

Quarterly Report for Q4 2022: Selected findings

February 10, 2023

Presentation outline

- Scope of this presentation
- Energy market
 - Market power
 - Carbon emission intensity
- Operating reserves
- Forward market
- Retail market

Scope of this presentation

- This presentation provides a selection of findings contained in the MSA's Quarterly Report for Q4 2022
 - Only selected figures are included here
 - Readers are referred to the Quarterly Report itself for discussion of the figures
- All content in this presentation was copied directly from the Quarterly Report and no additional information, including by exclusion of any material, is provided here.

Energy market

Figure 1: Average annual pool prices (2001 to 2022)

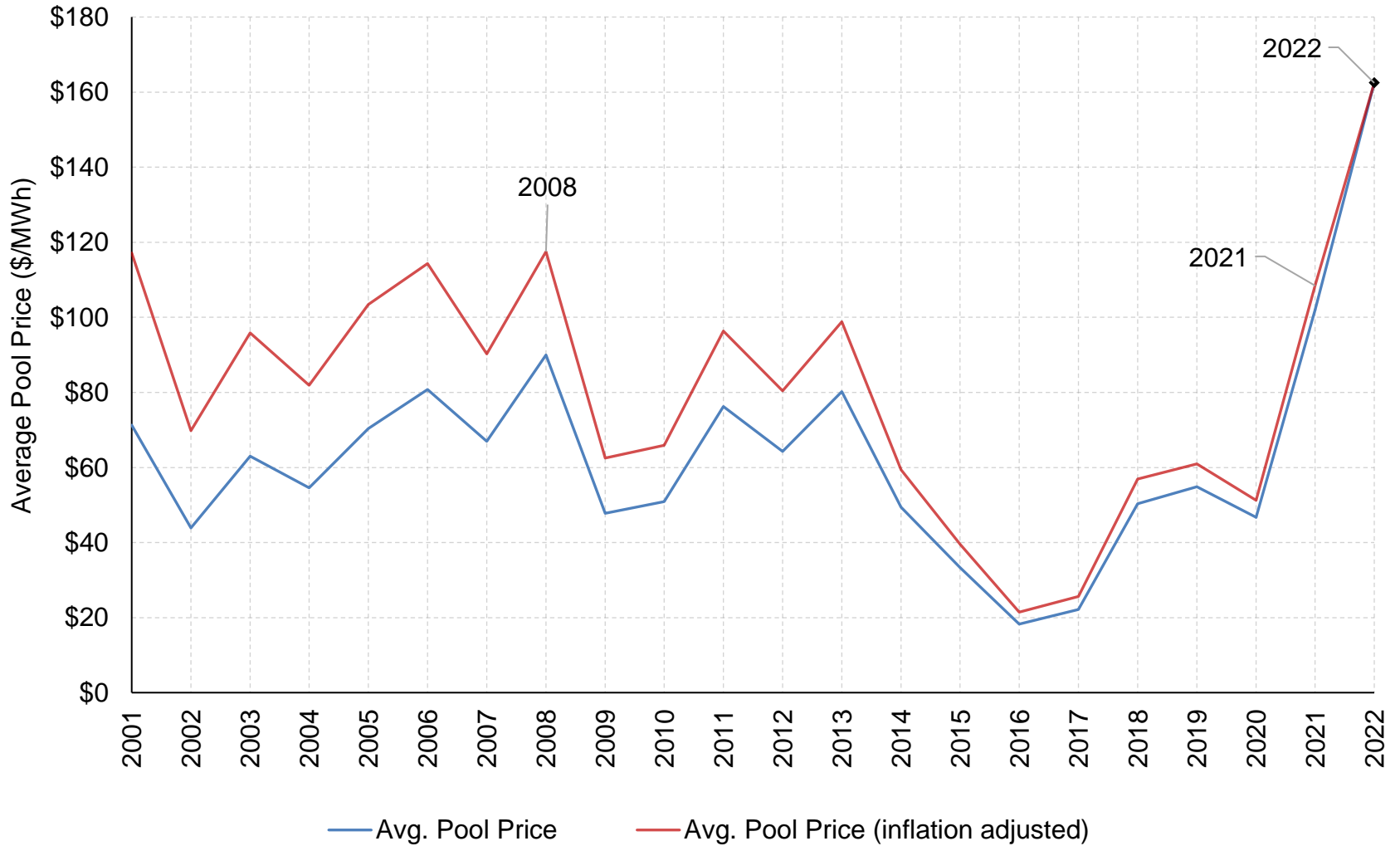


Figure 3: Average pool price, natural gas price, and spark spread by month (January 2018 to December 2022)

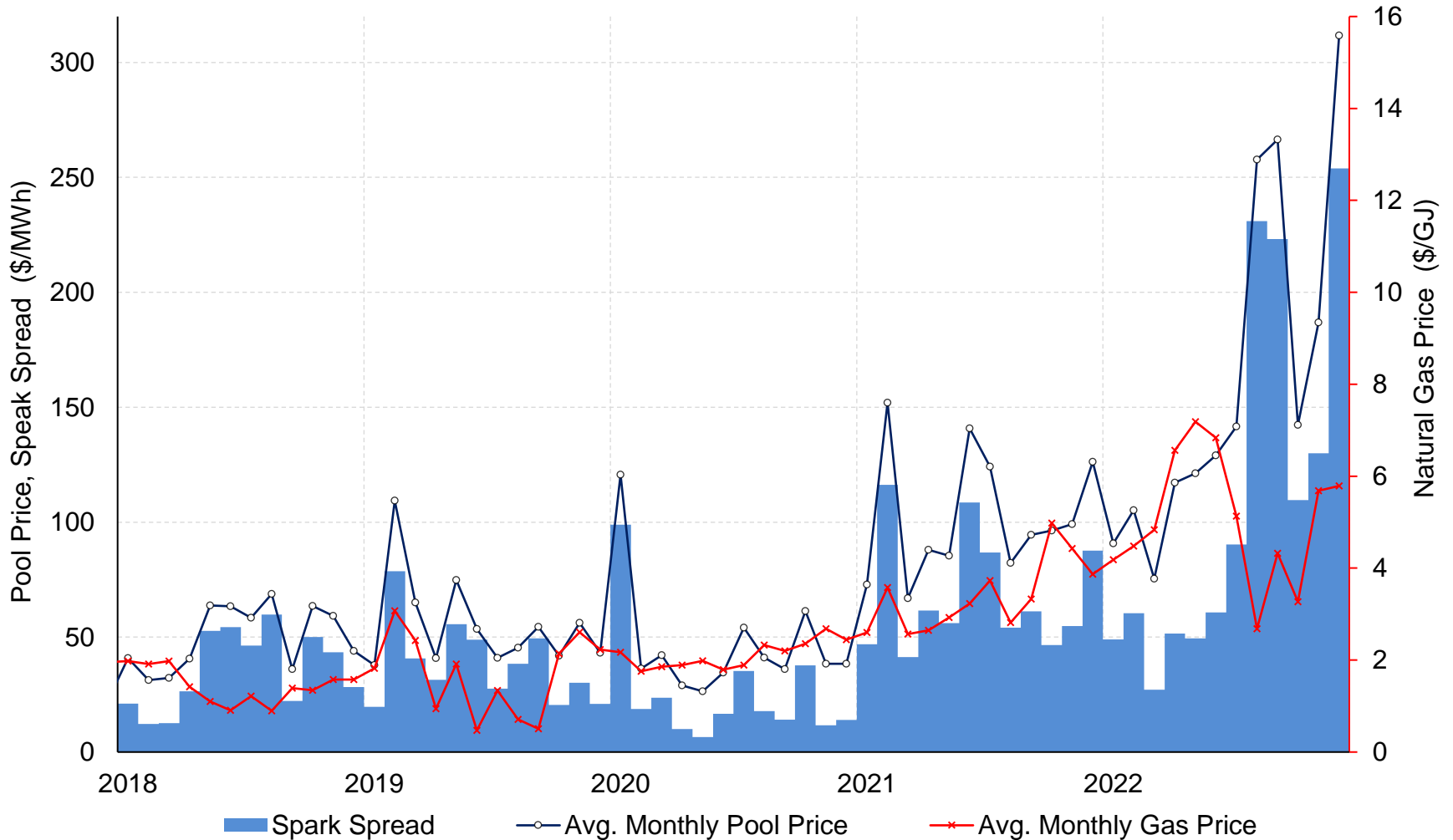
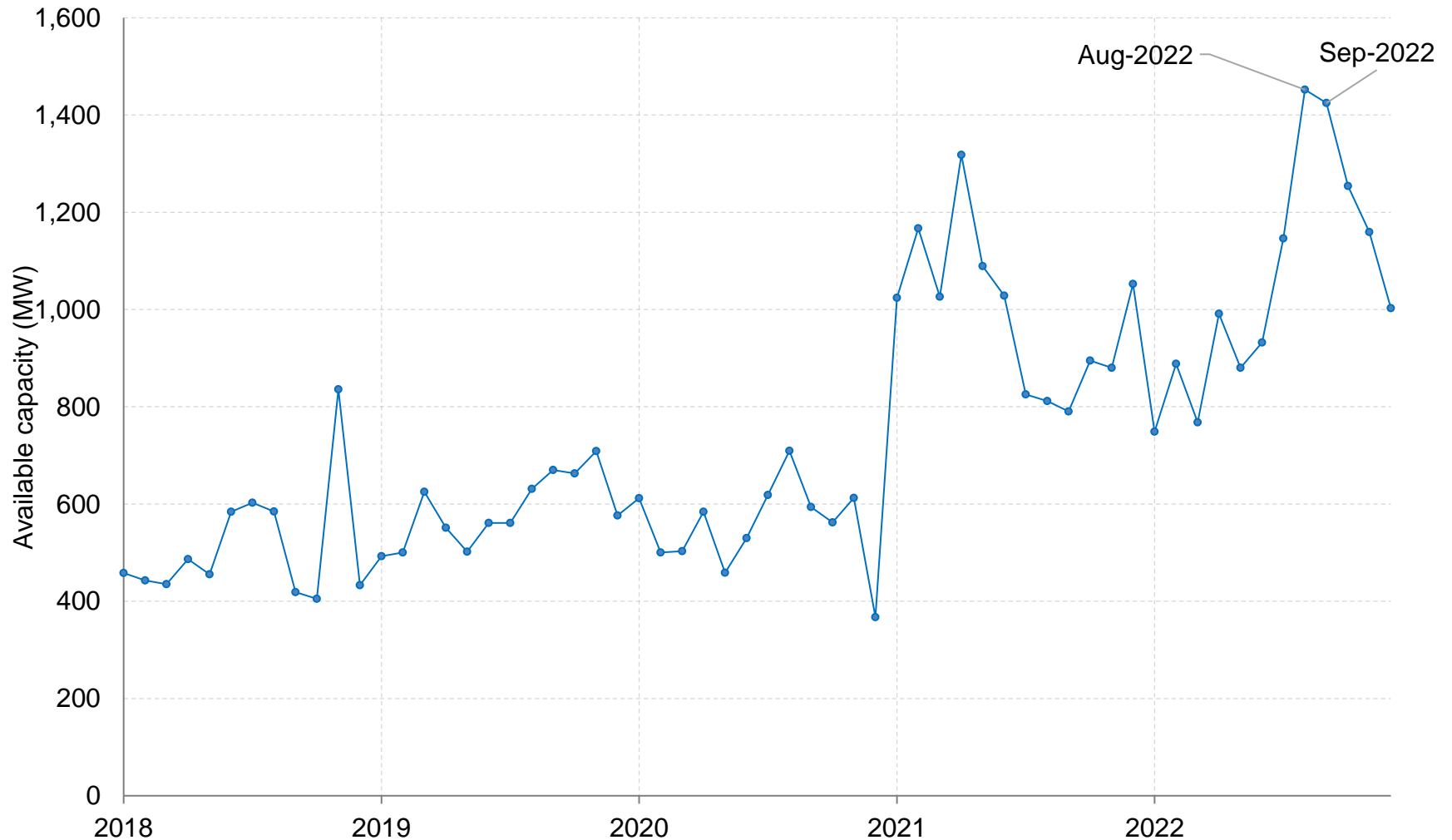


