

Q4 2023 Report on Market Issues and Performance

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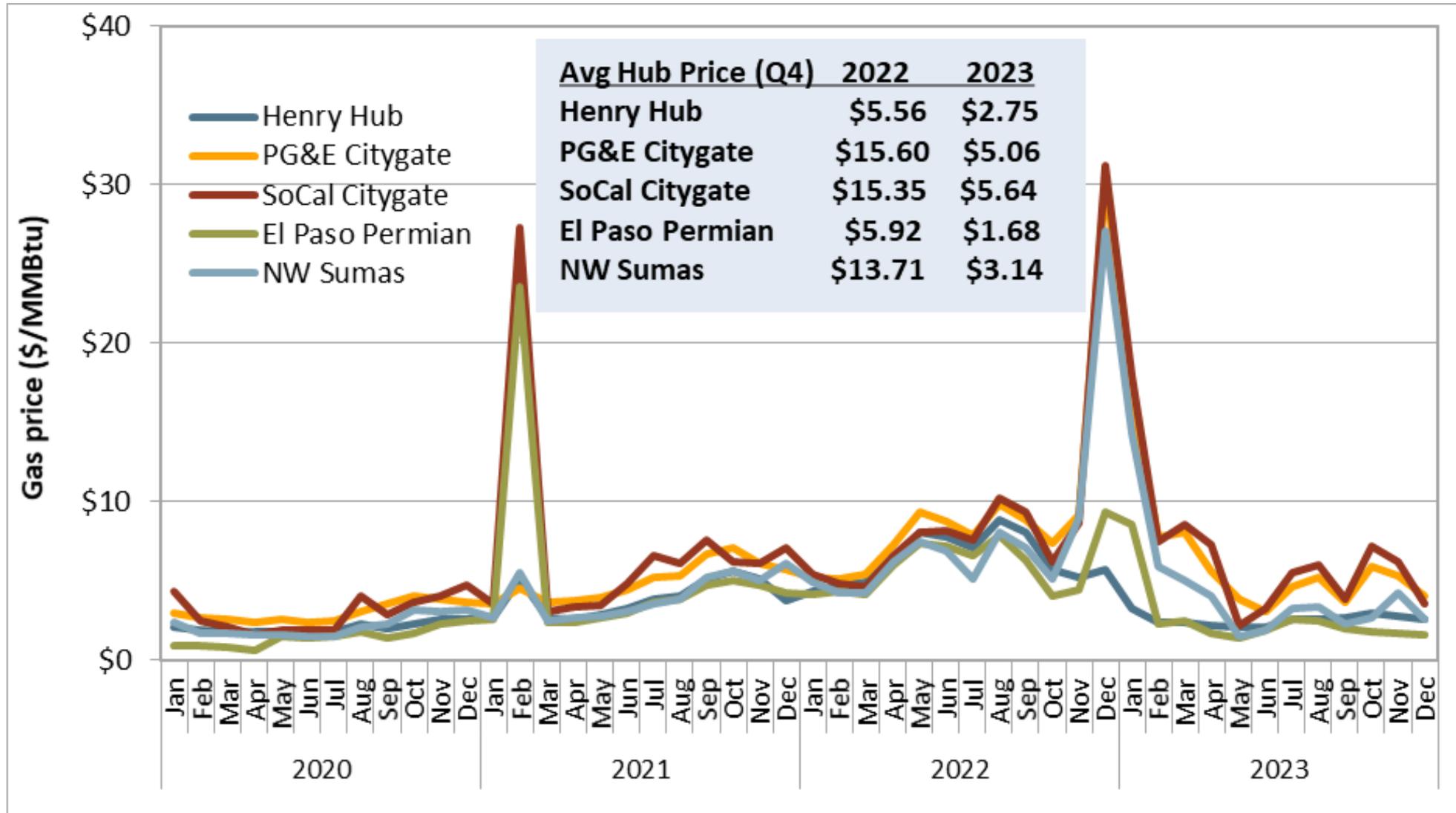
Department of Market Monitoring

April 30, 2024

<https://www.caiso.com/Documents/2023-fourth-quarter-report-on-market-issues-and-performance-apr-24-2024.pdf>

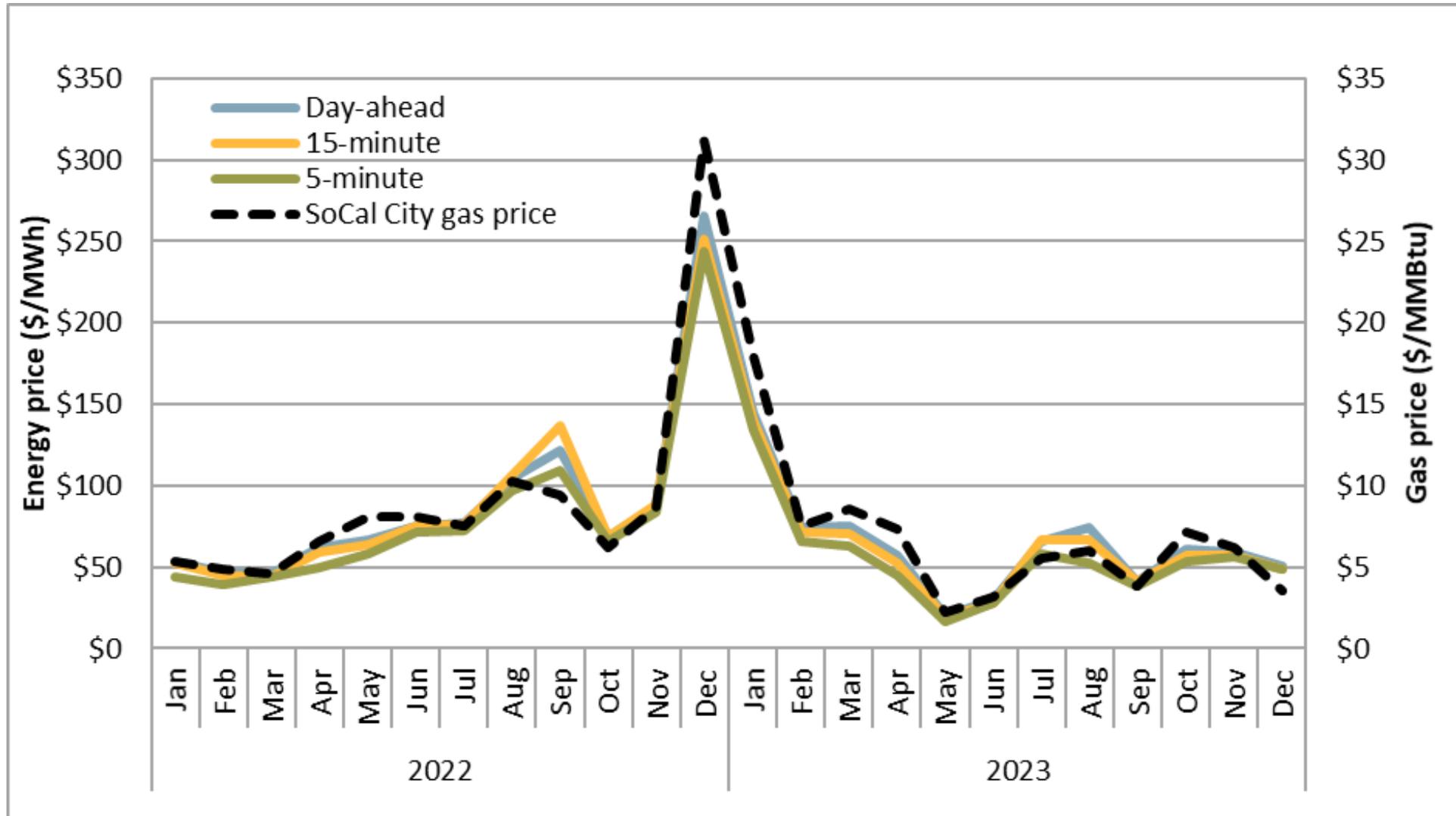
Gas prices down significantly from Q4 2022

