DMM 2017 Q2 Report Highlights

Kyle Westendorf
Market Monitoring Analyst
Department of Market Monitoring
California ISO

October 3, 2017

Discussion outline

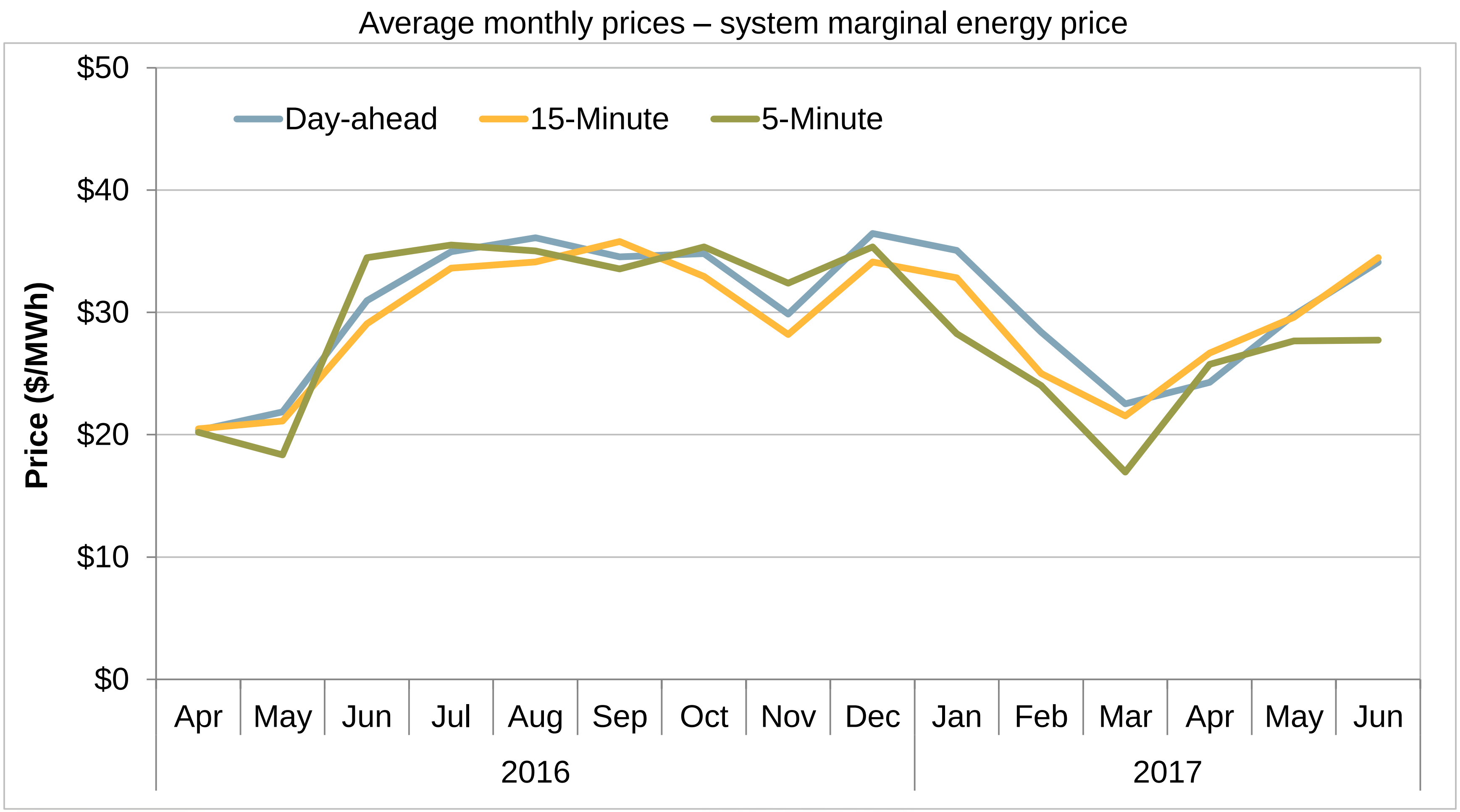
- ISO market results
  - Prices
  - Outcomes in June
  - Other highlights

- EIM market results

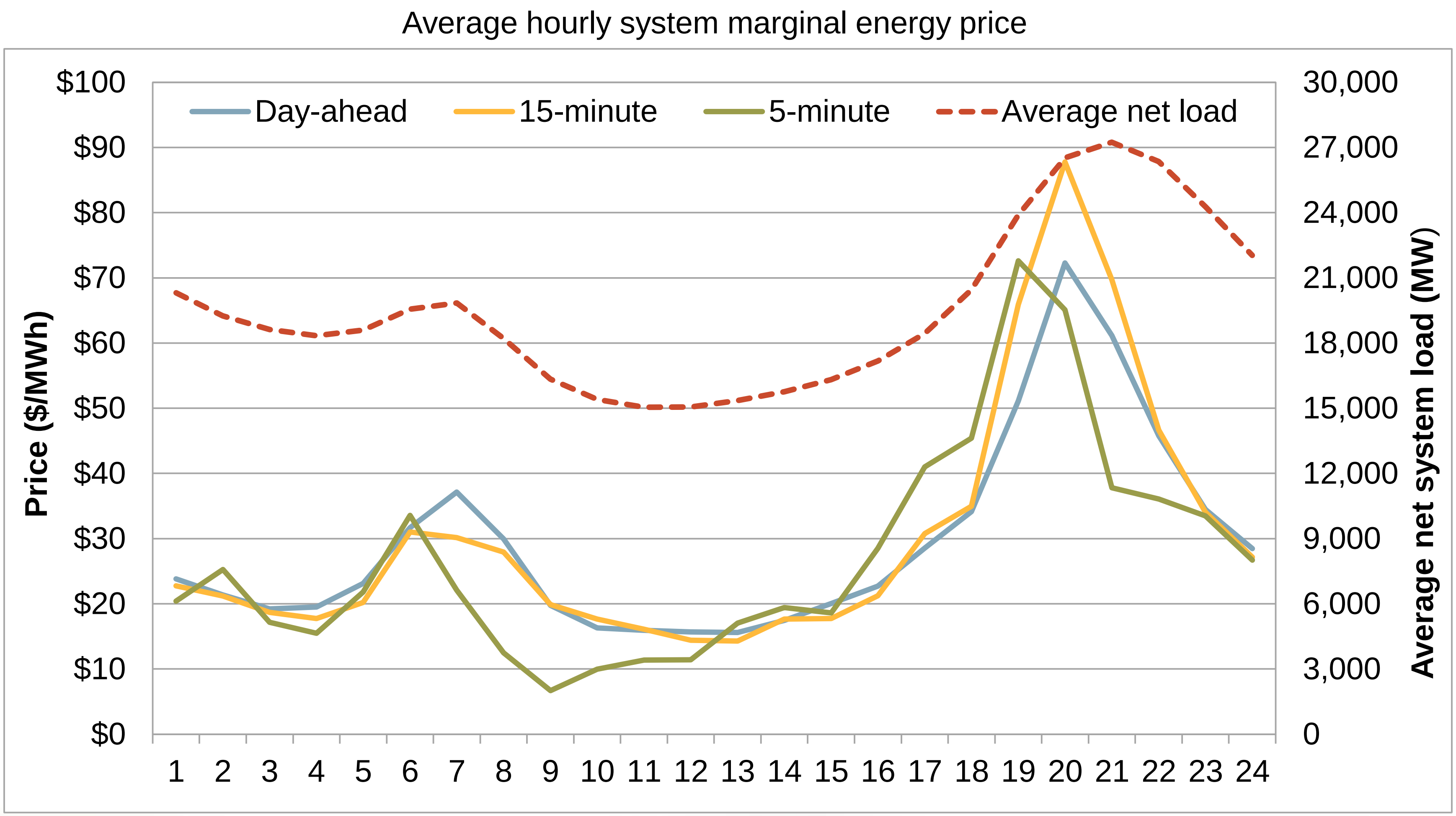
- Special Issues
  - Real-time market power mitigation enhancements
  - Market power mitigation differences in the day-ahead market

Market Performance

Prices increased during the quarter as a result of seasonally higher loads.