Figure 4: Average amount of available capacity offered above \$250/MWh by month (January 2018 to December 2022)



*Figure 8: Peak daily demand
(January 1, 2021 to December 31, 2022)*

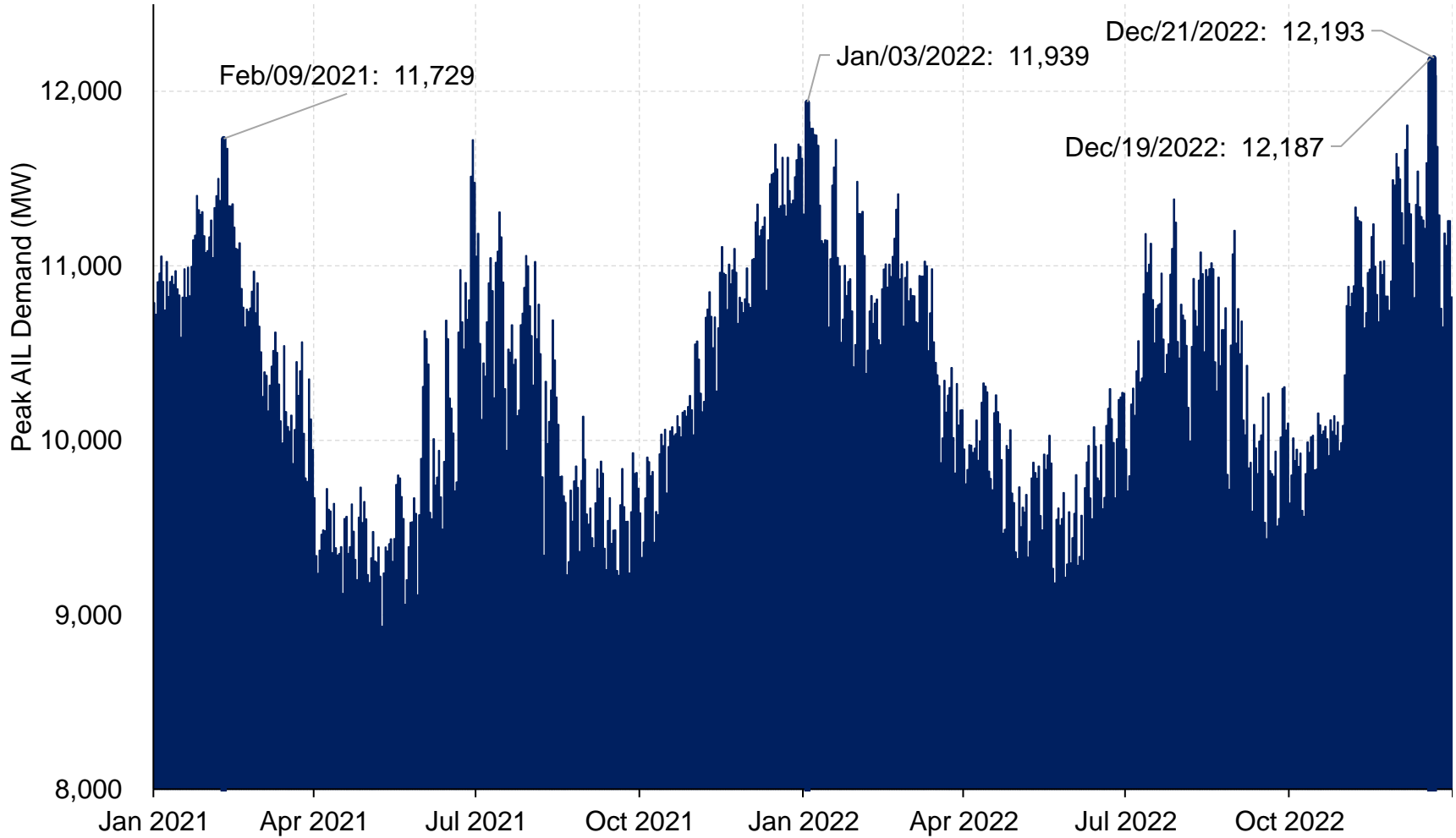
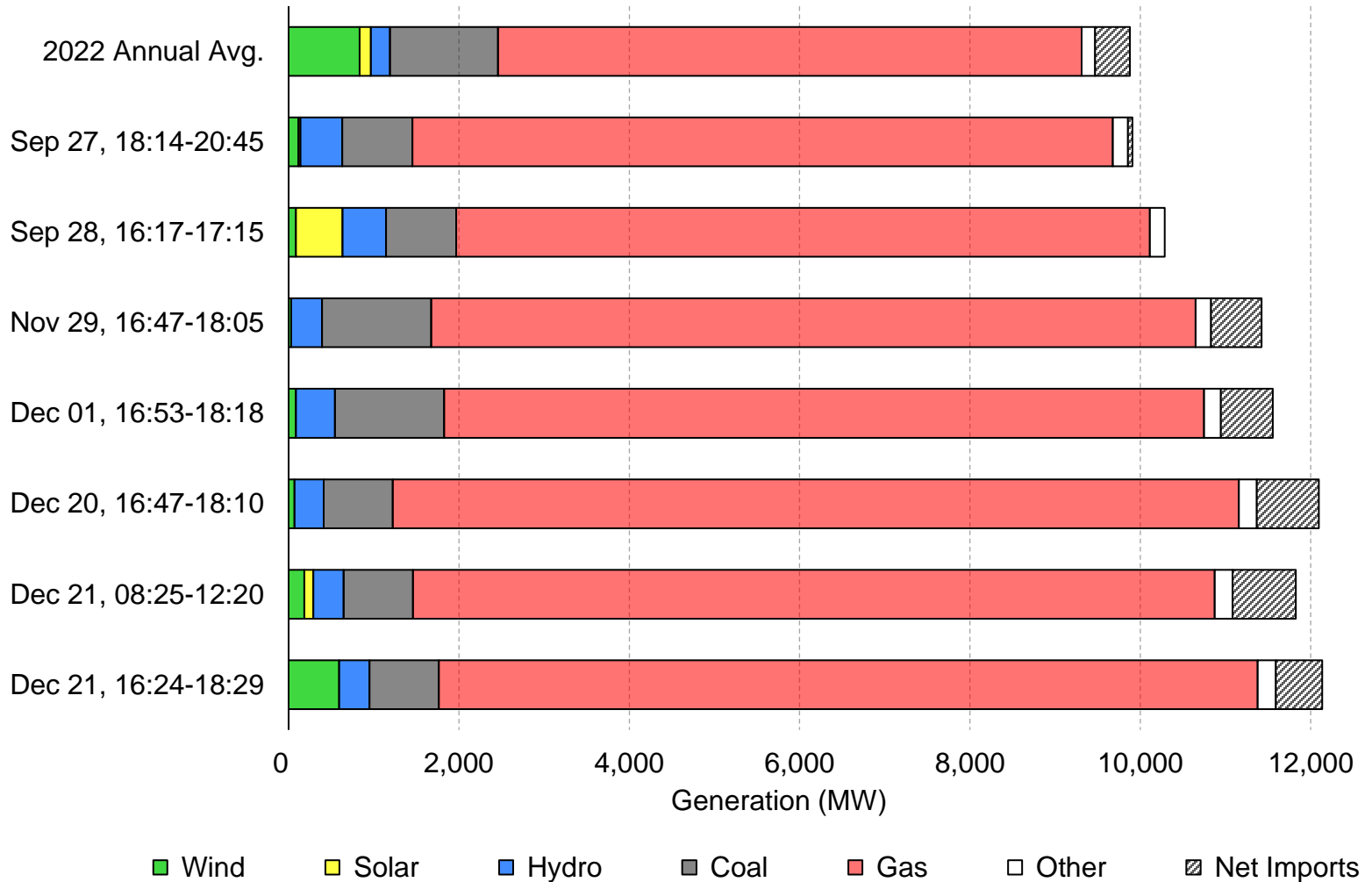


Figure 10: Average generation by fuel type during EEA3 events in 2022



*Figure 14: Wind generation, solar generation, and pool prices
(November 1 to 14, 2022)*

