

# Q3 2023 Report on Market Issues and Performance

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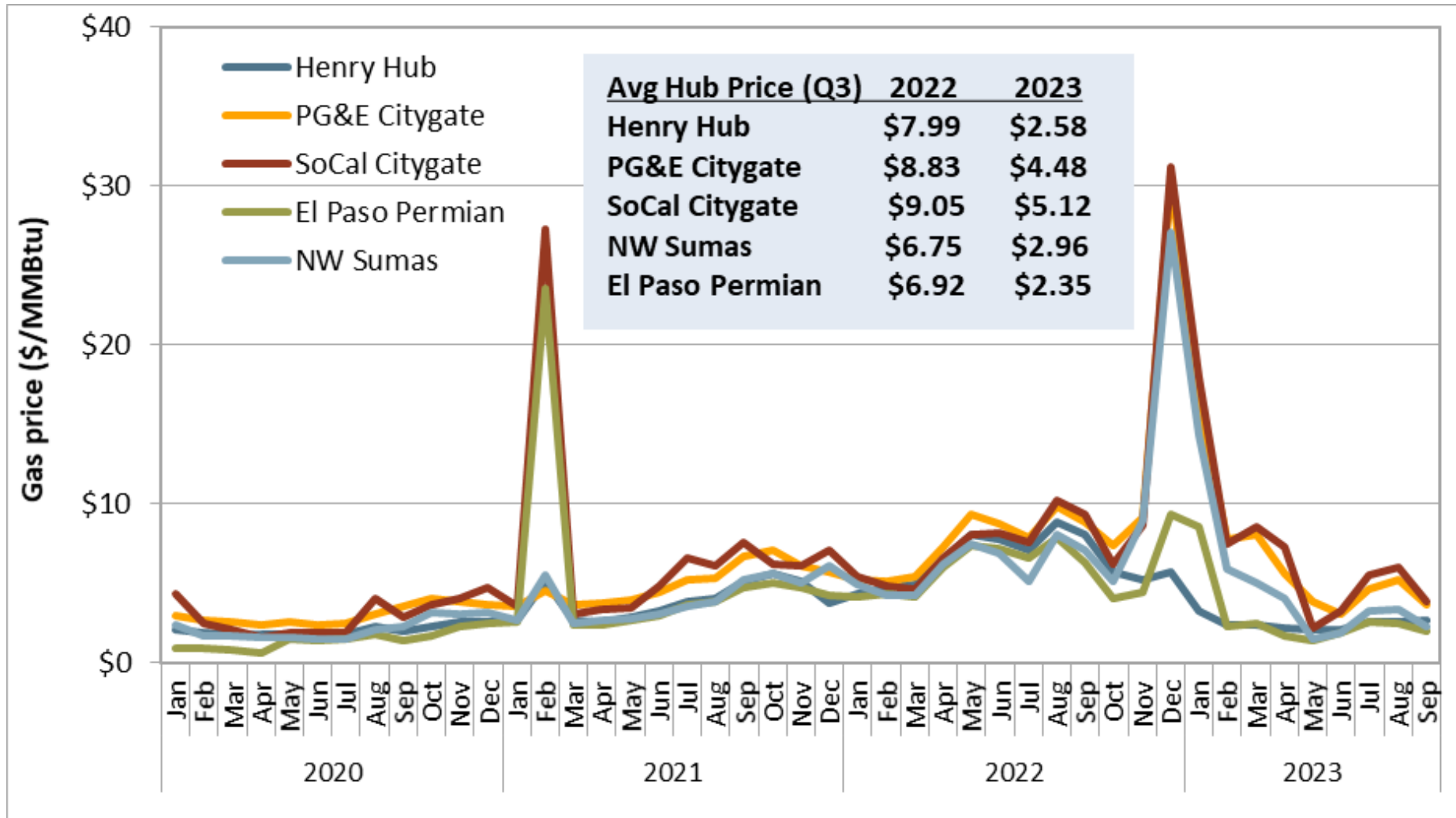
**Department of Market Monitoring**

**March 6, 2024**

**<https://www.caiso.com/Documents/2023-Third-Quarter-Report-on-Market-Issues-and-Performance-Feb-21-2024.pdf>**

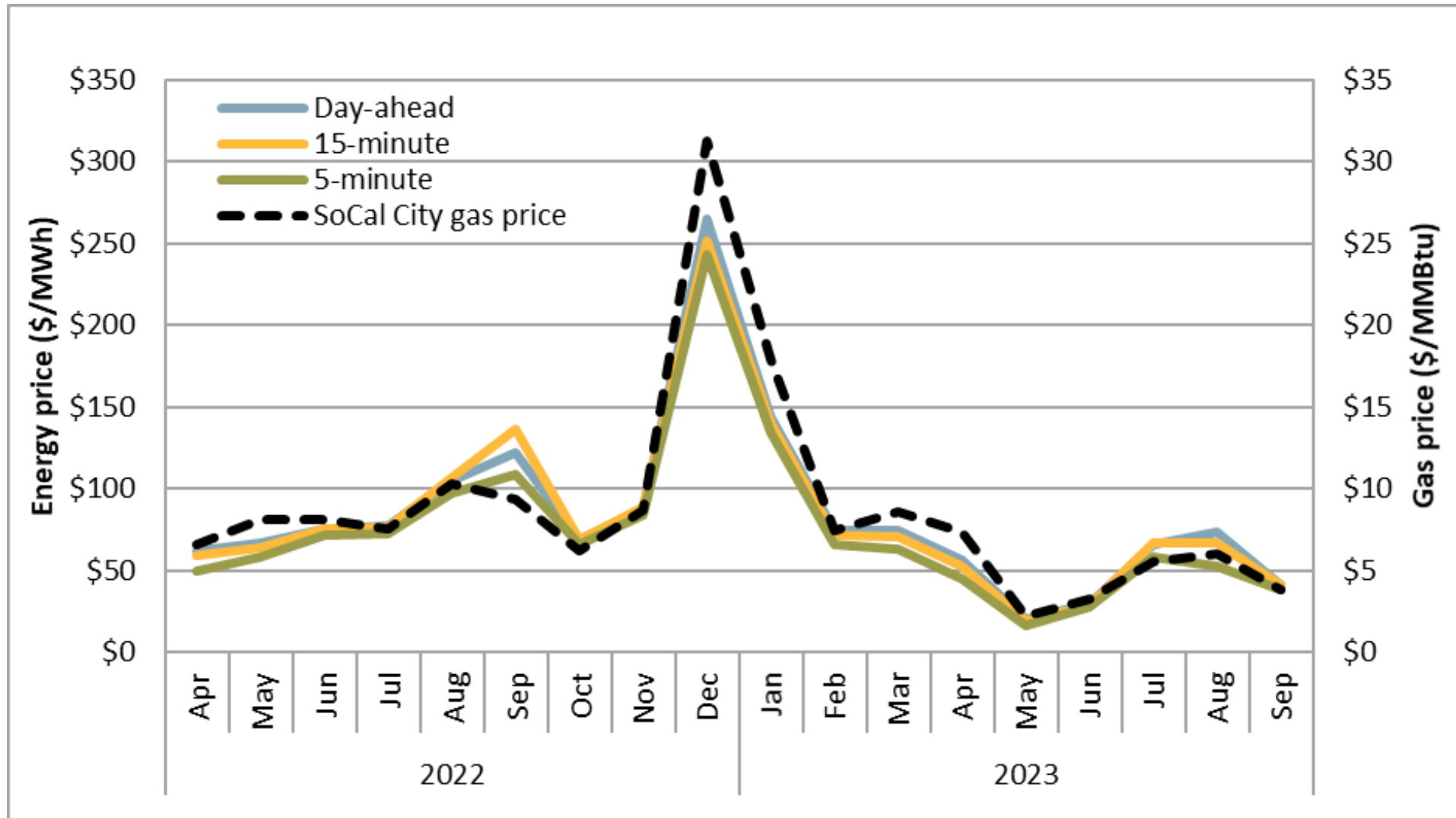
# Gas prices down from Q3 2022

Resulted in lower electricity prices



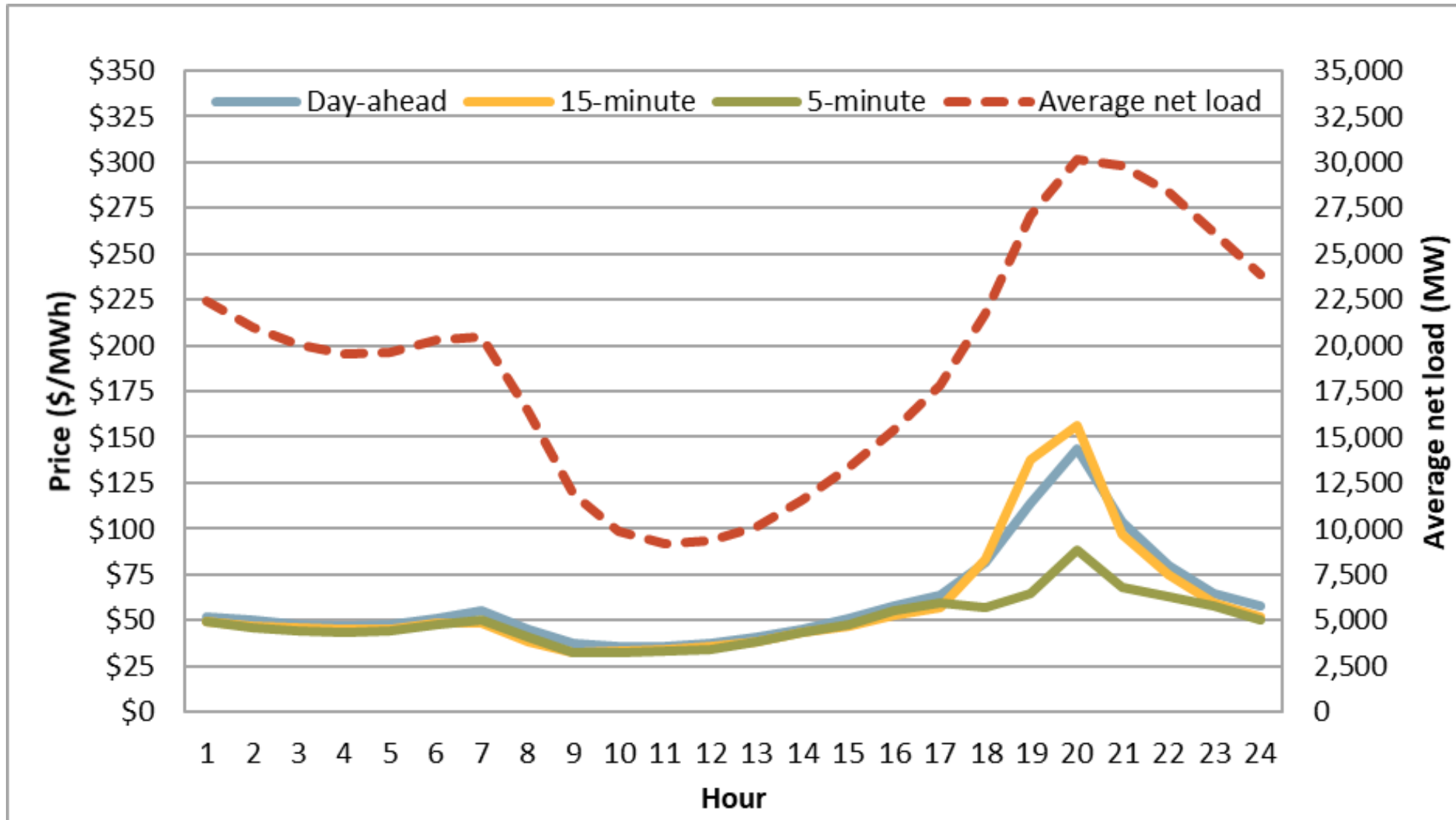
# SoCal gas price and load-weighted avg CAISO electricity prices