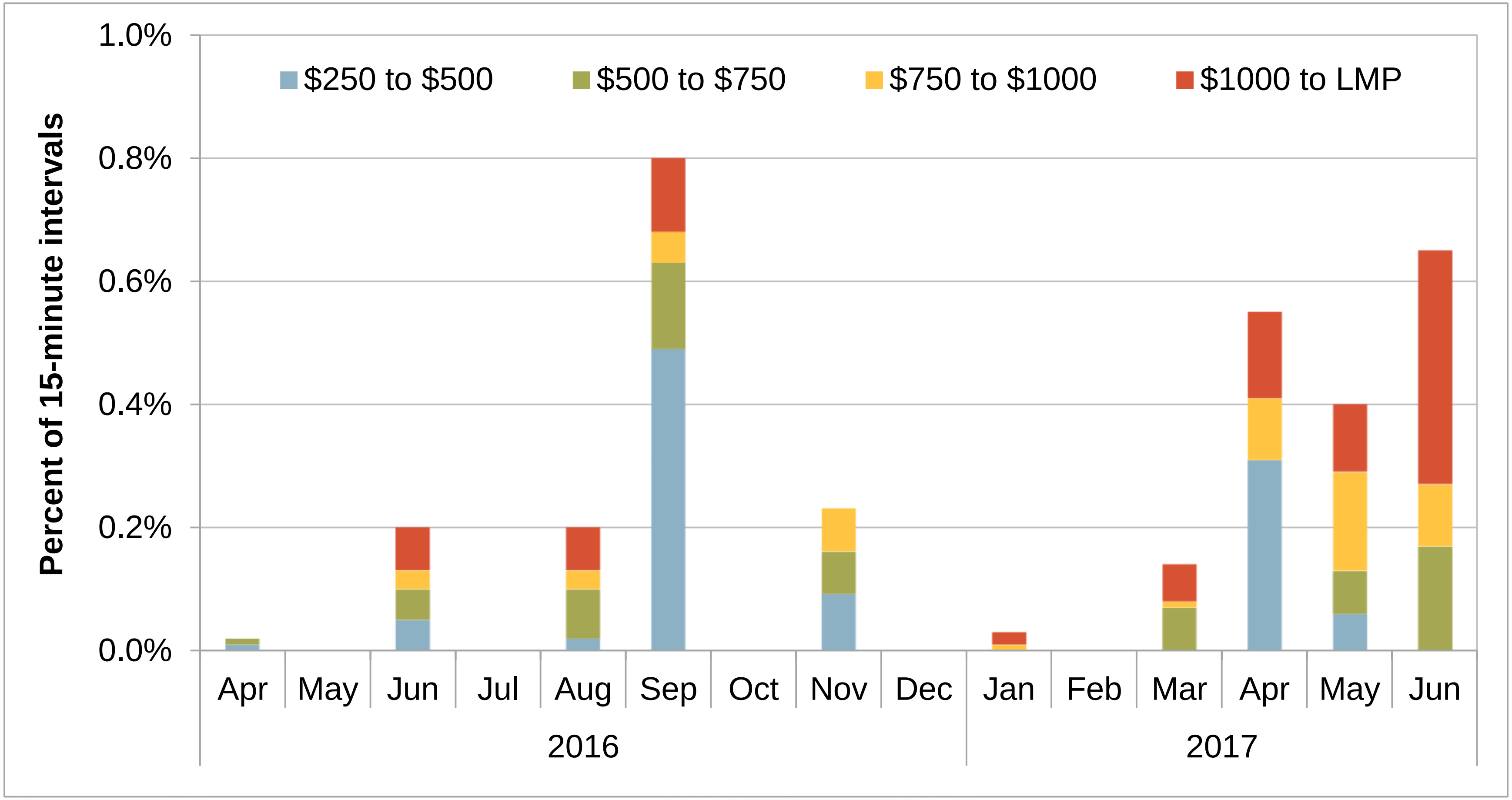


Average 15-minute market prices were higher than day-ahead prices in the peak net load ramping hours.



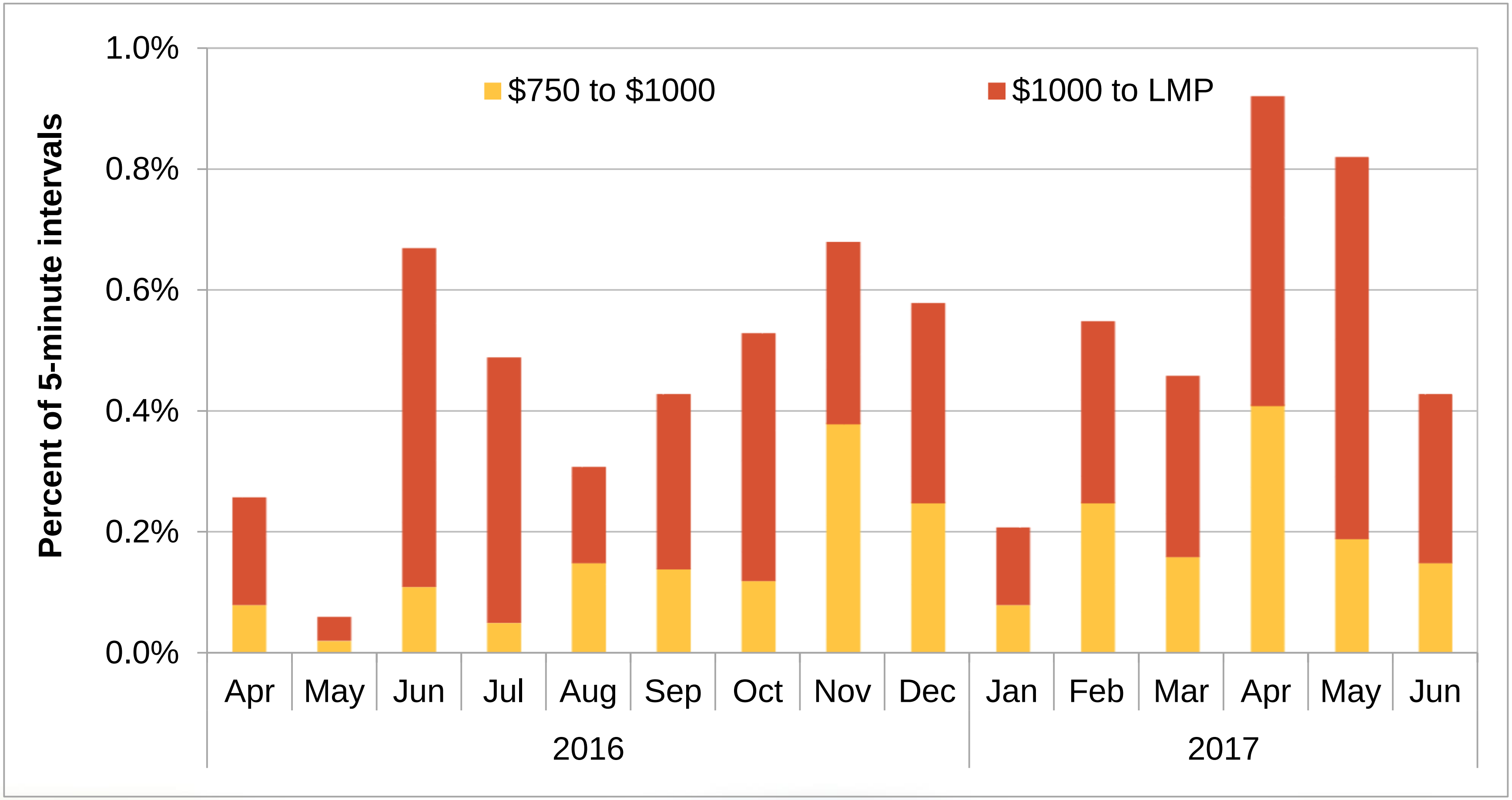
The frequency of price spikes in the 15-minute market increased during the quarter.

Frequency of high 15-minute prices by month



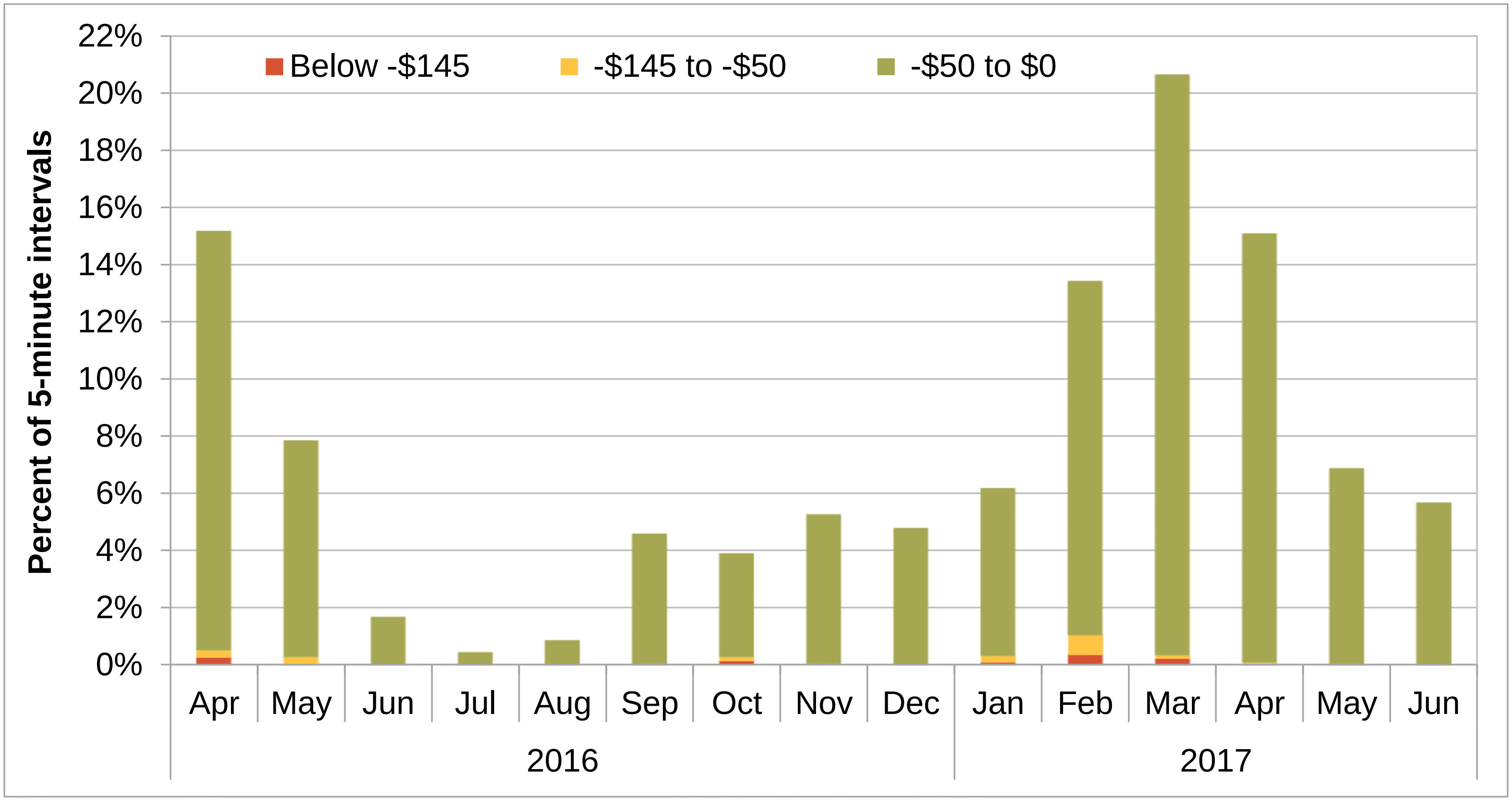
The frequency of high 5-minute market prices larger than $750/MWh increased.