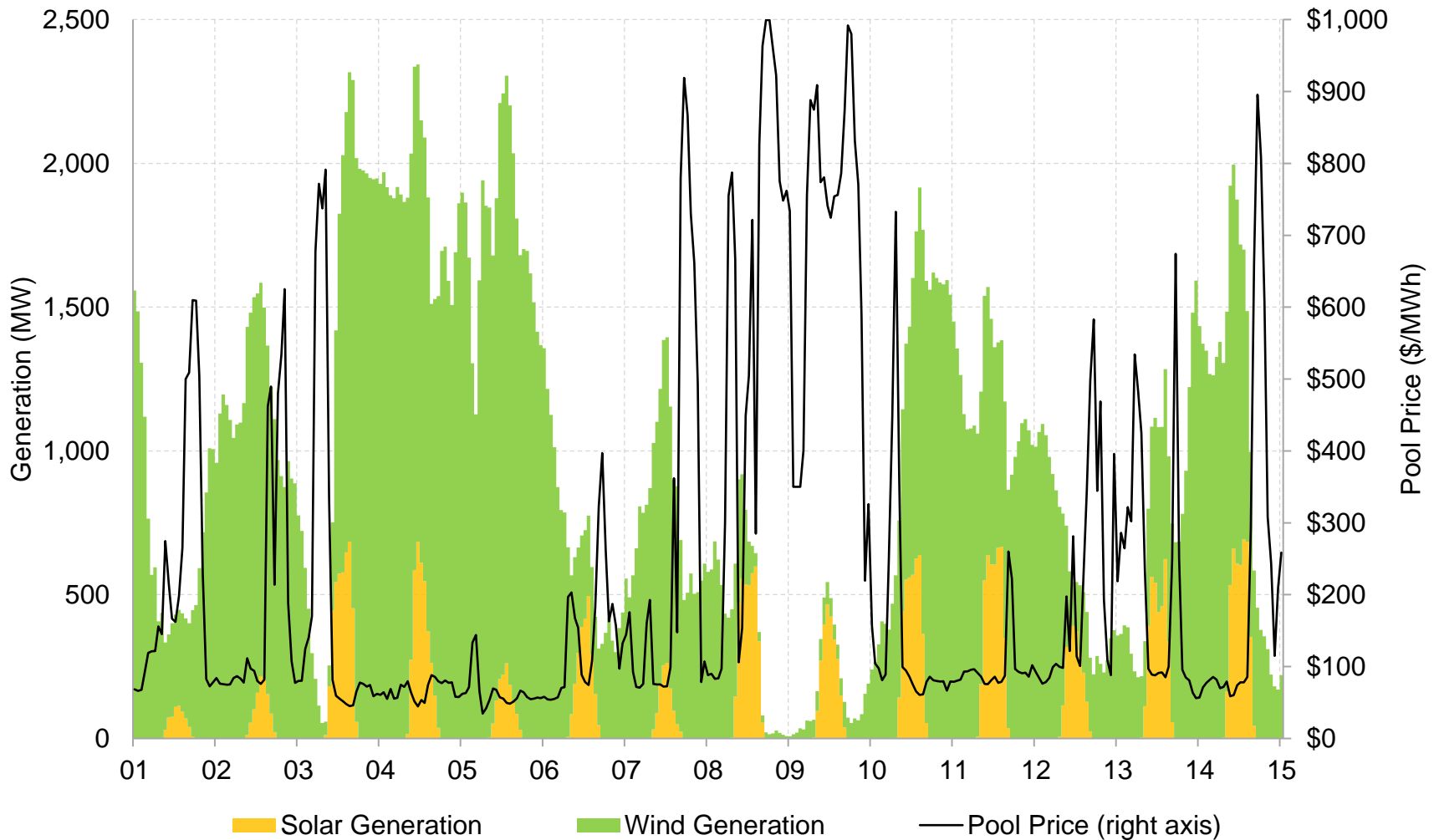
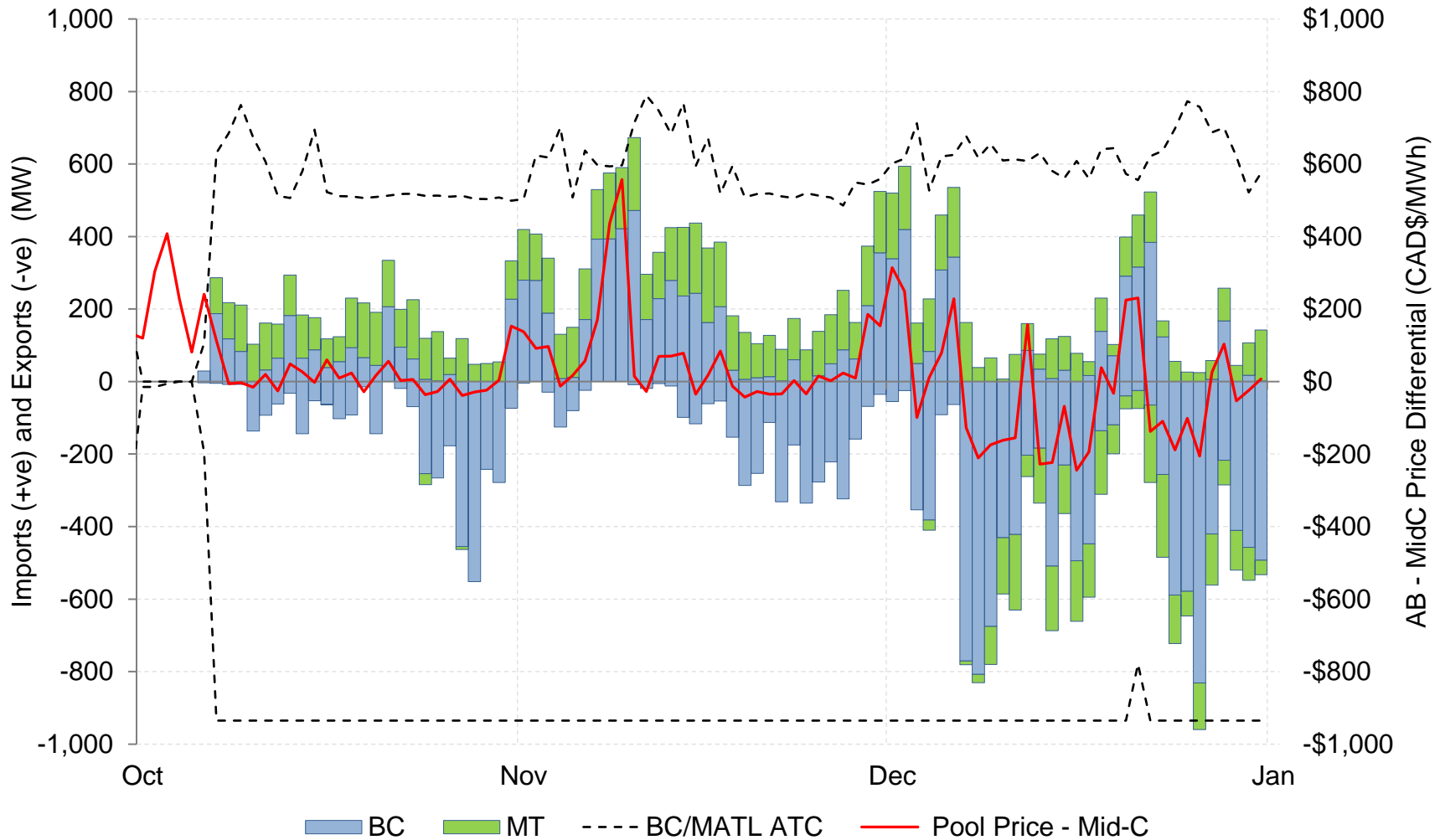


Figure 43: Daily average import and export volumes on BC/MATL, and the average price differential between Alberta and Mid-C (Q4 2022)



Market power

Figure 16: 1- and 2-Firm adjusted PSI, January to December 2022
(30-day rolling average)

% of Hours where Dispatchable
Capacity is Pivotal (30-Day RA)

Pool Price (Dec2022\$)
(30-Day RA)

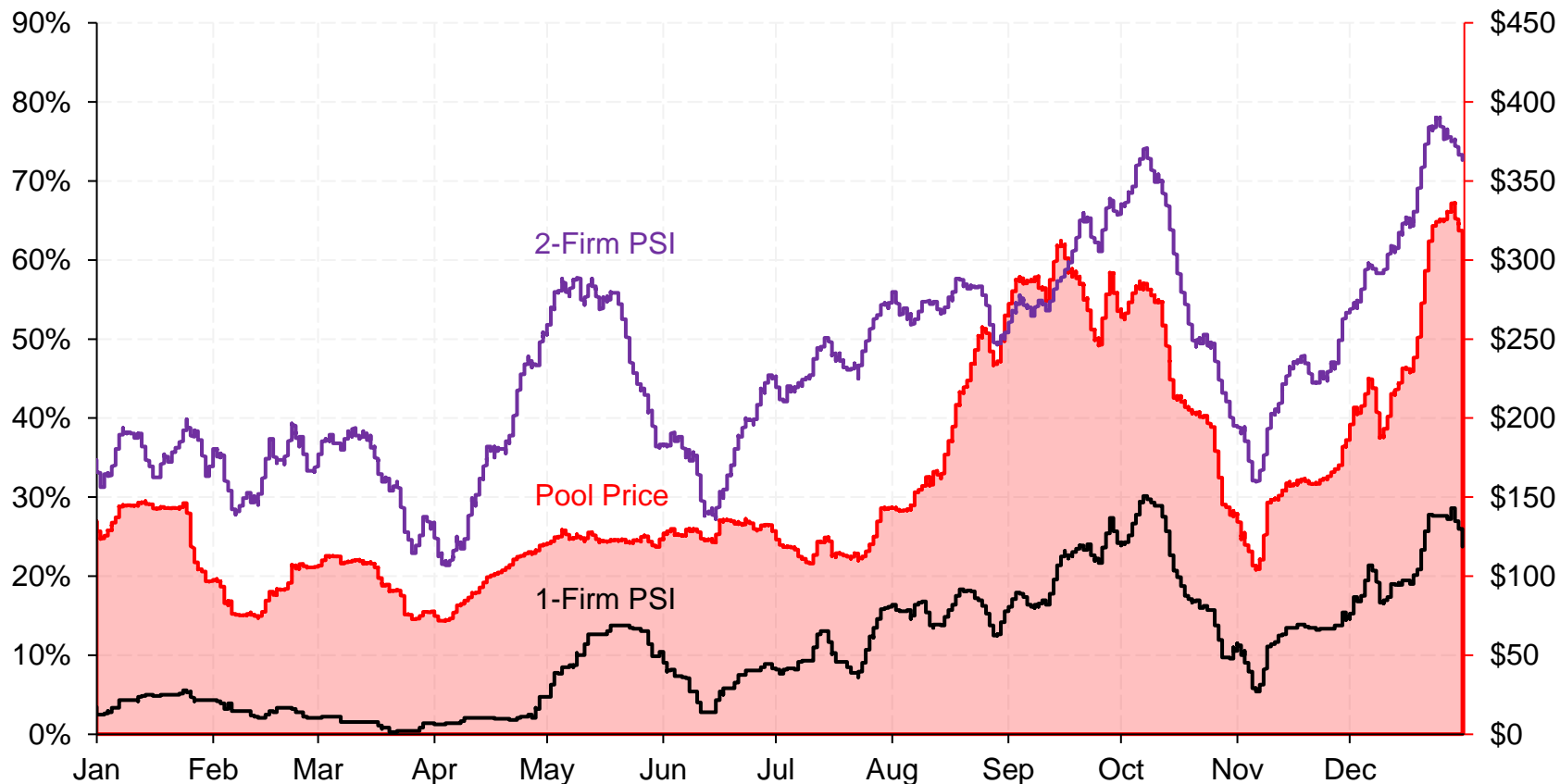


Figure 20: Average pool prices during different market conditions, January to December 2022

Pool Price
(Dec2022\$)

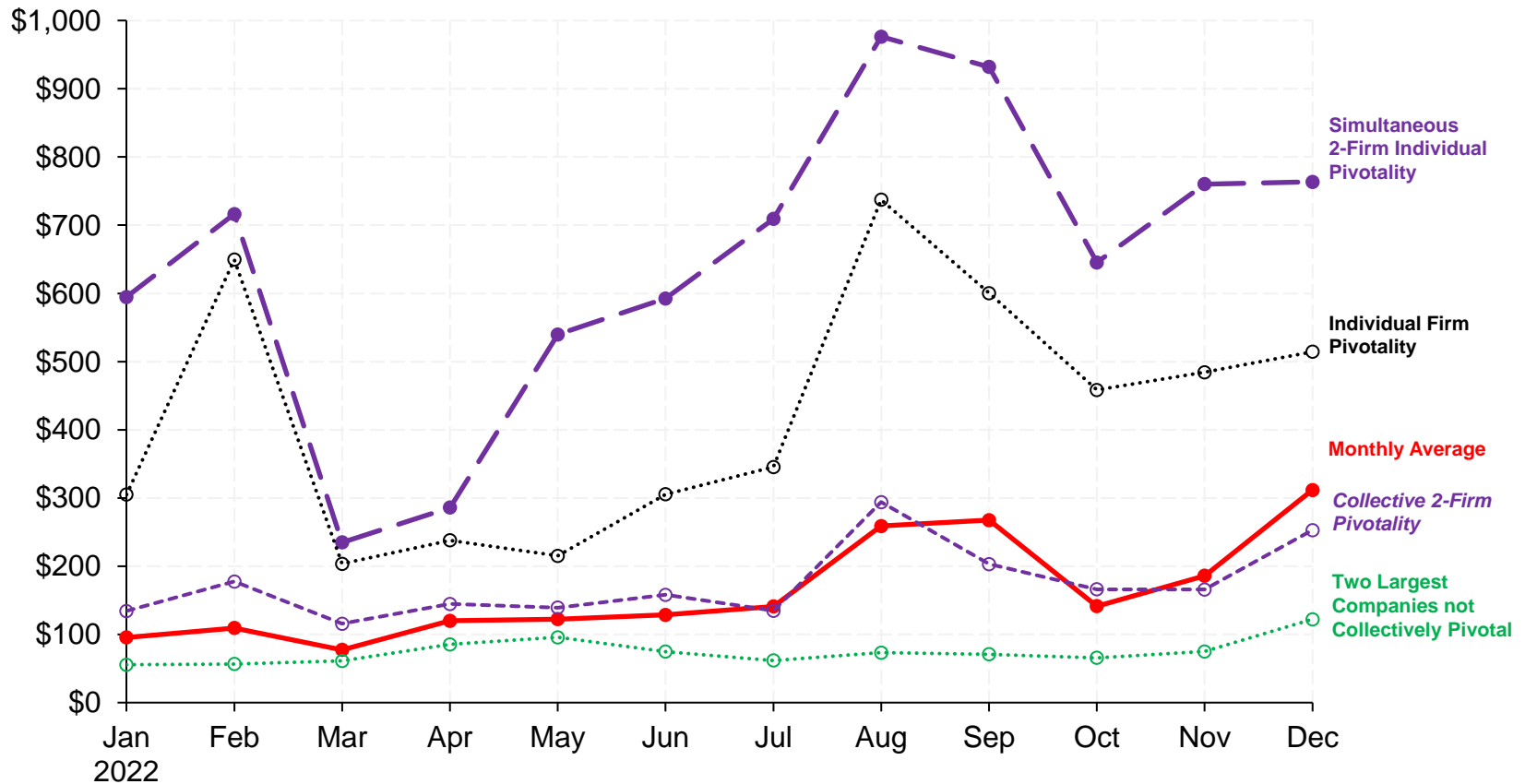


Figure 23: Monthly average observed and counterfactual (SRMC offers) pool prices, January to December 2022