Continued strong correlation between gas prices and electricity prices



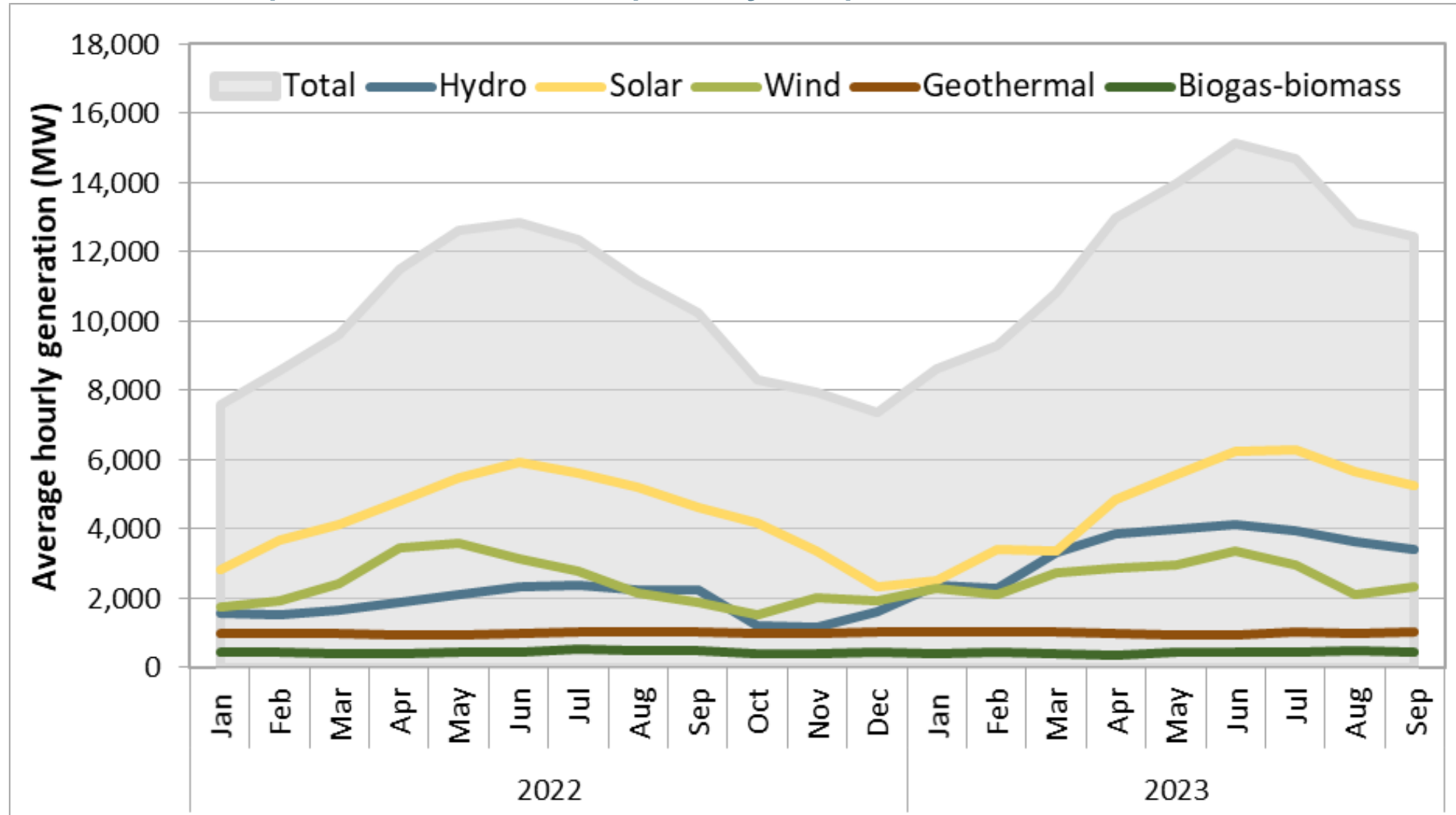
# Q3 2023 hourly load-weighted avg energy prices - CAISO

Follows load net load shape. 15-minute prices > 5-minute prices over net load peak



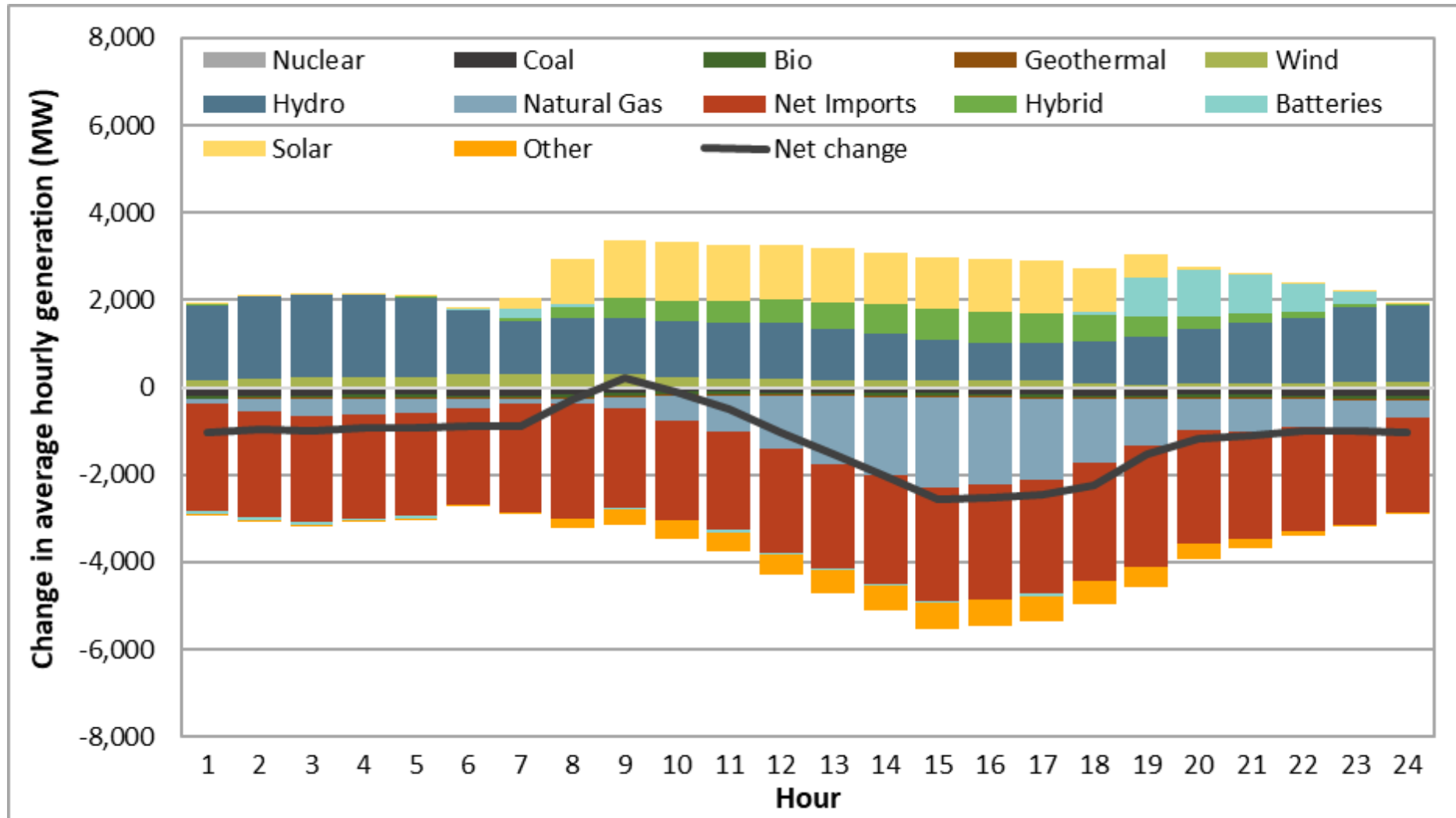
# Average monthly renewable generation - CAISO

Hydro, wind, and solar up 60%, 8%, and 11%, respectively, compared to Q3 2022



# Change in avg hourly generation by fuel type (Q3 2022 to Q3 2023) - CAISO

Battery up 34%, natural gas down 7%, net imports down 24%, compared to Q3 2022



# Atypical hydroelectric and weather conditions shift supply and demand



- Hydroelectric availability:
  - High in California
  - Low in Northwest
- Sustained high temperatures:
  - Southwest
- Typical power flows in peak hours:
  - Northwest to system
- Summer 2023:
  - Lower system to California flows

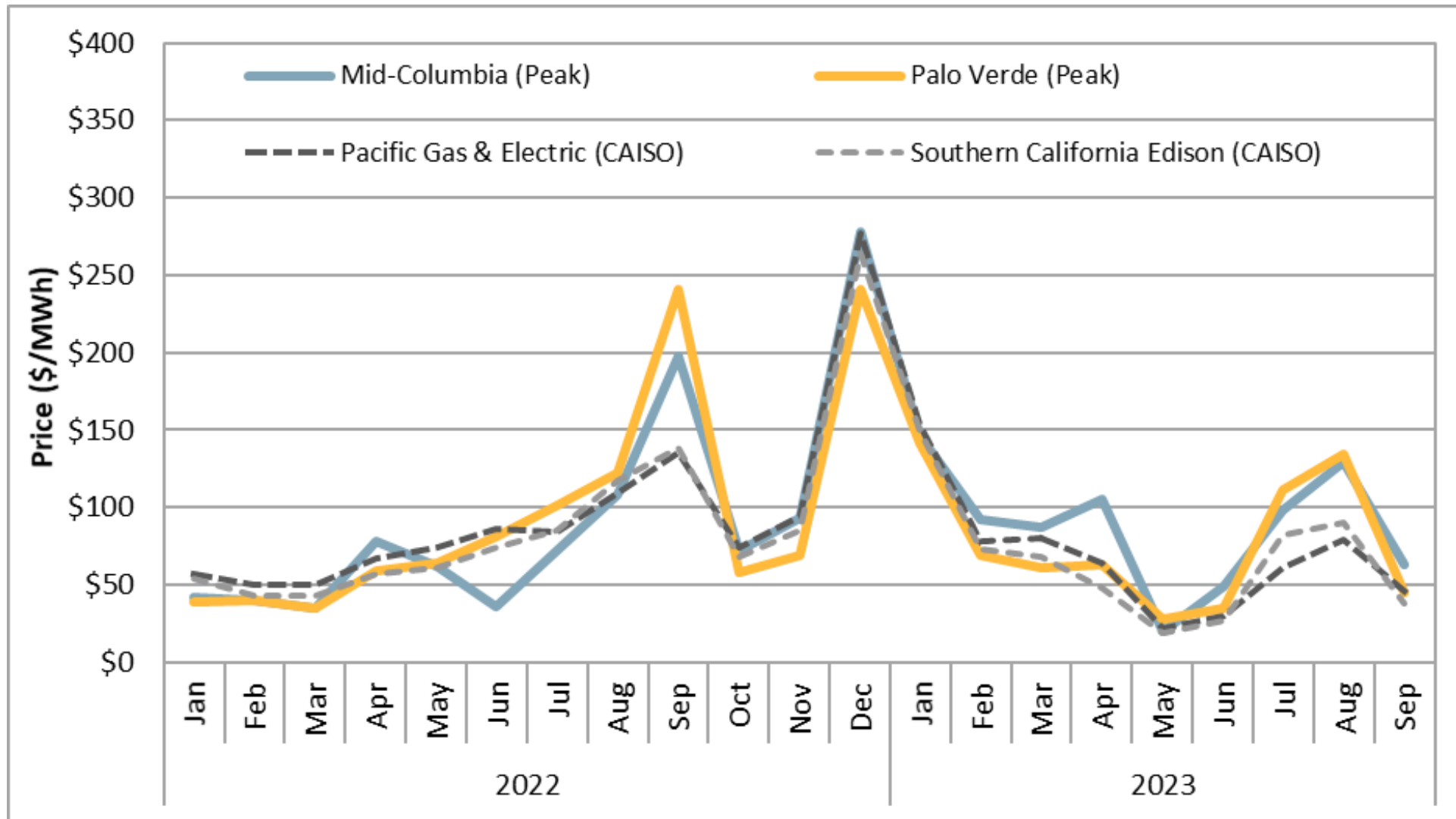
*\*Avangrid office; generation-only BAA with distribution across multiple states. Map boundaries are approximate and for illustrative purposes only.*

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# Day-ahead CAISO and bilateral market prices

