



# Use of bilateral gas and electricity prices in ISO/RTO markets

**Monitors Choice Session**

**2023 Annual Meeting of the Market Monitors**

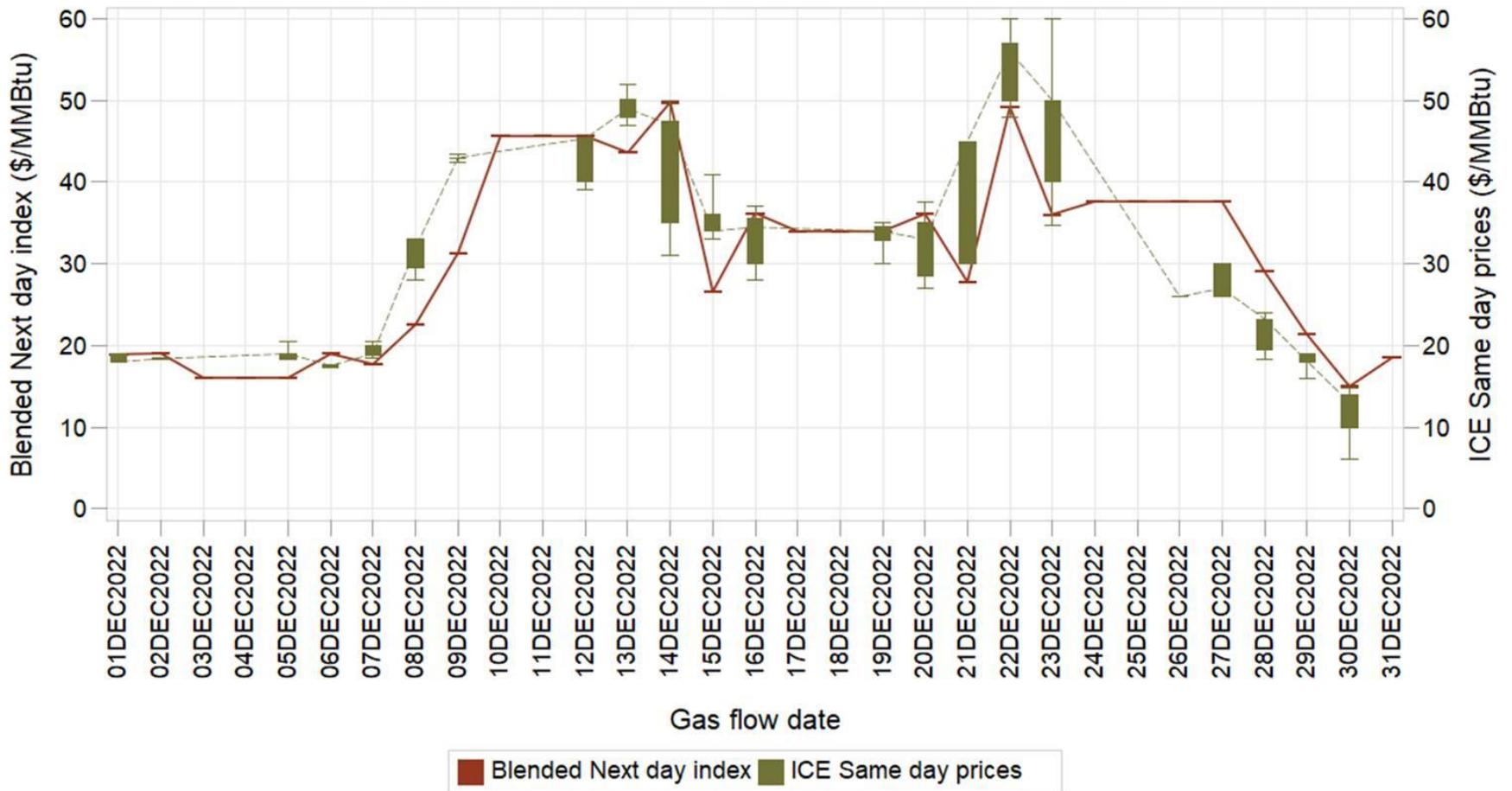
**June 1, 2023**

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Department of Market Monitoring  
California Independent System Operator