Frequency of high 5-minute prices larger than $750/MWh by month



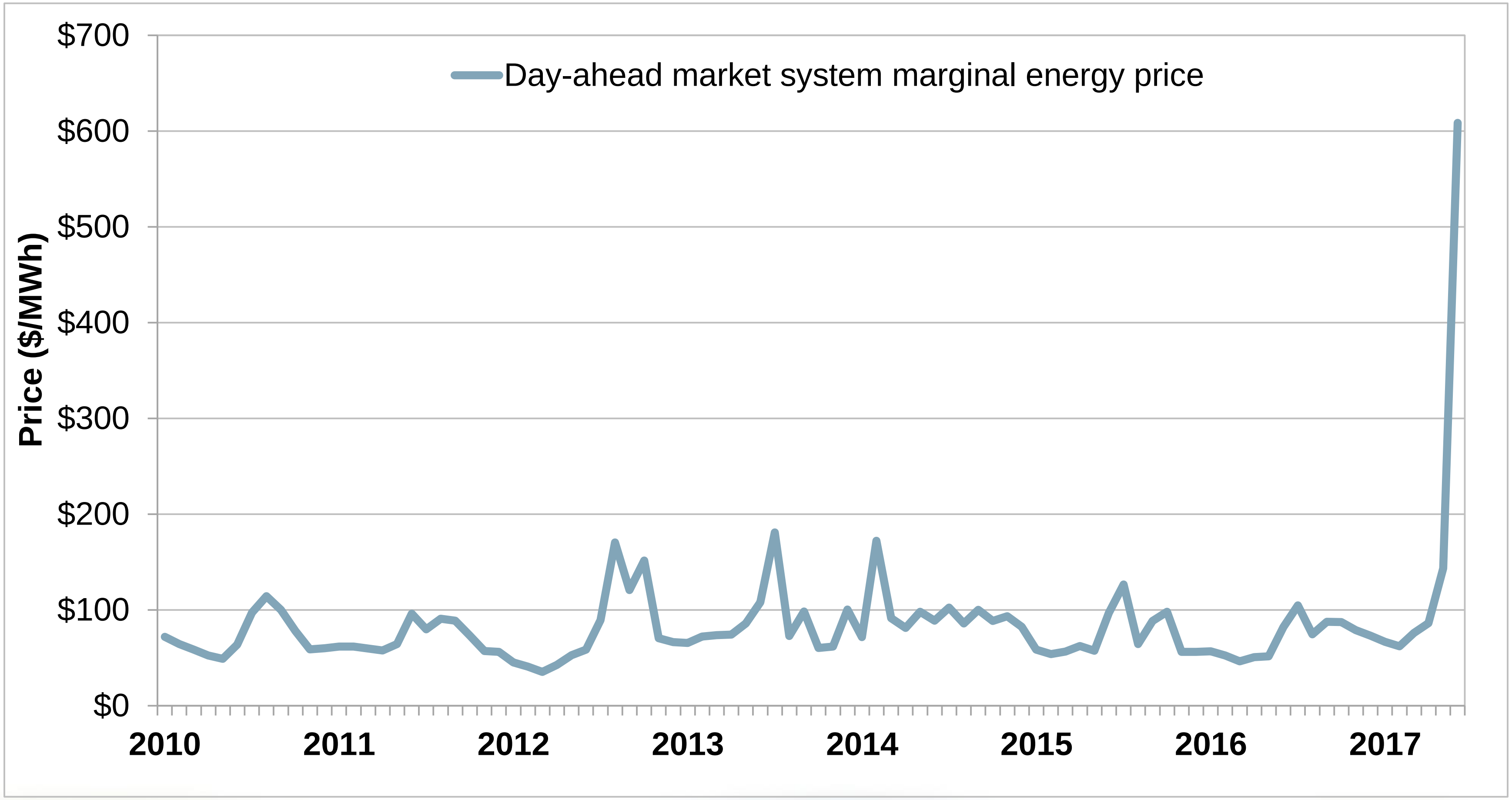
The market economically dispatched generation down rather than relax the power balance constraint or curtail self-scheduled generation.

Frequency of negative 5-minute prices by month



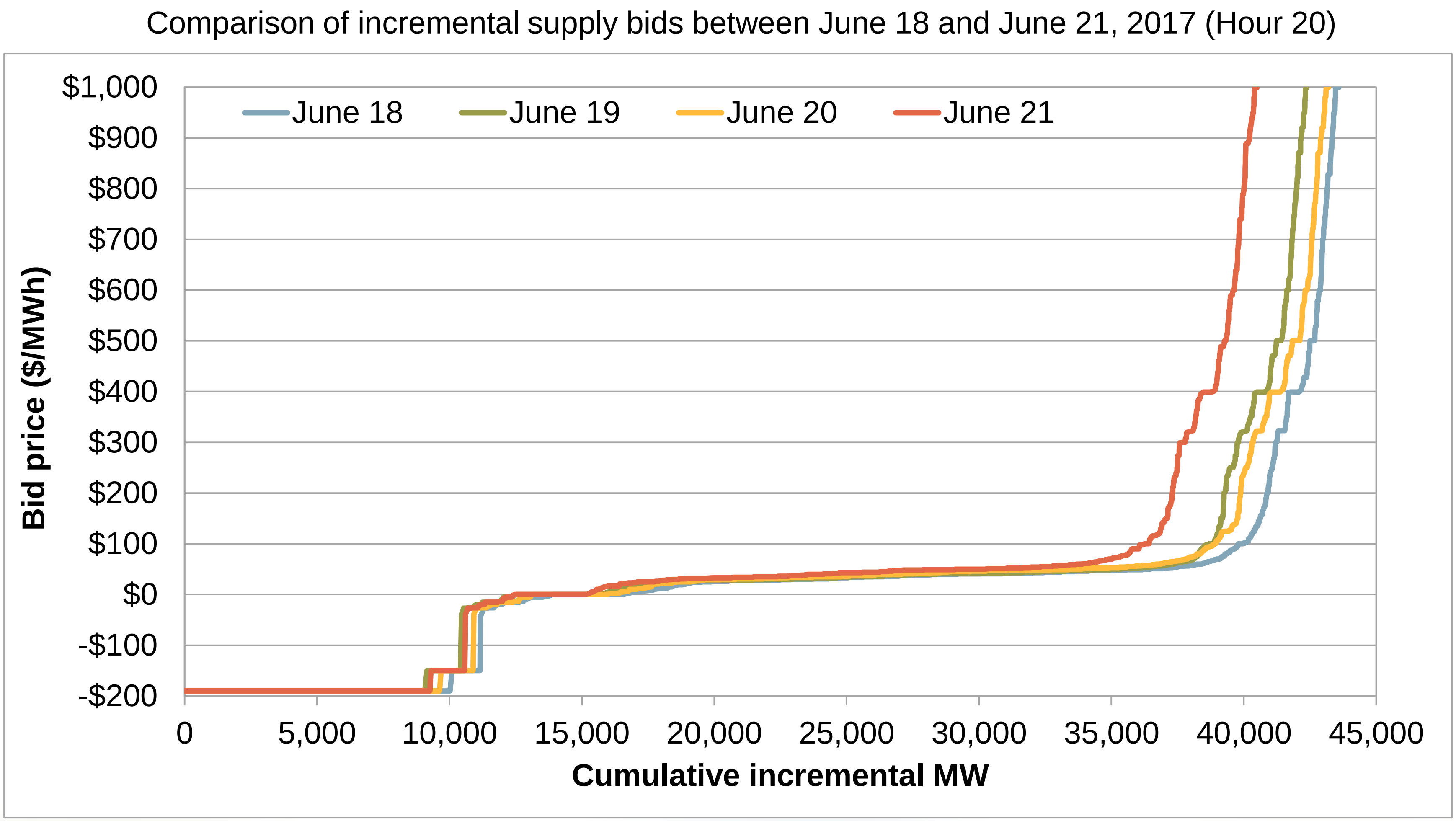
The day-ahead market system marginal energy price reached over $600/MWh on June 21.

Highest monthly day-ahead market system marginal energy price (2010 to June 2017)

