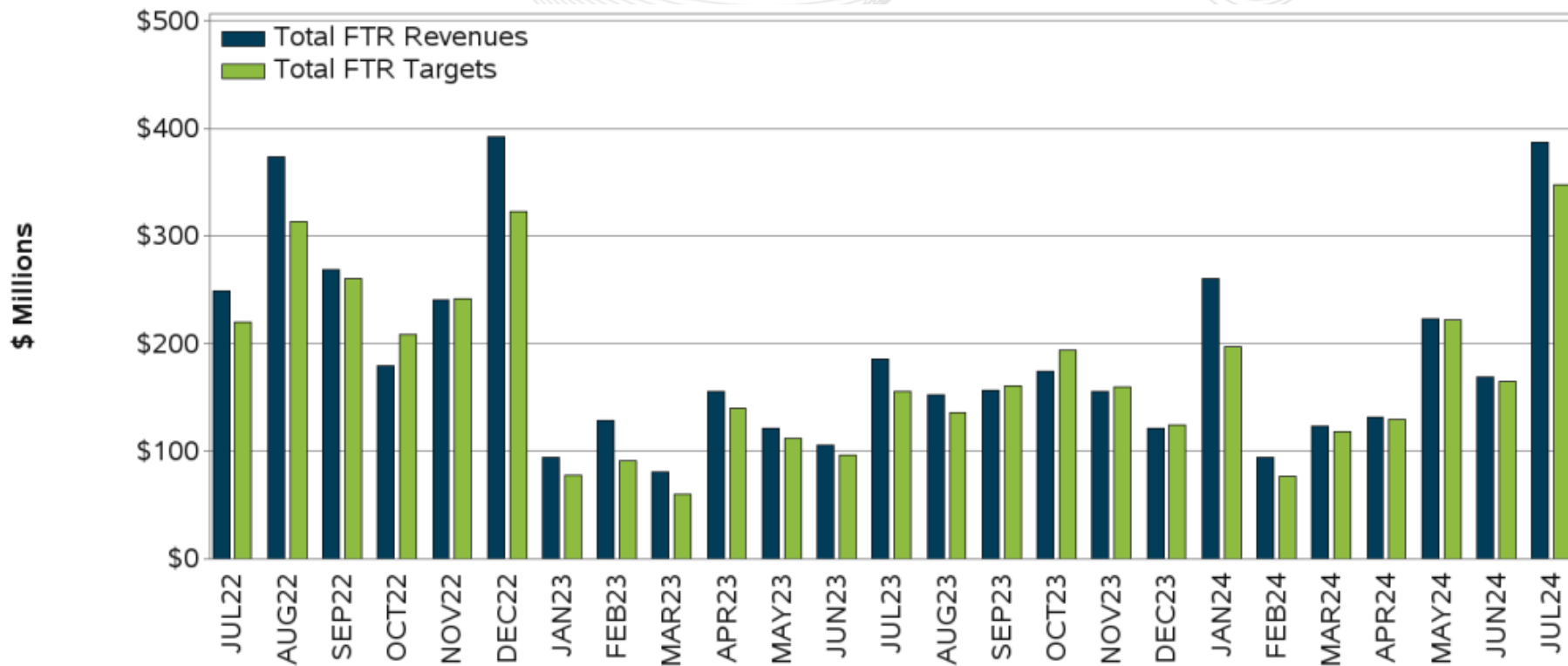
# INCs, DEC and Up-To-Congestion Transactions - Total Volume