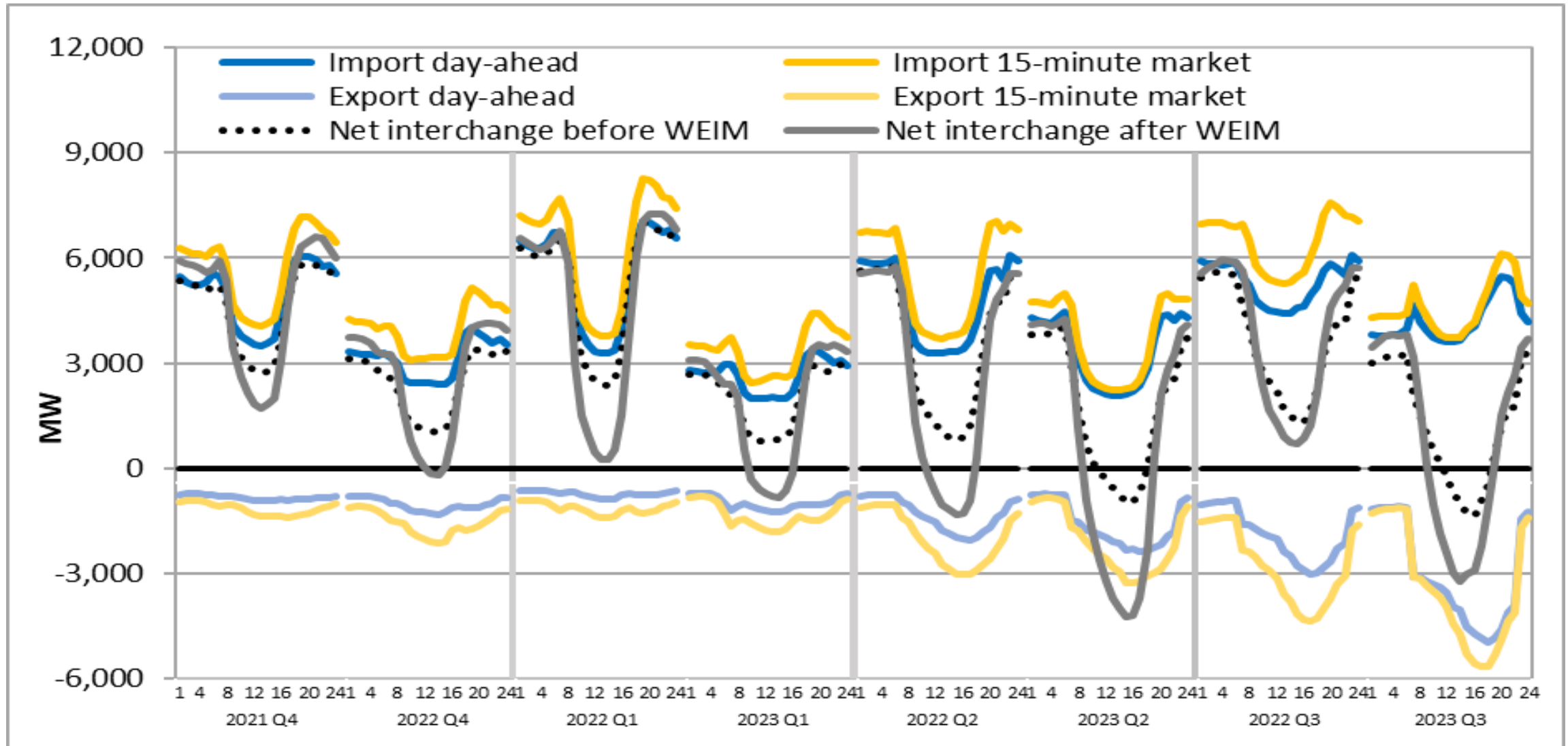
CAISO < MIDC and PV in July and August





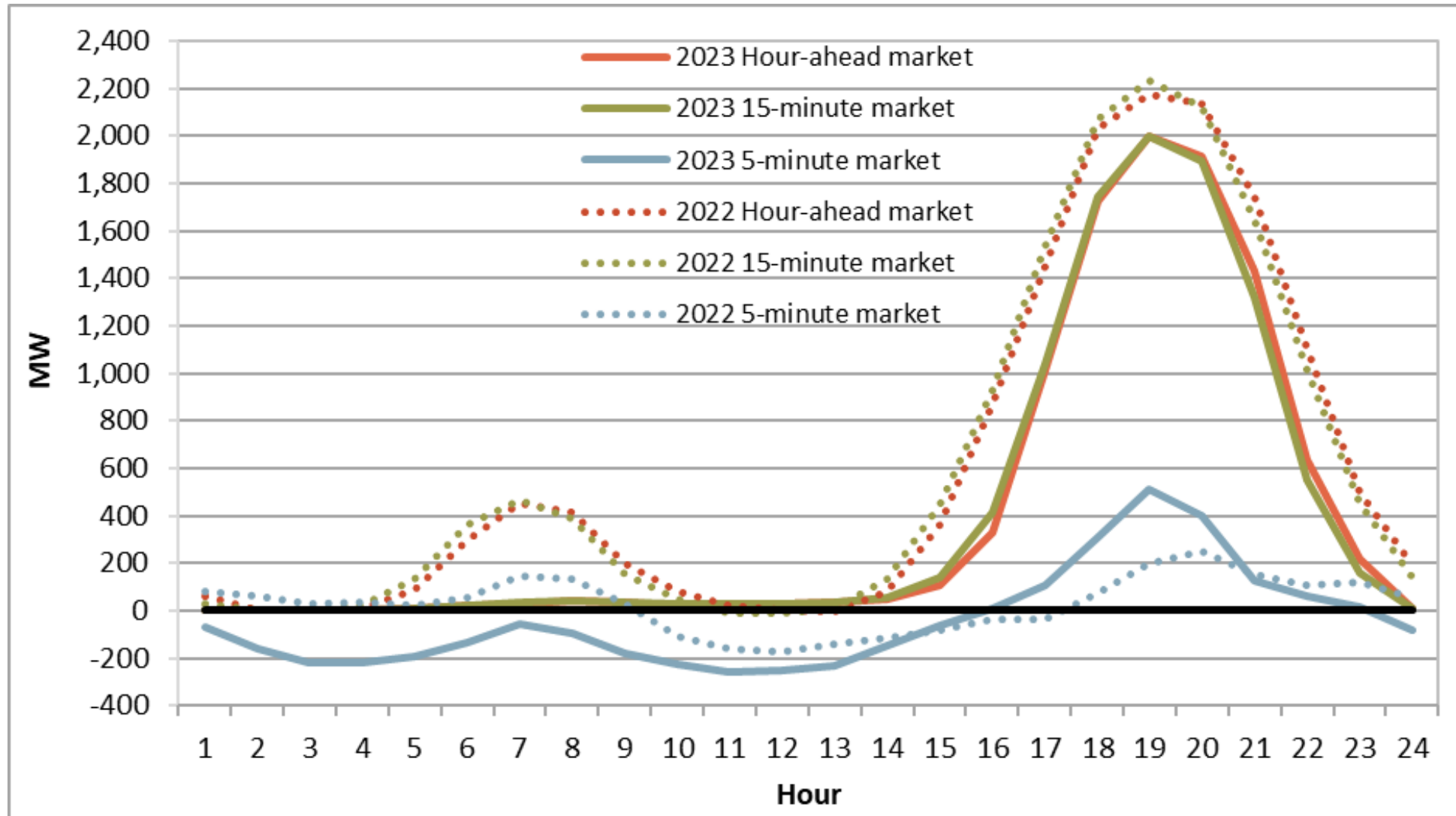
# Average CAISO hourly net interchange by quarter