Average monthly natural gas prices by hub



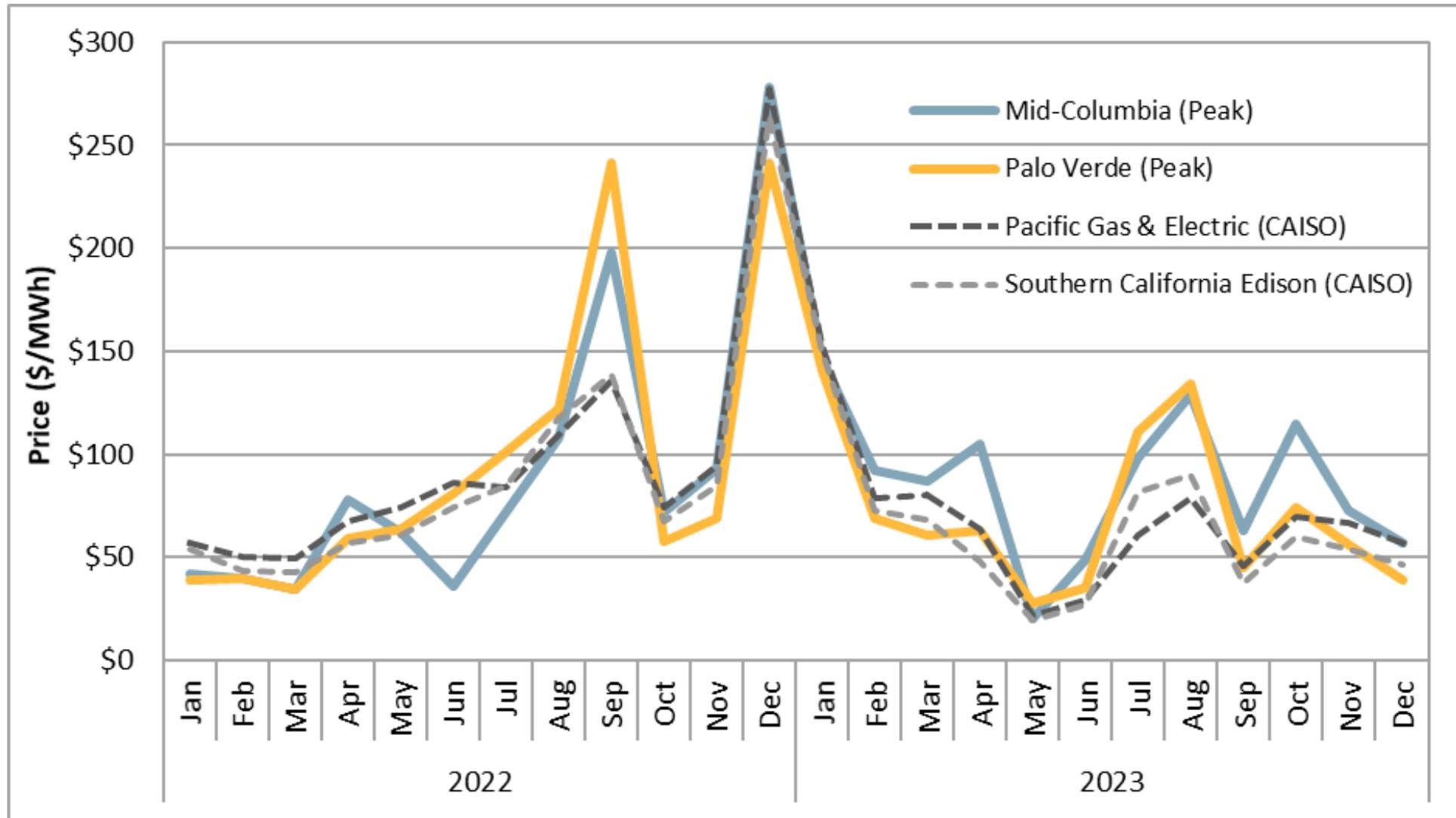
Electricity prices down due to lower gas prices compared to Q4 2022

Monthly average SoCal City gas price and load-weighted average electricity prices for California ISO



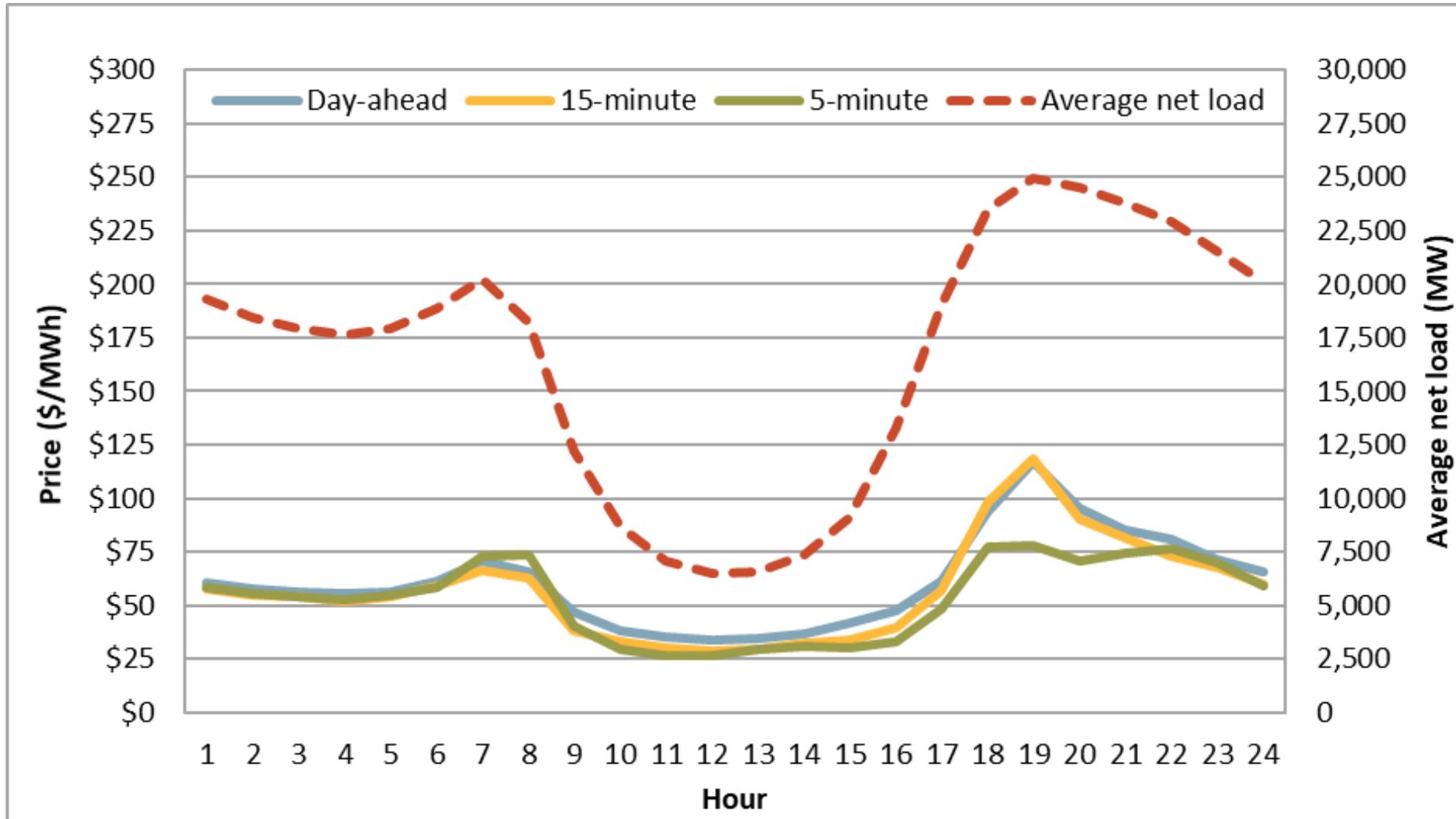
Peak Mid-Columbia prices > CAISO and Palo Verde