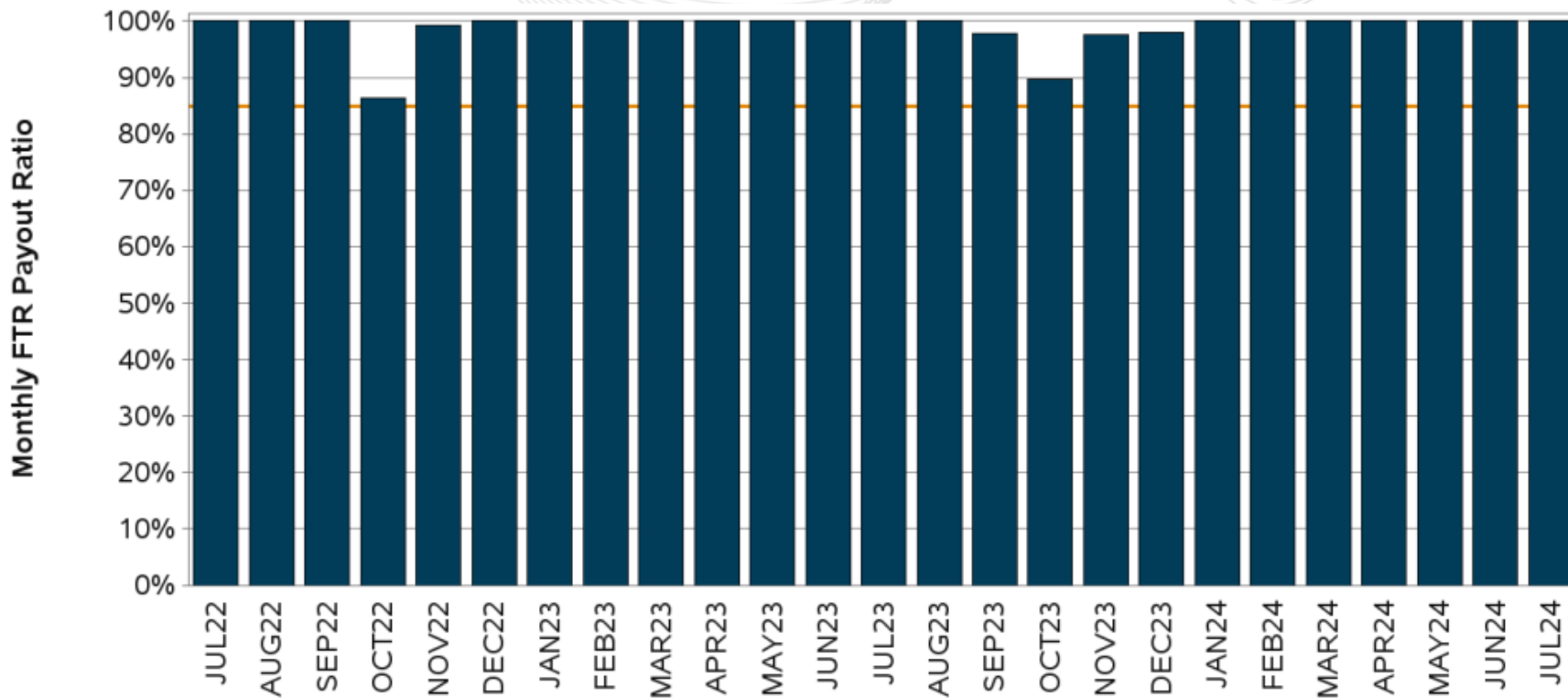


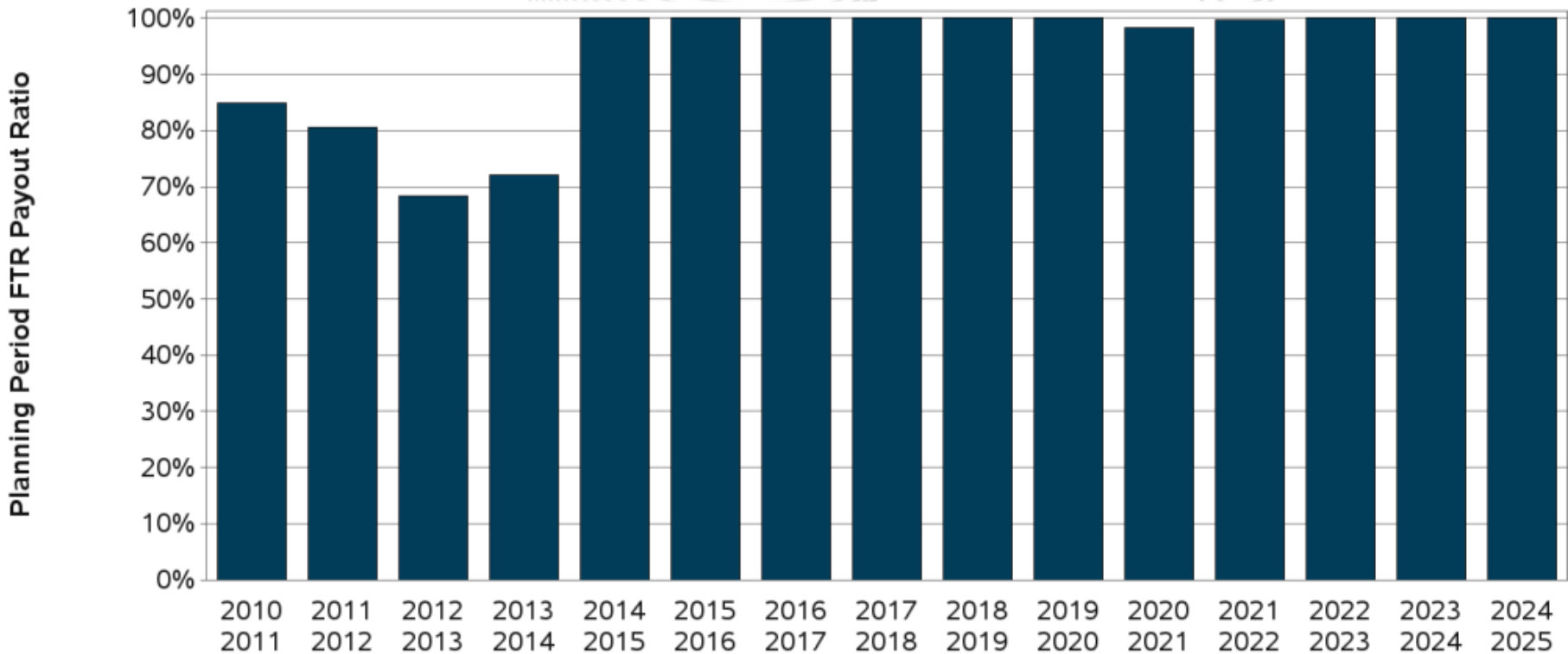
# Energy Market

# Congestion and FTR Summary

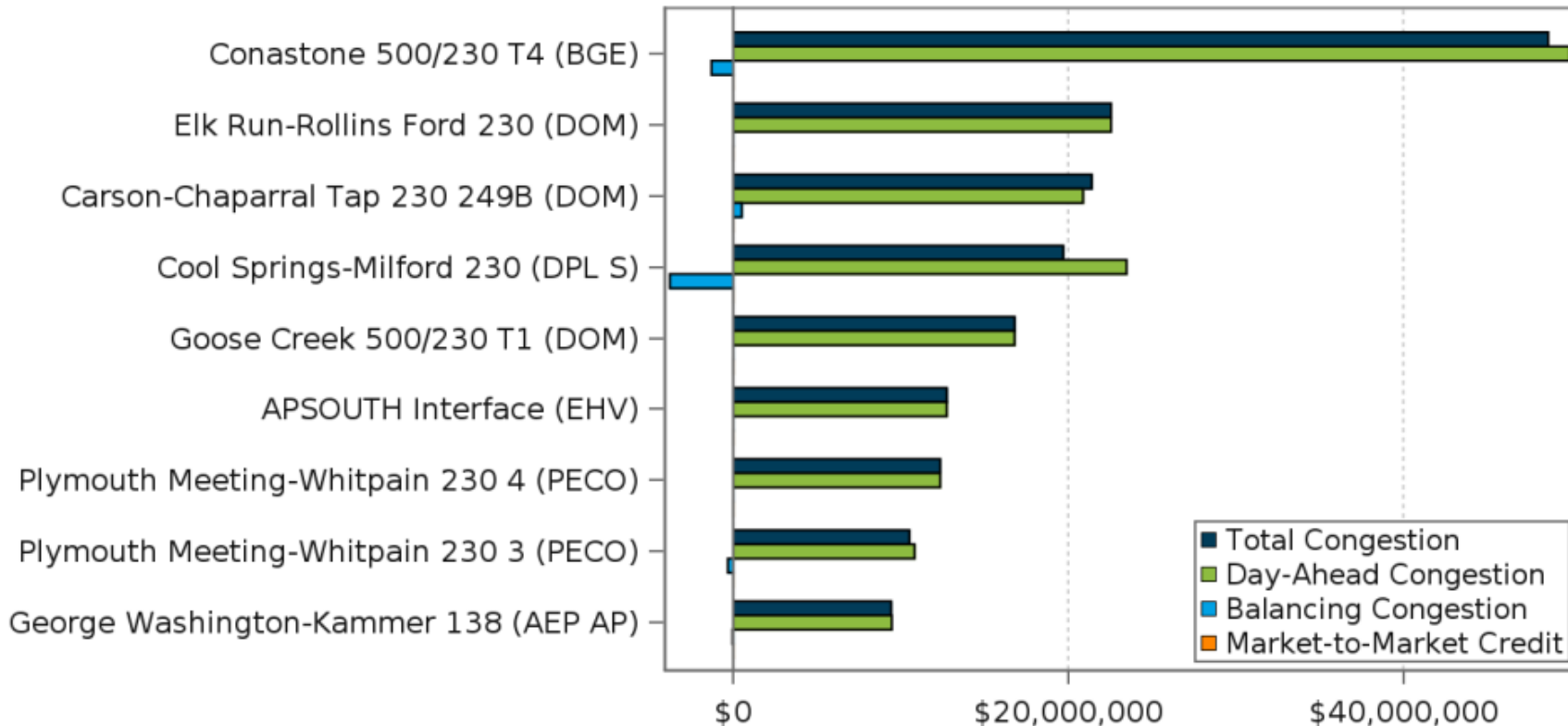
Period	Surplus / Underfunding	Payout Ratio
July 2024	\$39,456,922	100%
2024	\$133,405,016	100%
2024/2025	\$43,636,171	100%







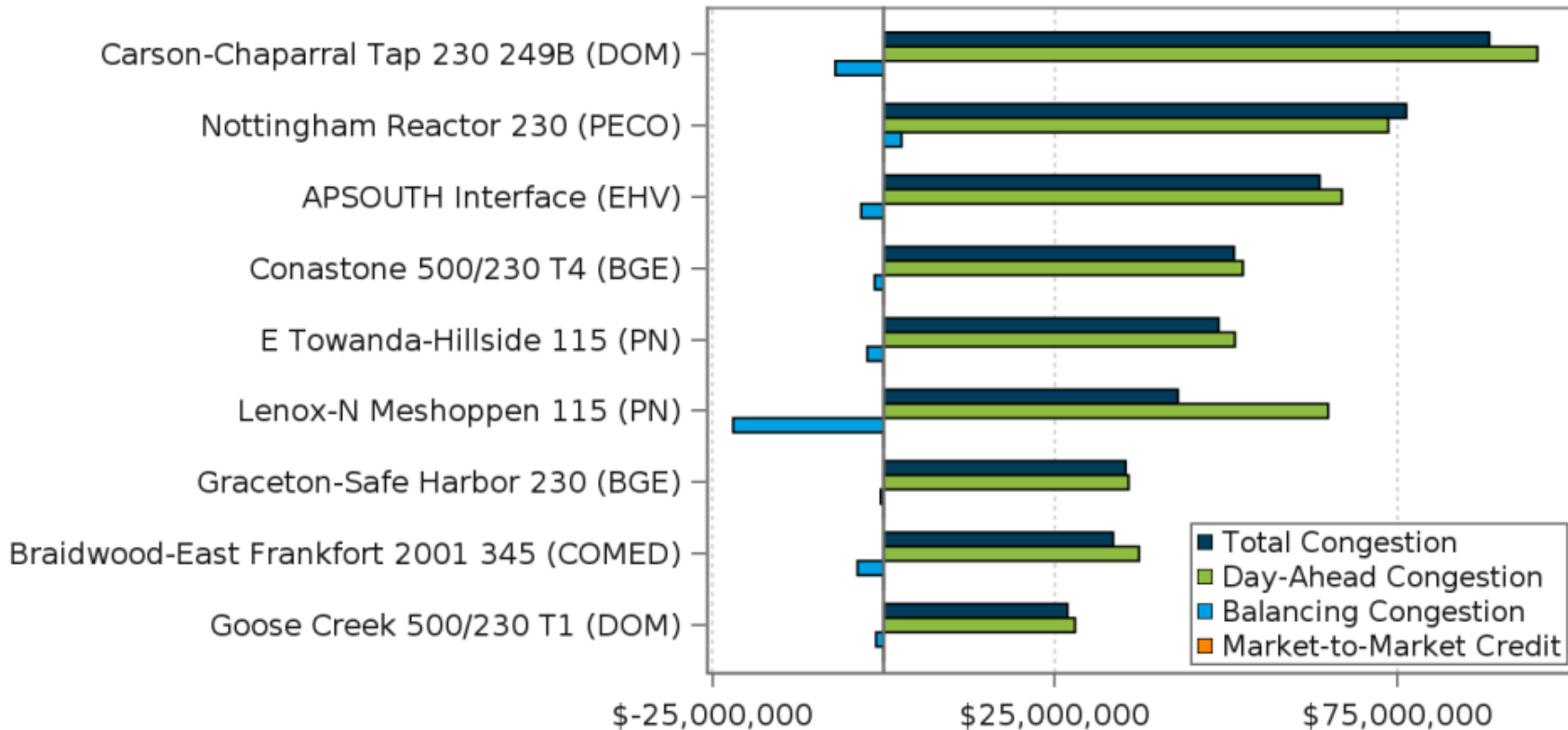
# Ten Most Heavily Congested Transmission Facilities - Overall, July



The ten most heavily congested facilities account for 74% of total congestion for July.