CAISO imports decrease and exports increase

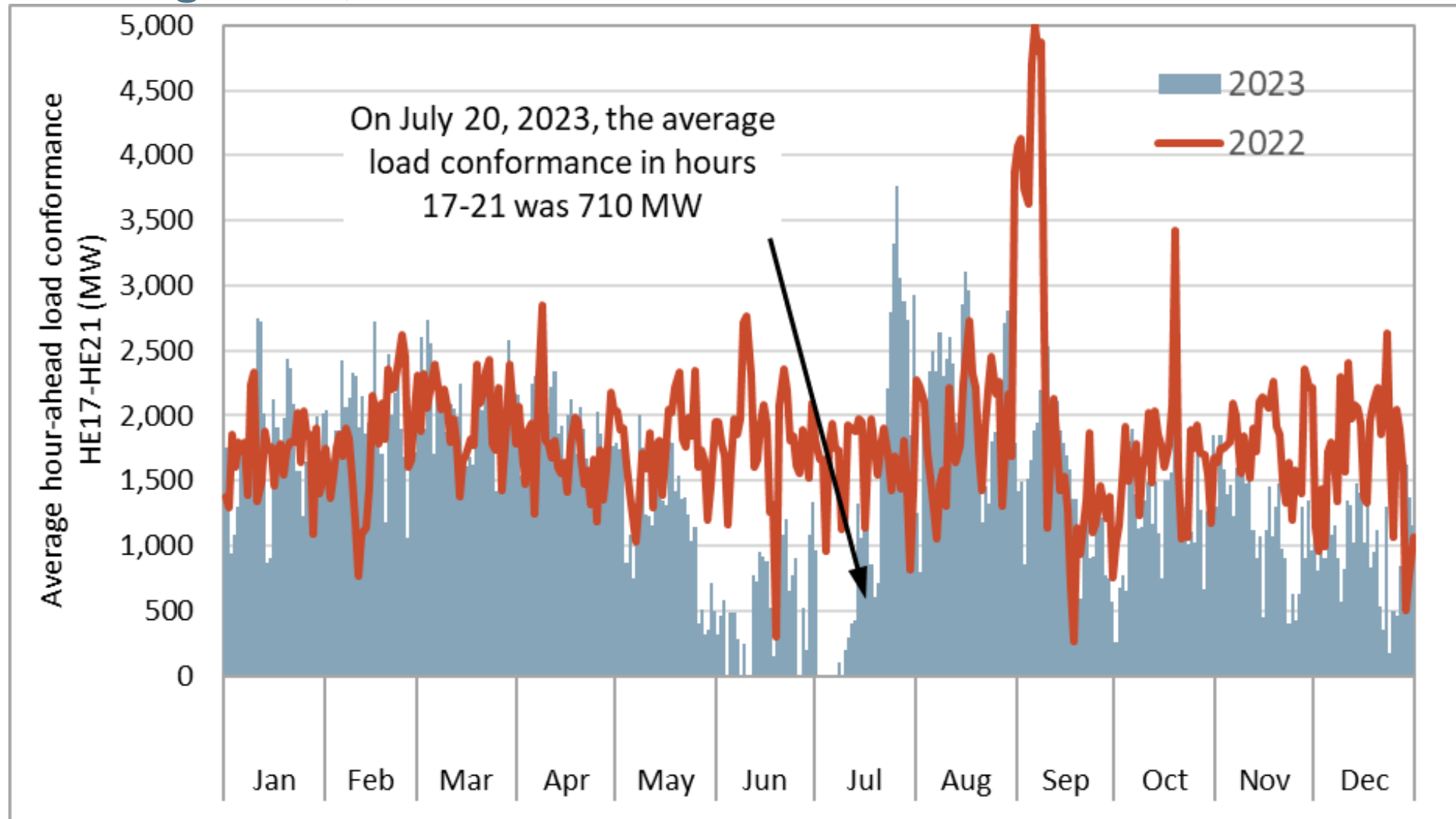


# Average hourly load adjustments (Q3 2022 and Q3 2023)

Hour-ahead and 15-minute load adjustments decrease in 2023

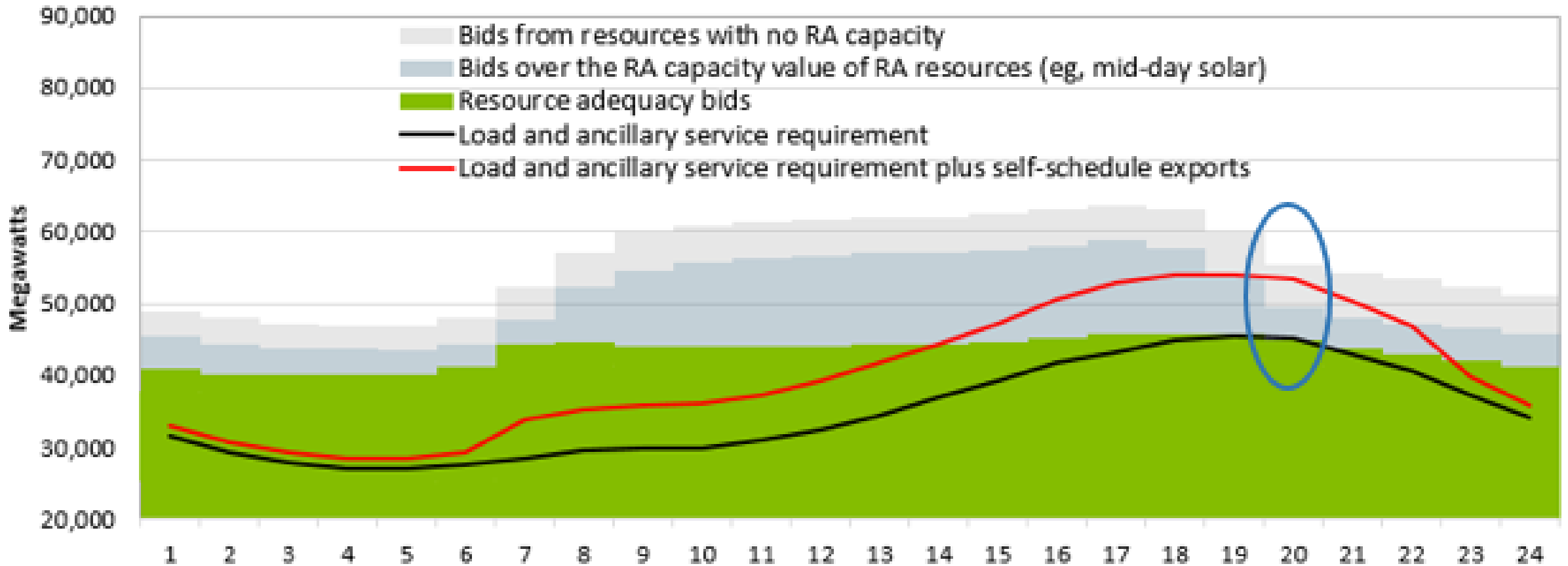


# Average daily hour-ahead market load adjustments Hours-ending 17-21, 2022-2023

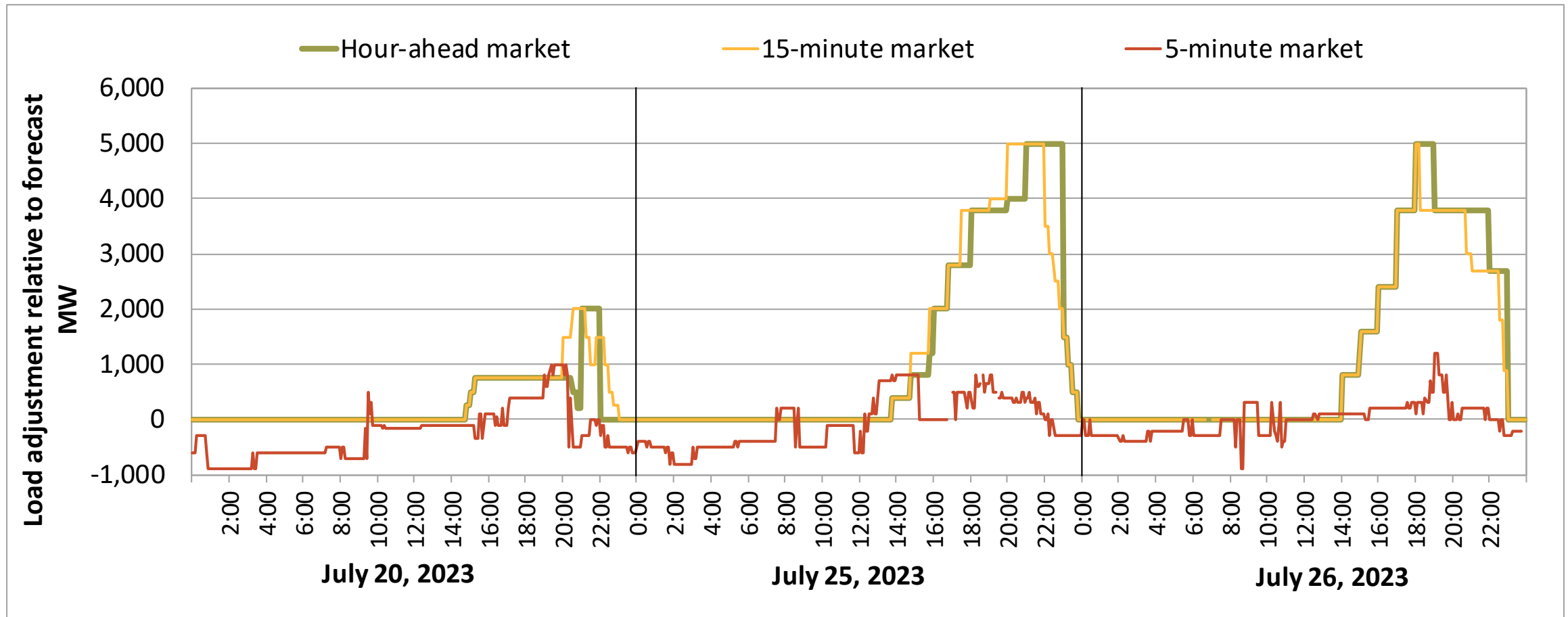


# Real-time market supply bids and demand requirements (July 20, 2023)

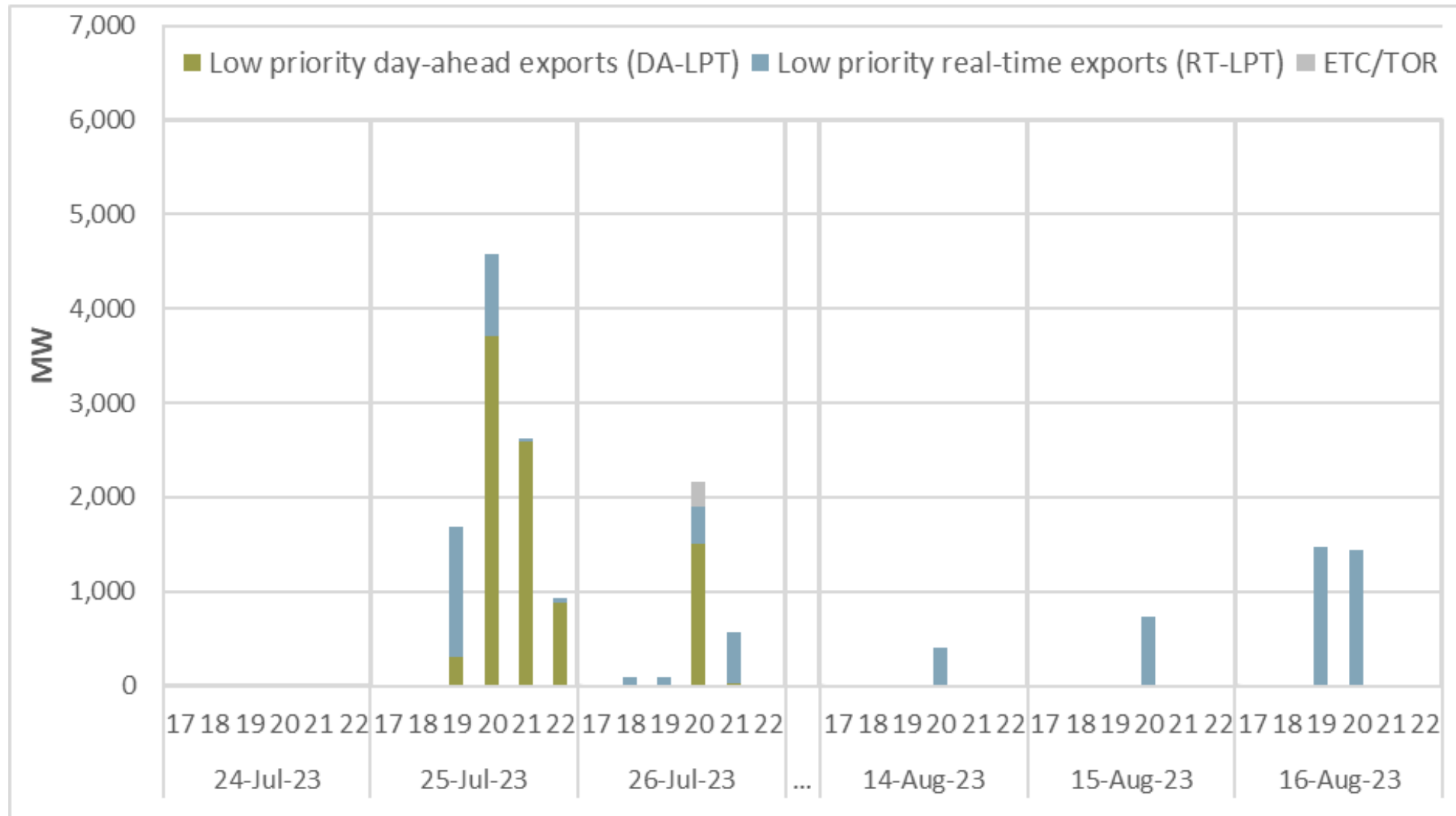
CAISO balancing area declares level 1 Energy Emergency Alert during hour-ending 20



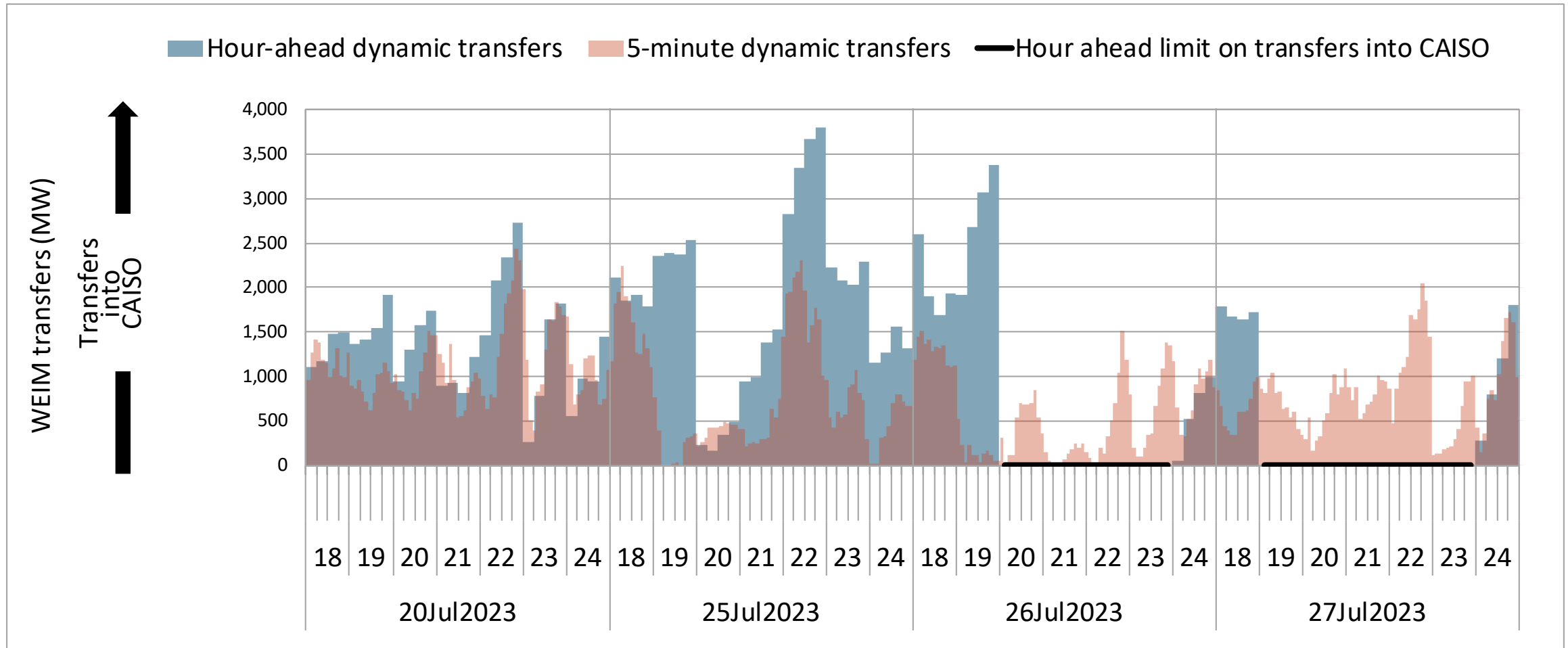
# CAISO BA significantly increases hour-ahead market load adjustments between July 20 and 25