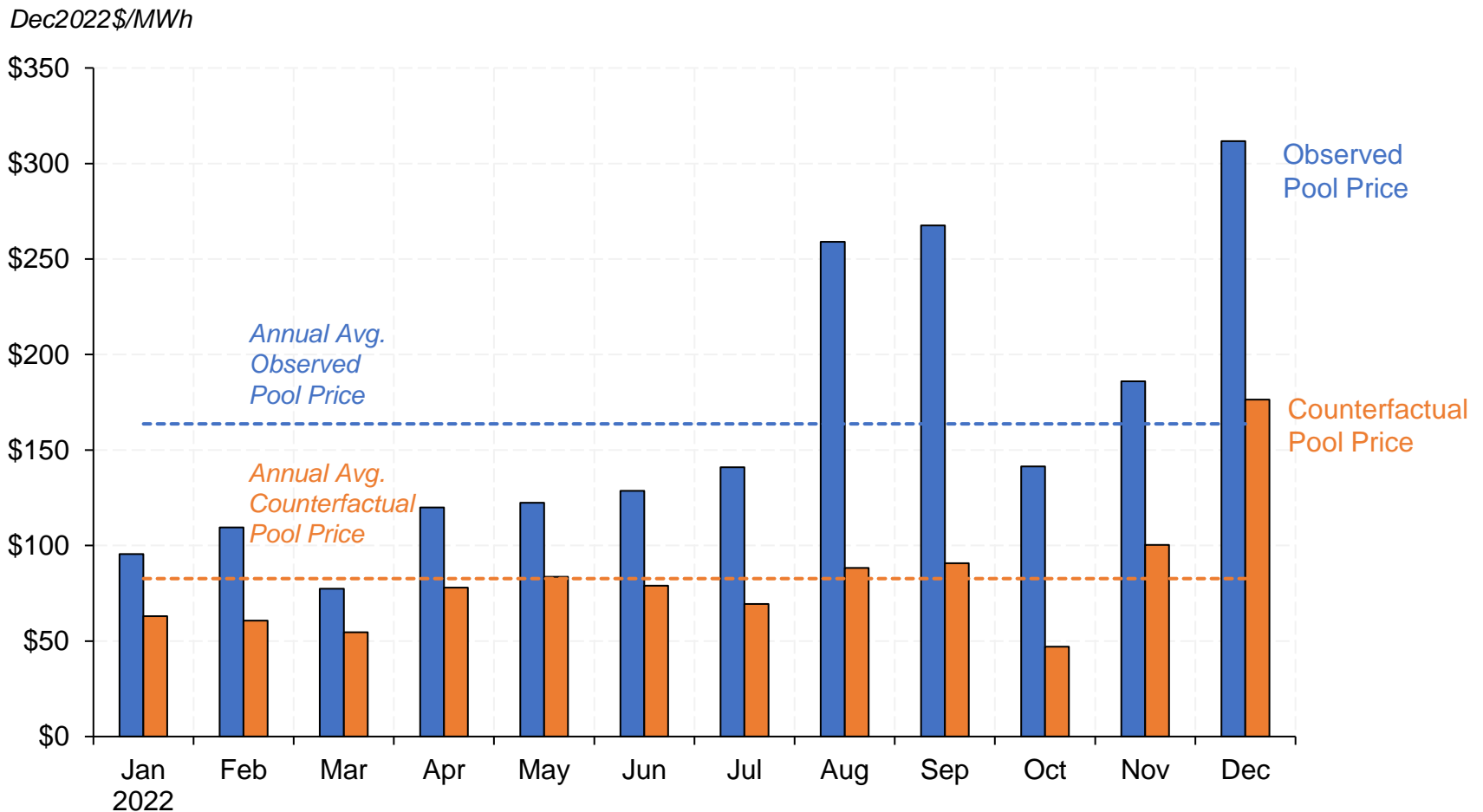
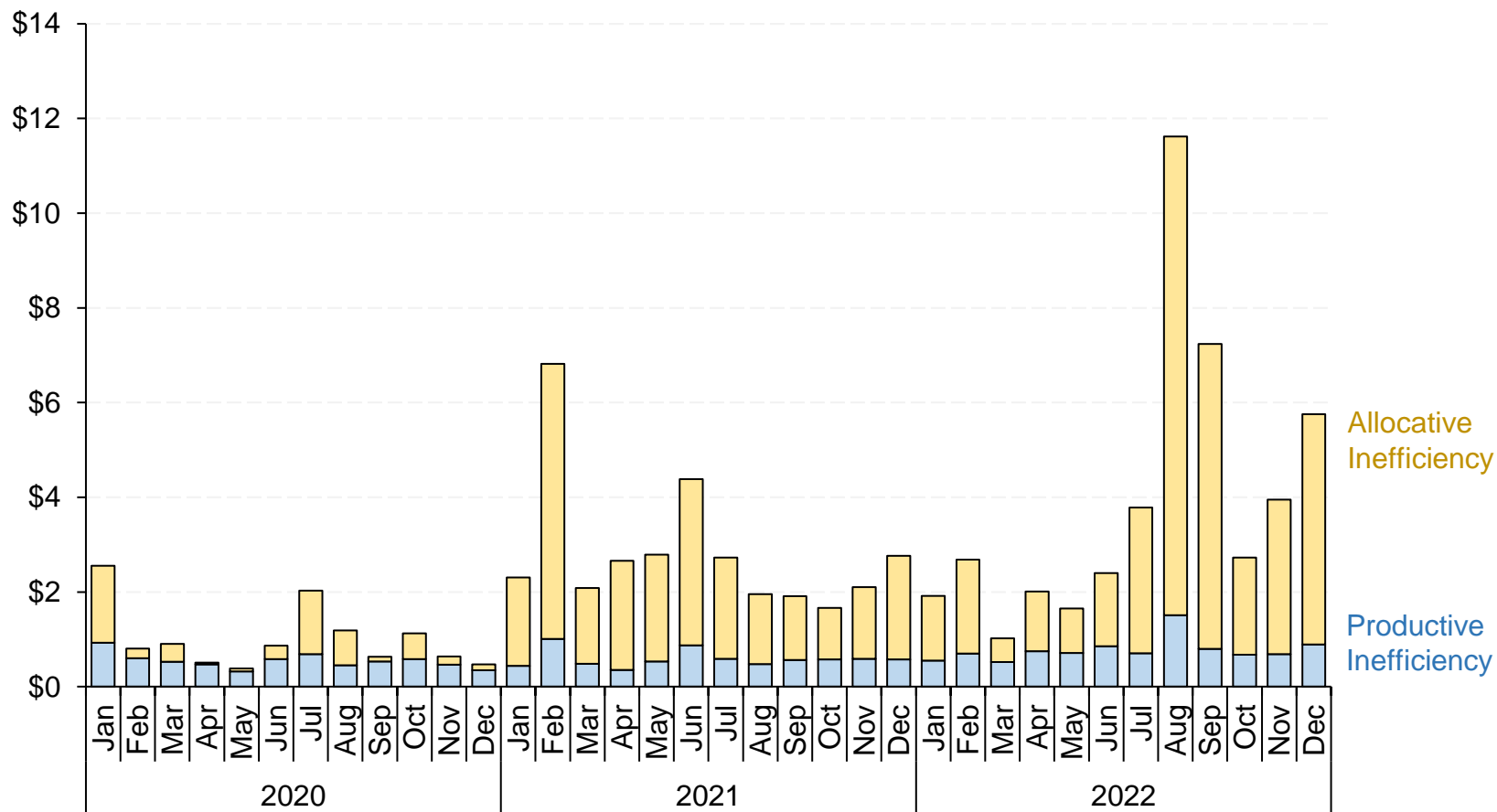


Figure 28: Monthly average static inefficiency, 2020 to 2022

Inefficiency
(Dec2022\$/MWh)



Carbon emission intensity (CEI)

Figure 55: Distribution of average carbon emission intensities in November and December (2019 to 2022)