Monthly average day-ahead CAISO and bilateral market prices



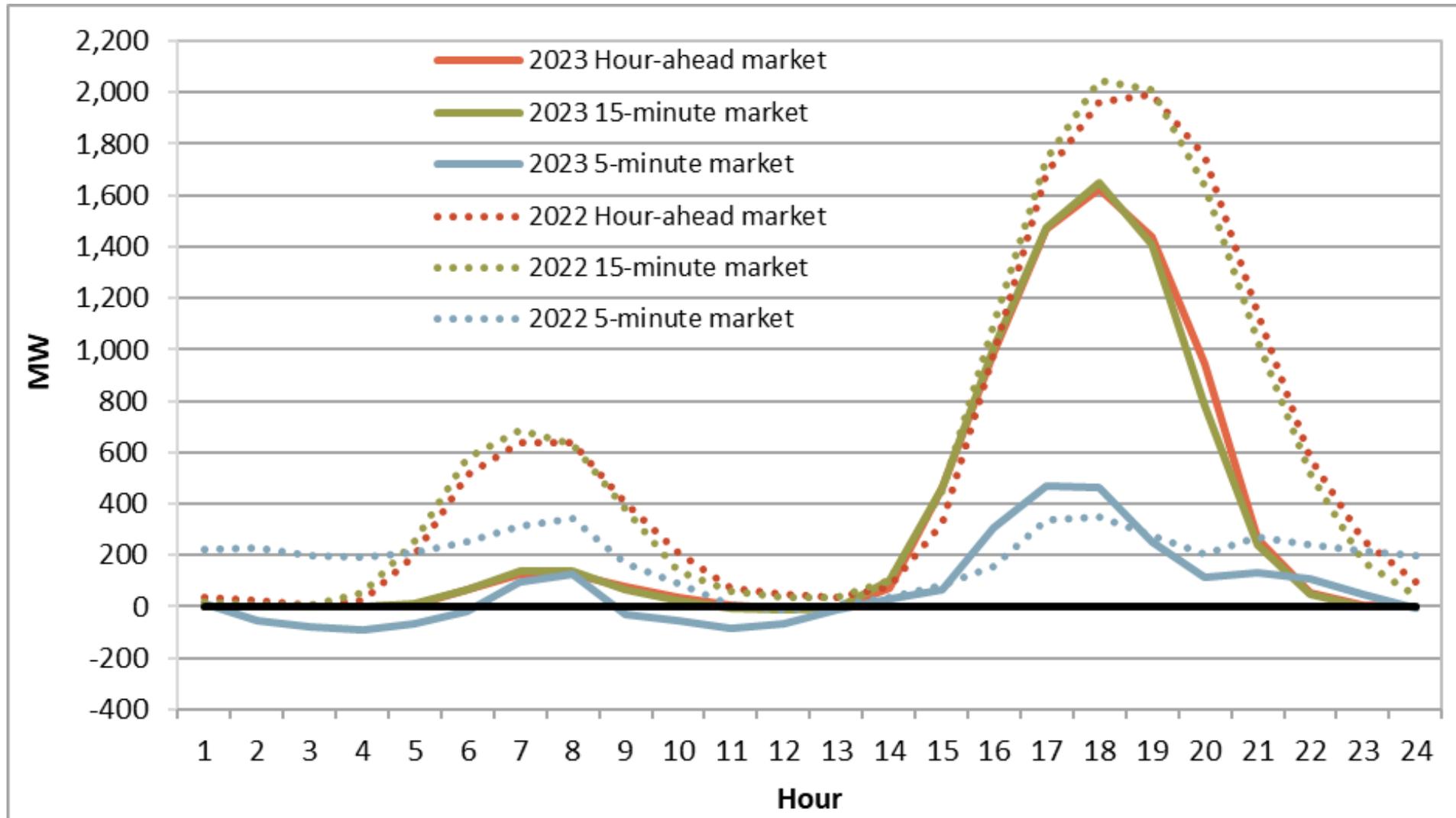
CAISO 15-minute prices > 5-minute prices over net load peak

Hourly load-weighted average energy prices (October-December 2023)



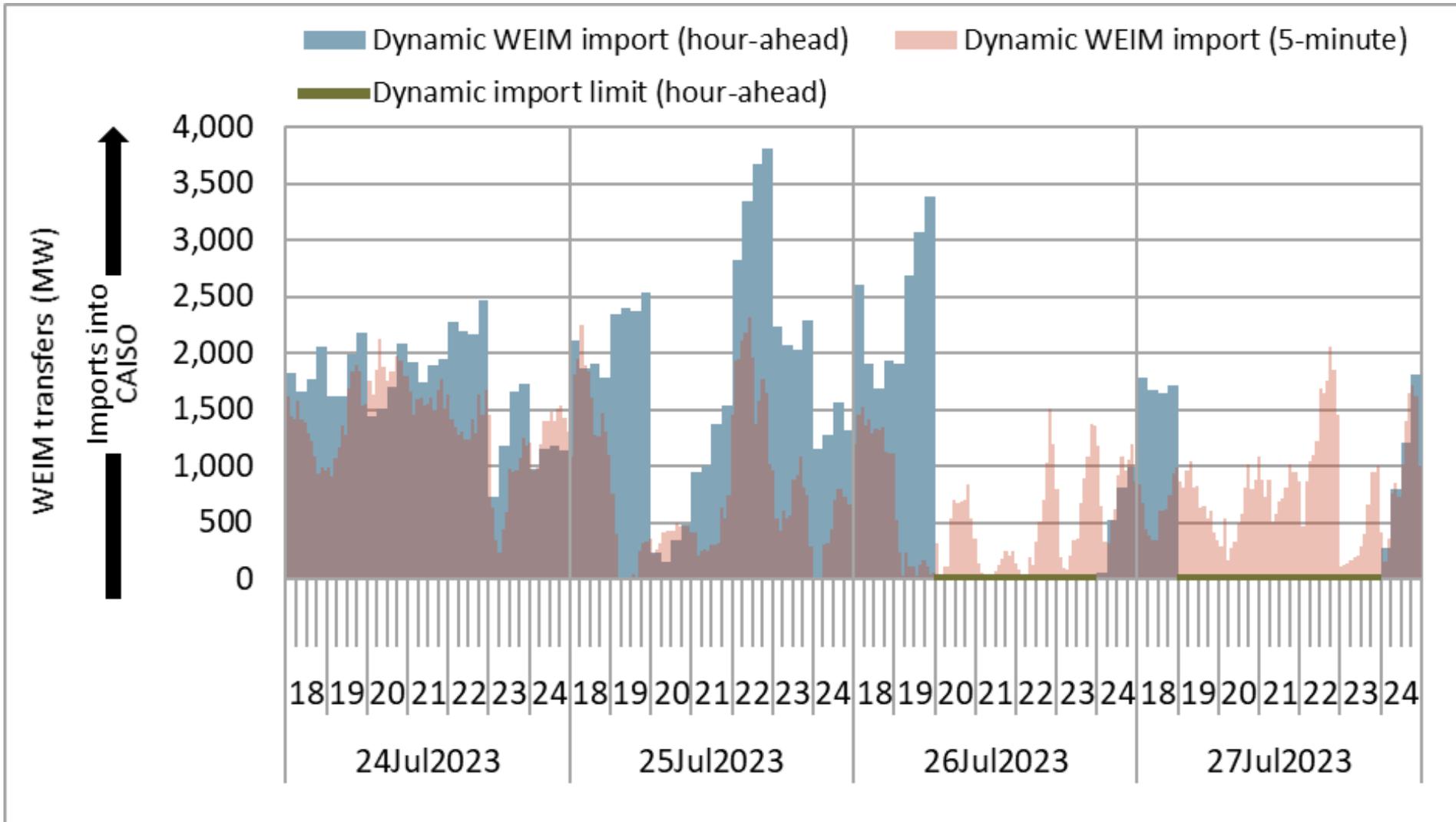
Net load peak load bias in hour-ahead and 15-minute market > 5-minute