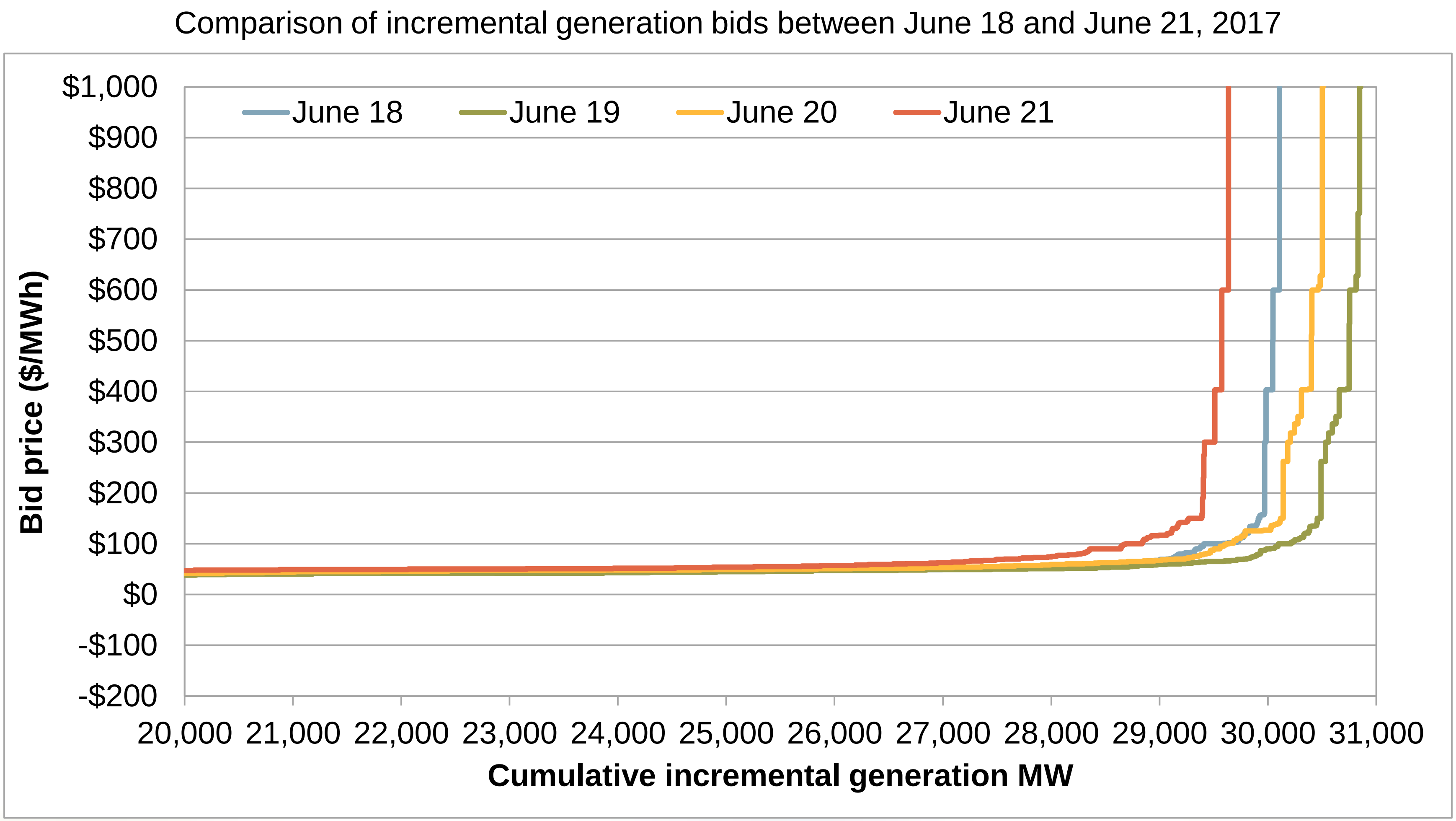


California ISO

On June 21, there was a downward shift of supply bids in the day-ahead market.

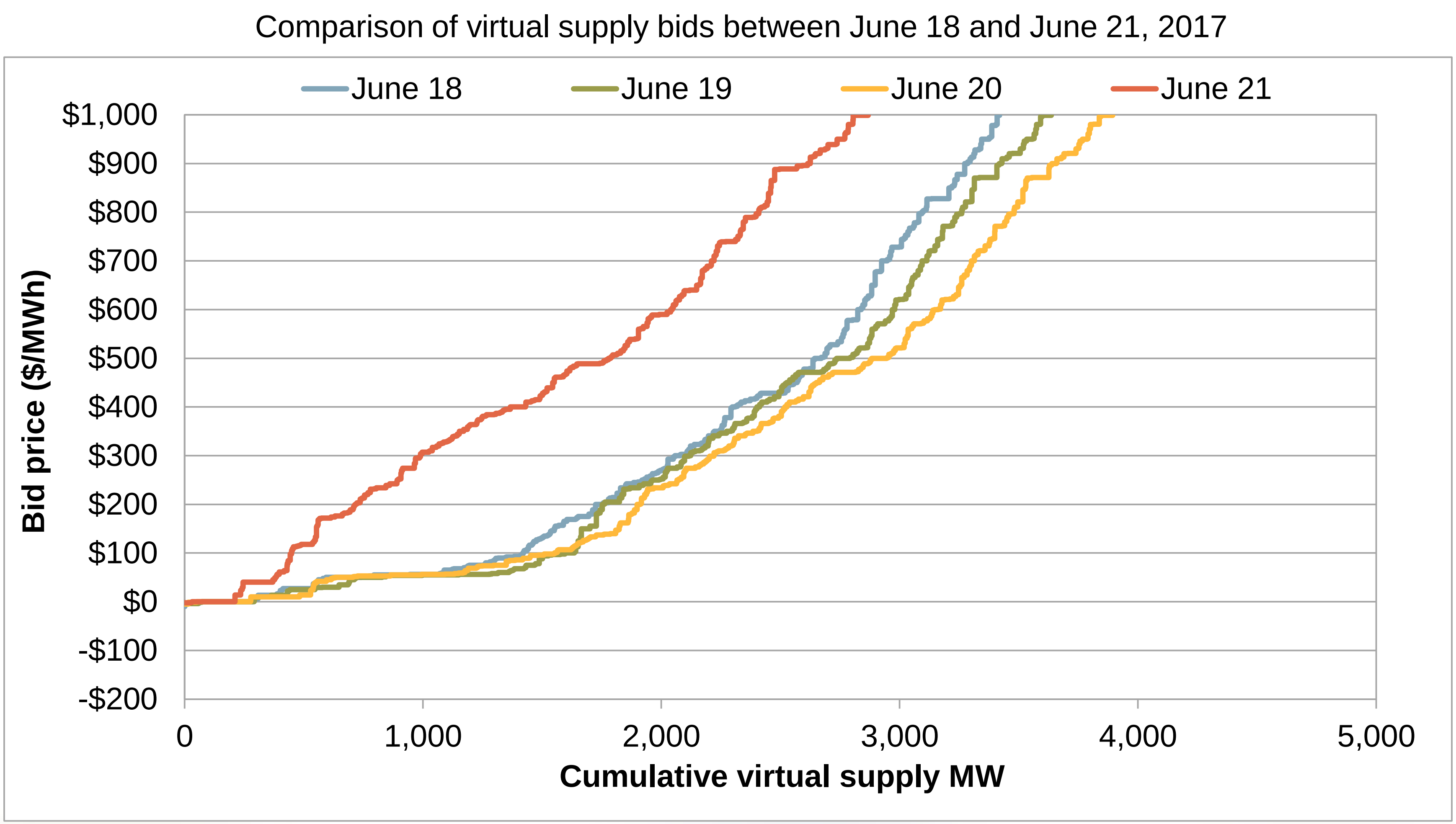


Generation bid in below $100/MWh decreased by around 800 MW.



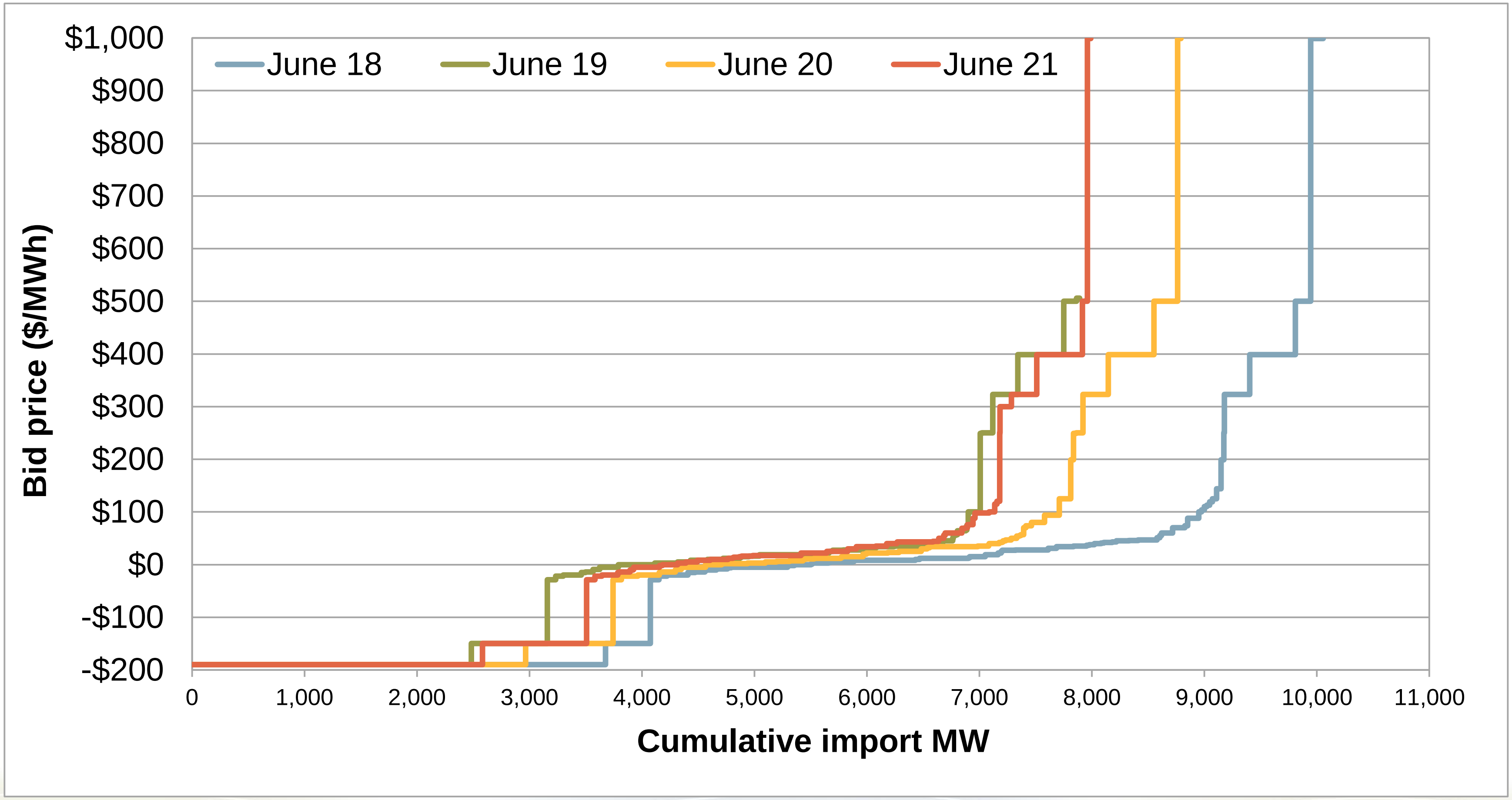
California ISO

Virtual supply bid in below $100/MWh decreased by around 1,100 MW.



Intertie imports offered decreased significantly from June 18 to June 19 and remained relatively low during the other days.