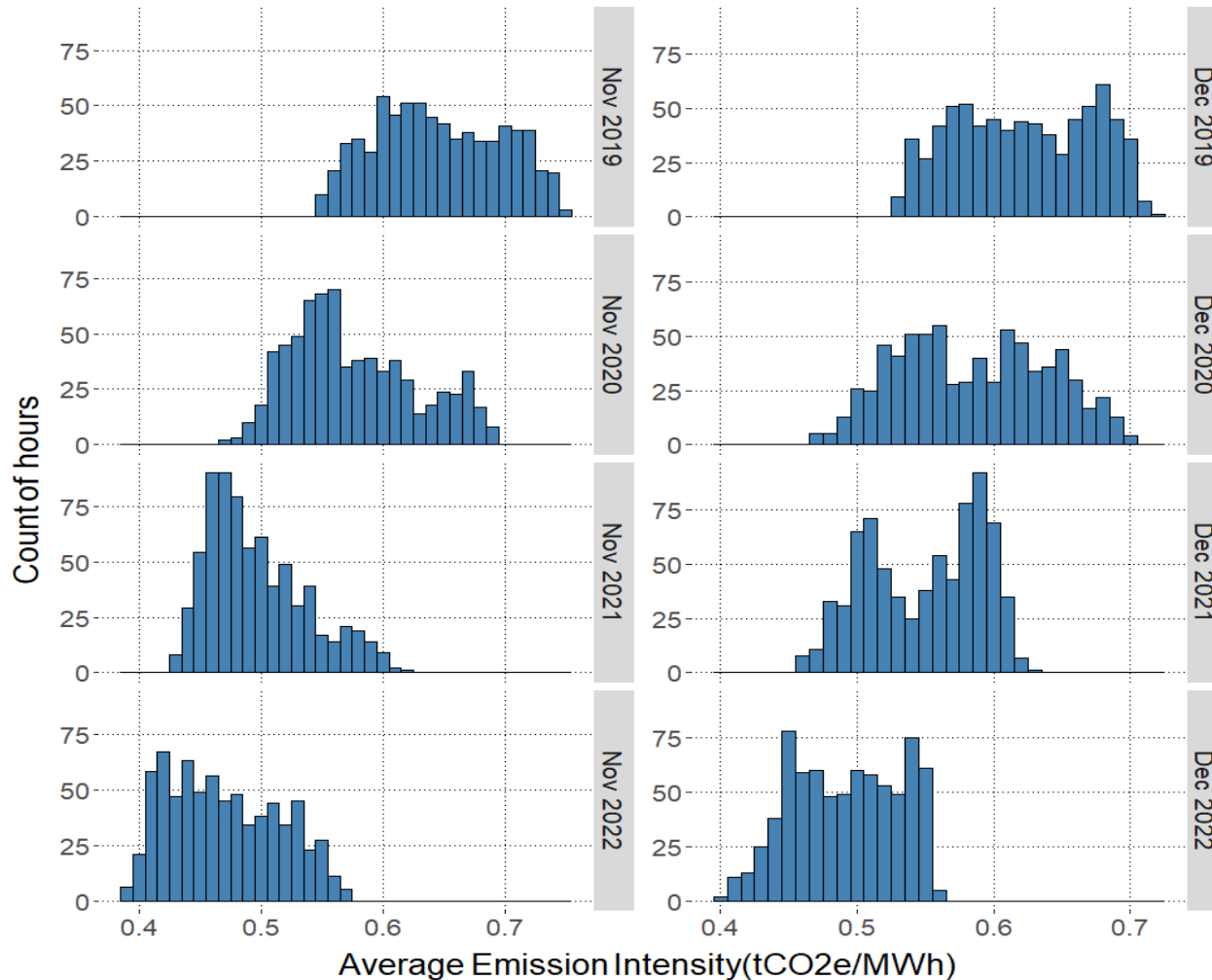
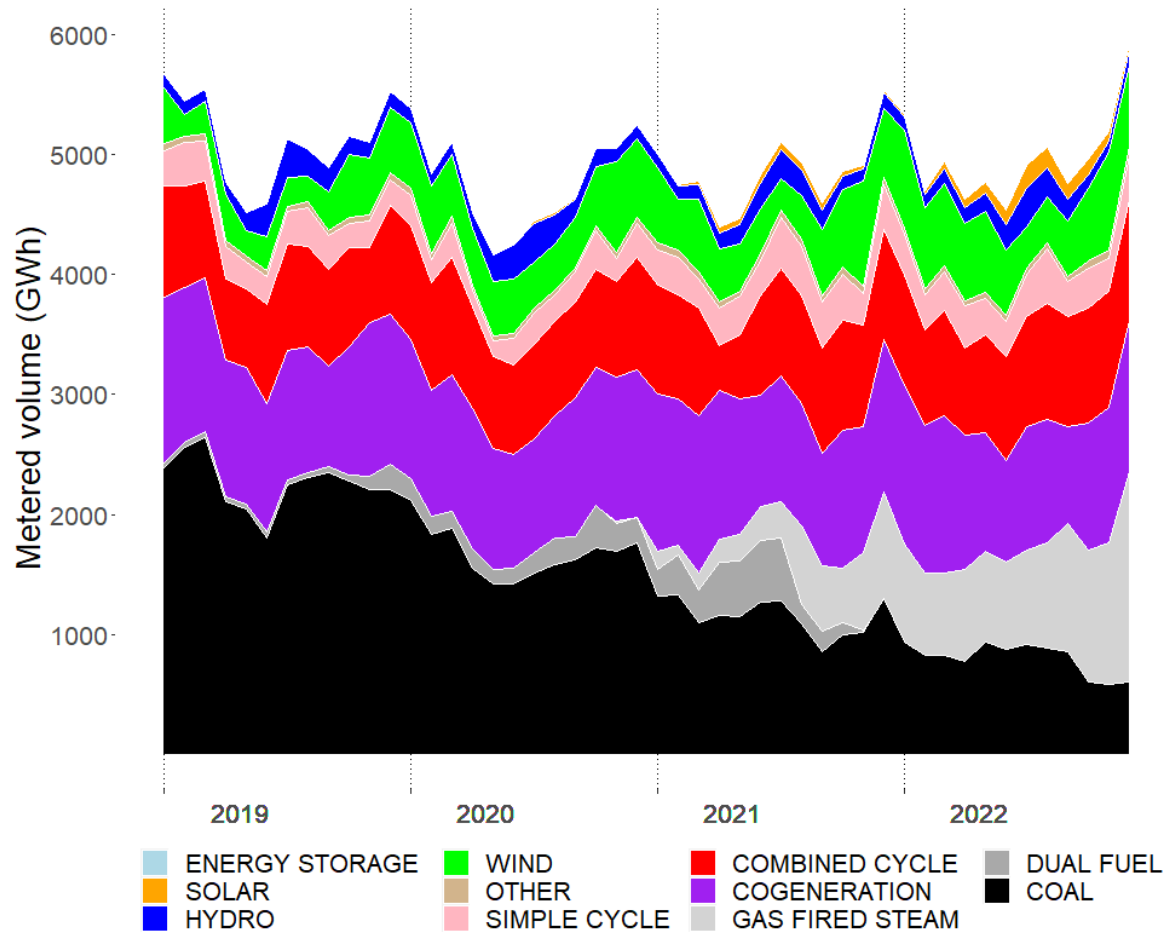


Figure 56: Monthly total net-to-grid generation volumes by fuel type (2019 to 2022)



Operating reserves

Table 8: Average cost (\$/MWh) of active OR products

Product	2022	2021	<i>Difference</i> <i>(2022 - 2021)</i>
Spinning	\$98.16	\$64.41	+\$33.75
Supplemental	\$56.29	\$42.96	+\$13.33
Regulating	\$97.36	\$64.33	+\$33.03
Avg. Pool Price	\$162.46	\$101.93	+\$60.53

Figure 57: Operating reserves dispatched by product and fuel type (2021 and 2022)

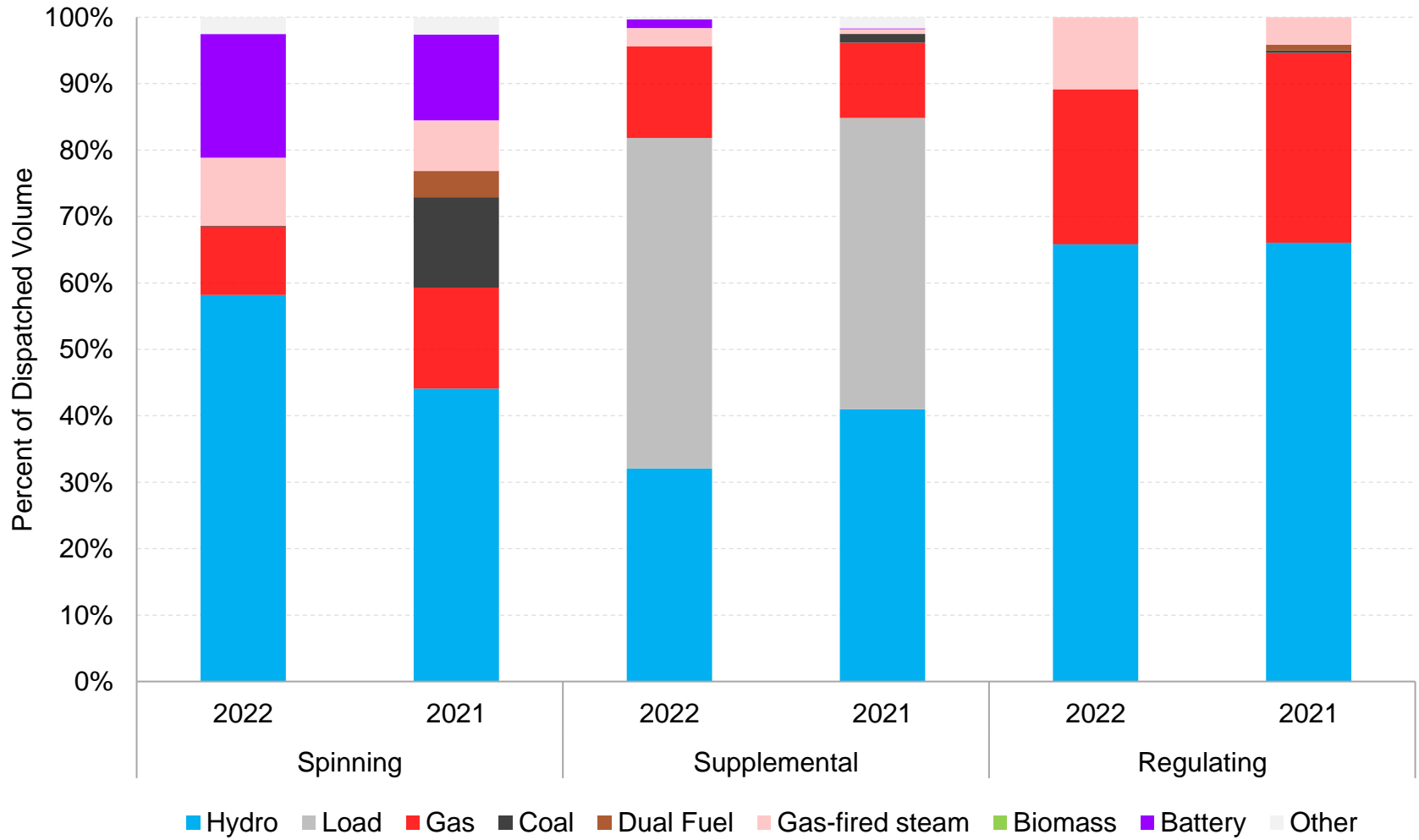


Figure 58: Total cost of active and standby reserves and average pool price by month (January 2021 to December 2022)

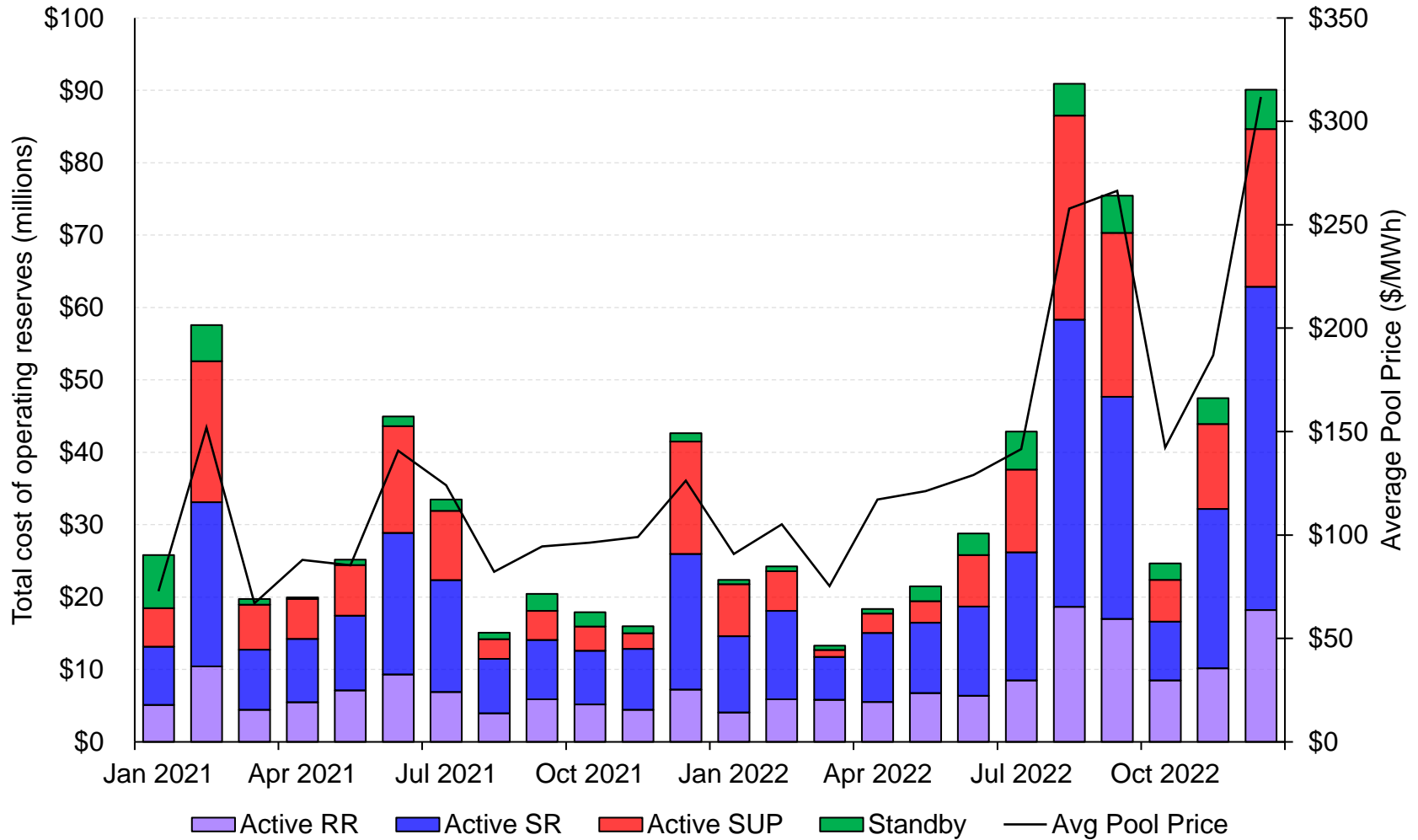


Figure 59: Daily active on-peak supplemental equilibrium price, received price, and pool price (January 1 to December 31, 2022)