Average hourly imbalance conformance adjustment (Q4 2022 and Q4 2023)



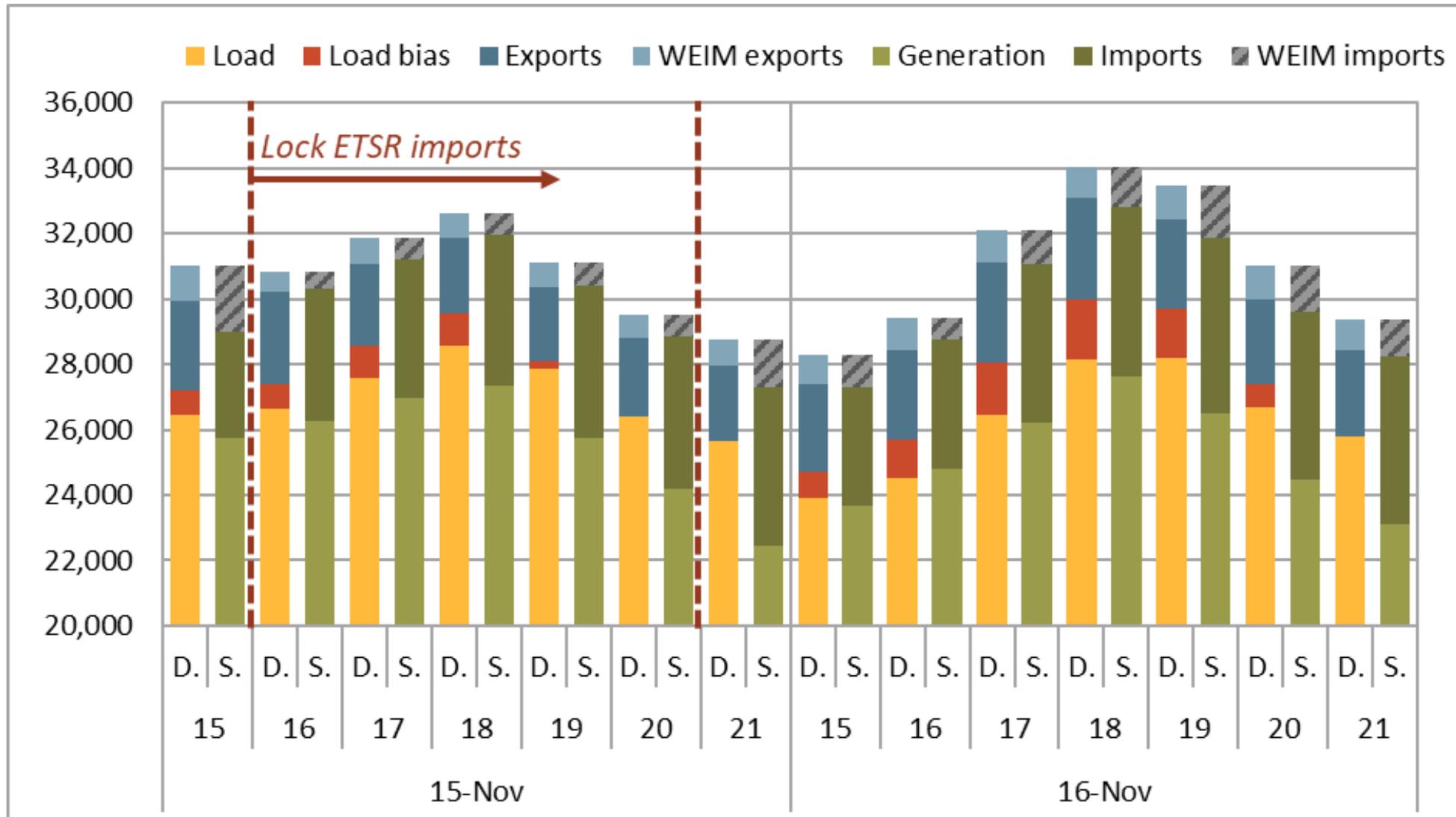
Review of rationale for limiting WEIM transfers into CAISO

Hour-ahead and 5-minute market dynamic WEIM transfers into CAISO area (evening hours July 24-27)



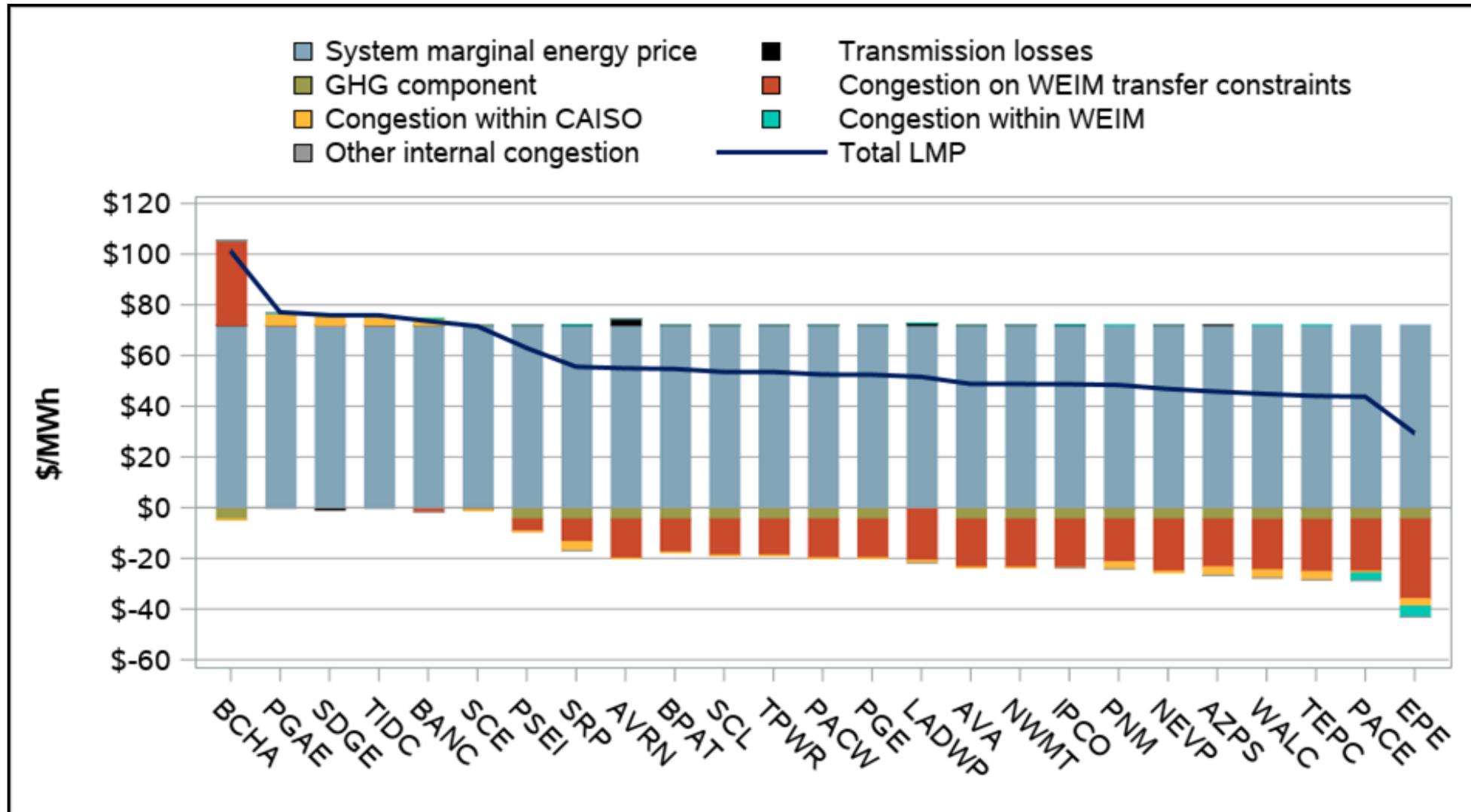
Difficult to assess impact of transfer limitation on supply and demand