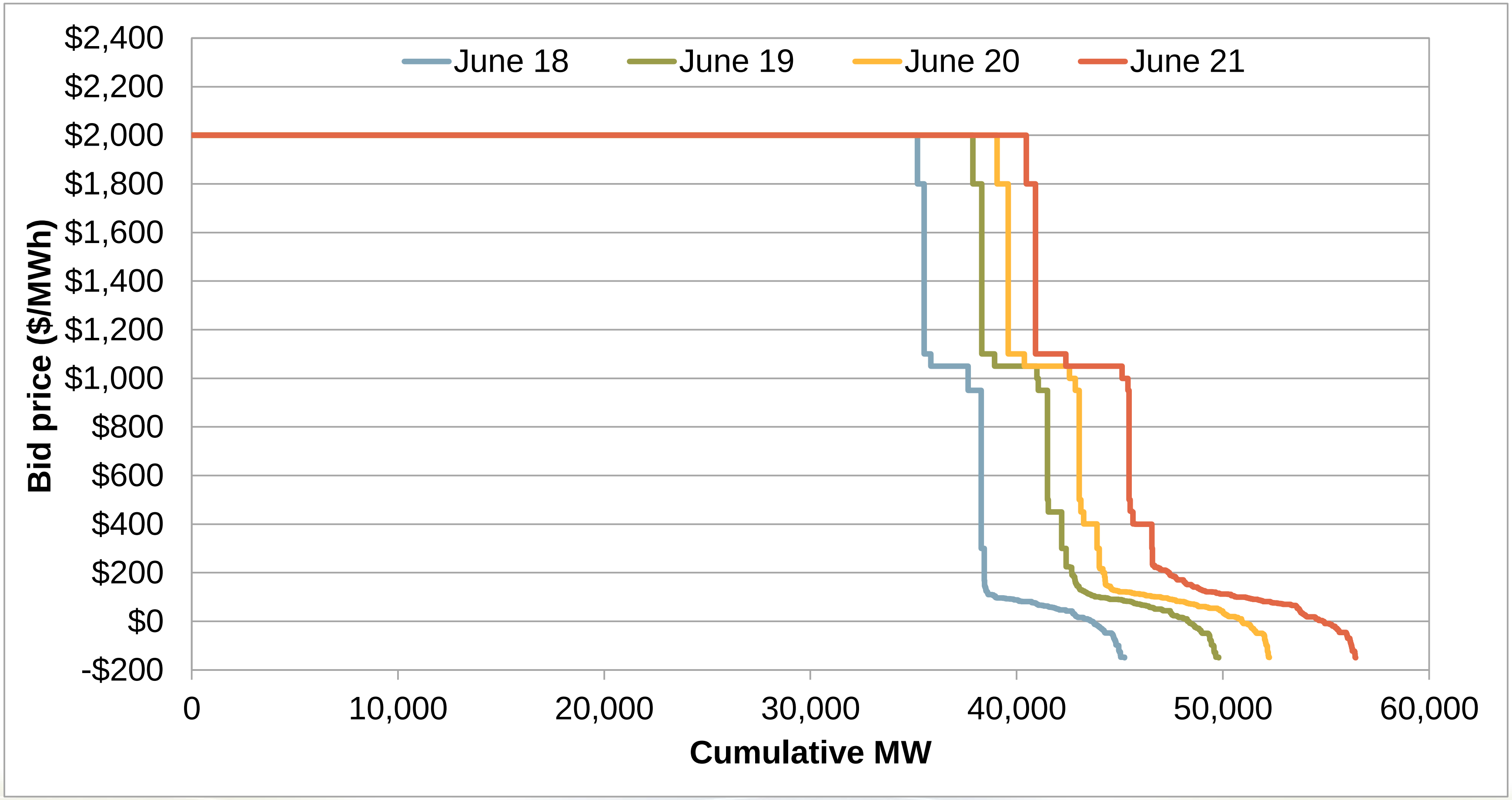
Comparison of import bids between June 18 and June 21, 2017



California ISO

On June 21, there was an upward shift in load, export, and virtual demand bids in the day-ahead market.

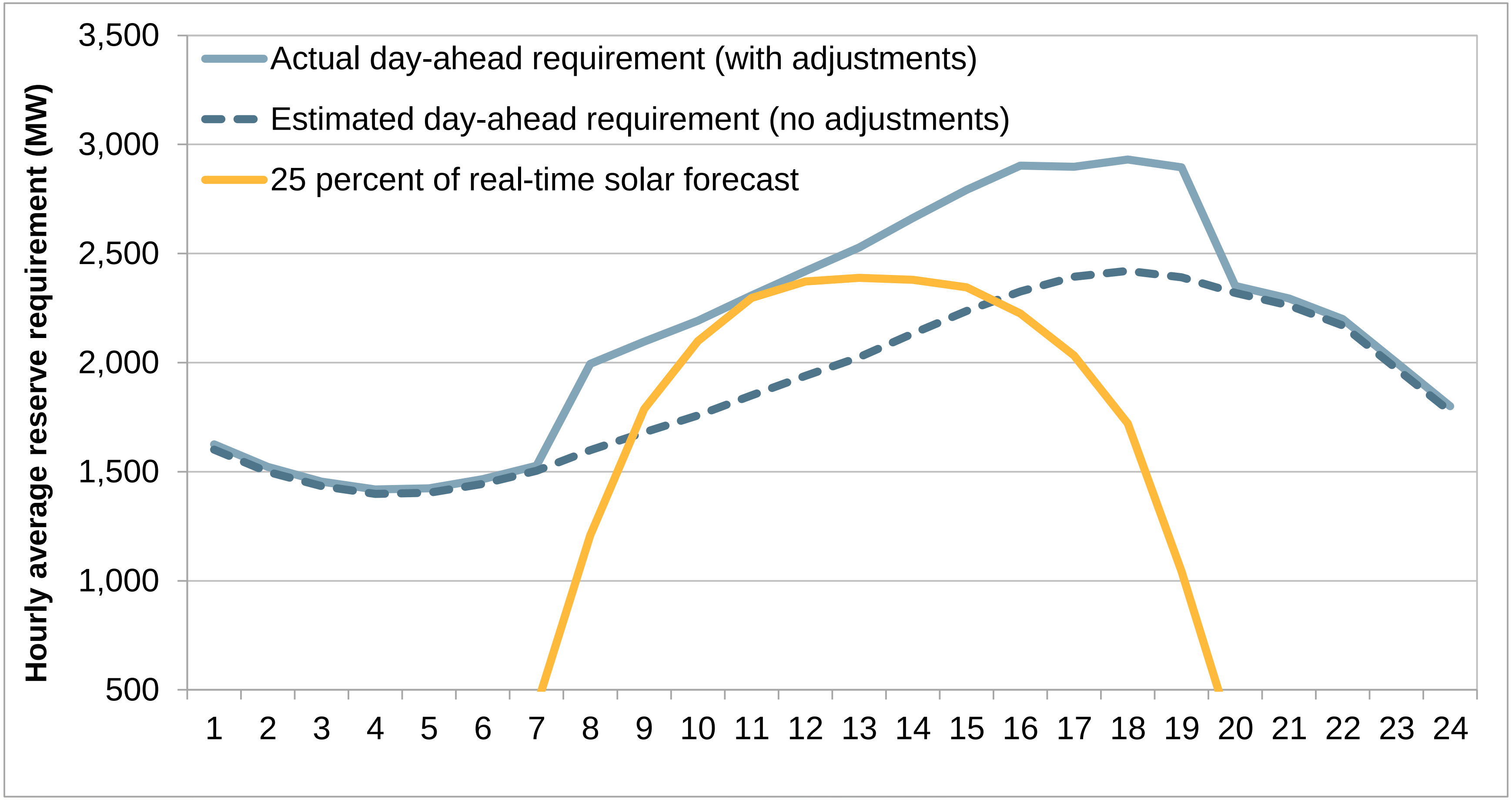
Comparison of load, export, and virtual demand bids between June 18 and June 21, 2017



California ISO

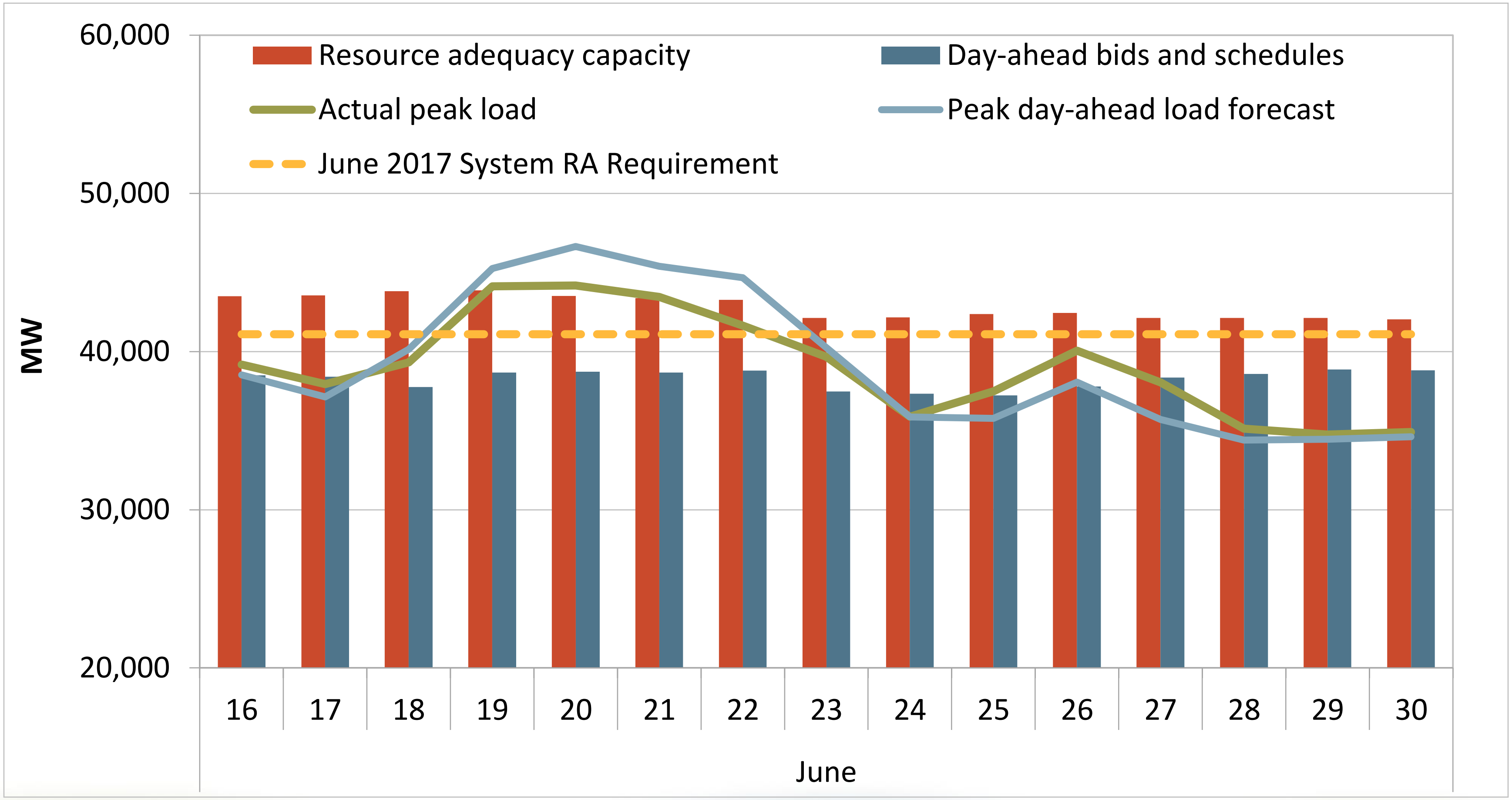
Operating reserve requirements began being increased during midday hours on June 14.