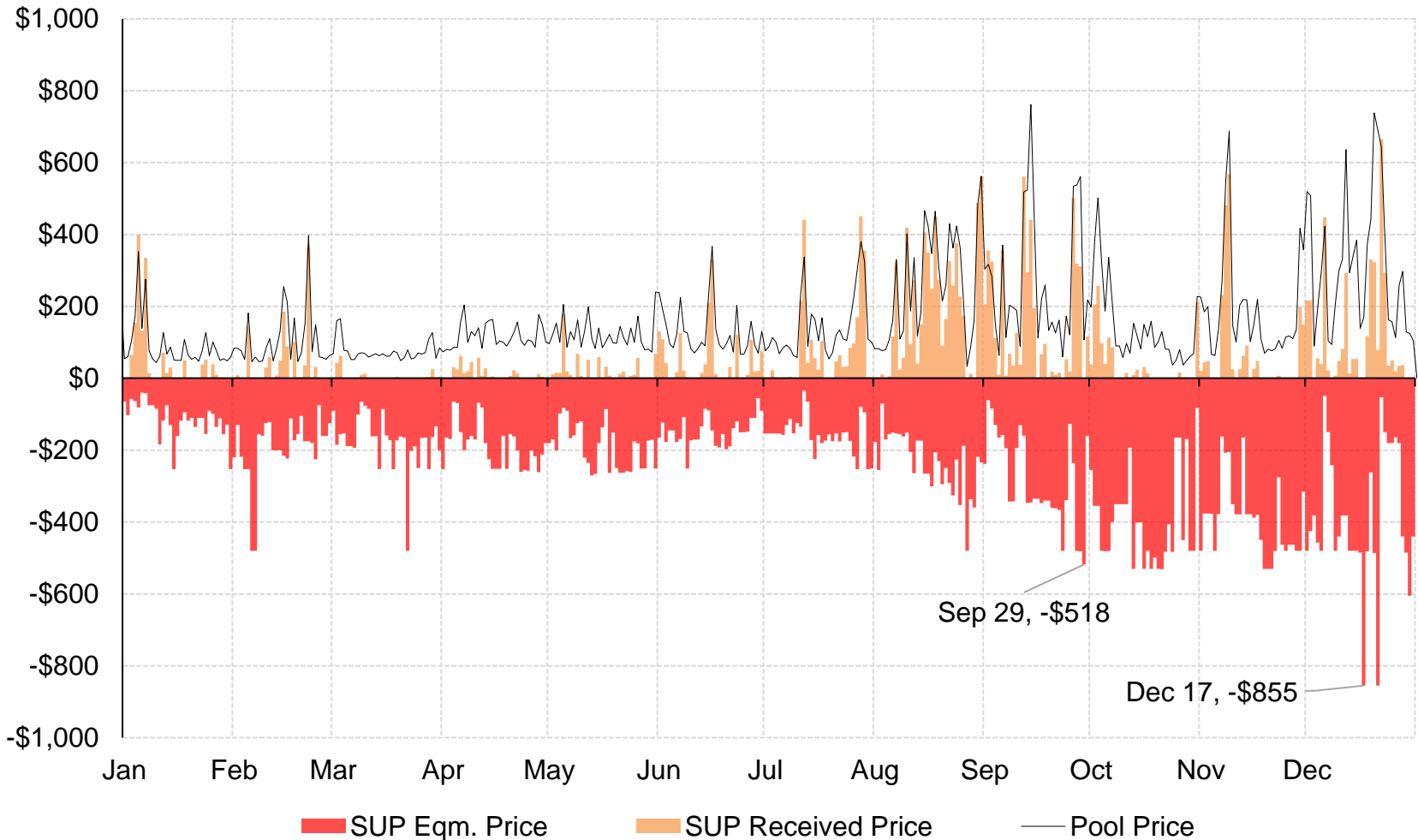
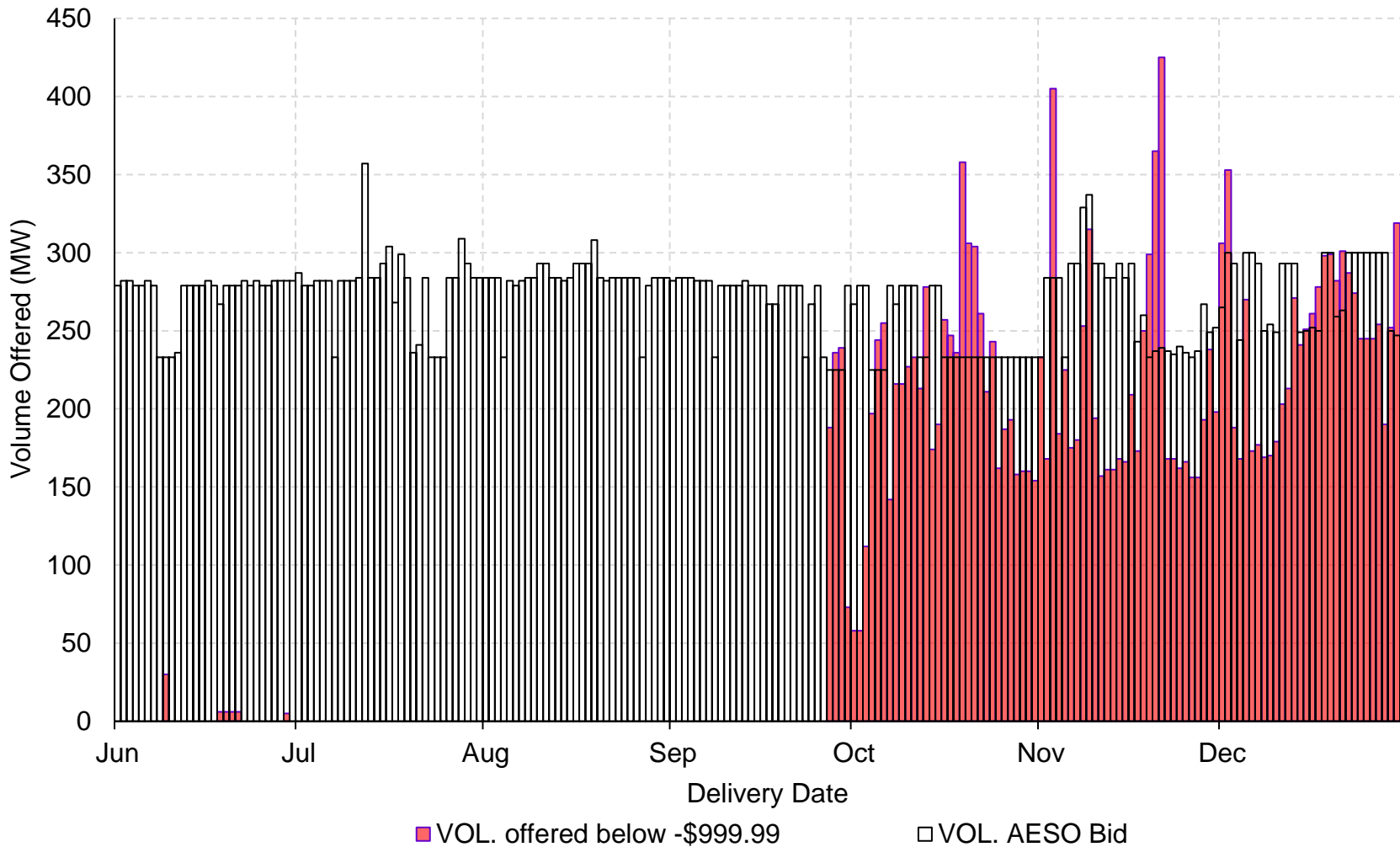


Figure 62: Active on-peak supplemental volumes offered below -\$999.99, and bid volume (June 1 to December 31, 2022)



Forward market

Figure 71: Forward versus realized spark spread by month in 2022

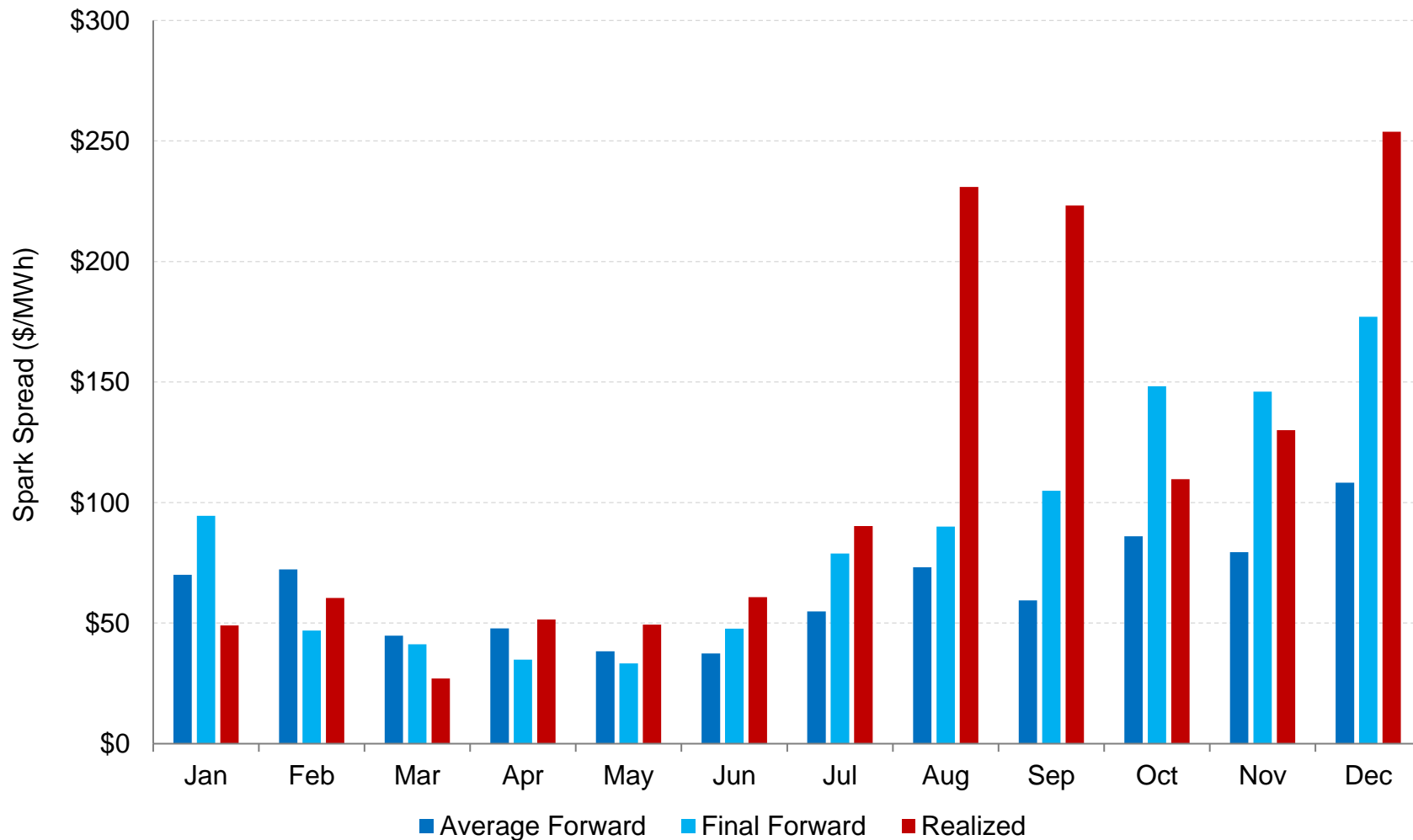


Figure 72: Monthly flat forward prices
(trade dates September 1 to December 31, 2022)