# Self-schedule non-wheel exports not receiving HASP awards (July and August high load periods)



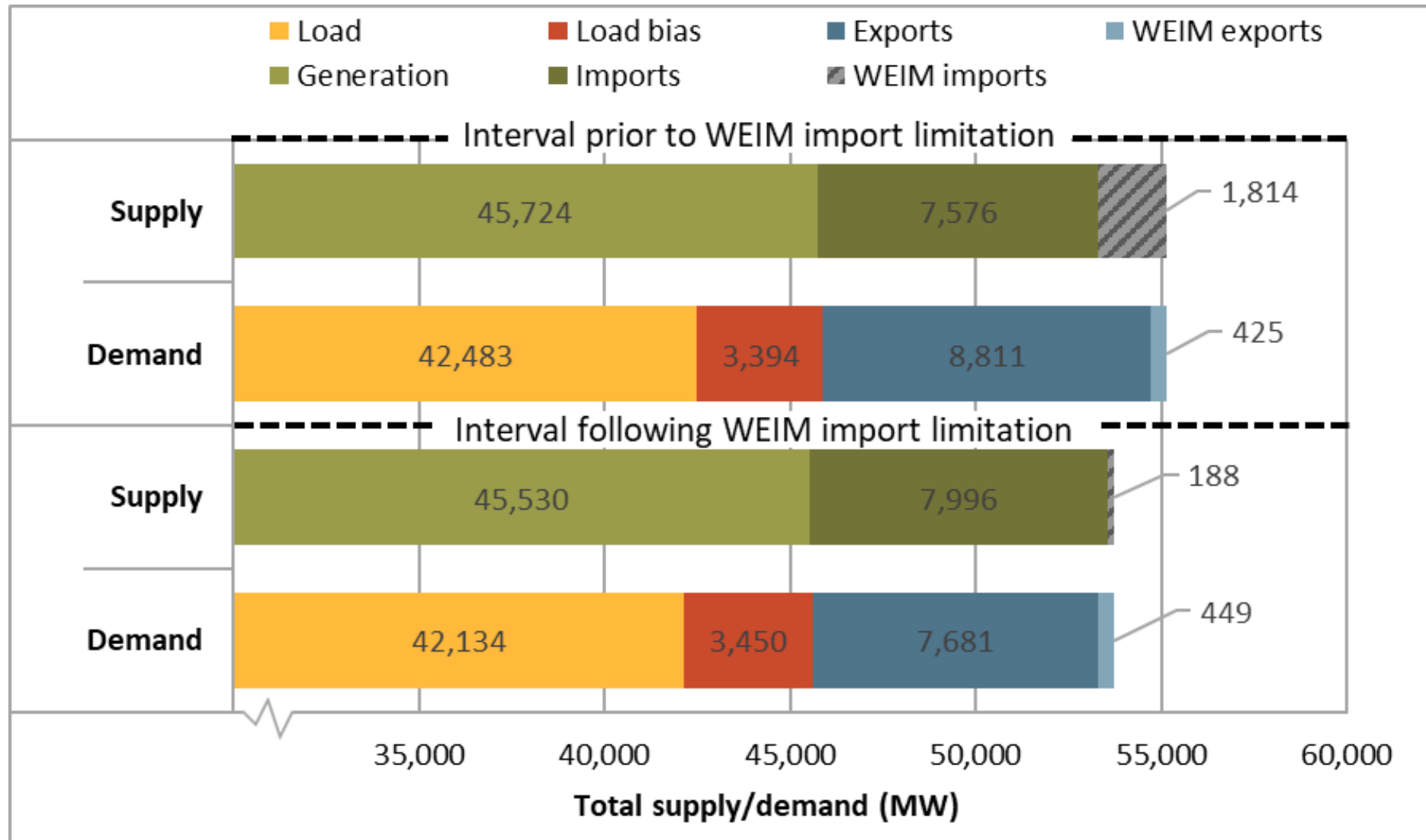
# Hour-ahead and 5-minute market dynamic WEIM transfers into CAISO balancing area



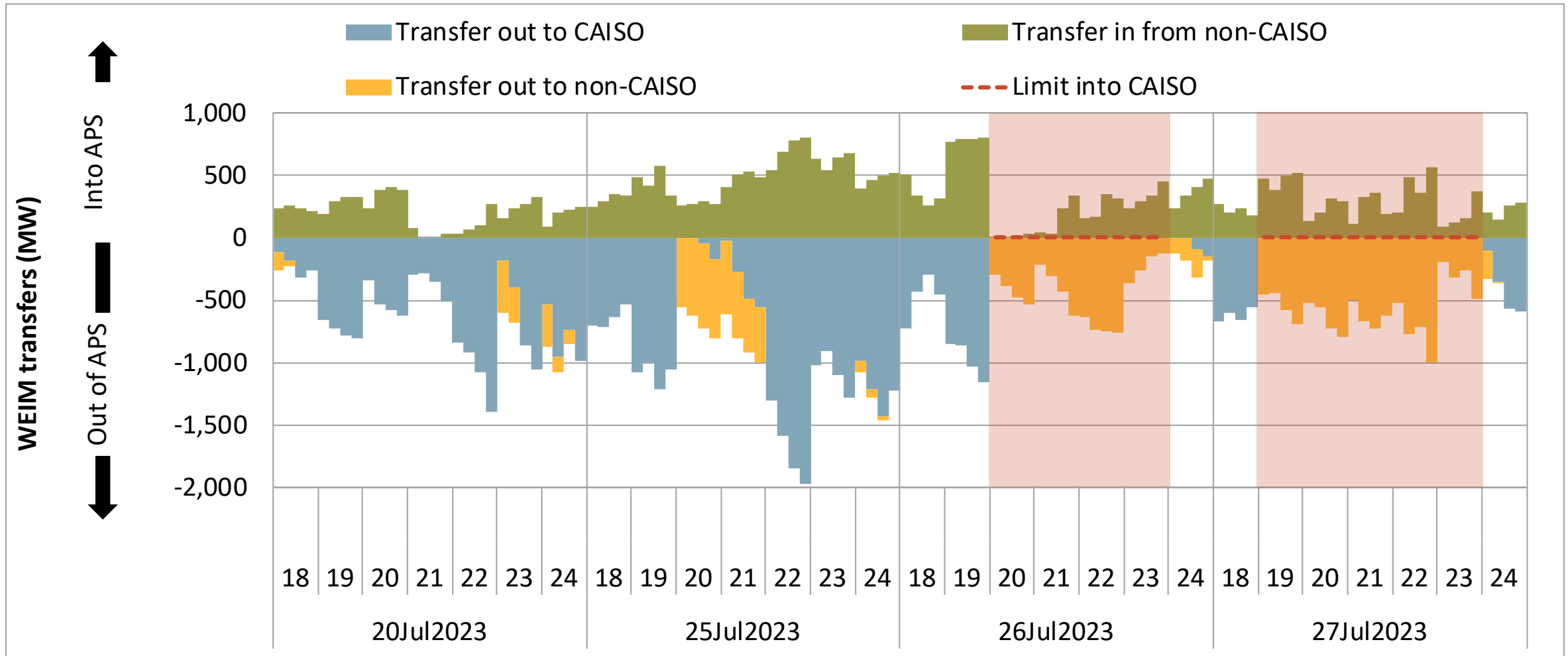


# Avg HA CAISO supply/demand in interval before and after limitation

(Summer 2023 peak days): 1,600 MW decrease in WEIM imports met by ITC imports up and ITC exports down



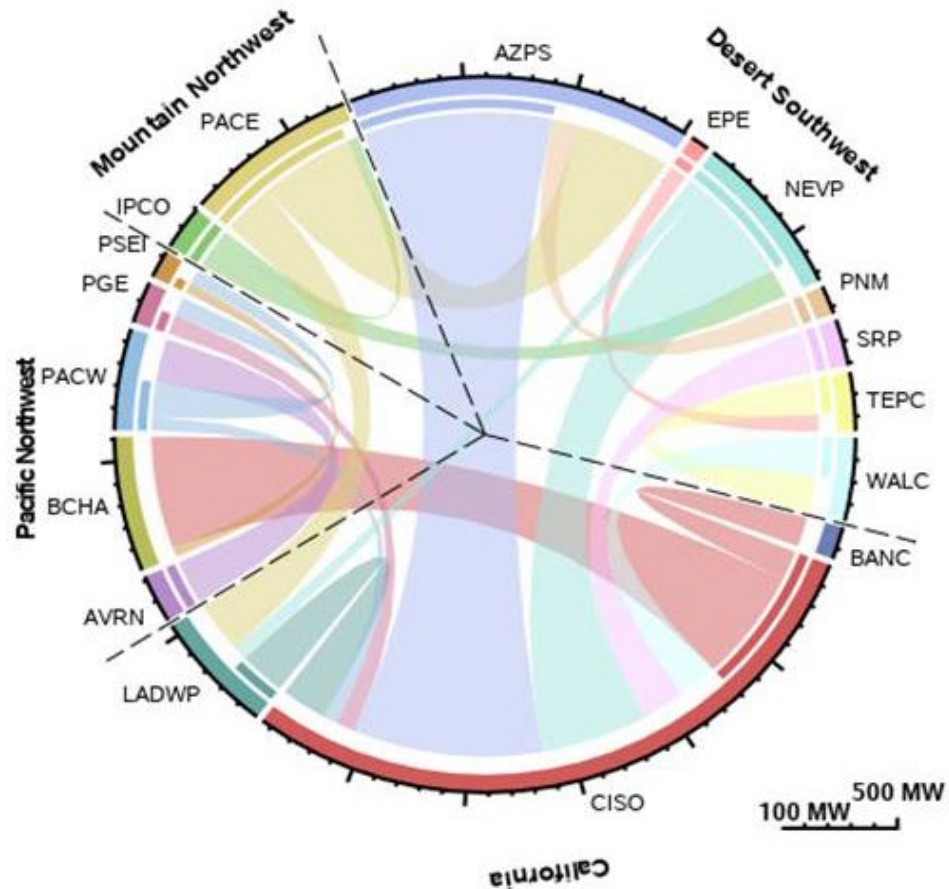
# Arizona Public Service dynamic WEIM transfers hour-ahead market



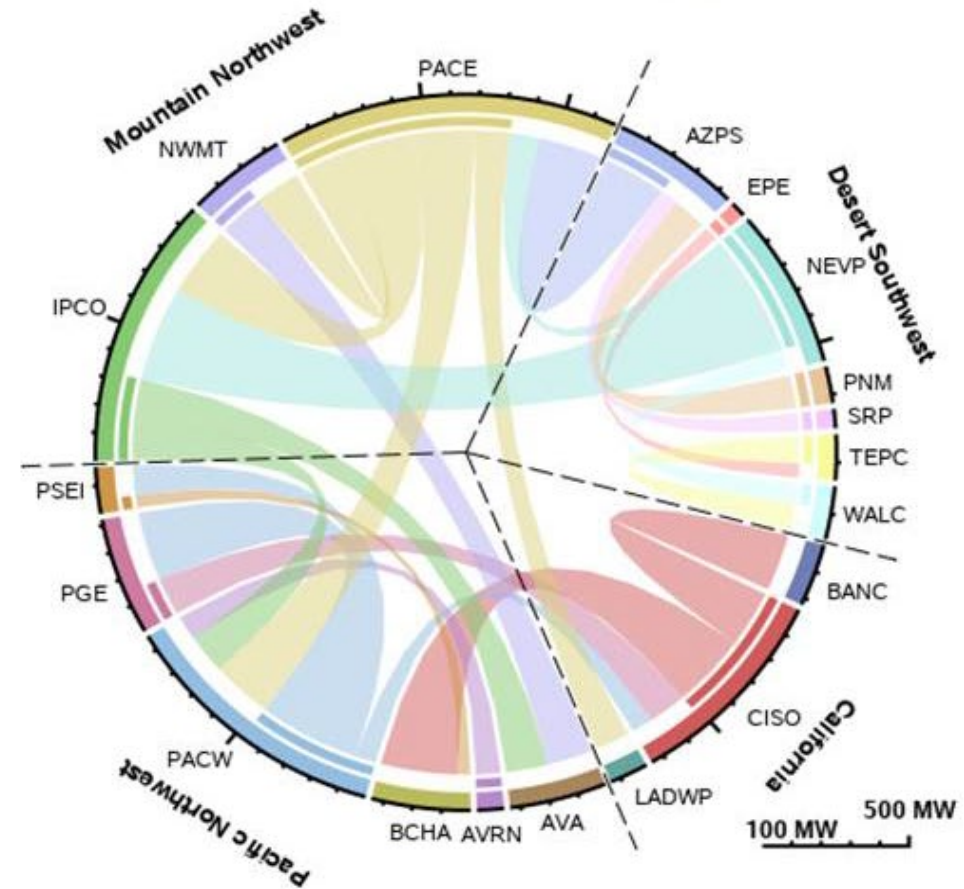
# Estimated changes in WEIM transfers due to hour-ahead and 15-minute market limits on dynamic transfers into CAISO BA

(Average for each circle is one 15-minute interval from hour-ahead market per day from July 26 - August 7)