Hourly average operating reserve requirements (June 14 – June 30)



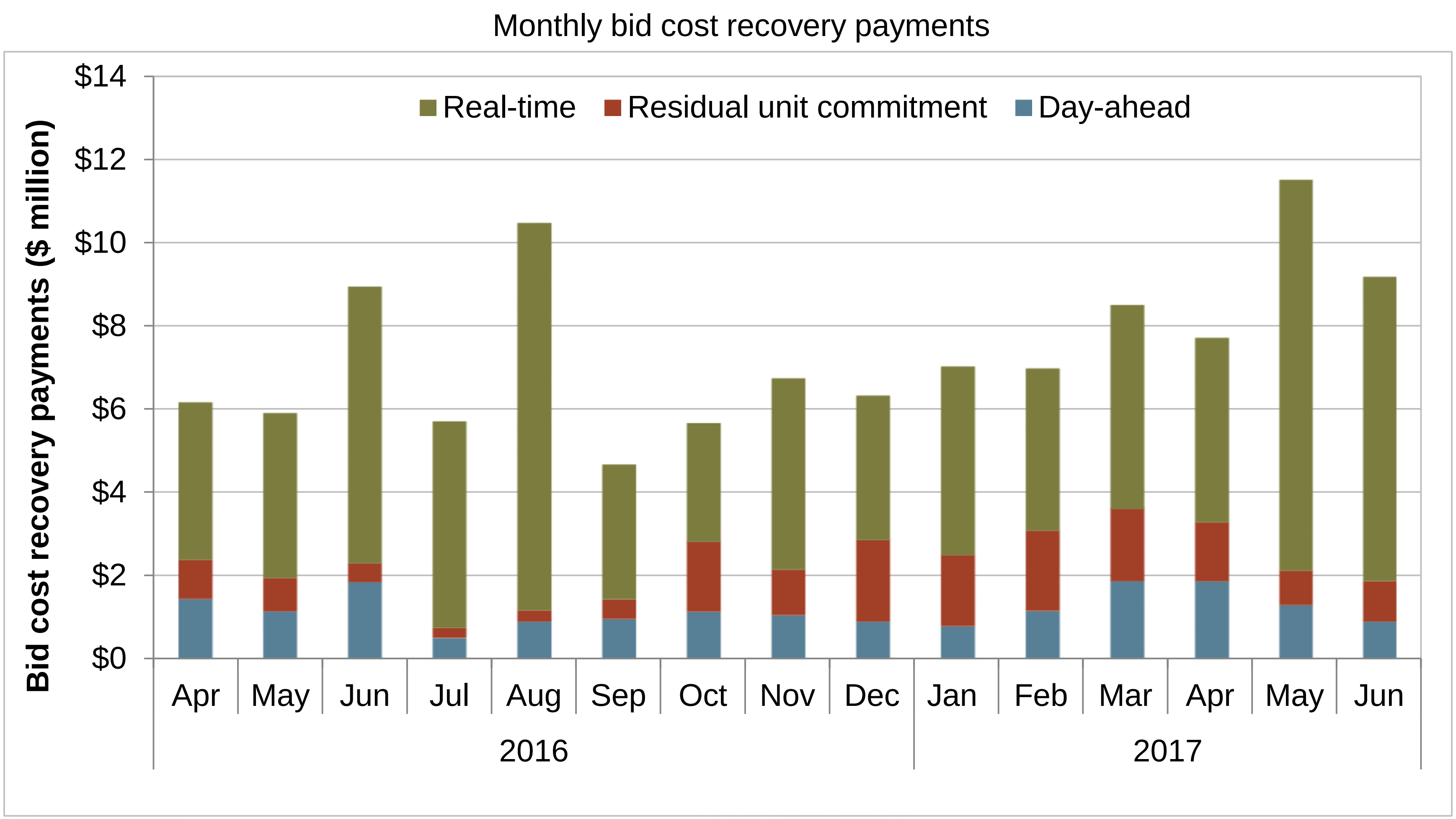
Resource adequacy capacity showings and availability fell below peak day-ahead load forecasts and actual load.

June daily peak load, resource adequacy capacity, and system requirement

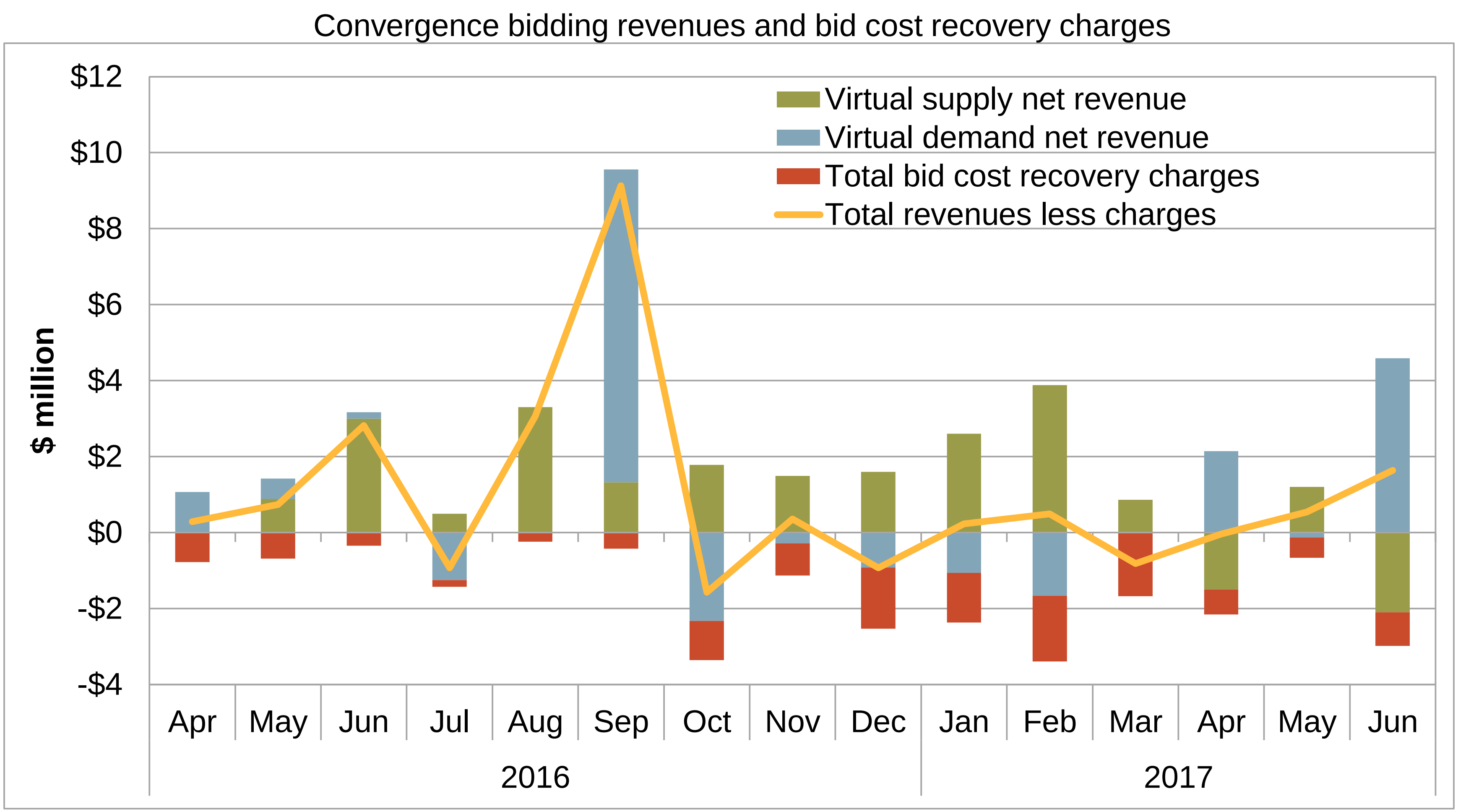


California ISO

Estimated bid cost recovery payments for the quarter totaled about $28 million.