# Use of bilateral gas price indices in CAISO markets

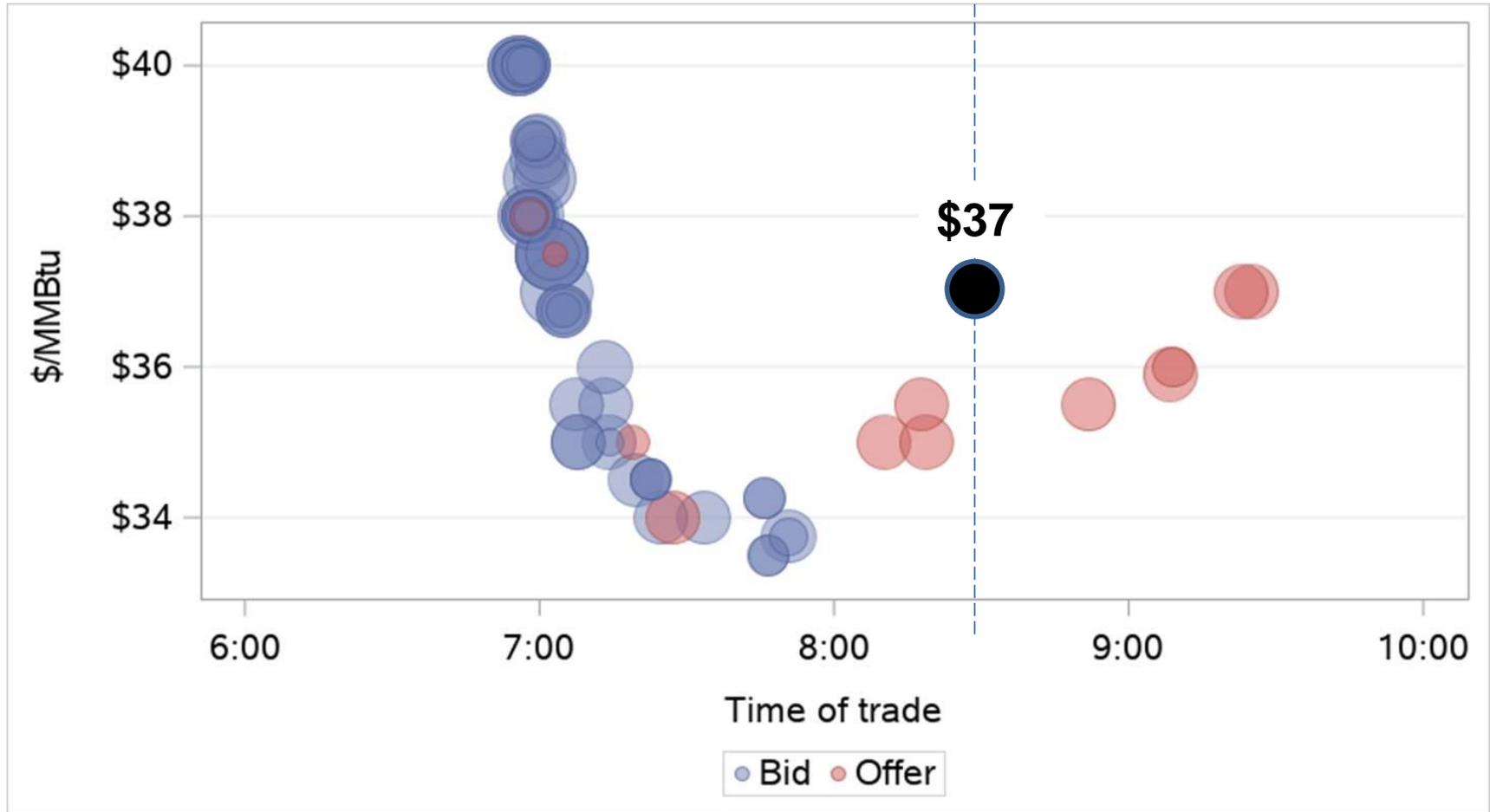
- Local market power mitigation
  - Energy bids capped at estimated marginal cost when congestion occurs and the local market is structurally uncompetitive
  - Bid caps for day-ahead market based on next day gas trades occurring on ICE (8 to 9 am)
  - Thresholds (+10 to 25%) used to automatically approve real-time bid cap increases based on same day gas trades occurring on ICE (8 to 9 am)
- Start-up and minimum load bid costs
  - Capped at 125% of estimated costs based on gas price indices
- System level bid cap
  - Hard bid cap and penalty prices raised to \$2,000/MW when gas price indices justify gas-fired unit bids > \$1,000/MW.