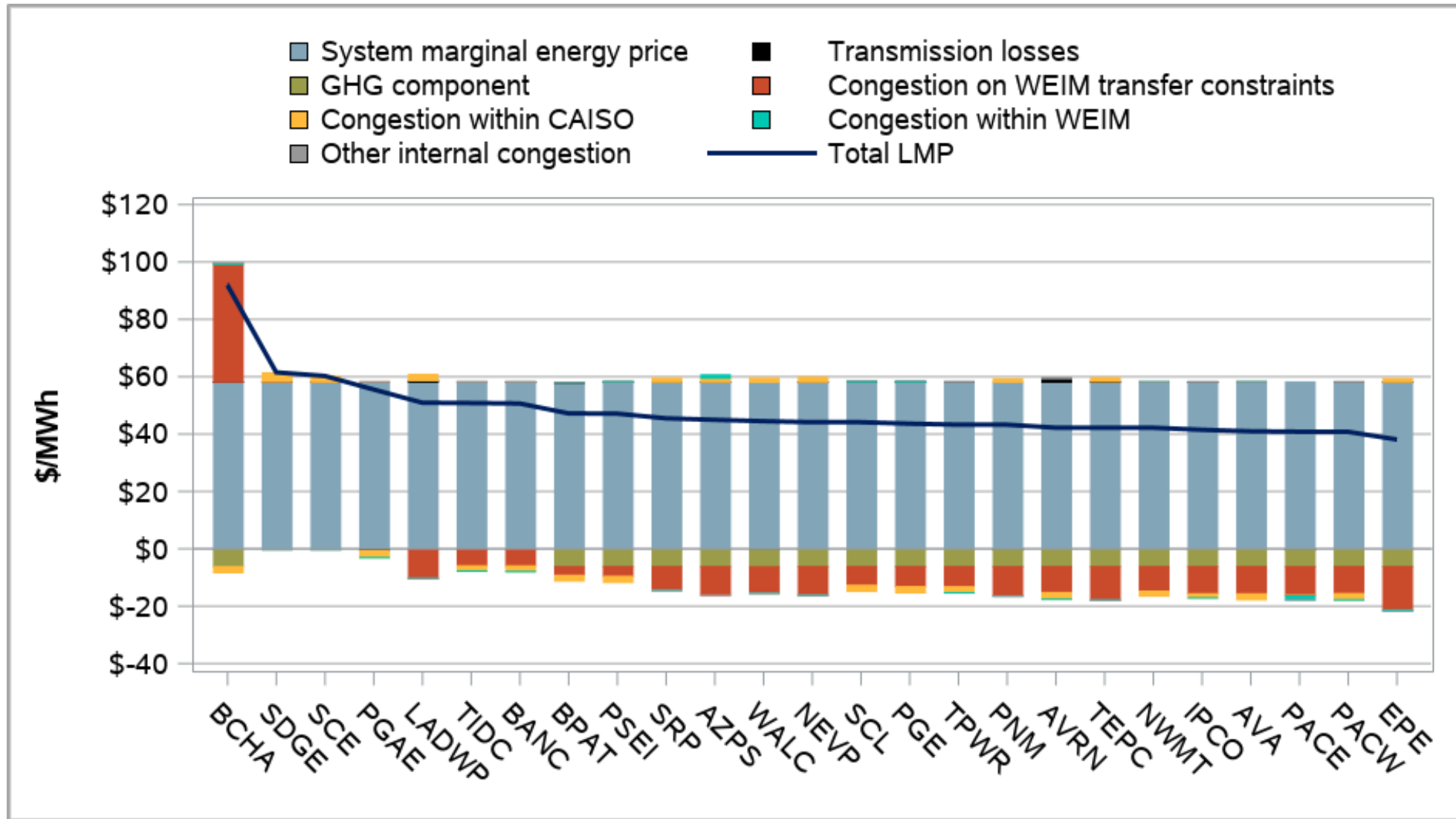
Advisory WEIM transfers in HASP interval immediately prior to ETSR lock



Advisory WEIM transfers in HASP interval immediately following ETSR lock

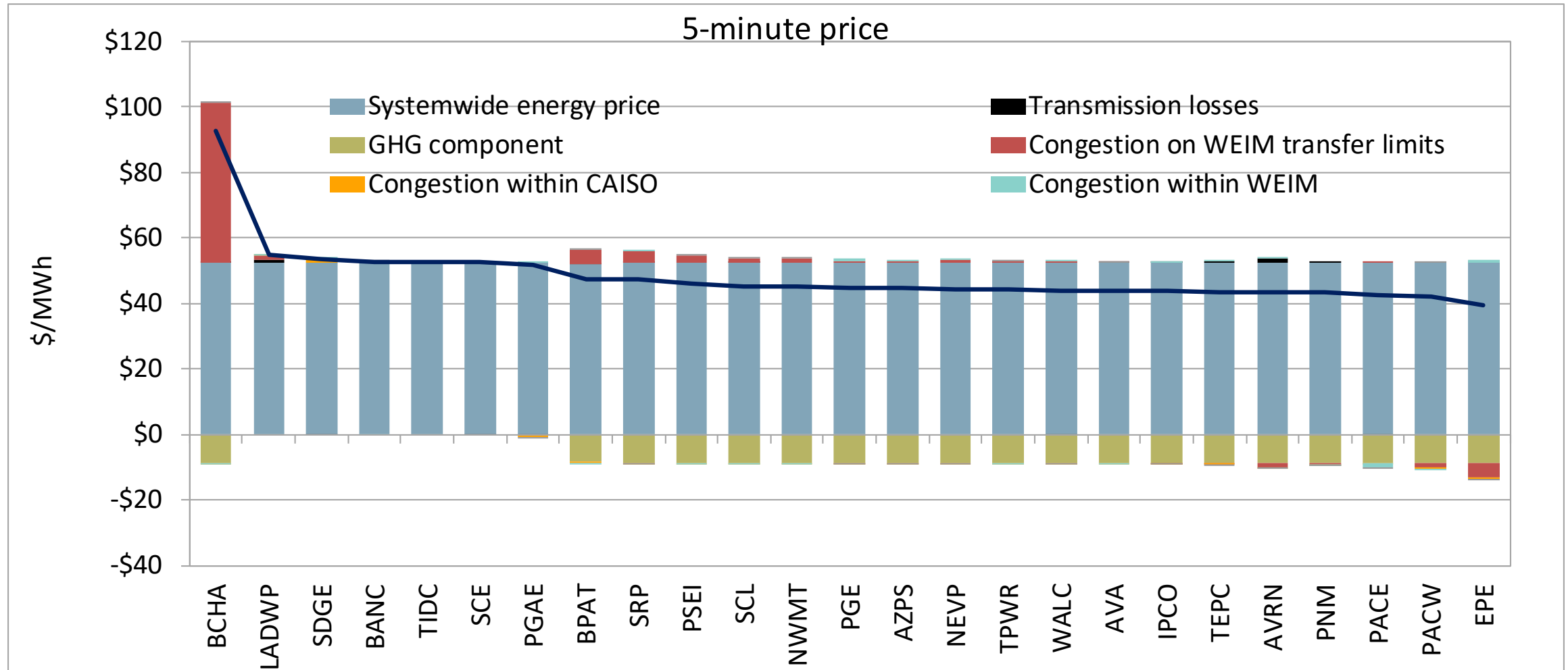


# Average 15-minute market price by component (Q3 2023)



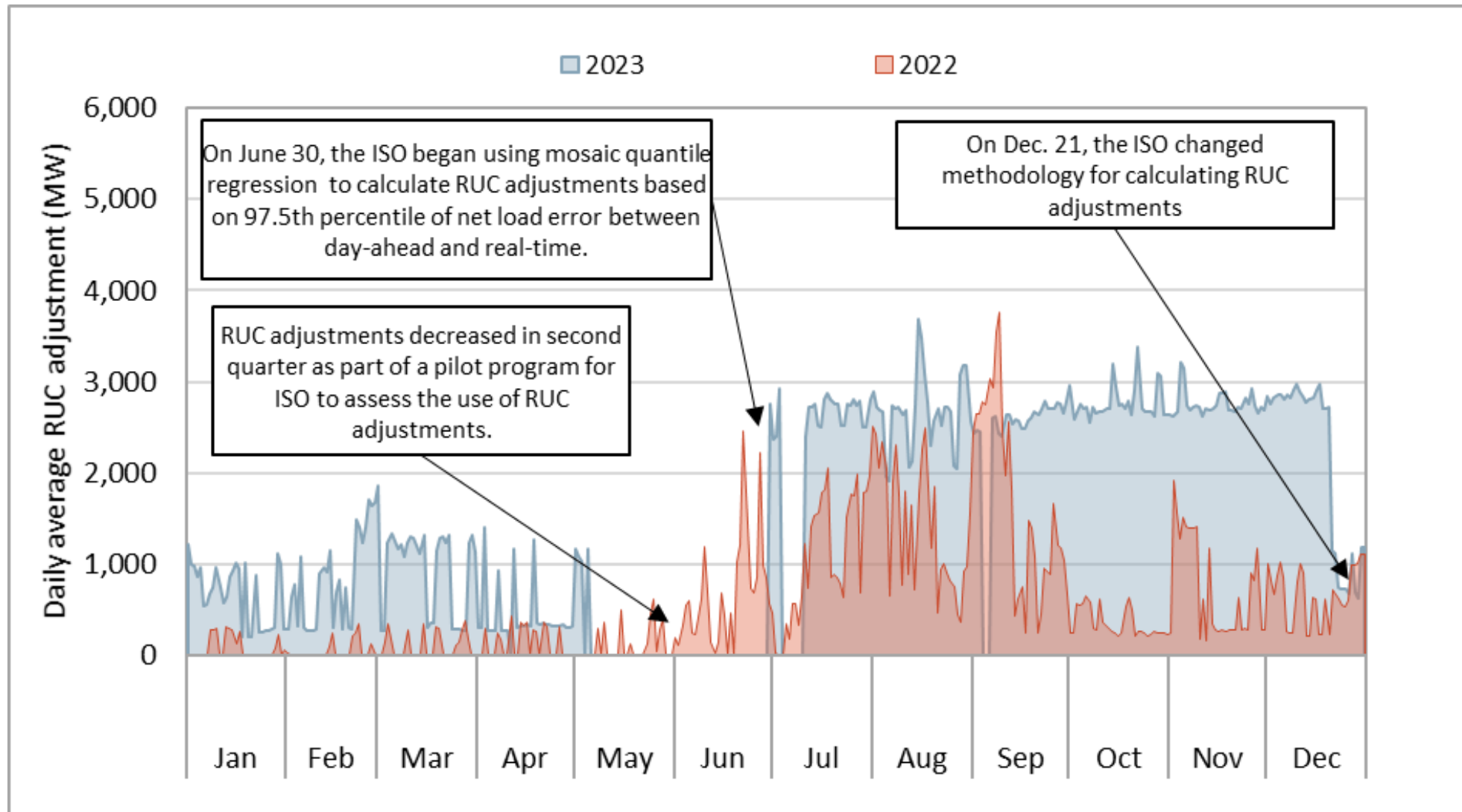
# Average 5-minute market price by component (Q3 2023)

CAISO 5-minute prices lower than 15-minute prices. Southwest 5-minute prices higher than 15-minute



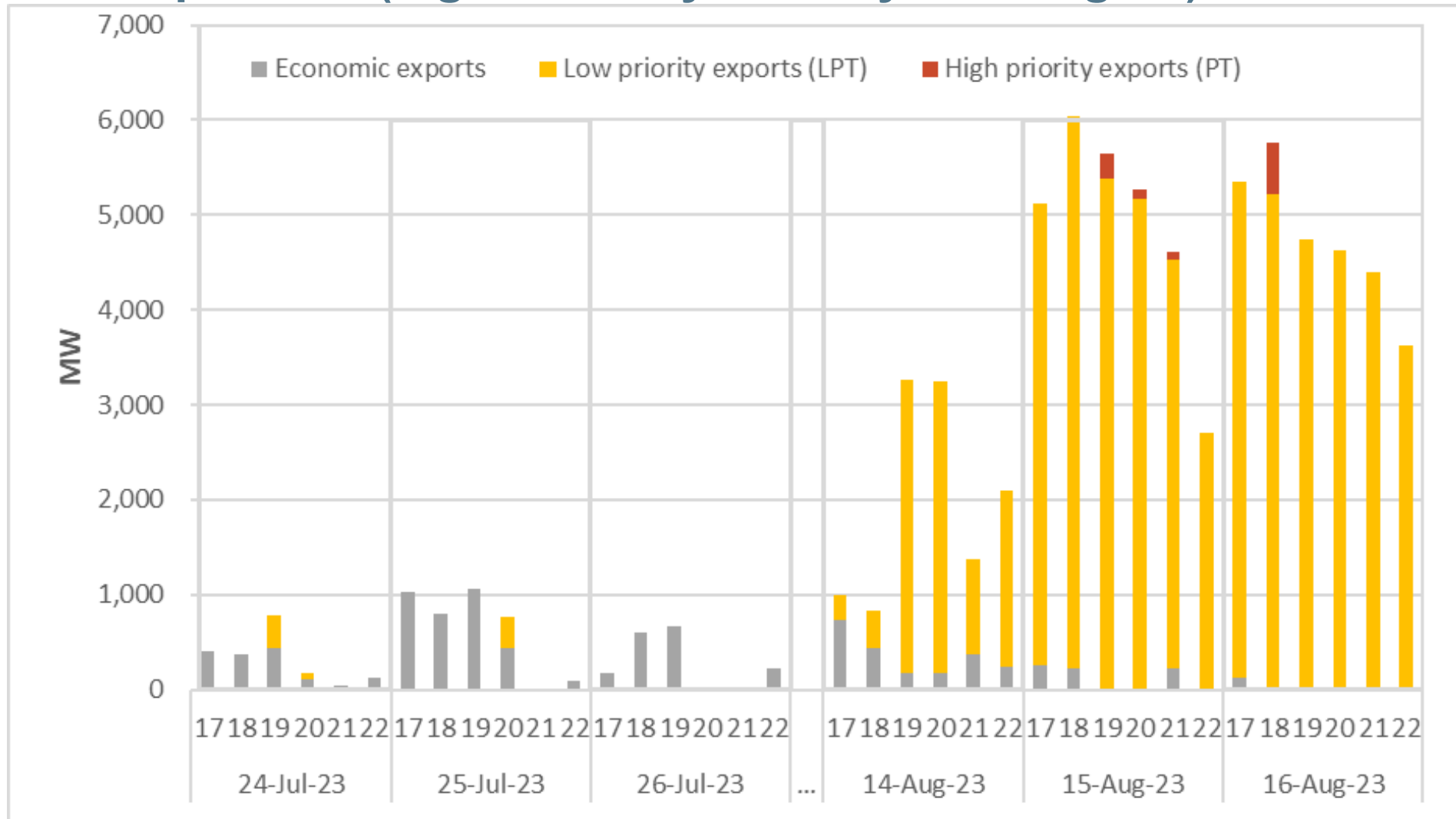
# Daily average residual unit commitment load adjustments, 2022-2023