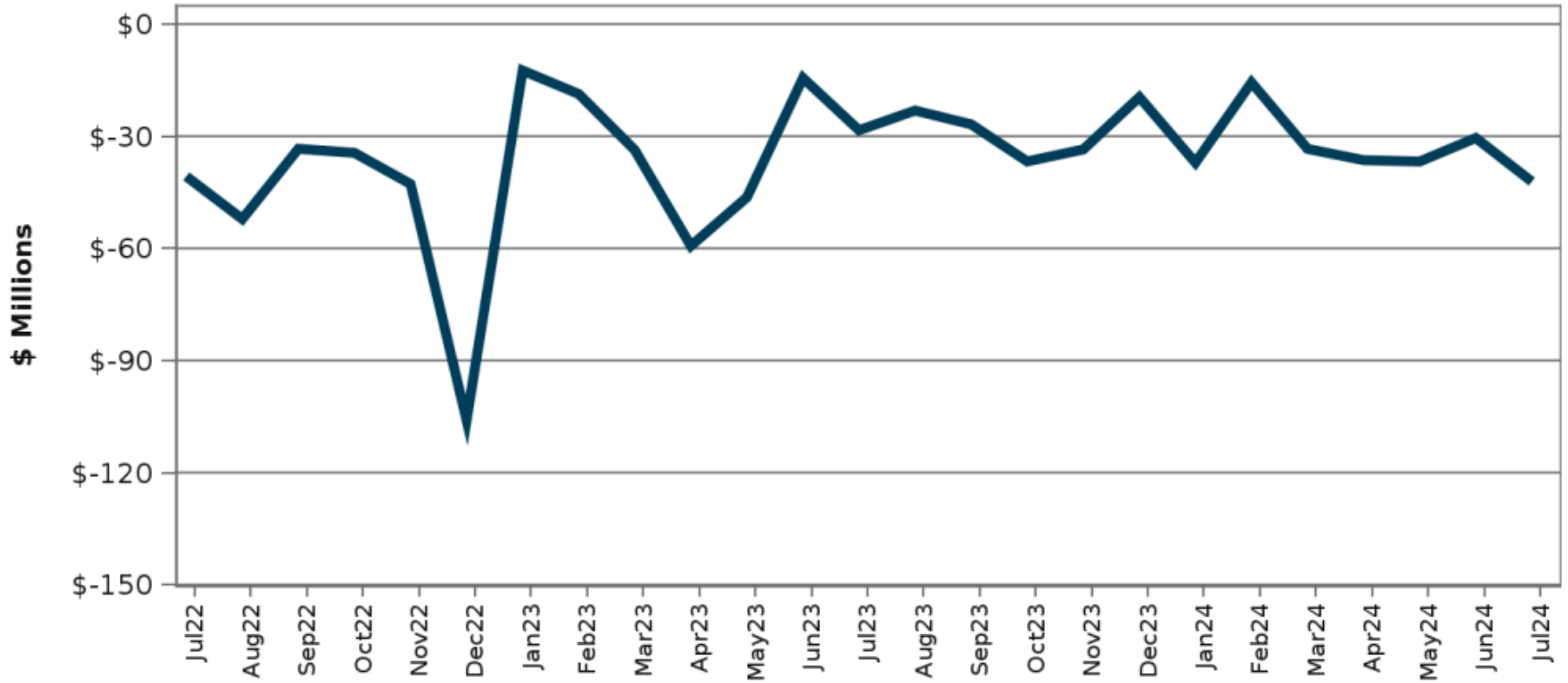


# Ten Most Heavily Congested Transmission Facilities - Overall, 2024



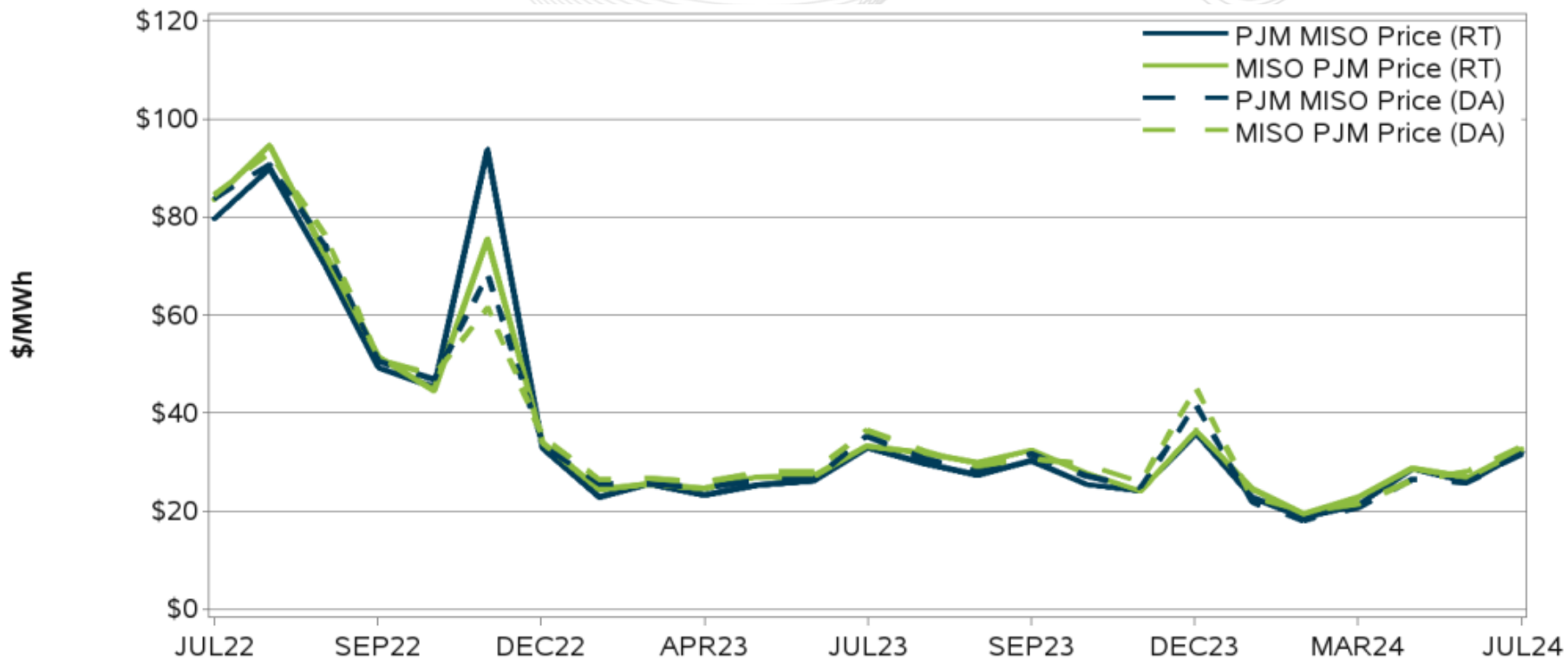
The ten most heavily congested facilities account for 50% of total congestion for 2024.

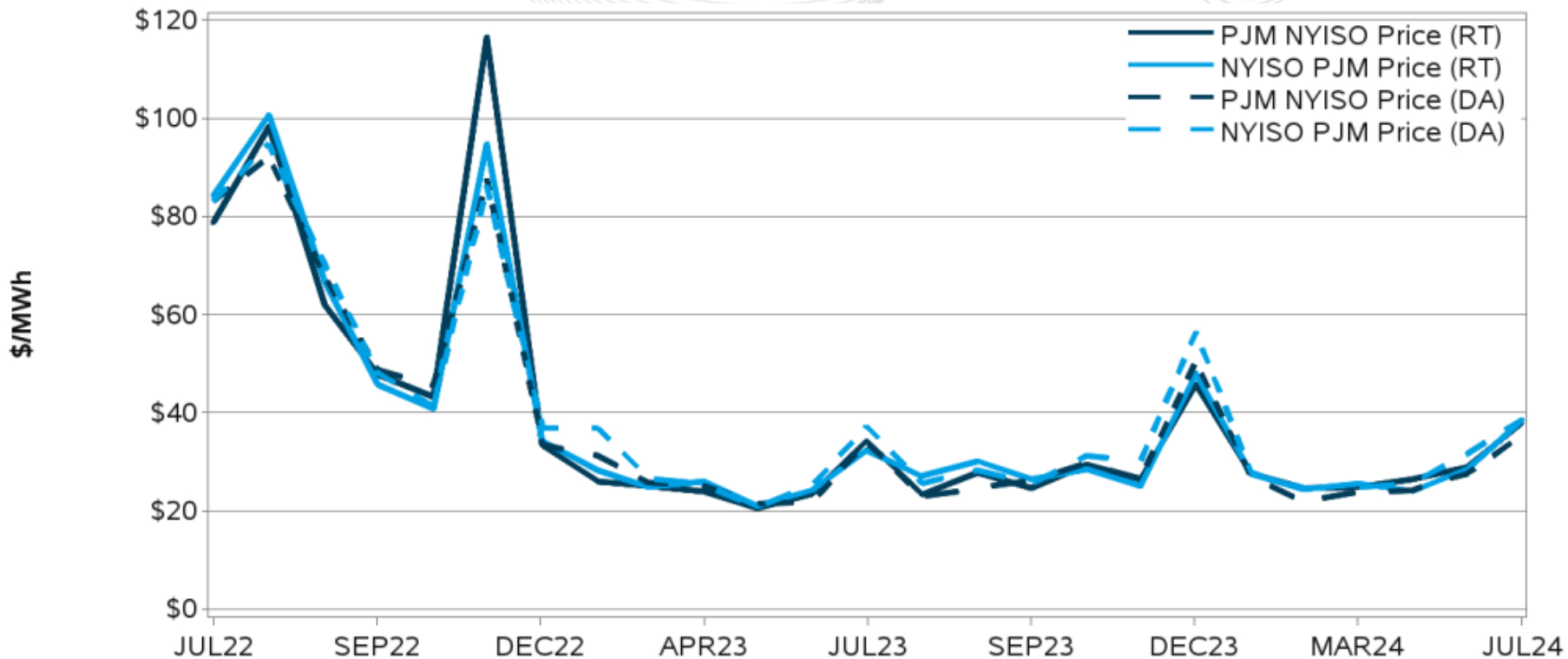
# Balancing Congestion Charge Revenues (BLI 2215)