CAISO area hour-ahead supply and demand (Peak hours, November 15-16, 2023)



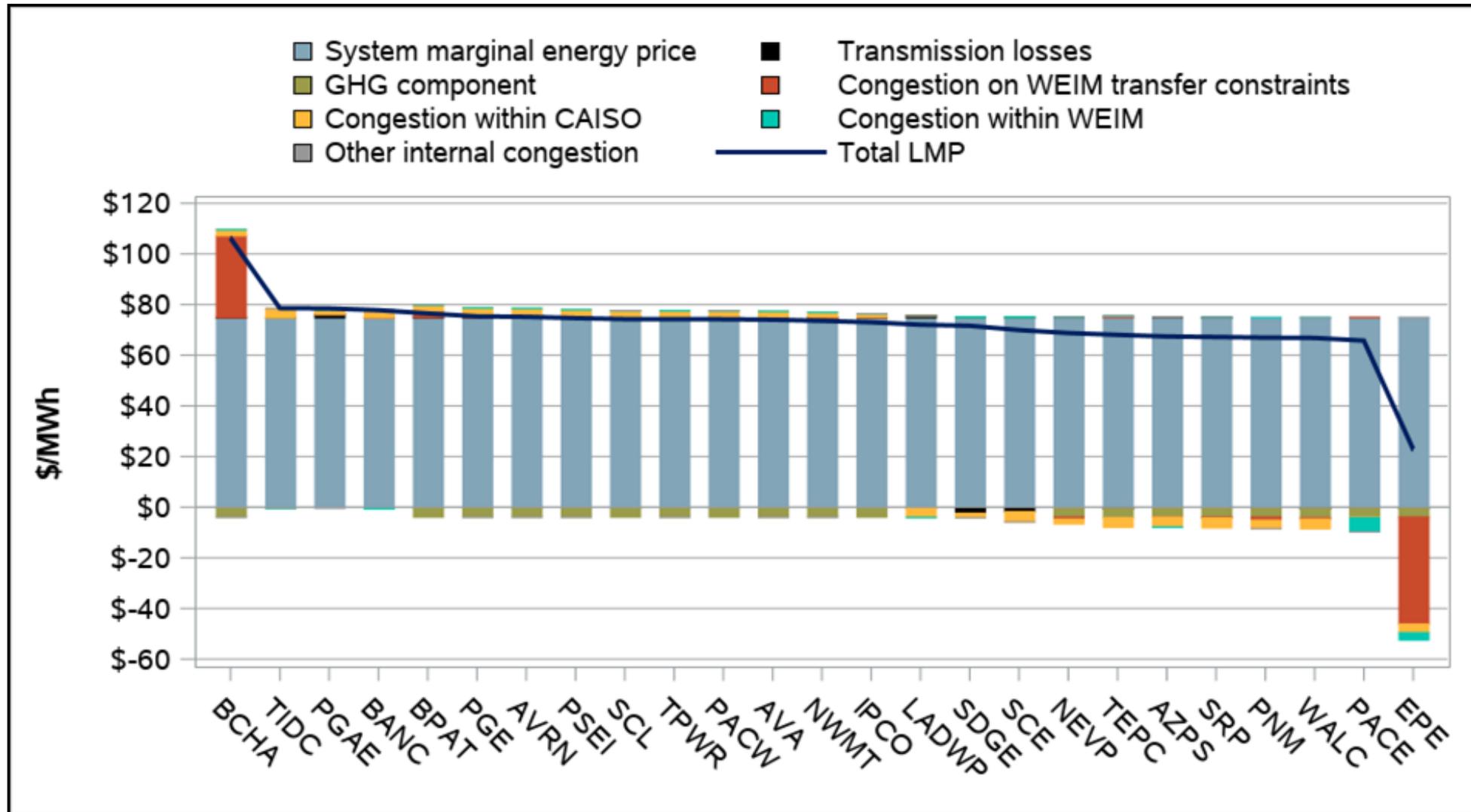
Limitation increased price separation between CAISO and rest of WEIM

Average 15-minute market prices during WEIM import limitation (November 1 to 15, hours 16-20)



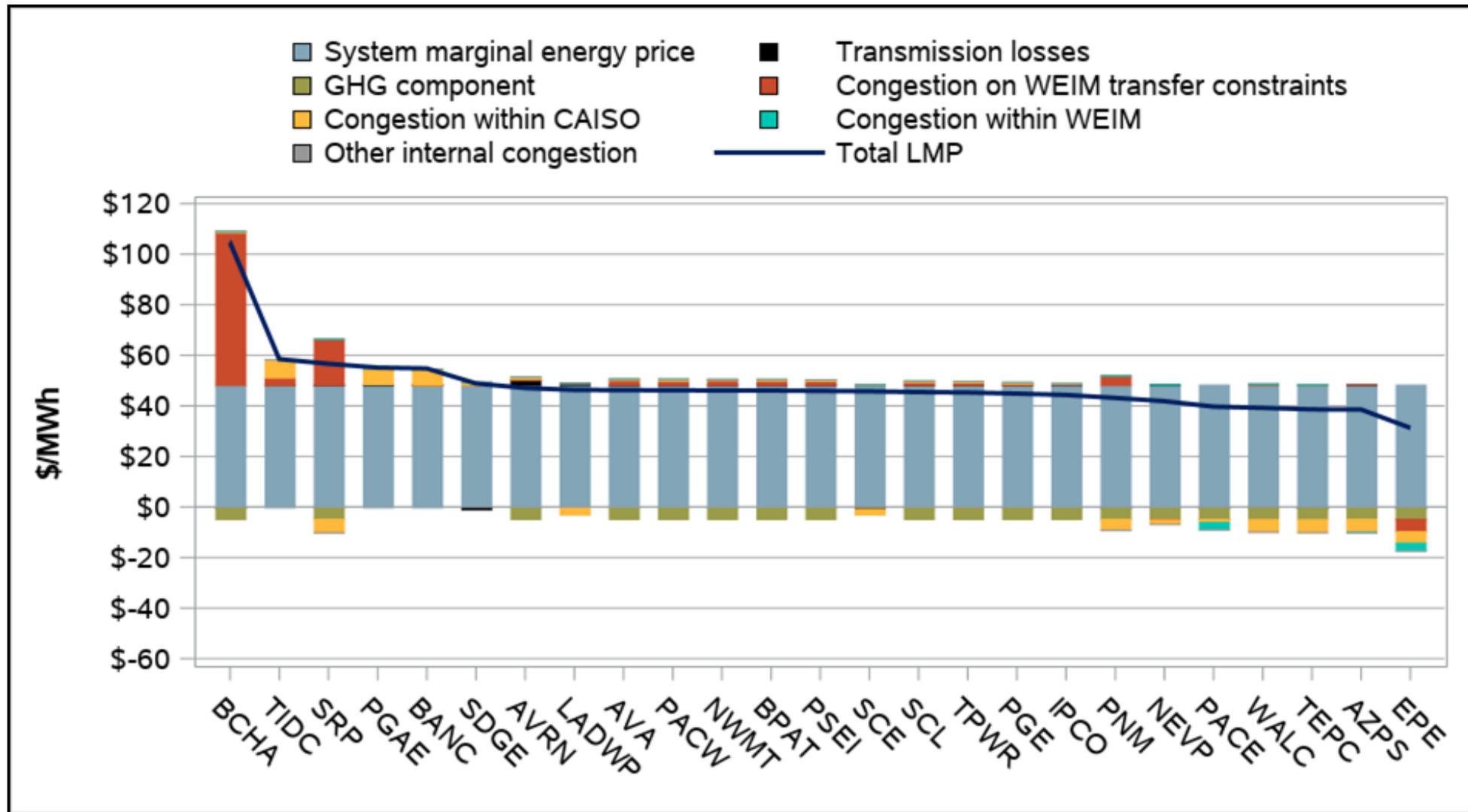
Limitation increased price separation between CAISO and rest of WEIM