Significant changes to RUC load adjustment patterns: Early May, early July, and late December





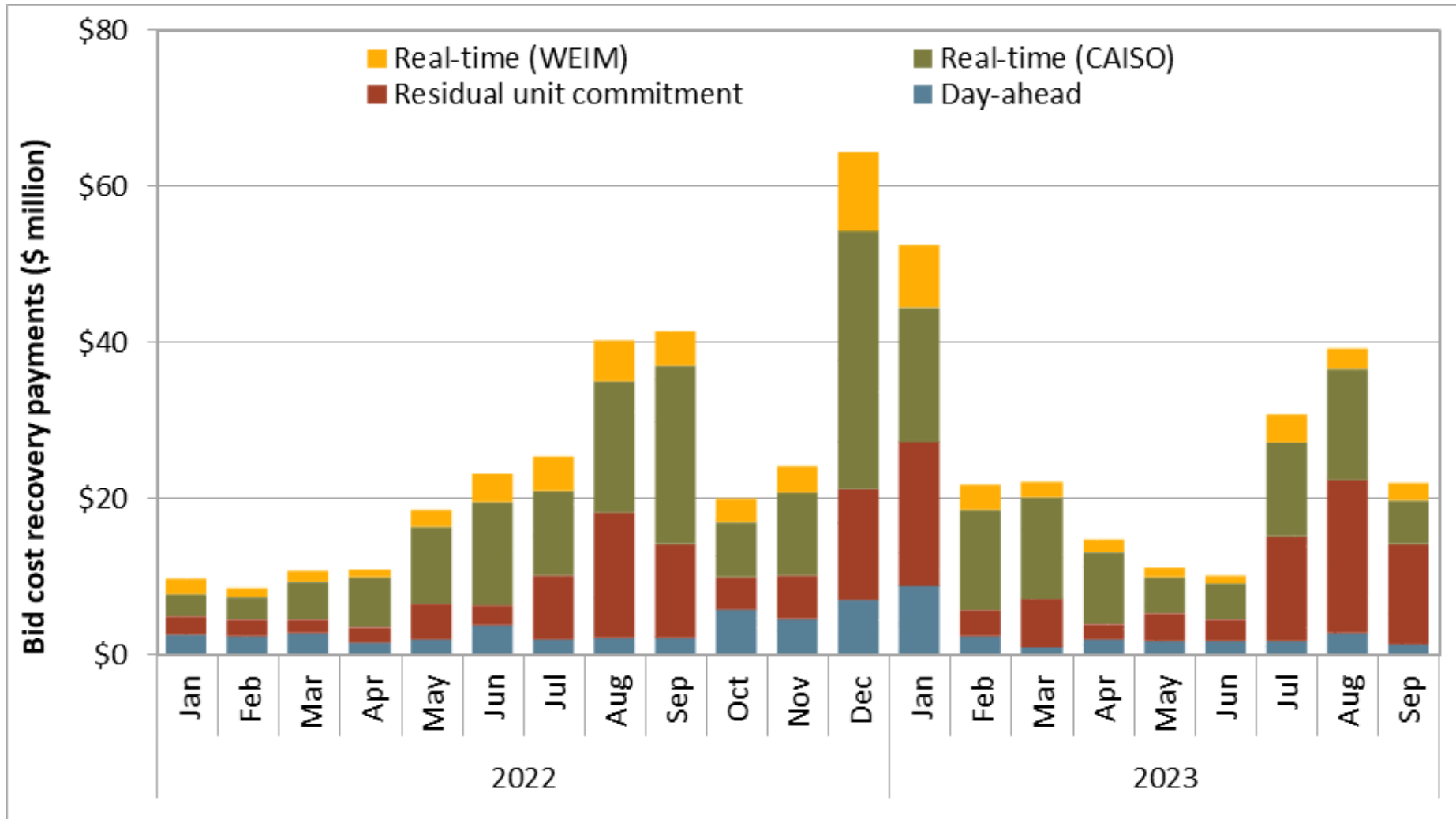
# Reductions in day-ahead market energy schedules made in residual unit commitment process (high load days in July and August)



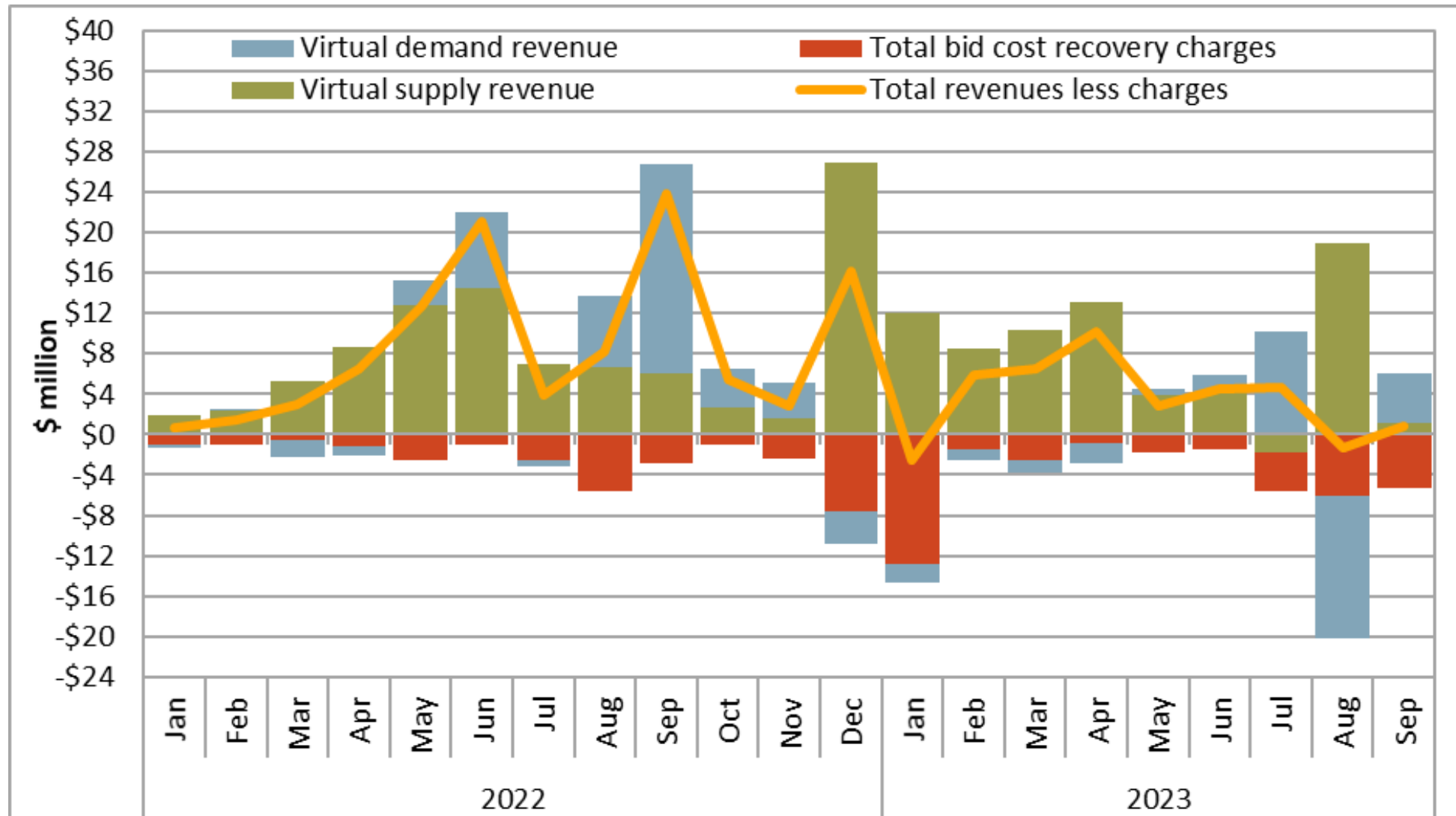


# Monthly bid cost recovery payments

\$84 million in CAISO, \$8 million in WEIM in Q3. RUC BCR up \$10 million from Q3 2022.