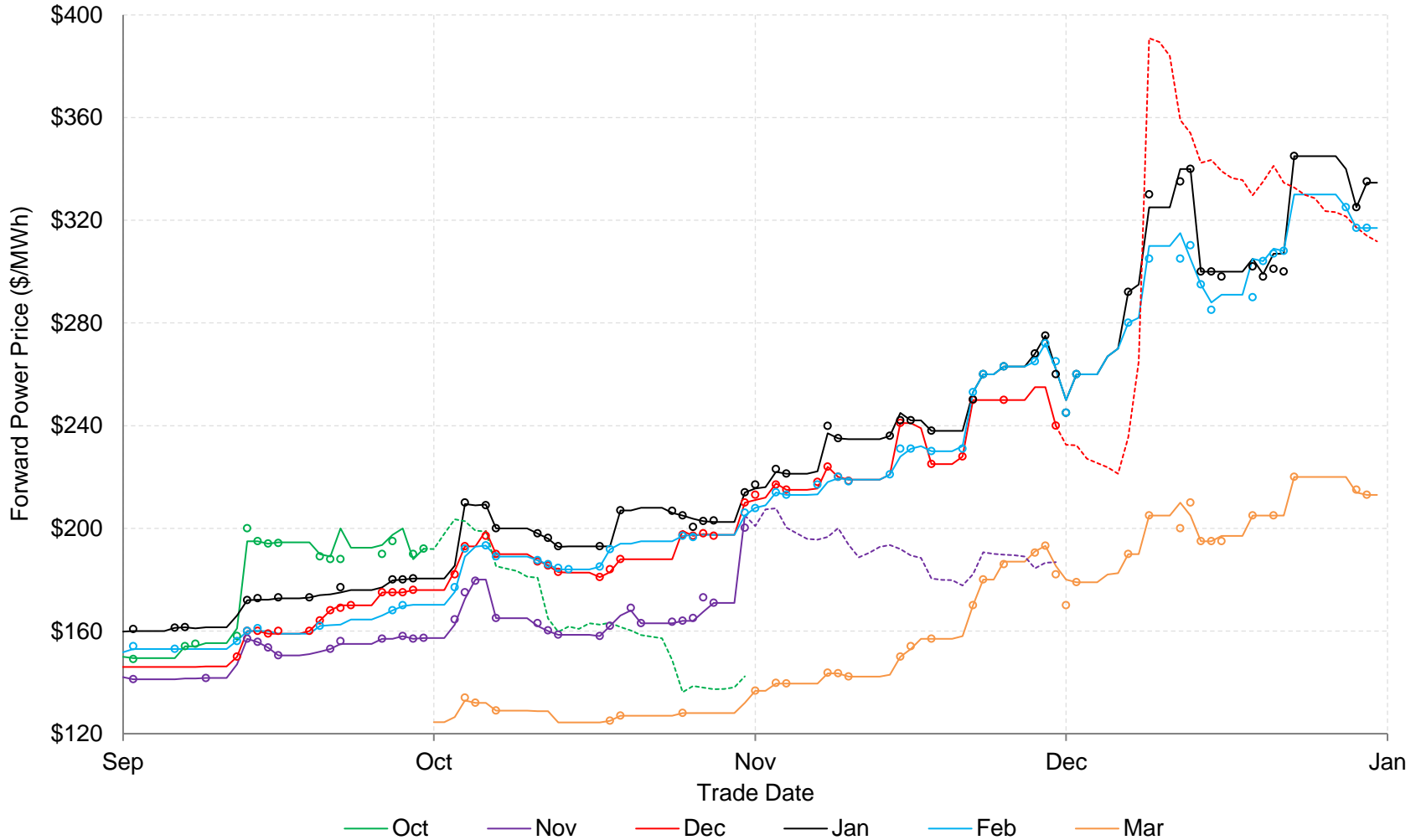


Figure 75: Forward prices compared to realized pool prices, annual contracts (2013 to 2022)

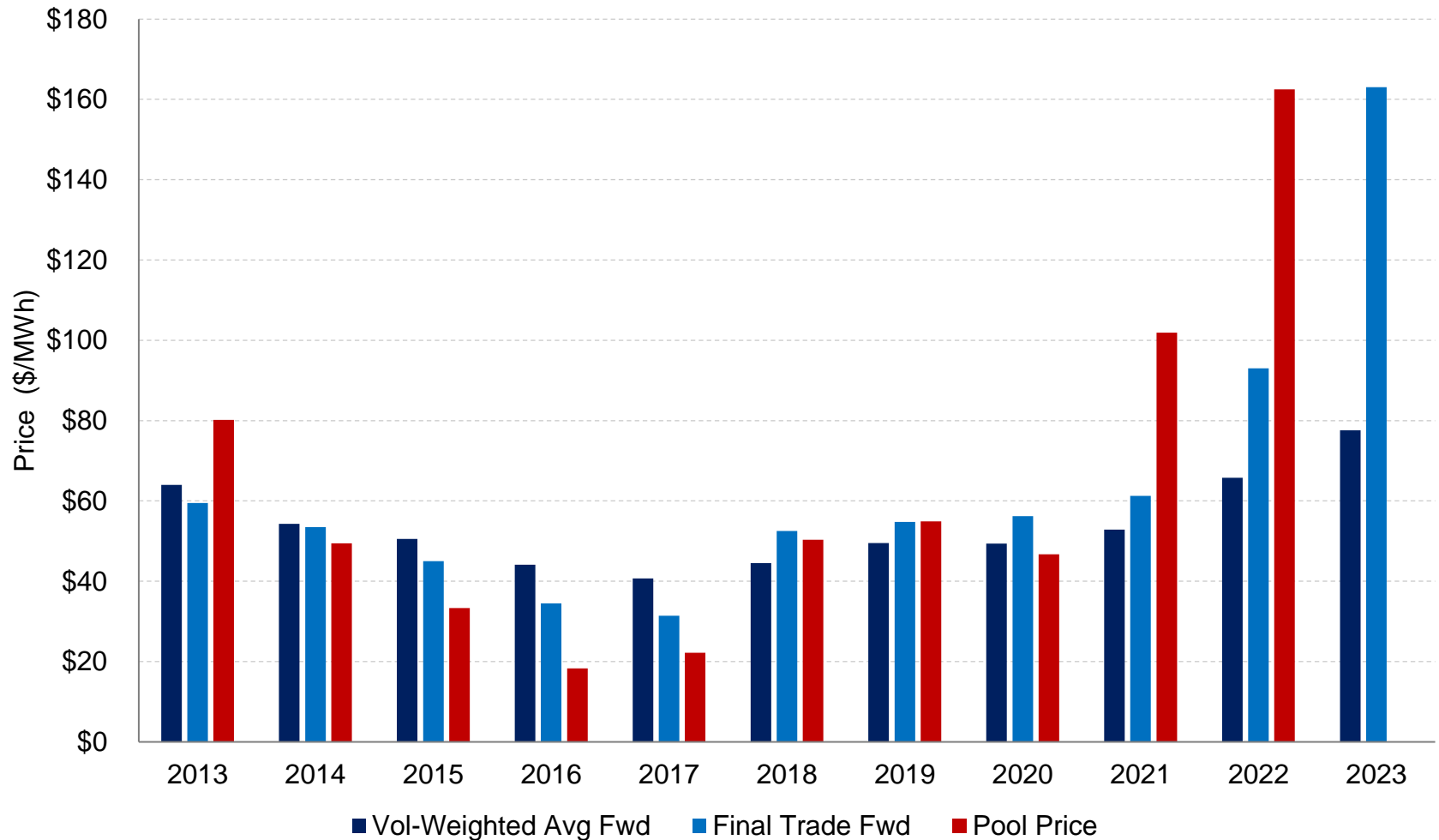
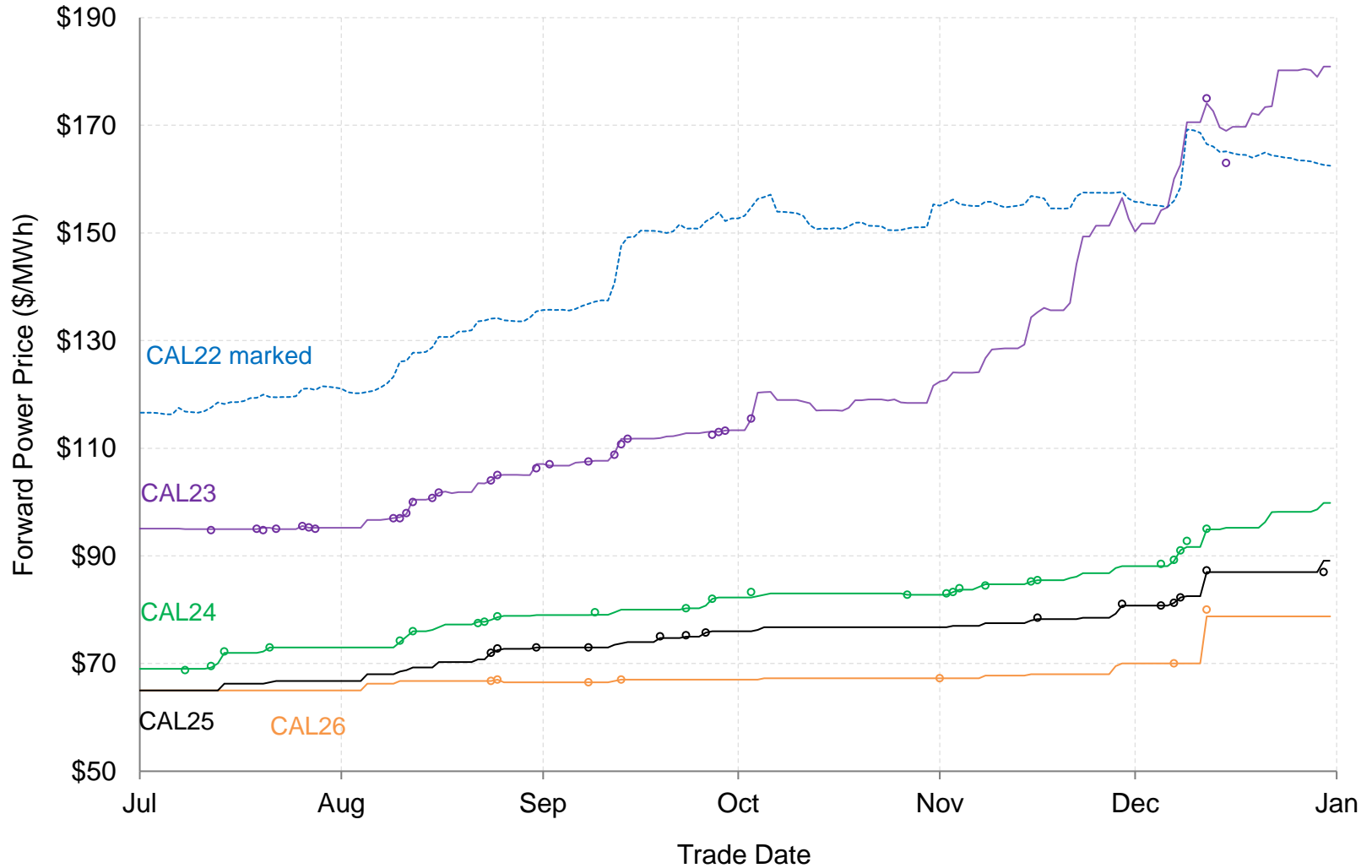


Figure 76: Annual power prices for CAL22 to CAL26
(trade dates July 1 to December 31, 2022)



Retail market

Figure 87: 5-year fixed rate electricity contract prices, residential customers, ENMAX service area (January 1, 2022 to Dec 31, 2022)