# Next day vs same day gas prices (ICE)

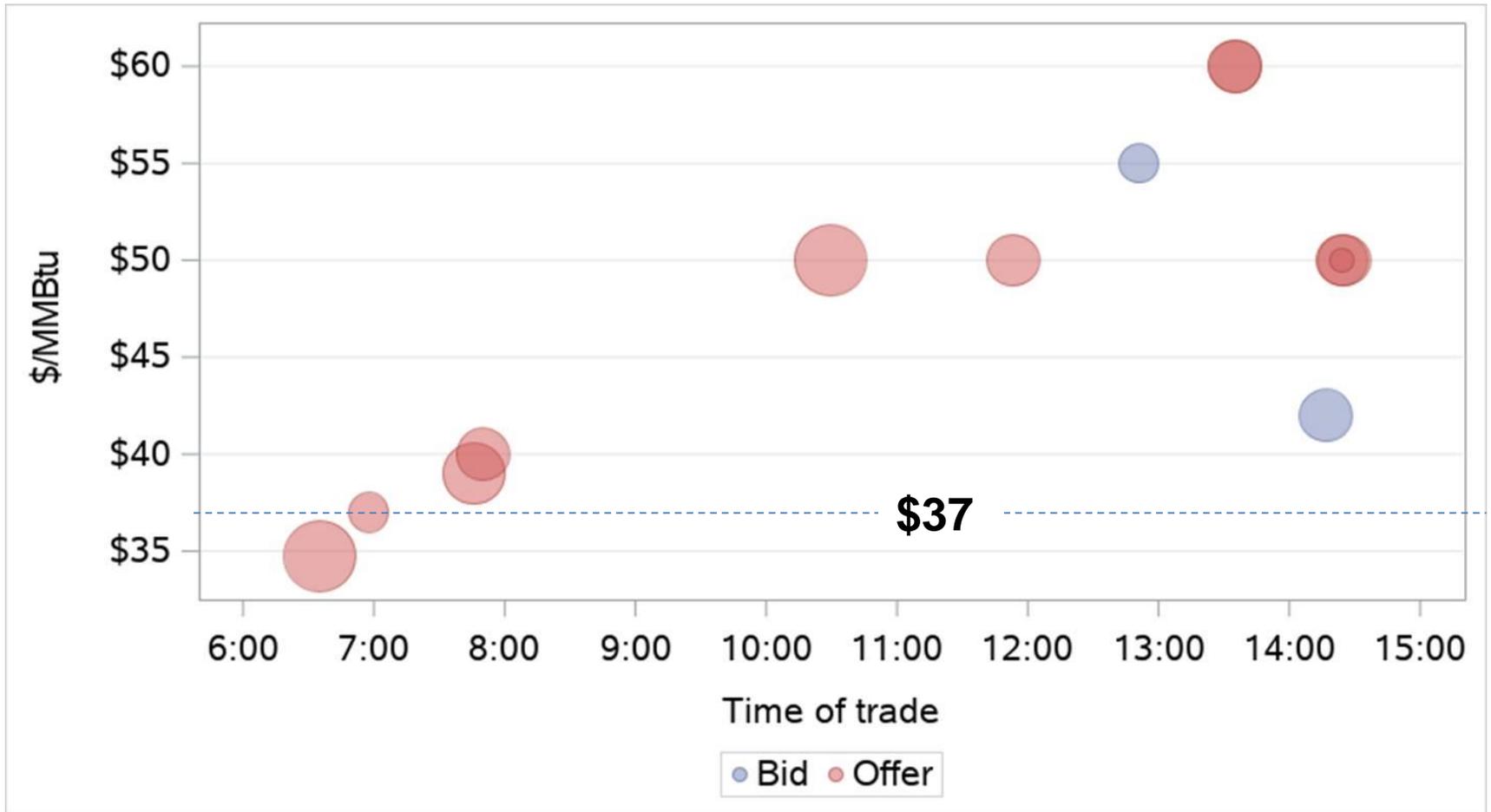


# SoCal Citygate ICE next-day gas trades

## December 22 trade date = December 23 flow date



# SoCal Citygate ICE same-day trades December 23 flow date



# CAISO's approach for 831 compliance

- Hard cap raised to \$2,000 if:
  - CAISO cost-verifies bid above \$1,000 from a specific resource, or
  - The CAISO-calculated Maximum Import Bid Price (MIBP) exceeds \$1,000
- When the hard cap is raised to \$2,000:
  - Internal resources still subject to cost-verification for bids above \$1,000/MW
  - Resource adequacy imports can bid to the maximum of (1) the highest cost-verified bid or (2) the Maximum Import Bid Price
  - Bids up to \$2,000 can be submitted by non-resource adequacy imports, load/demand, exports, and virtual bids.
  - Hours in the day-ahead with \$2,000 bid cap will carry over to real-time.
    - \$2,000 cap may be triggered in real-time for additional hours.
- System energy penalty price
  - If bid cap raised to \$2,000 any hour, penalty prices pegged to the \$2,000 cap used for all hours in the day-ahead market
  - If the real-time MIBP exceeds \$1,000 in any hour, the penalty prices will be scaled to the \$2,000 bid cap for the entire real-time market horizon