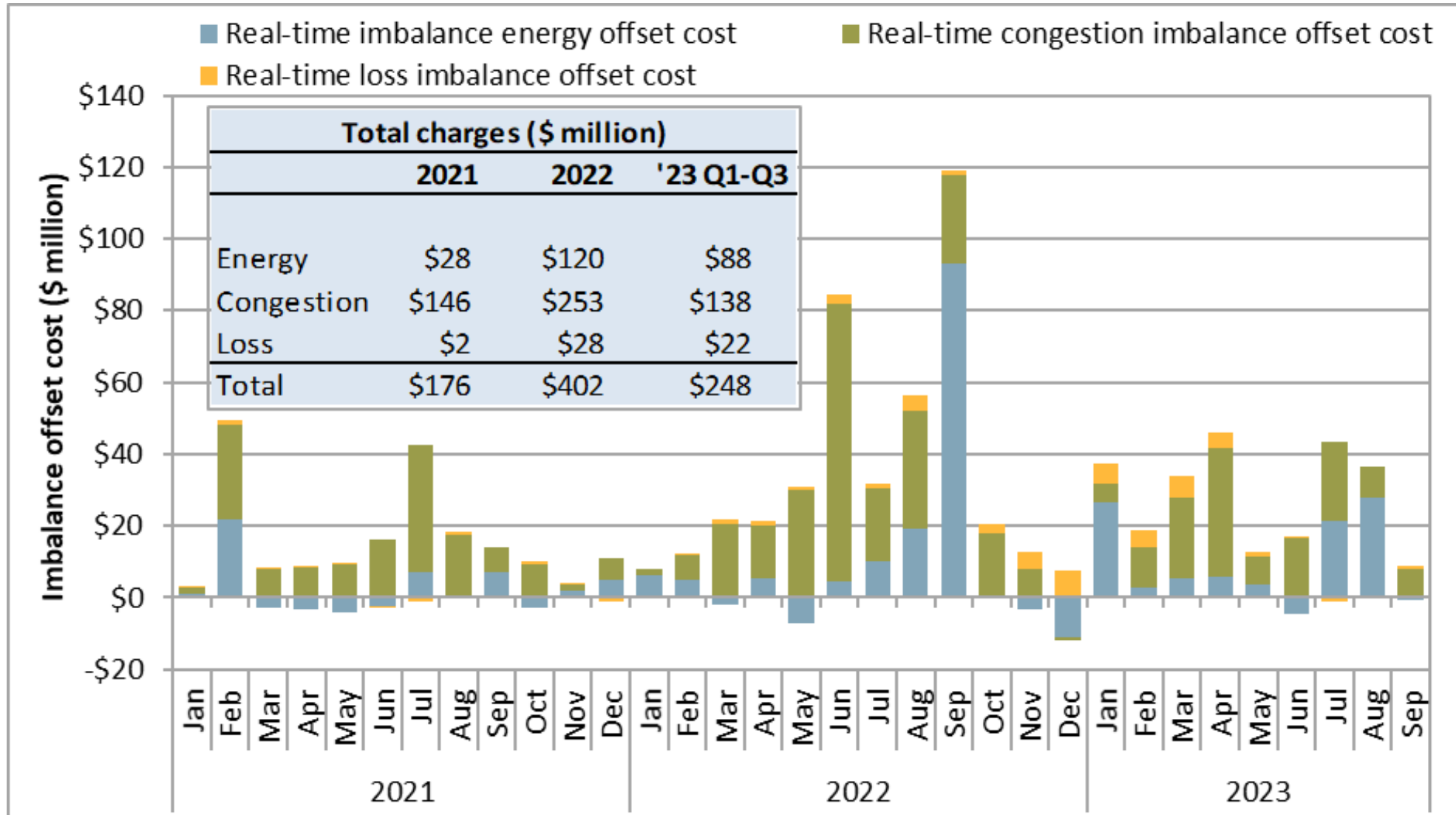


# Convergence bidding revenues and bid cost recovery charges



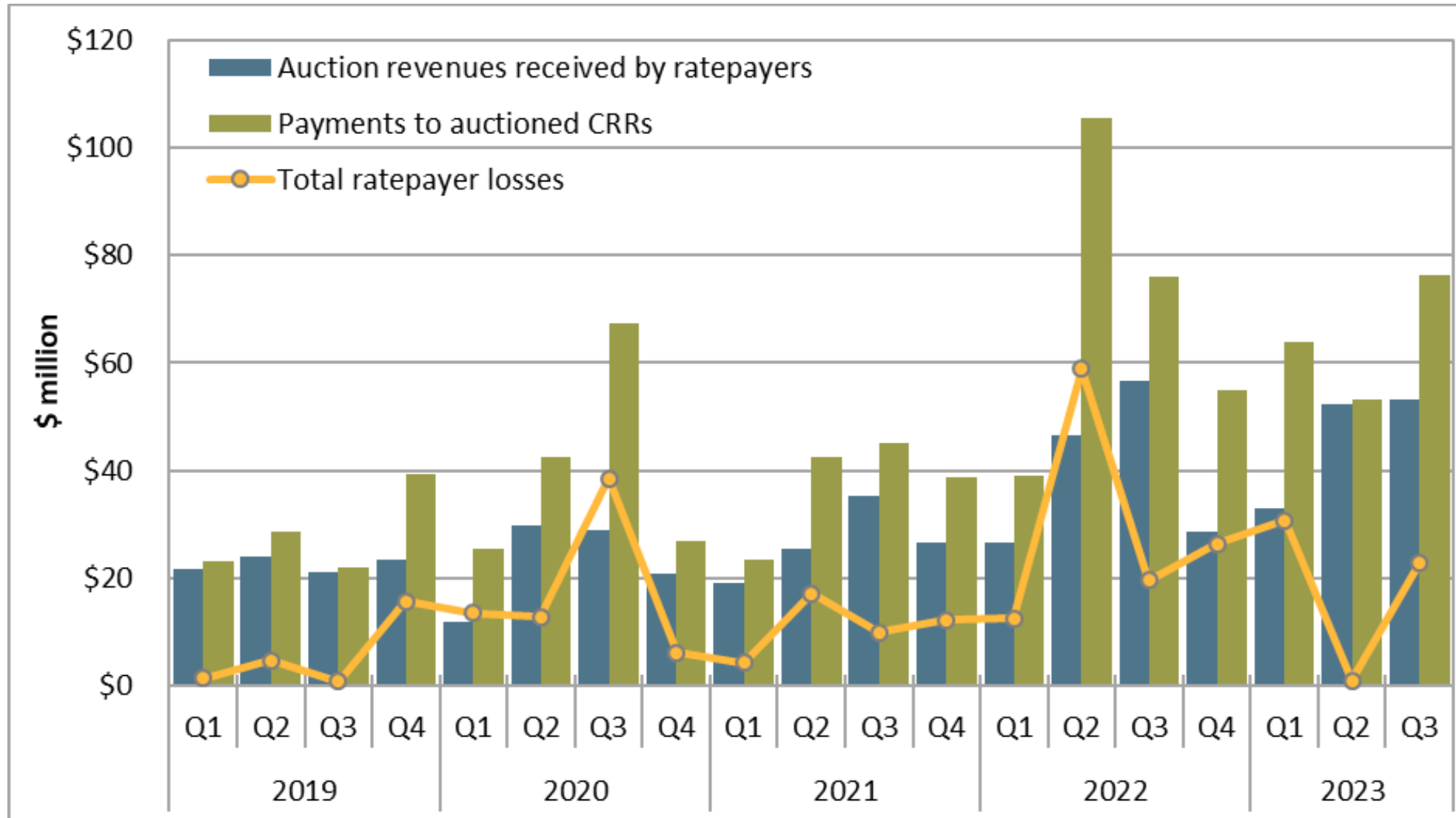
# Real-time imbalance offset costs

\$86 million in Q3 2023 compared to \$207 million in Q3 2022



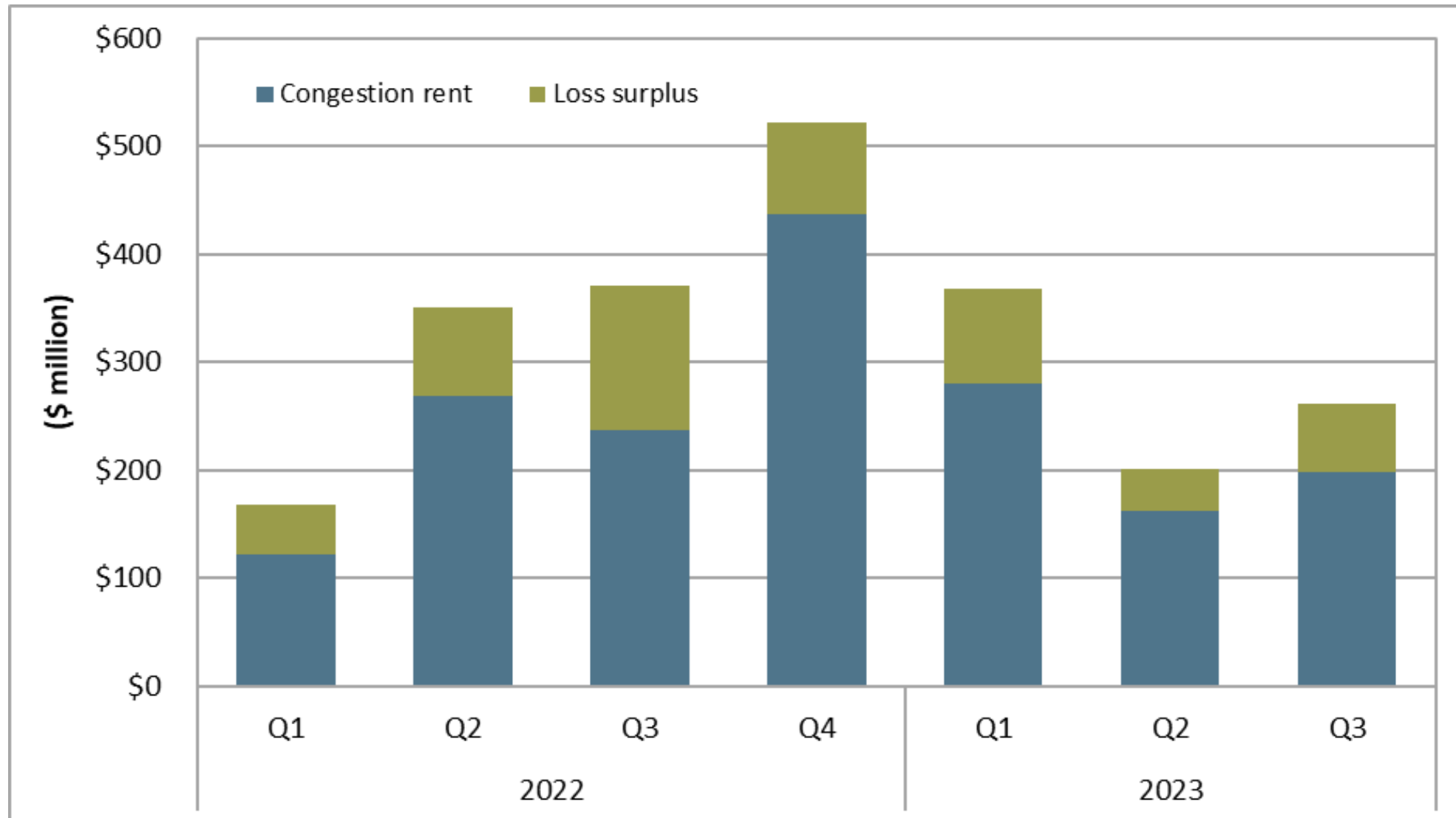
# CRR auction revenues and payments to non-load serving entities

\$23 million losses to ratepayers in Q3 2023, up from \$20 million in Q3 2022. Financial entities: \$15 million



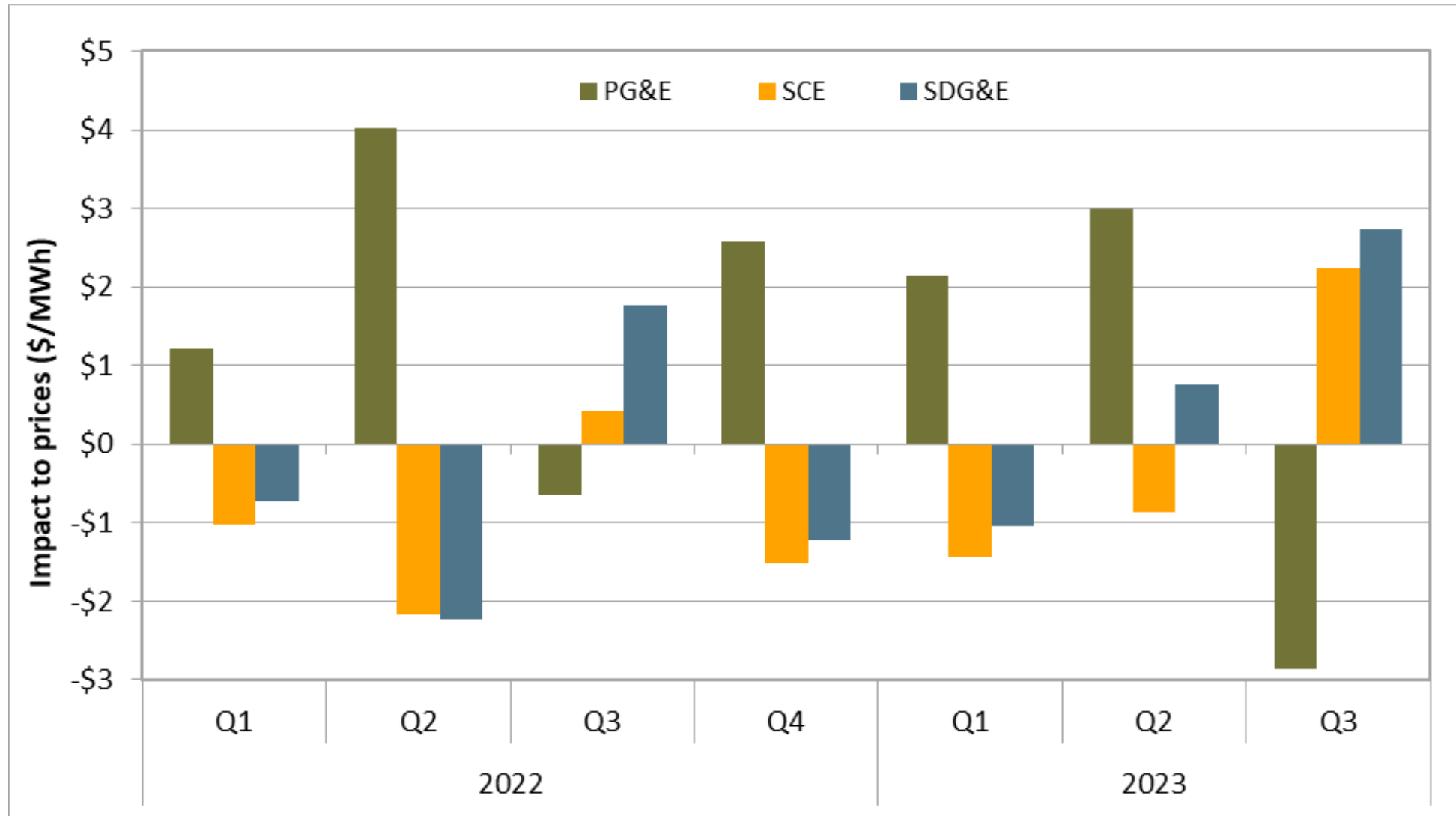
# Day-ahead congestion rent and loss surplus by quarter (2022-2023)

17% decrease in congestion rent relative to Q3 2022



# Overall impact of congestion on price separation in day-ahead market

Increased north-to-south congestion compared to Q3 2022



# Day-ahead import congestion rent on major interties

Import congestion rent decreased by \$50 compared to Q3 2022