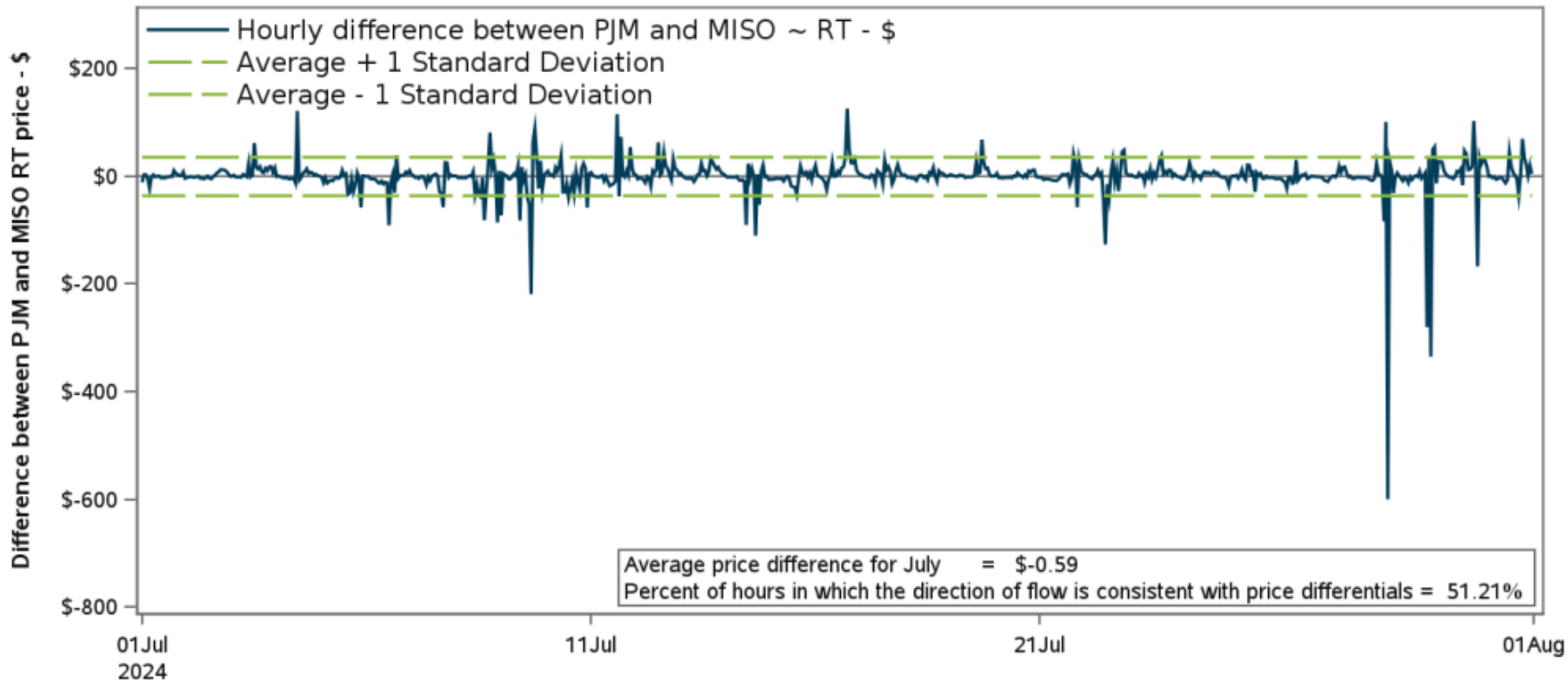
# Energy Market

# Interchange/Seams Summary



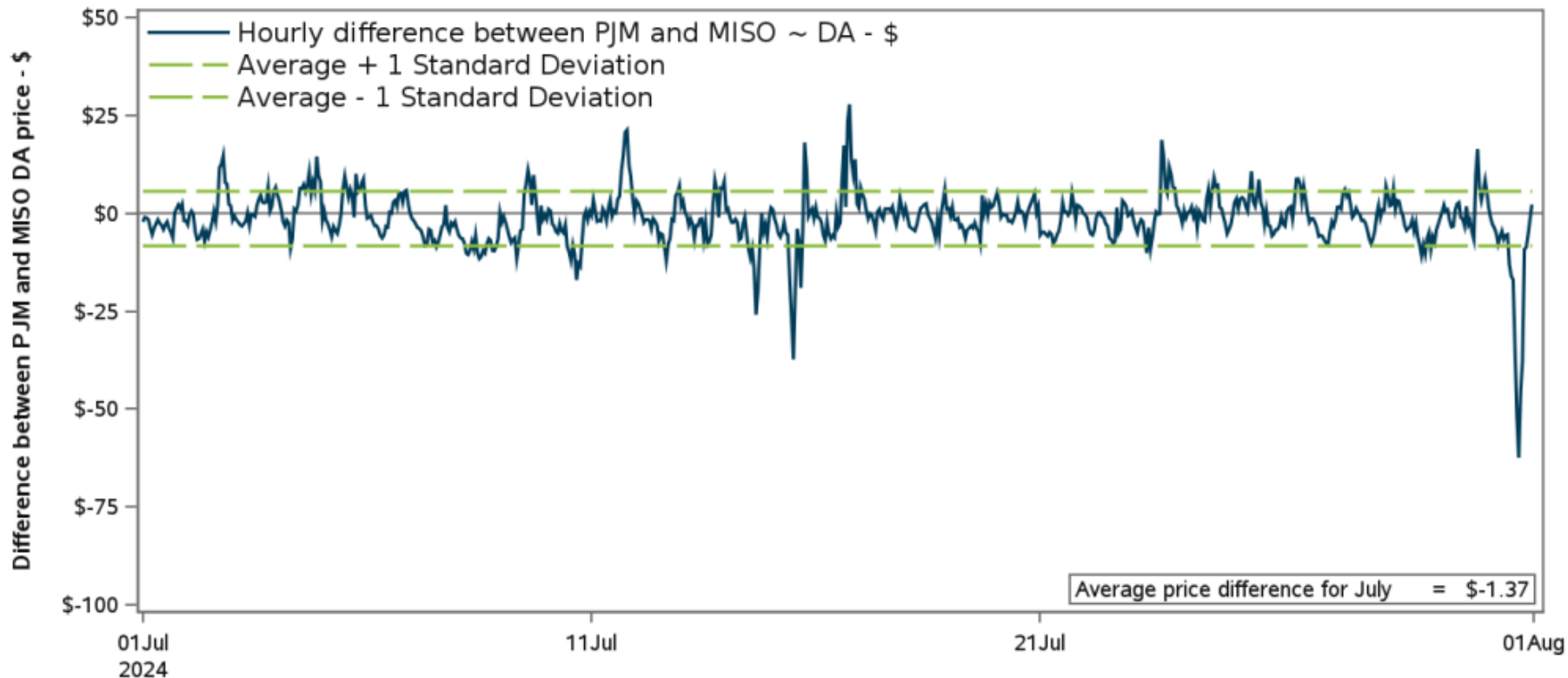


# Hourly Difference Between PJM and MISO Real-Time Prices



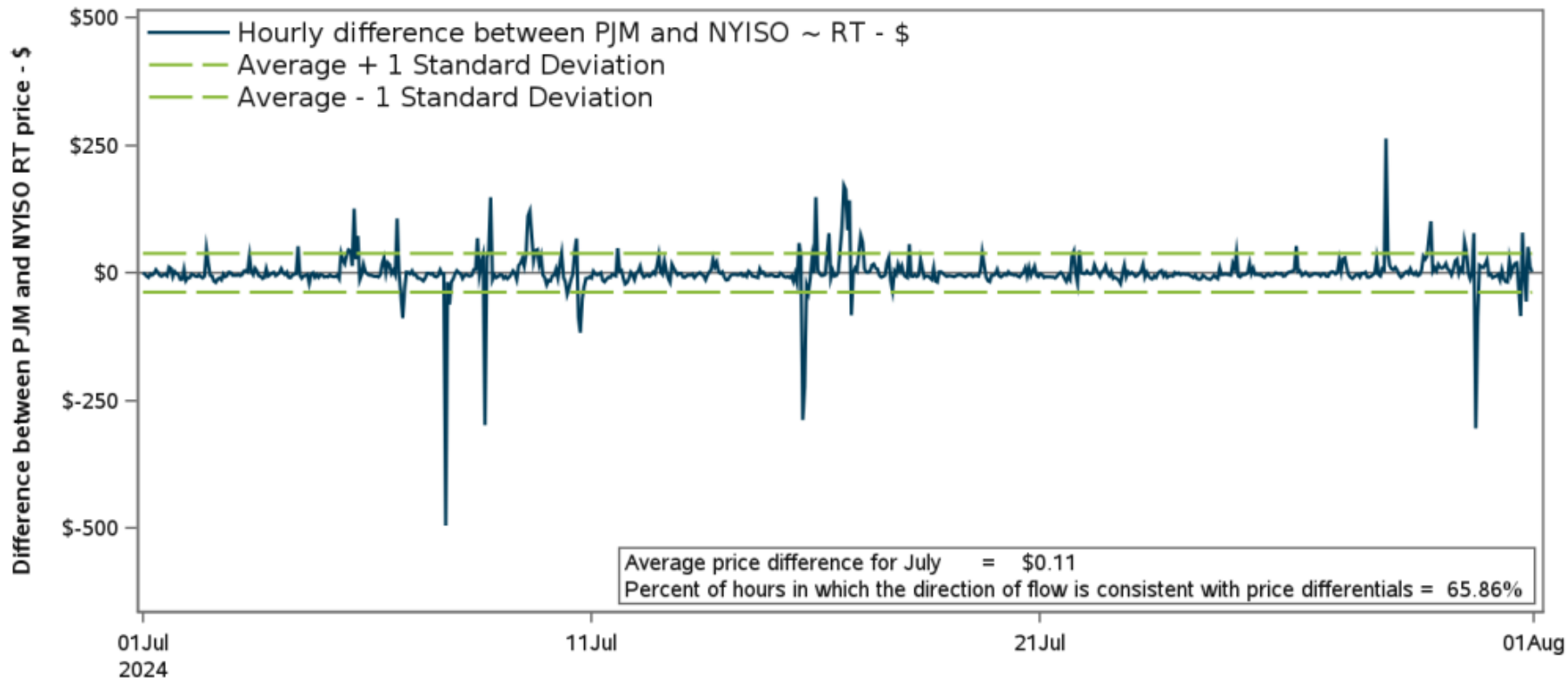
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.