Average 15-minute market prices without WEIM import limitation (November 16 to 30, hours 16-20)



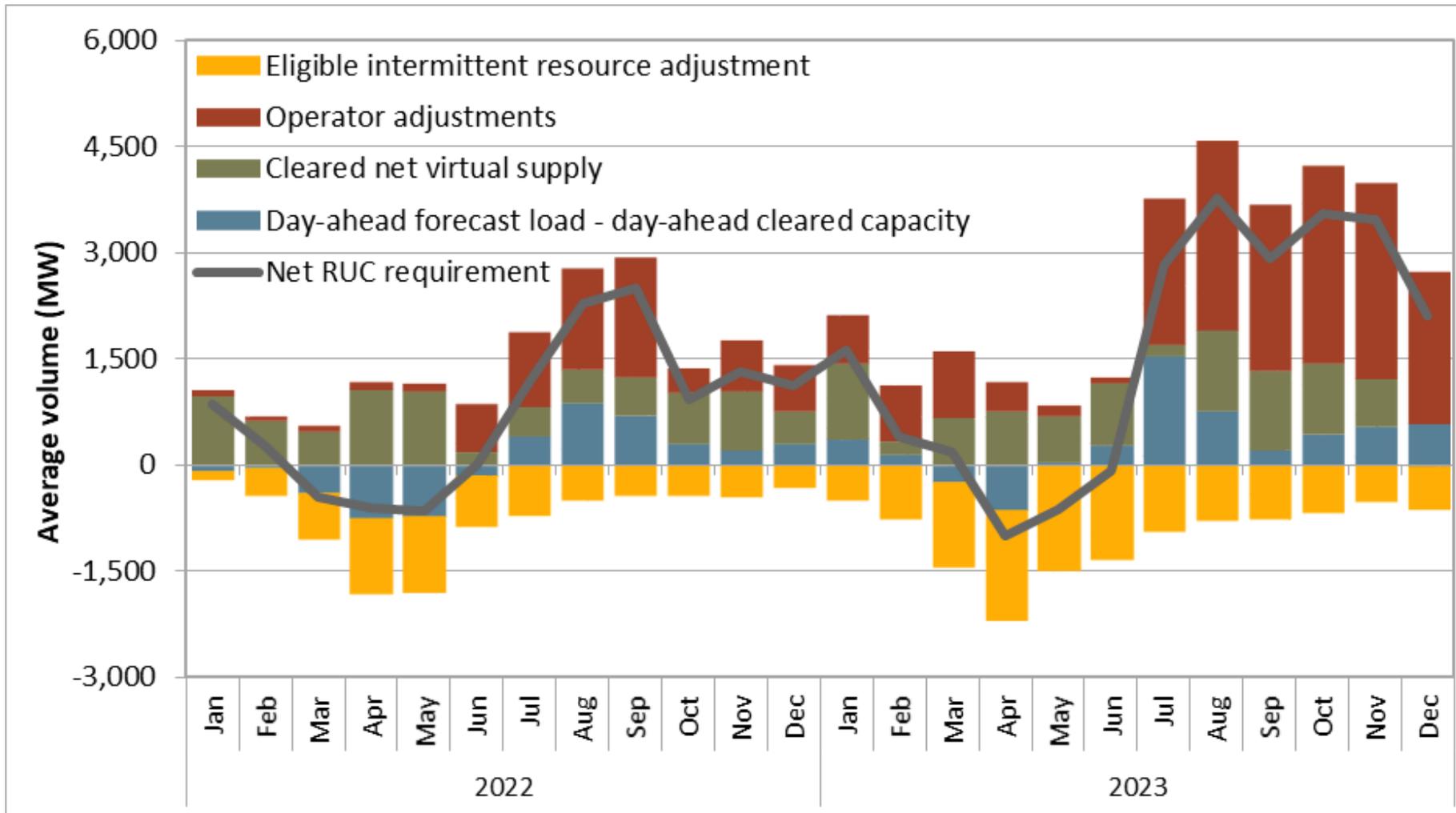
Limitation increased price separation between CAISO and rest of WEIM

Average 5-minute market prices during WEIM import limitation (November 1 to 15, hours 16-20)