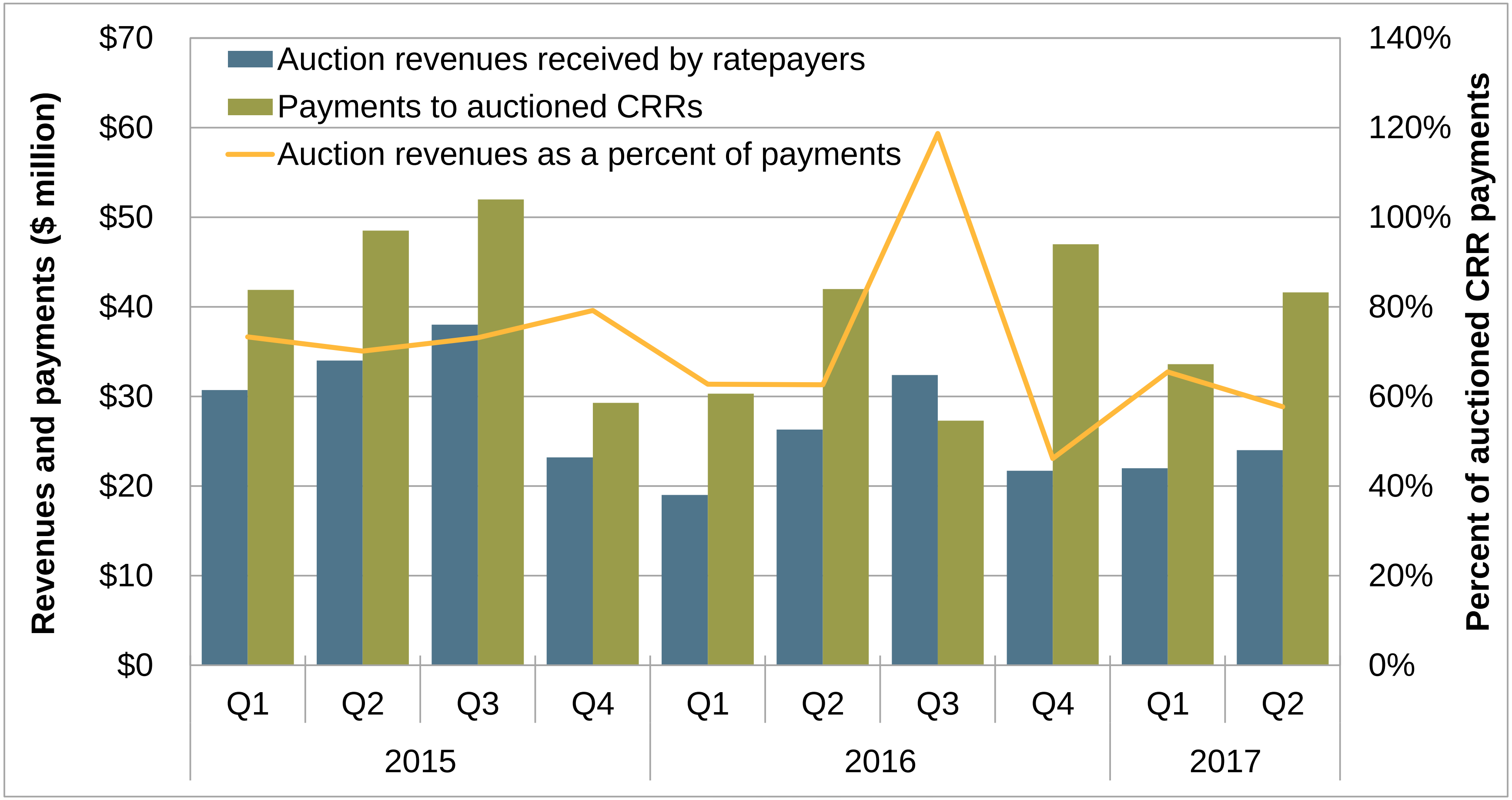
Virtual supply was not profitable overall for the quarter for the second time since its implementation in 2011.



California ISO

Auction revenues continued to be less than payments made to congestion revenue rights holders.

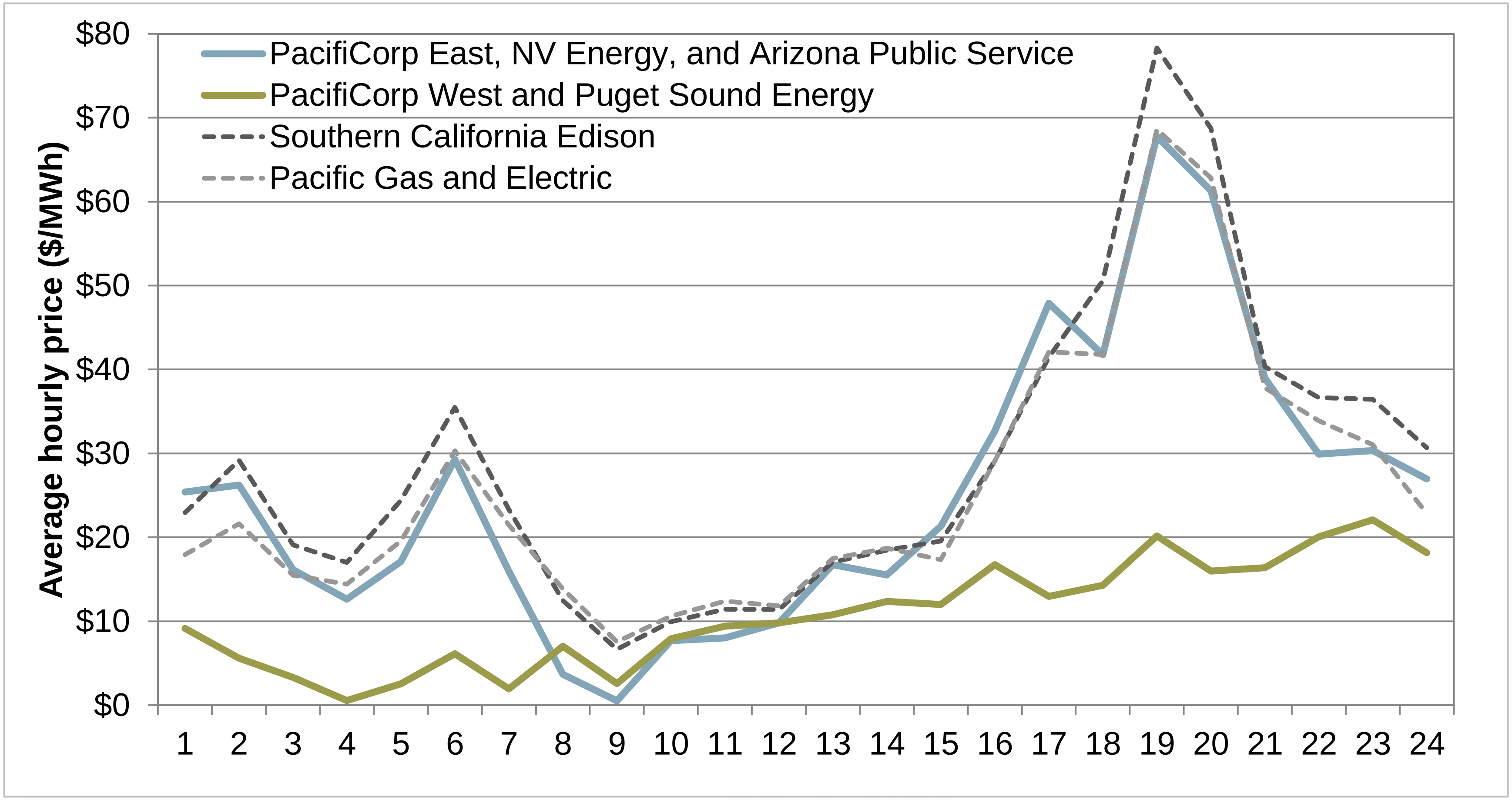
Auction revenues and payments to non-load serving entities



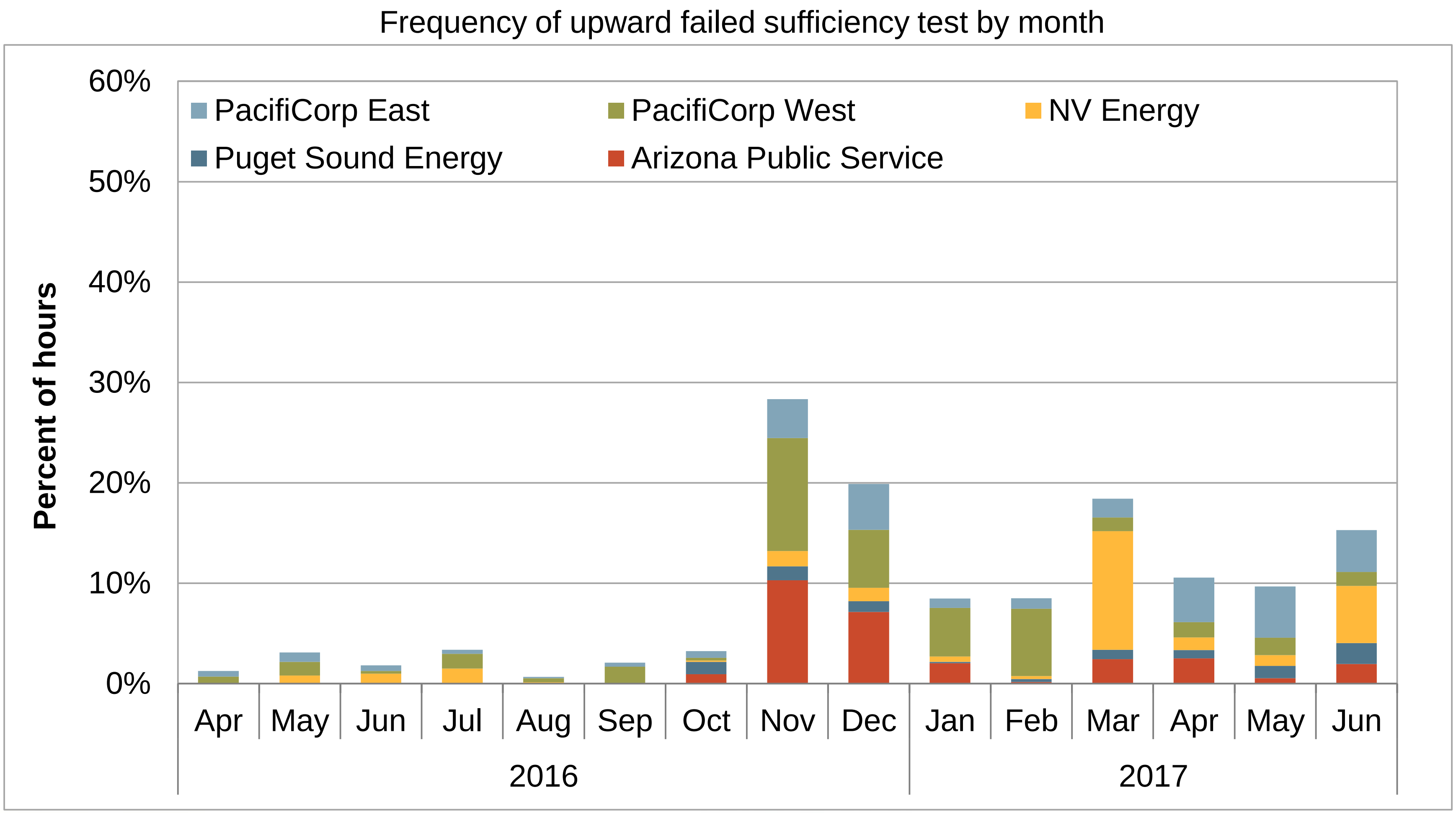
Energy Imbalance Market

Prices in PacifiCorp West and Puget Sound Energy were lower as a result of congestion.