# 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.

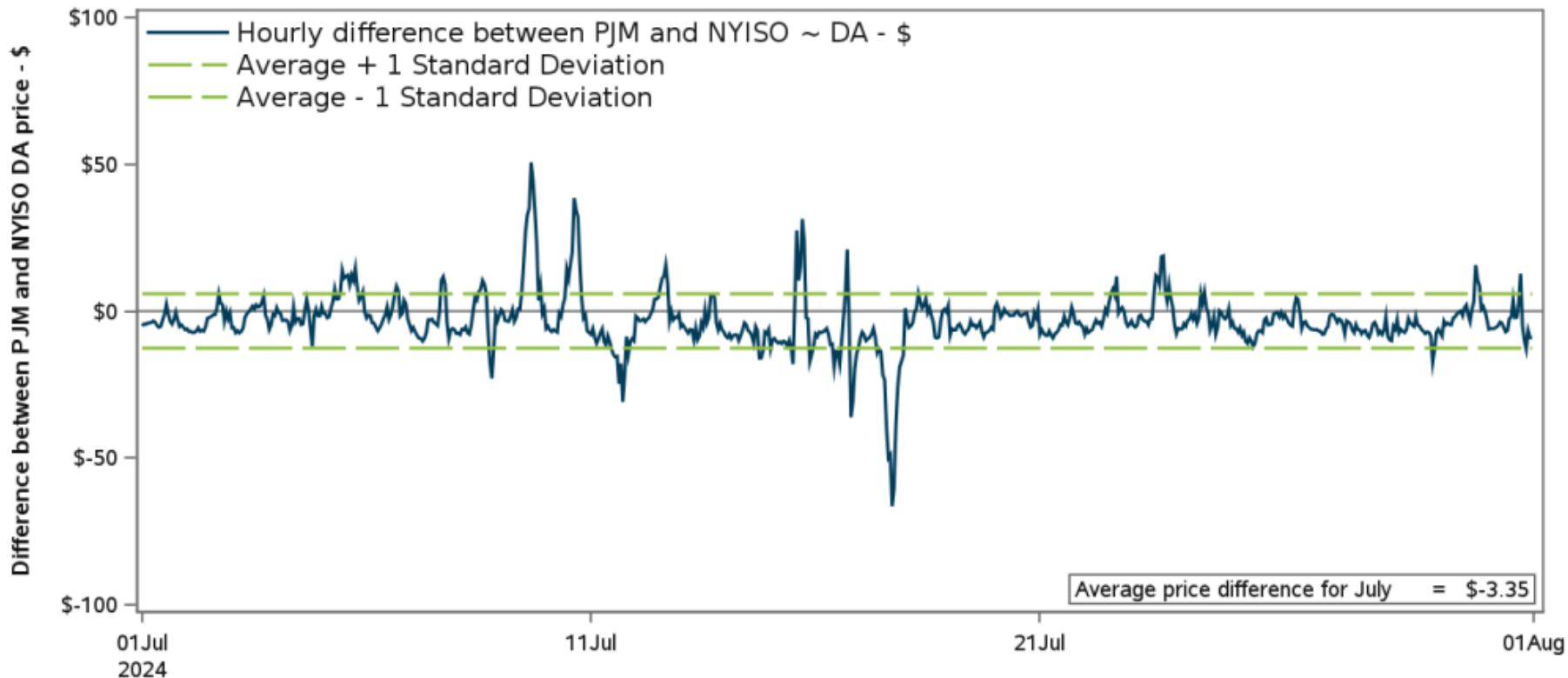
# Hourly Difference Between PJM and NYISO Real-Time Prices



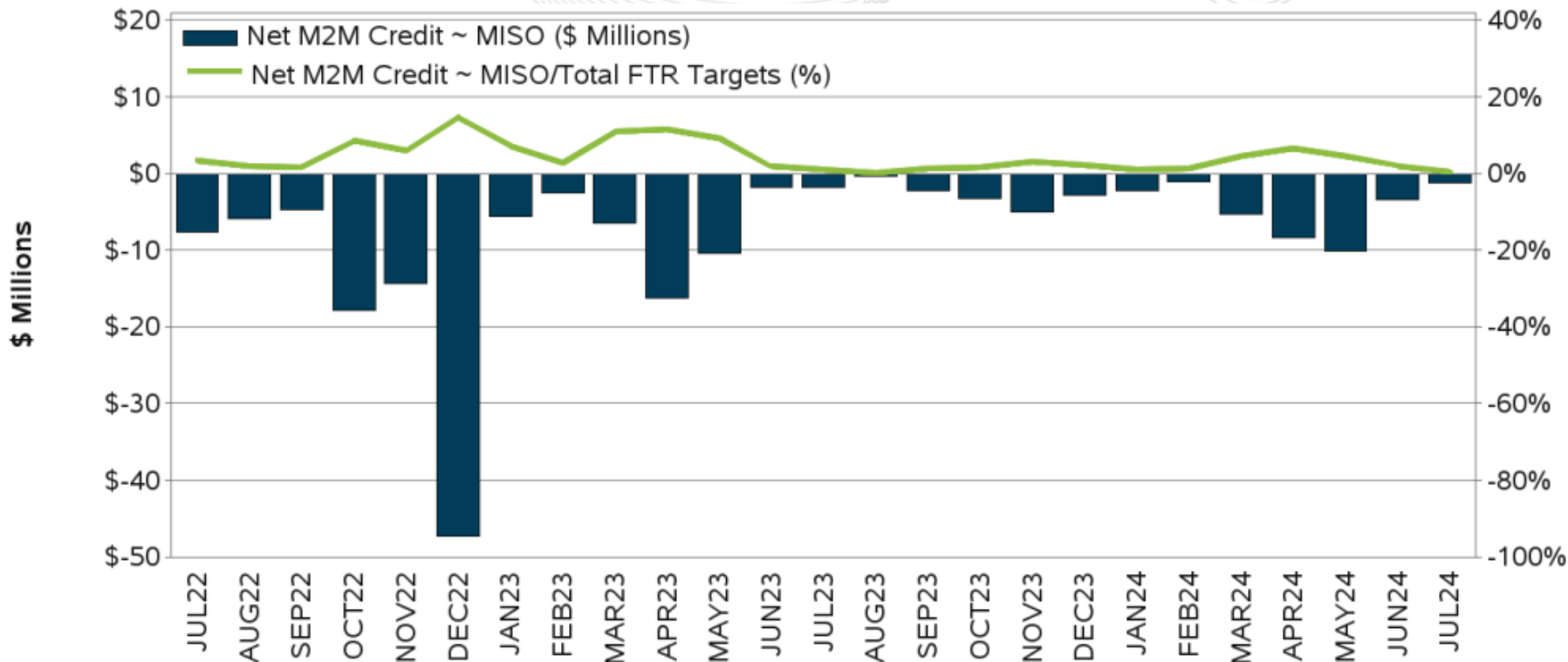
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.