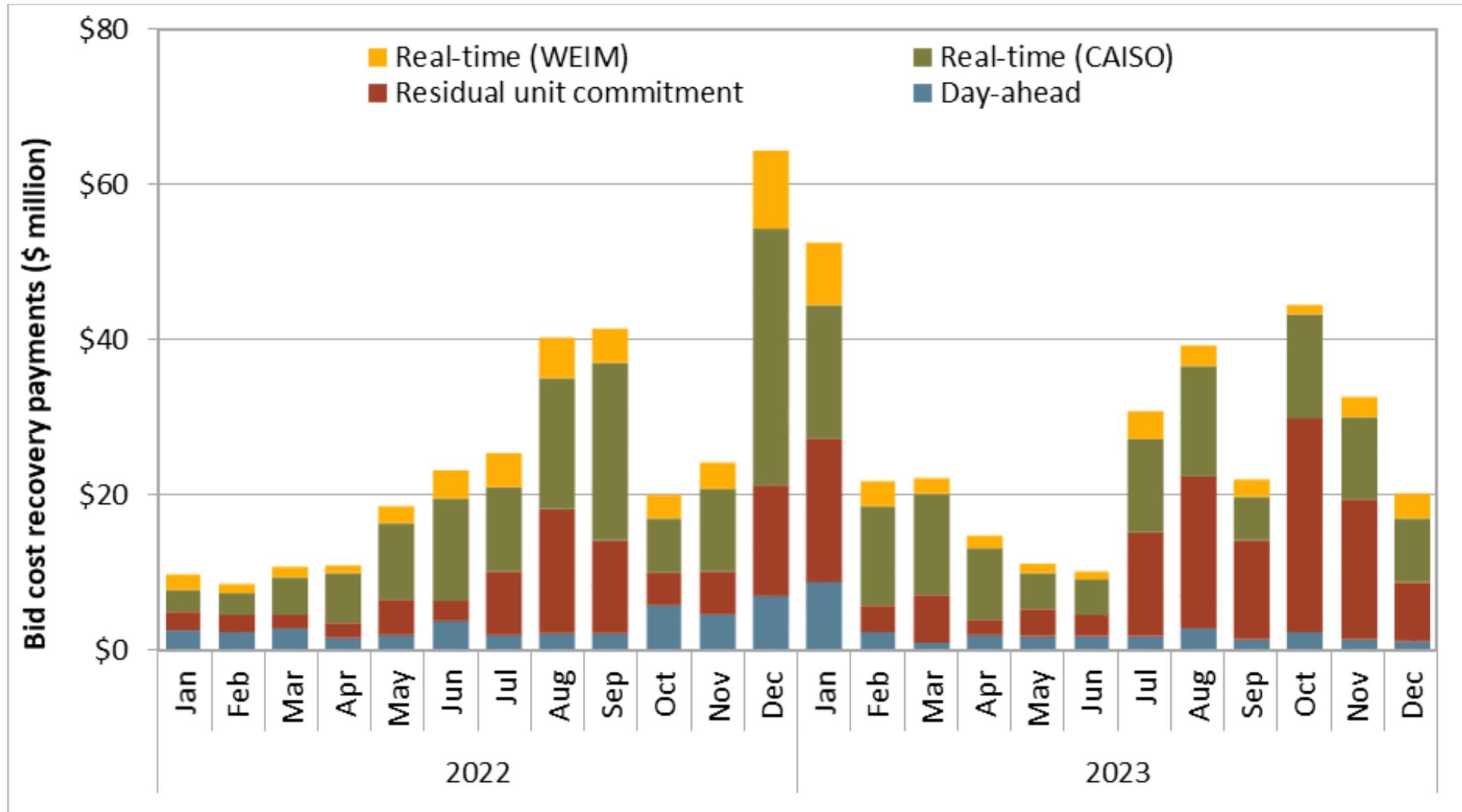
Load adjustments accounted for most of the increase in RUC requirements between Q4 2022 and Q4 2023

Determinants of residual unit commitment procurement



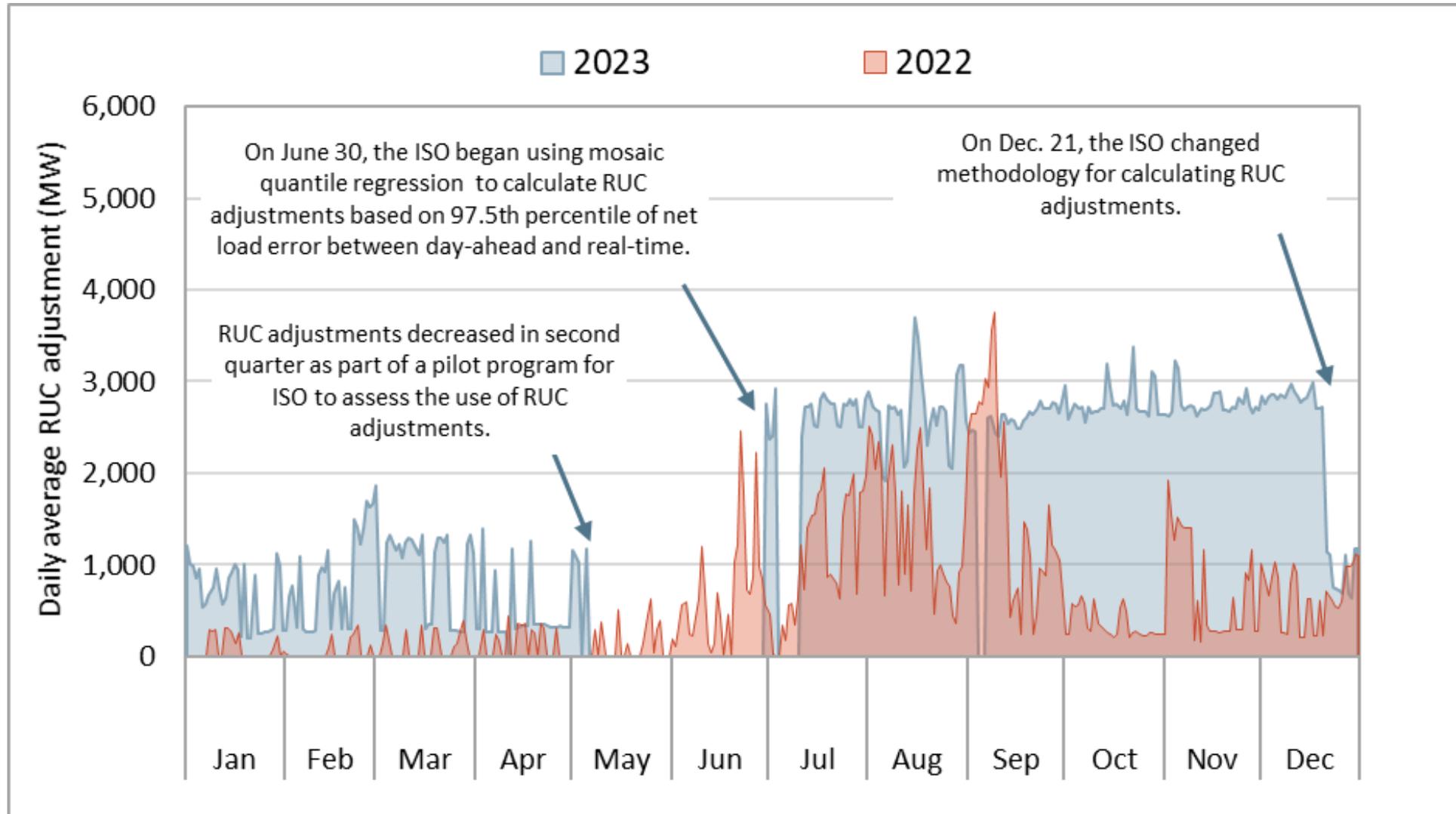
RUC BCR more than doubled from Q4 2022; other components decreased