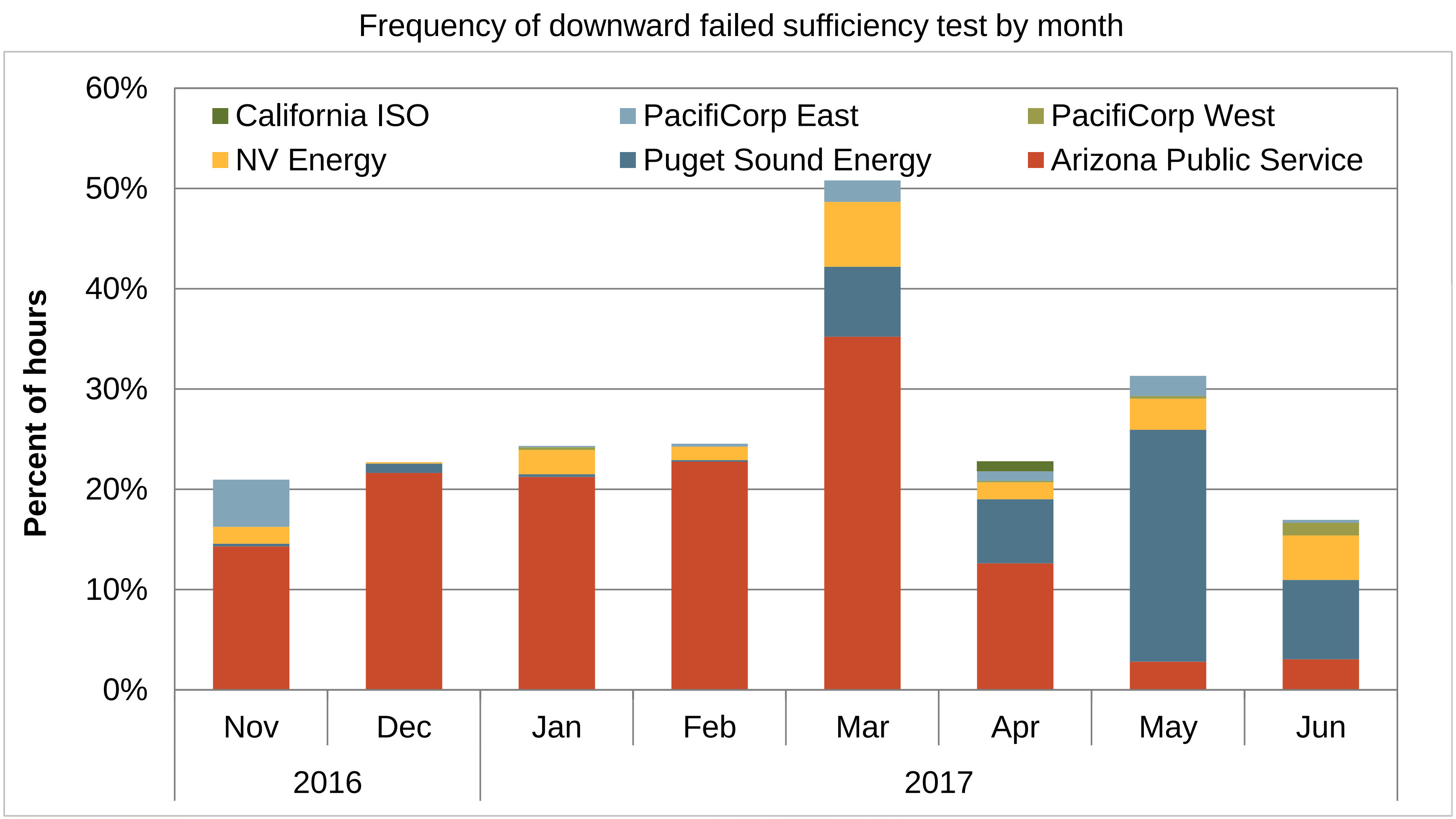
Hourly 5-minute market prices (April – June)



EIM balancing areas continued to fail the upward and downward sufficiency test.



EIM balancing areas continued to fail the upward and downward sufficiency test.



Special Issues

The ISO implemented market power mitigation enhancements in the 5-minute market on May 2.

Comparison of 5-minute market power mitigation systems on flow based constraints

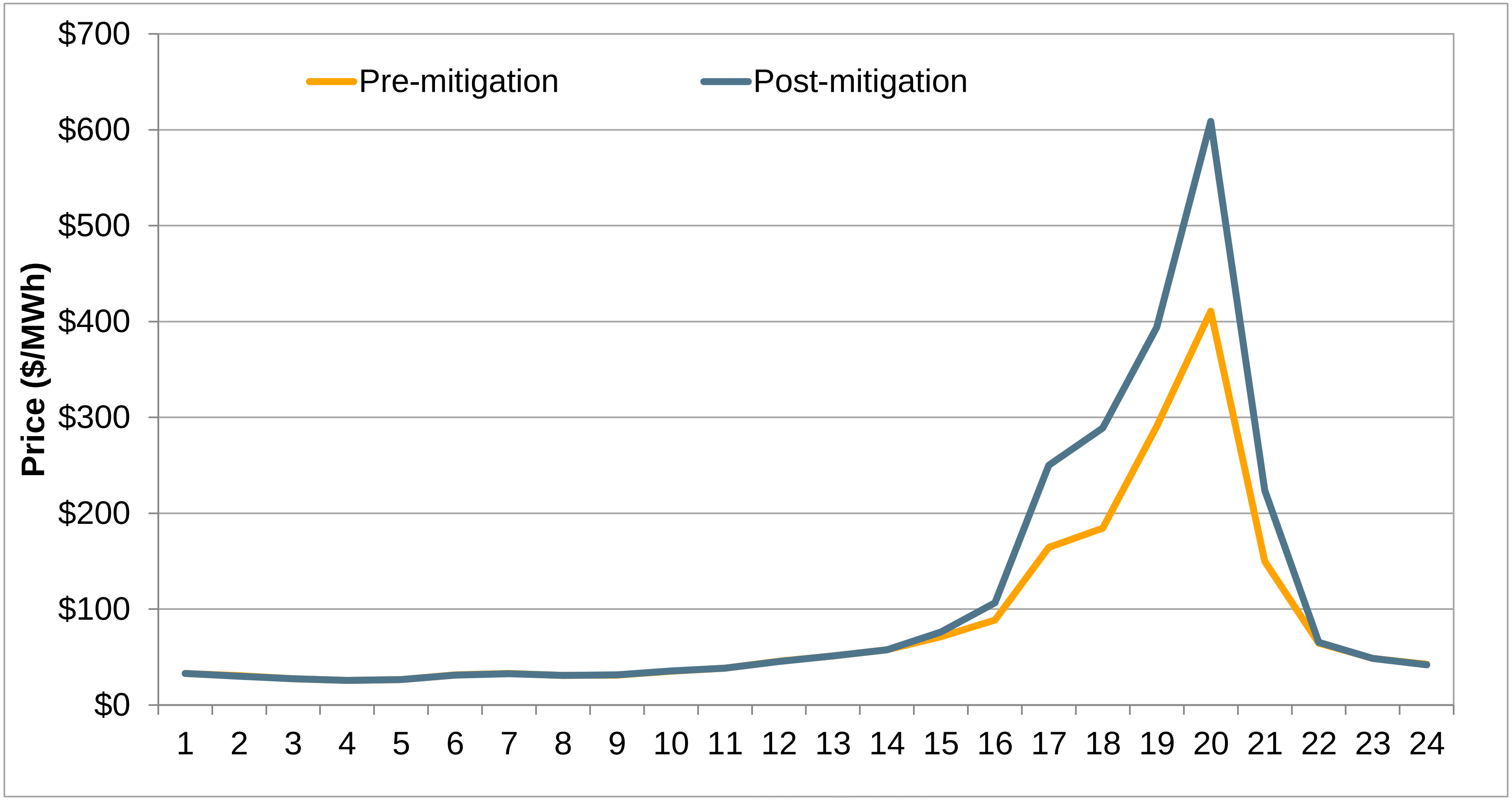
	Accurately predicted	Over predicted	Under predicted
June 2016 - May 1 2017	72%	13%	14%
May 2 - July 31 2017	84%	14%	2%

Comparison of 5-minute market power mitigation systems on EIM transfer constraints

	Accurately predicted	Over predicted	Under predicted
Jun 2016-May 1 2017	29%	30%	41%
May 2 2017-July 31 2017	56%	35%	8%

Prices increased following market power mitigation in the day-ahead market on June 21.

Comparison of day-ahead market system marginal energy prices on June 21, 2017



California ISO

Energy revenues were almost $25 million greater in the binding market run than in the market power mitigation run.