# Hourly Difference Between PJM and NYISO Day-Ahead Prices



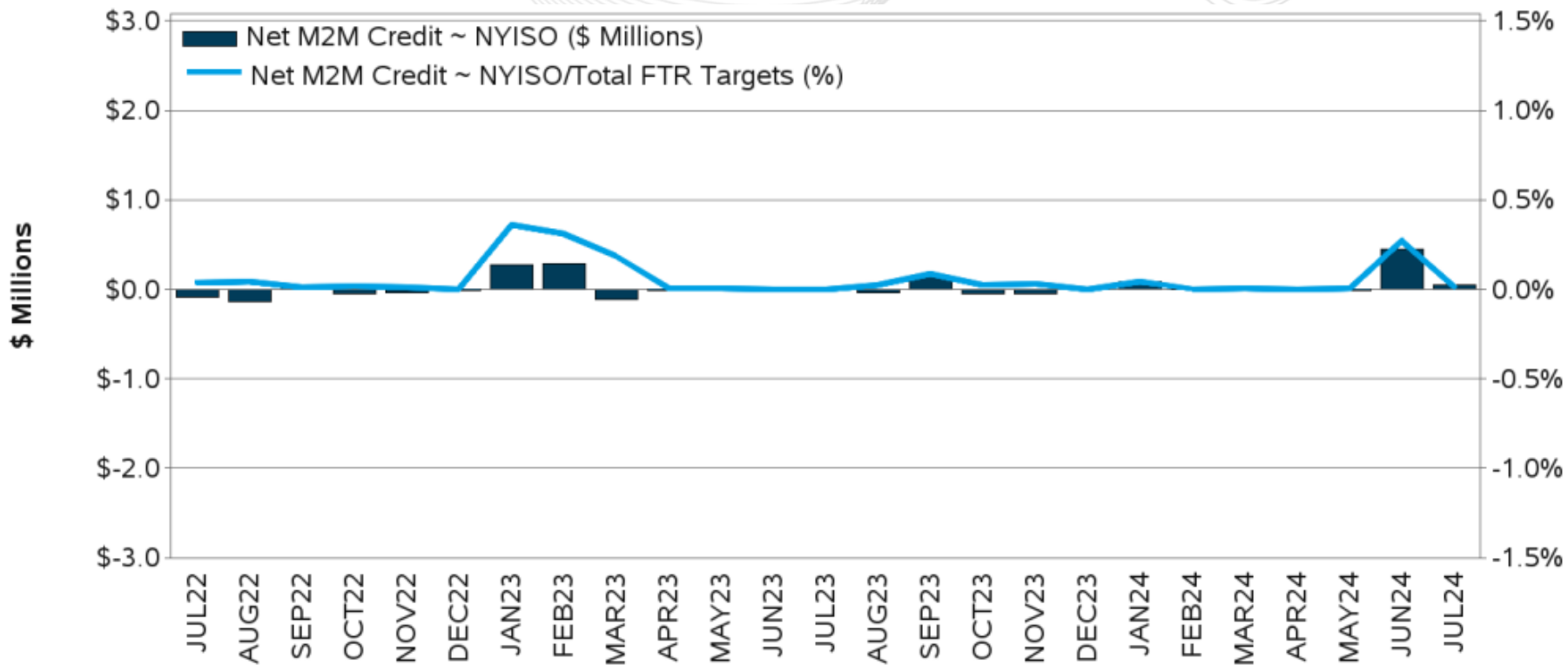
Positive values represent hours when the PJM price was higher. Negative values represent hours when the PJM price was lower.