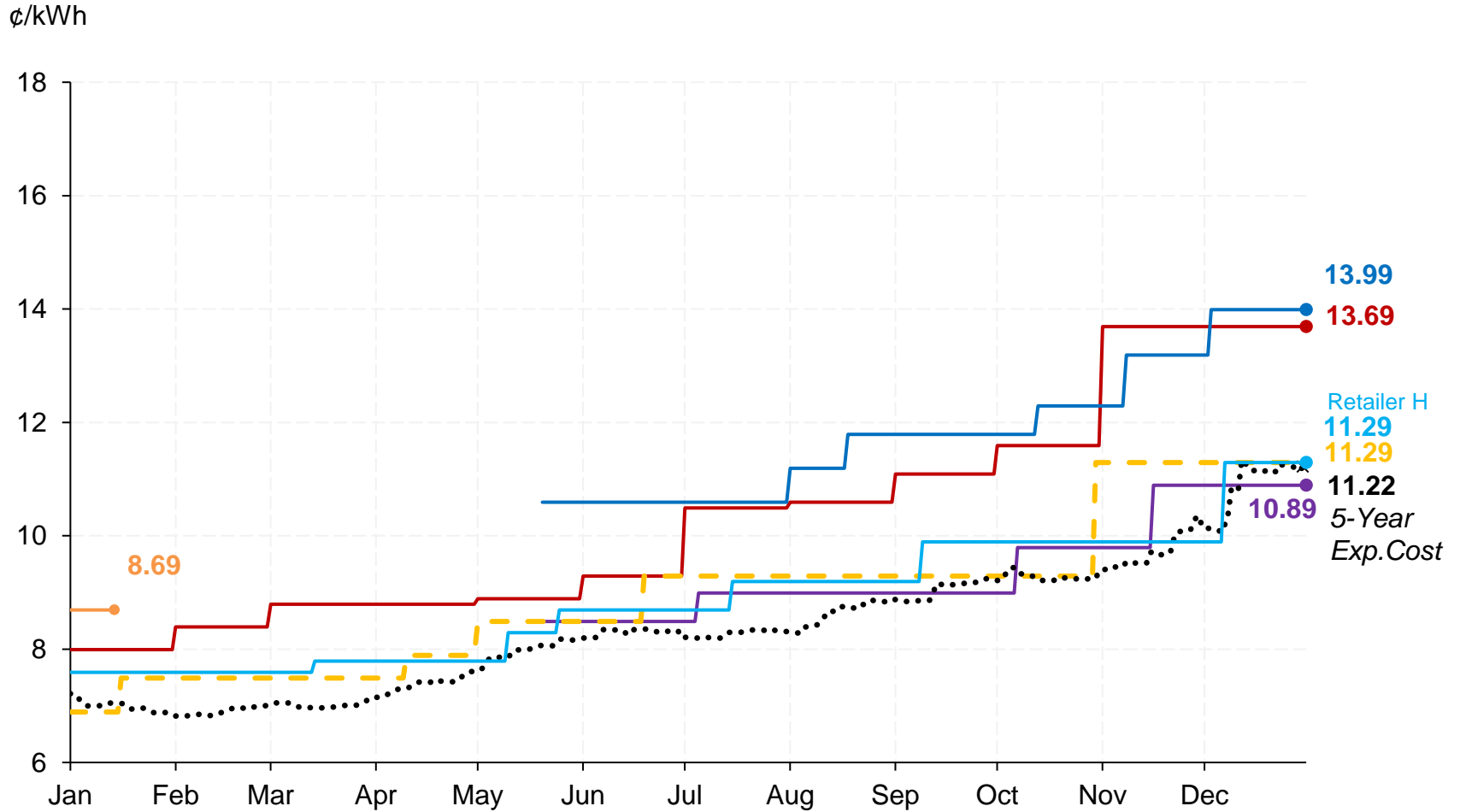


Figure 89: Estimated competitive variable electricity rates vs. RRO, residential customers, ENMAX service area (Q1 2021 to Q4 2022)

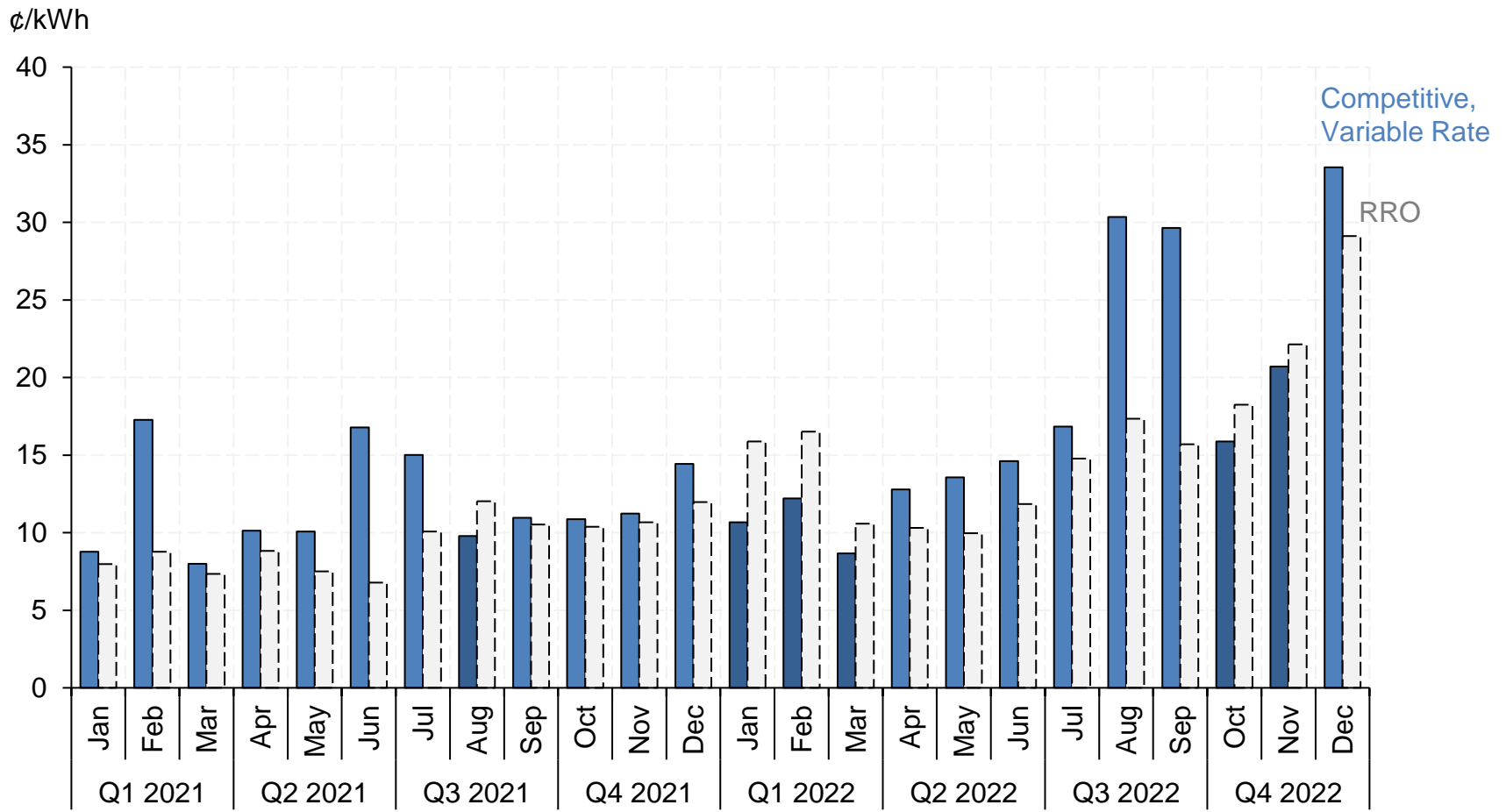
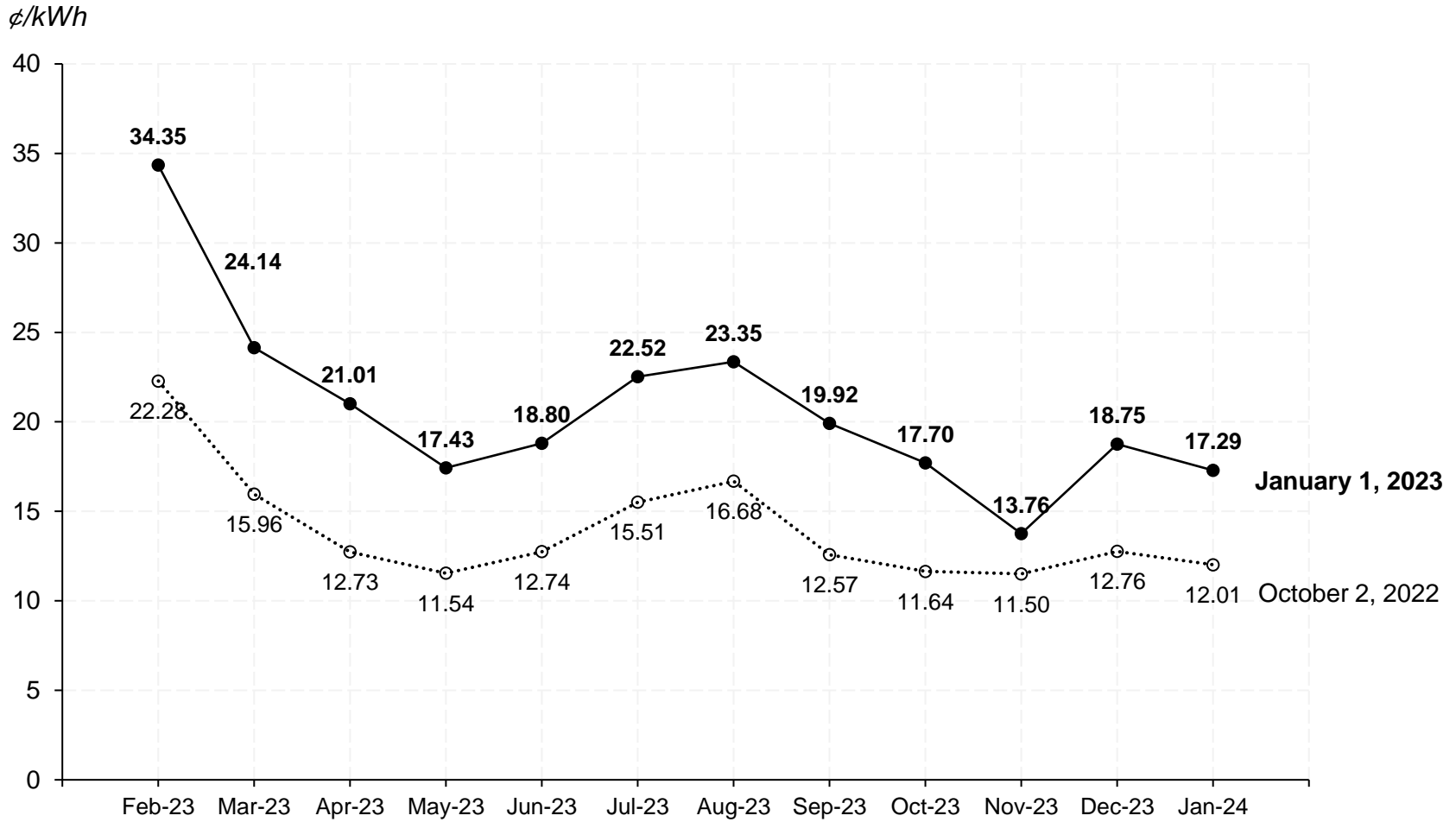


Figure 91: February 2023 to January 2024 residential RRO monthly rate estimates (EPCOR service area), estimates as of October 2, 2022 vs. January 1, 2023



*Figure 93: Expected RRO bill vs. competitive electricity bill
(3-year fixed rate at 9.55 ¢/kWh, \$6.85/month)*