Monthly bid cost recovery payments



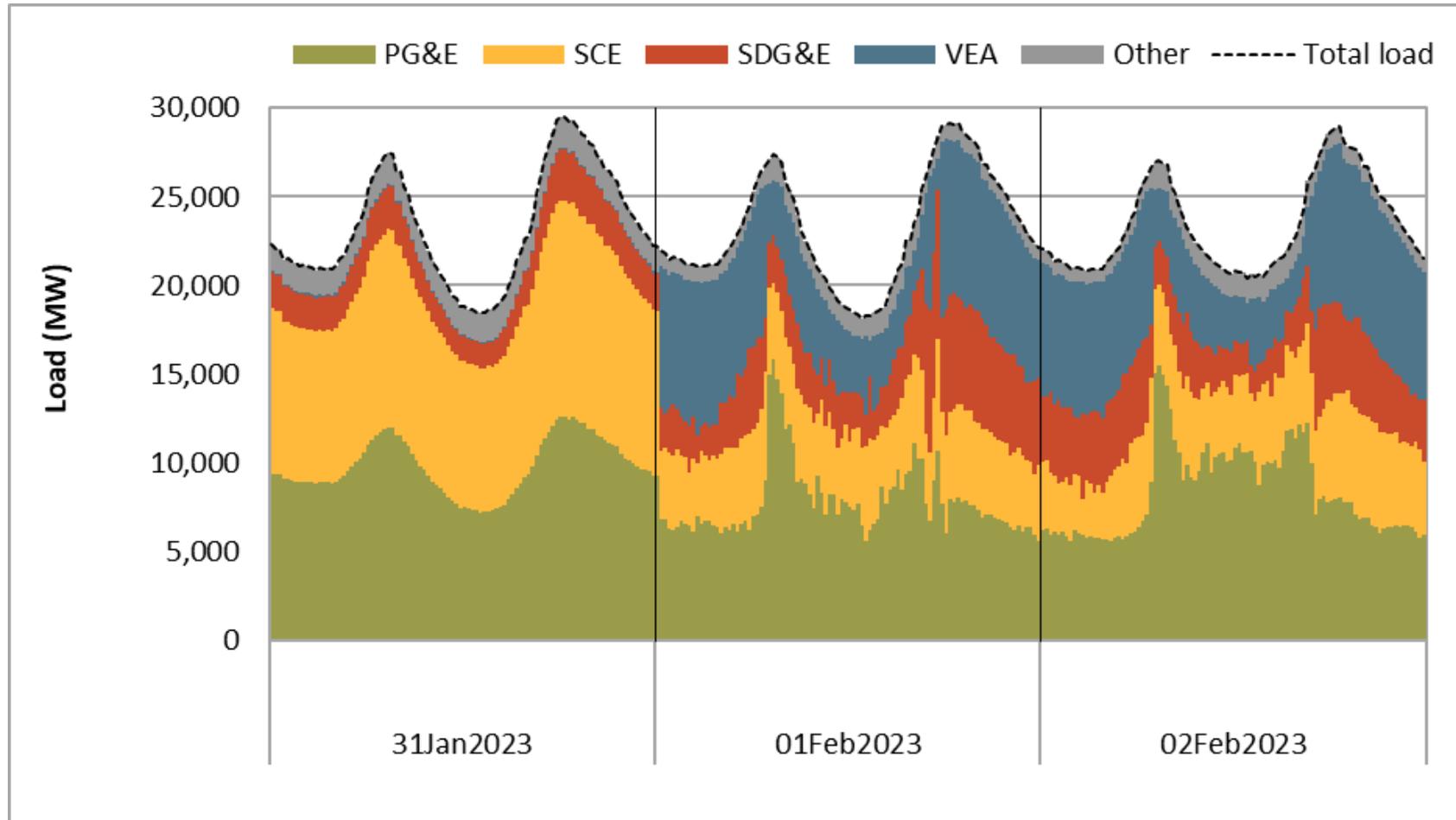
CAISO made significant changes to RUC load adjustments during 2023

Average residual unit commitment adjustment by day (2022 vs. 2023)



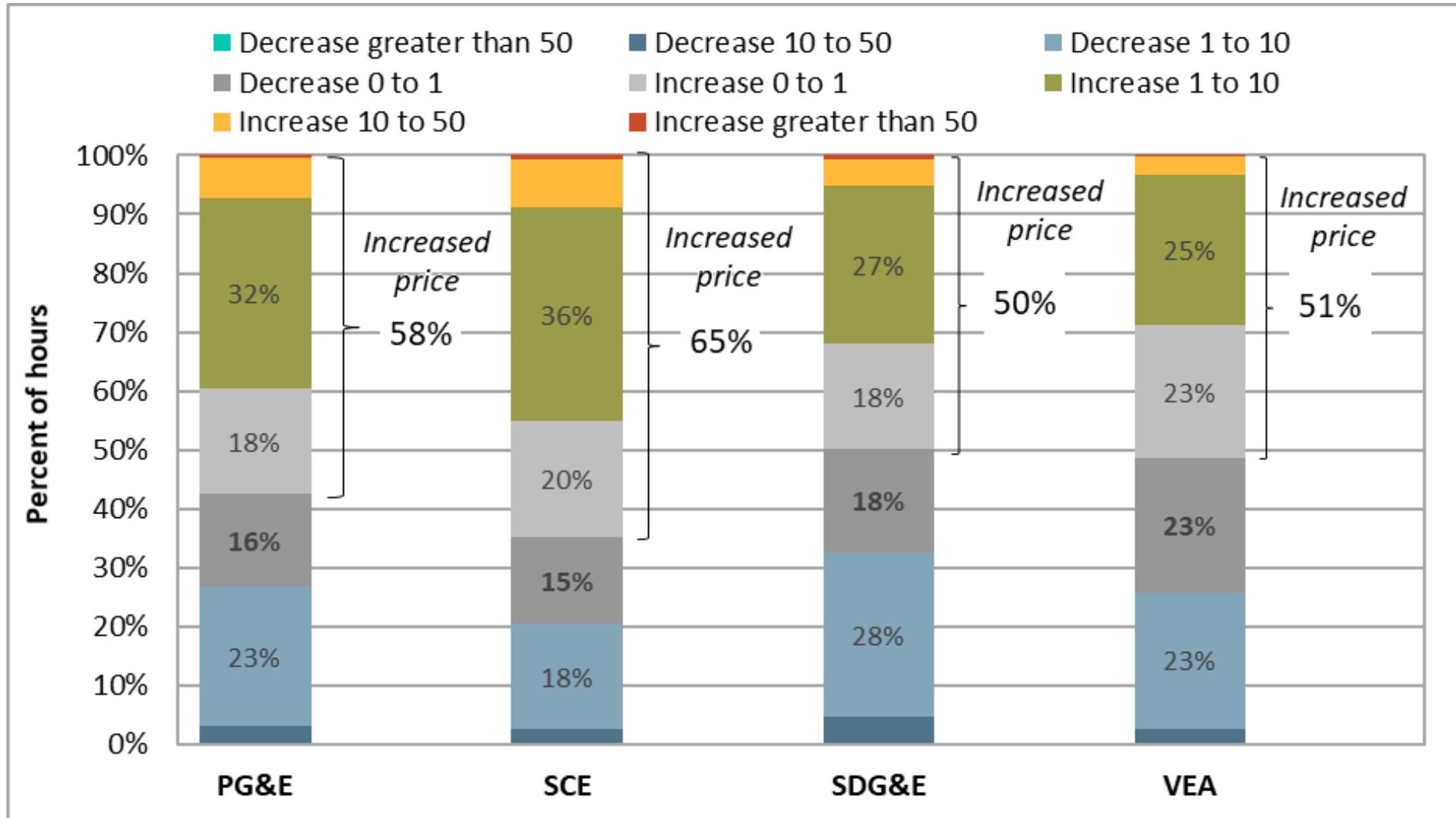
Incorrect load used to calculate CAISO load settlement prices from February 1, 2023 to February 4, 2024

15-minute market aggregate load schedules used to calculate each LAP's real-time settlement price, which is weighted between 15-minute market and 5-minute market imbalances (January 31, 2023 to February 2, 2023)



About 5-10% of hours had real-time price errors greater than \$10

Impact of incorrect aggregate load schedules on hourly real-time price (February 1, 2023 to December 31, 2023)



DMM estimates the error only shifted about \$7.1 million between entities

Estimated impact of incorrect aggregate load schedules on net charge to load (February 1, 2023 to December 31, 2023)

LAP	Estimated impact of error (shortfall)	Estimated impact of error (surplus)	Estimated net shortfall
PG&E	\$16,282,242	\$12,474,293	\$3,807,949
SCE	\$18,793,455	\$14,007,041	\$4,786,415
SDG&E	\$6,557,468	\$4,661,010	\$1,896,458
VEA	\$180,919	\$94,975	\$85,944
Other	\$1,099,241	\$520,172	\$579,069
Total	\$42,913,325	\$31,757,491	\$11,155,835

Error allocating 5-minute market WEIM transfer congestion rent and uplift

WEIM daily 5-minute market component of congestion offset calculation (June 26, 2023 to December 11, 2023) - represents upper bound of potential allocation error