Negative M2M Credit represents PJM payment to MISO

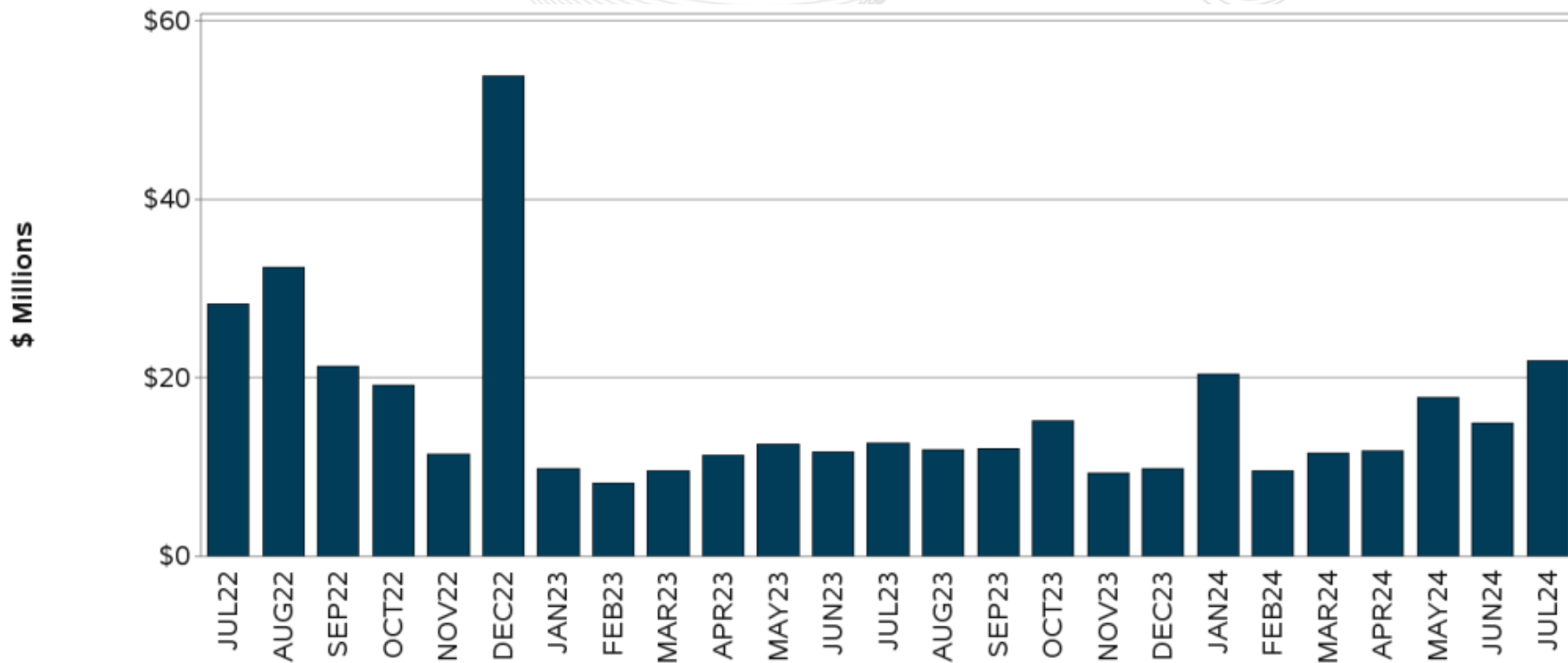


# PJM-NYISO Market-to-Market Coordination Settlement

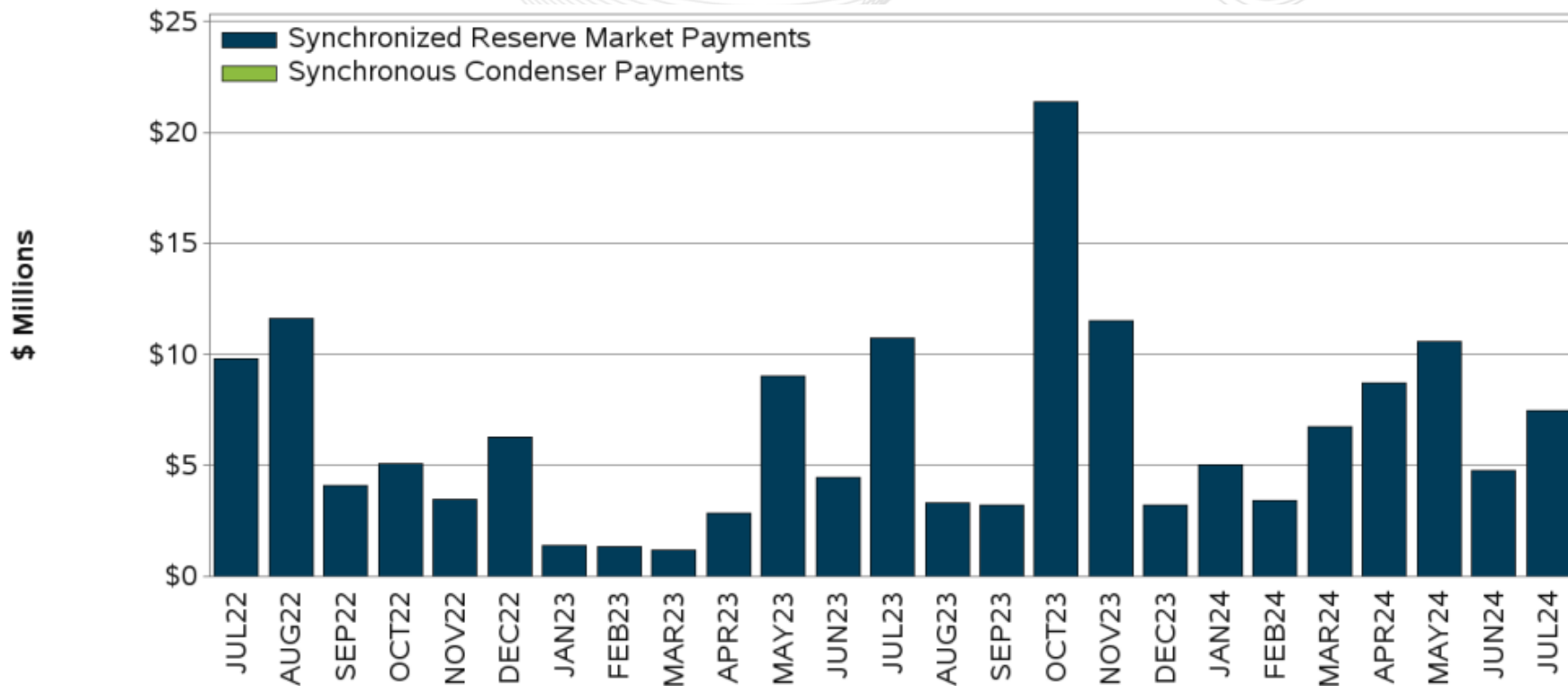


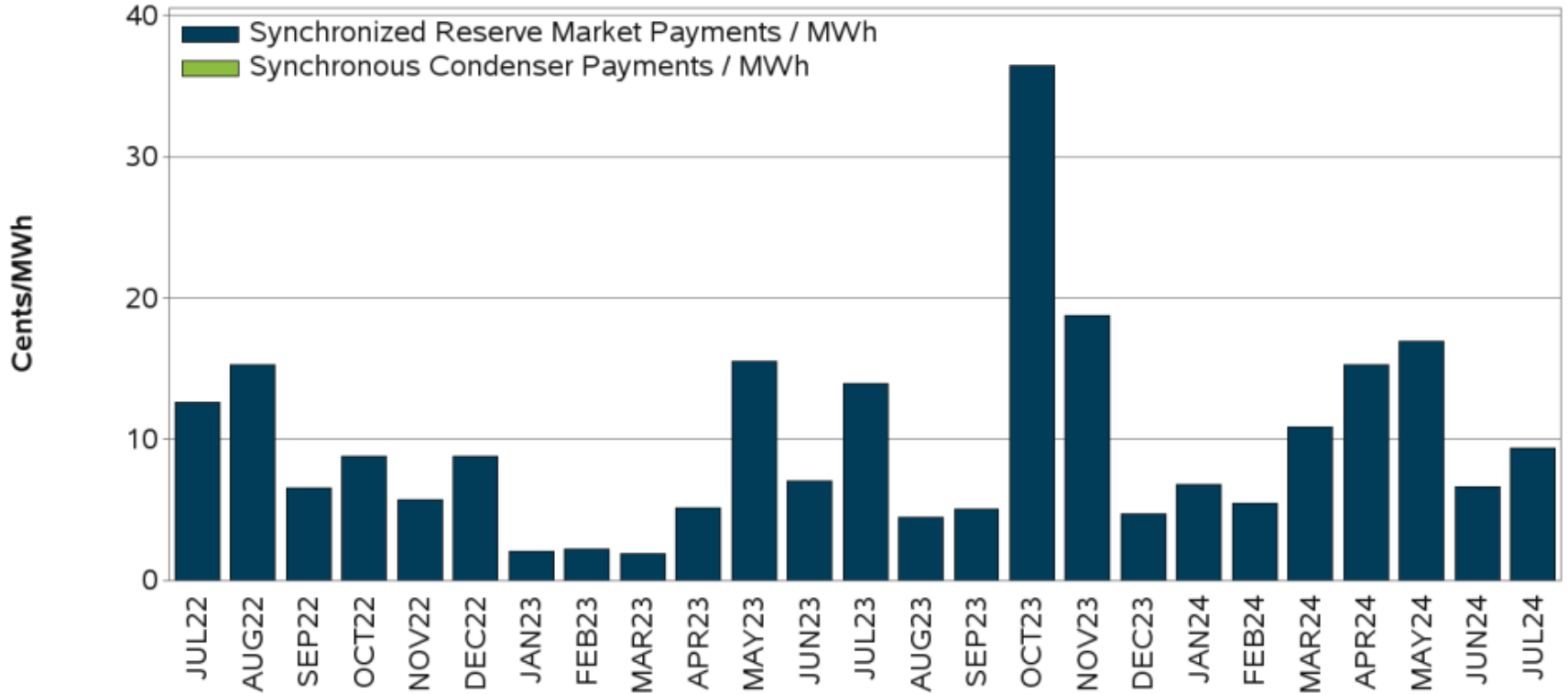
Negative M2M Credit represents PJM payment to NYISO

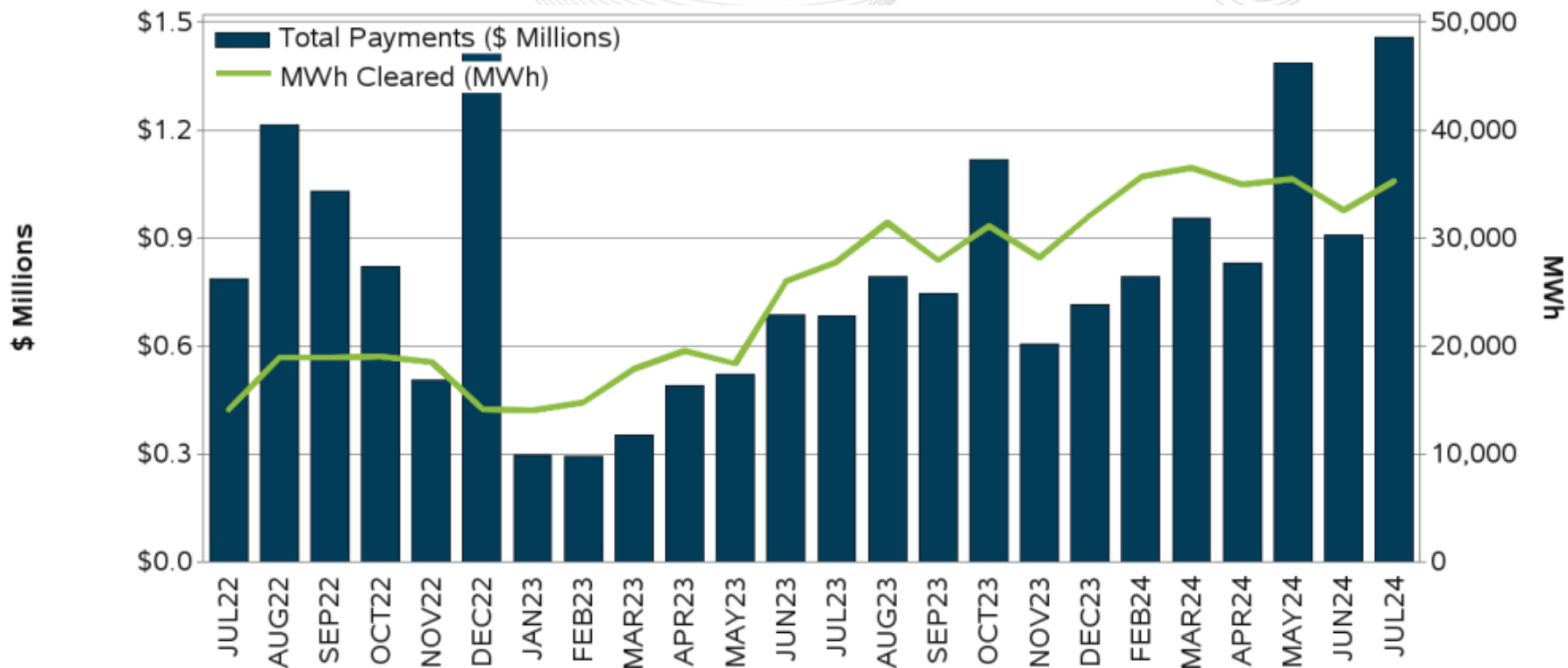
# Ancillary Service Market Summary



# Synchronized Reserve and Synchronous Condenser Costs

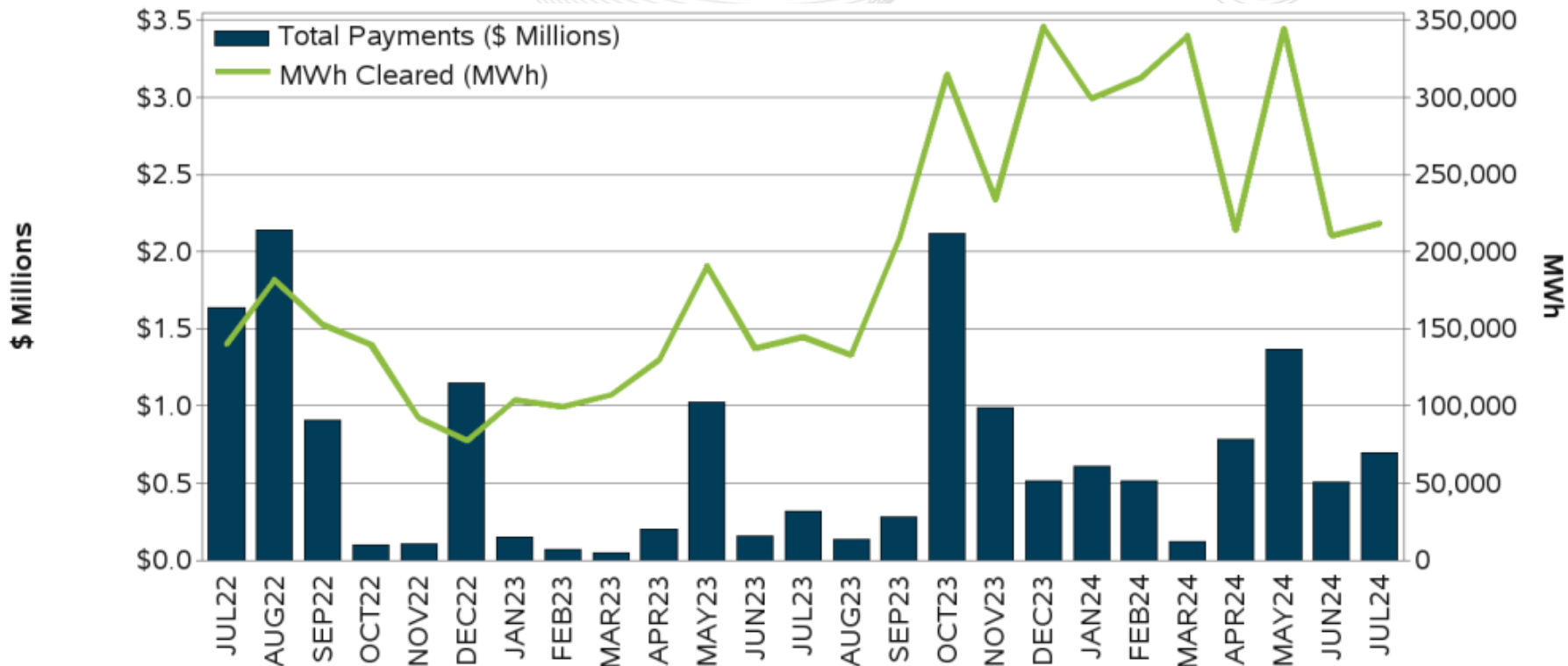




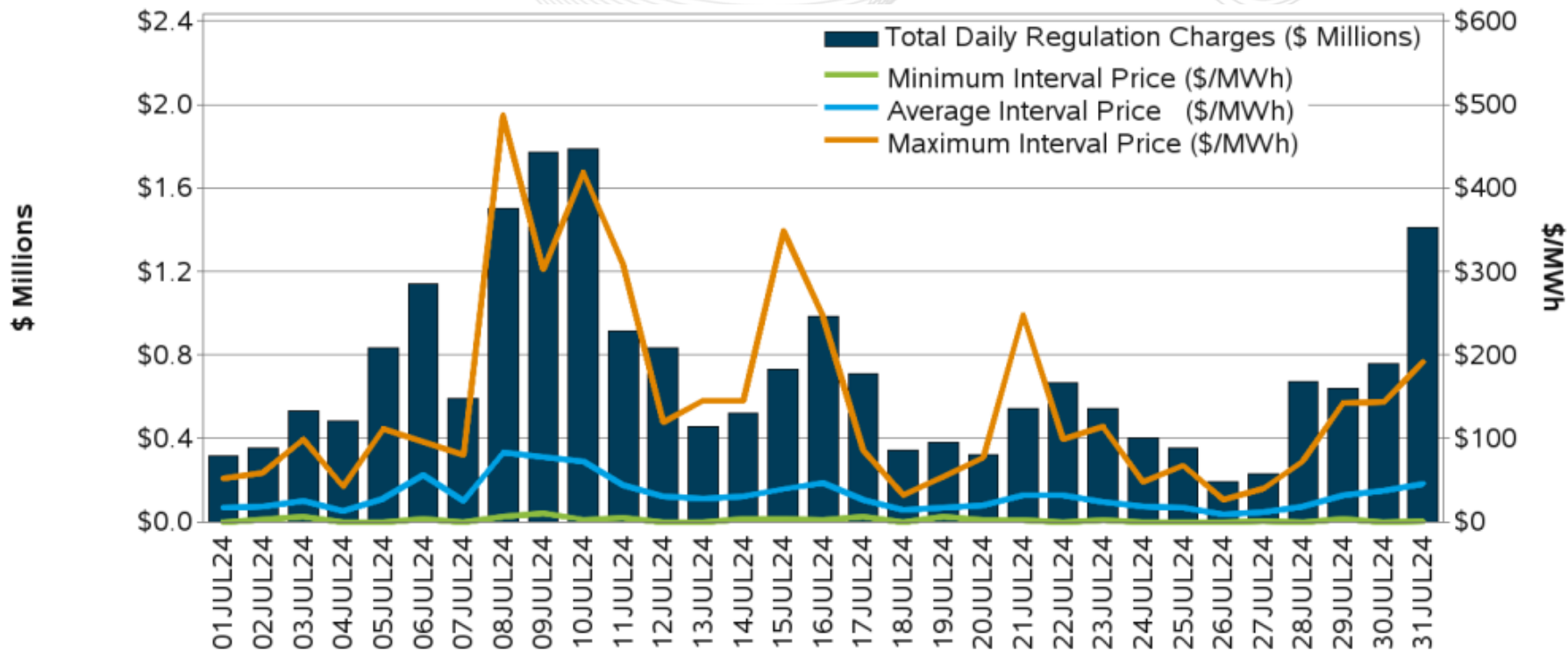




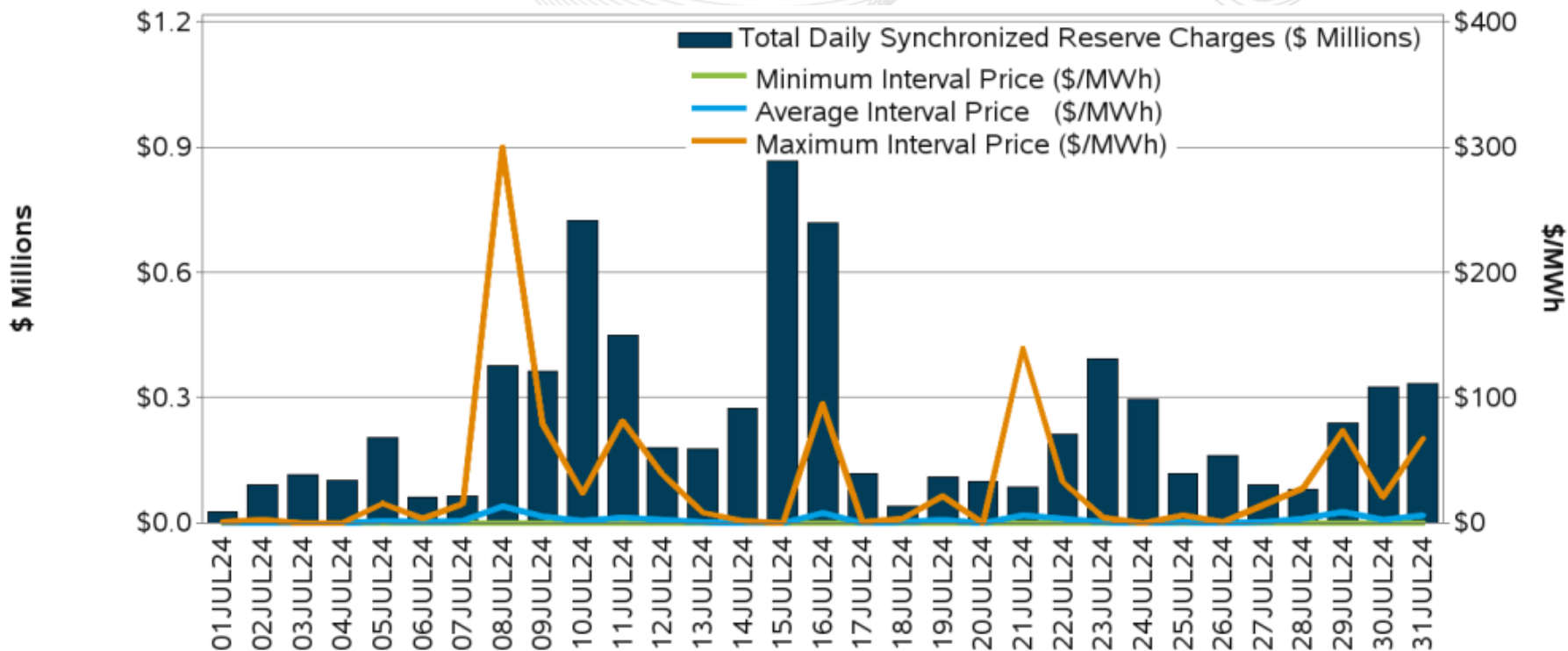
# DR Participation in PJM Synchronized Reserve Markets



# 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.  
(610) 666-2244 / [it\\_ops\\_ctr\\_shift@pjm.com](mailto:it_ops_ctr_shift@pjm.com)