# CAISO's approach for using ICE regional electric market prices to allow bids > \$1,000

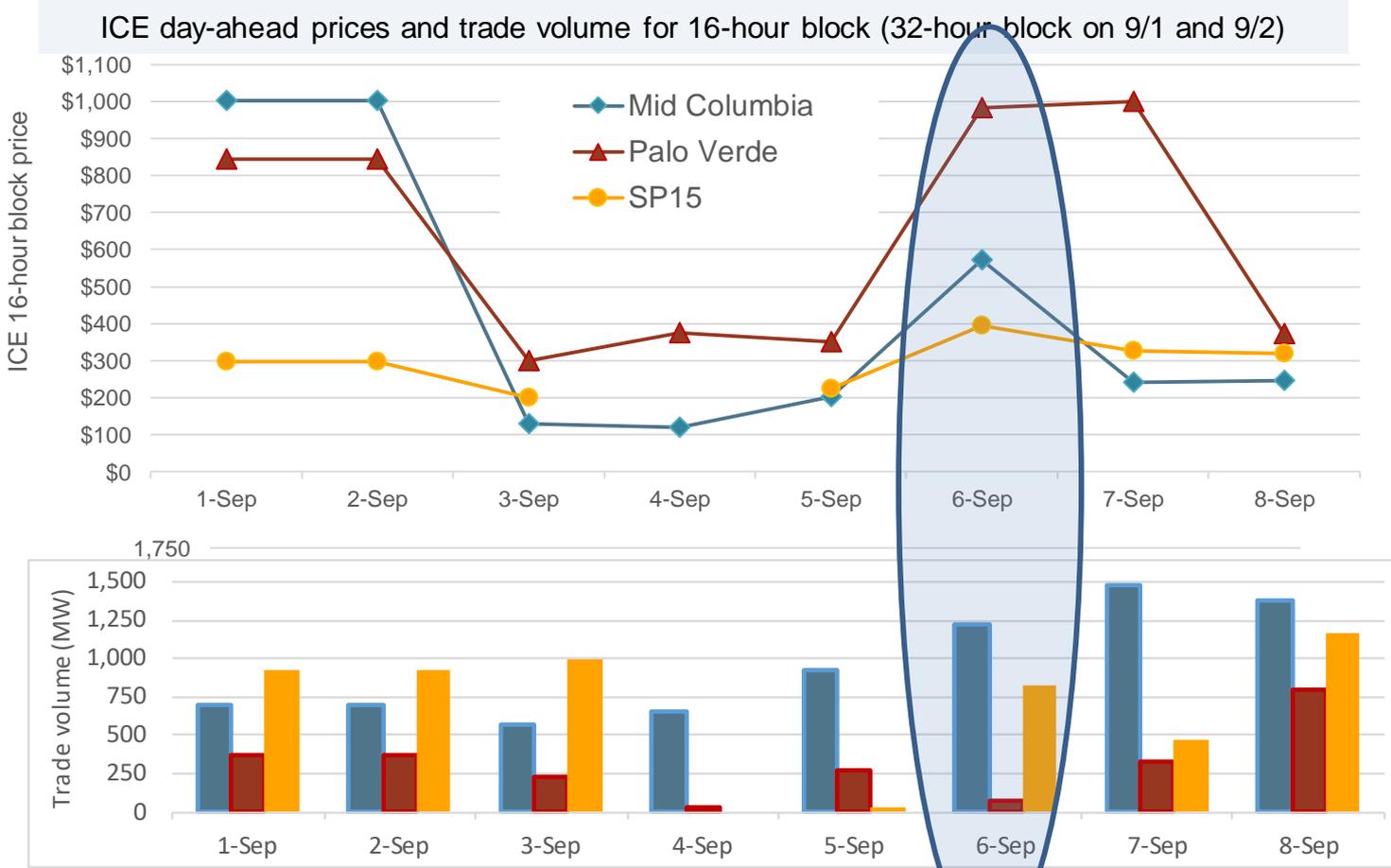
- Calculate weighted average prices from trades on ICE for next day peak power block (hours 7-22) at 9 am
- Take maximum of two regional hubs:
  - Mid-Columbia (northwest)
  - Palo Verde (southwest)
- Convert ICE day-ahead block price to hourly Maximum Import Bid Price (MIBP) based on historical hourly CAISO market prices.
  - MIBP capped at \$2,000/MWh
- For hours when MIBP > \$1,000/MWh:
  - Resource adequacy import bids  $\leq$  MIBP automatically cost-approved and can set LMP
  - Non-resource adequacy import bids up to \$2,000 automatically cost-approved and can set LMP

# FERC liquidity criteria for bilateral electric market price indices

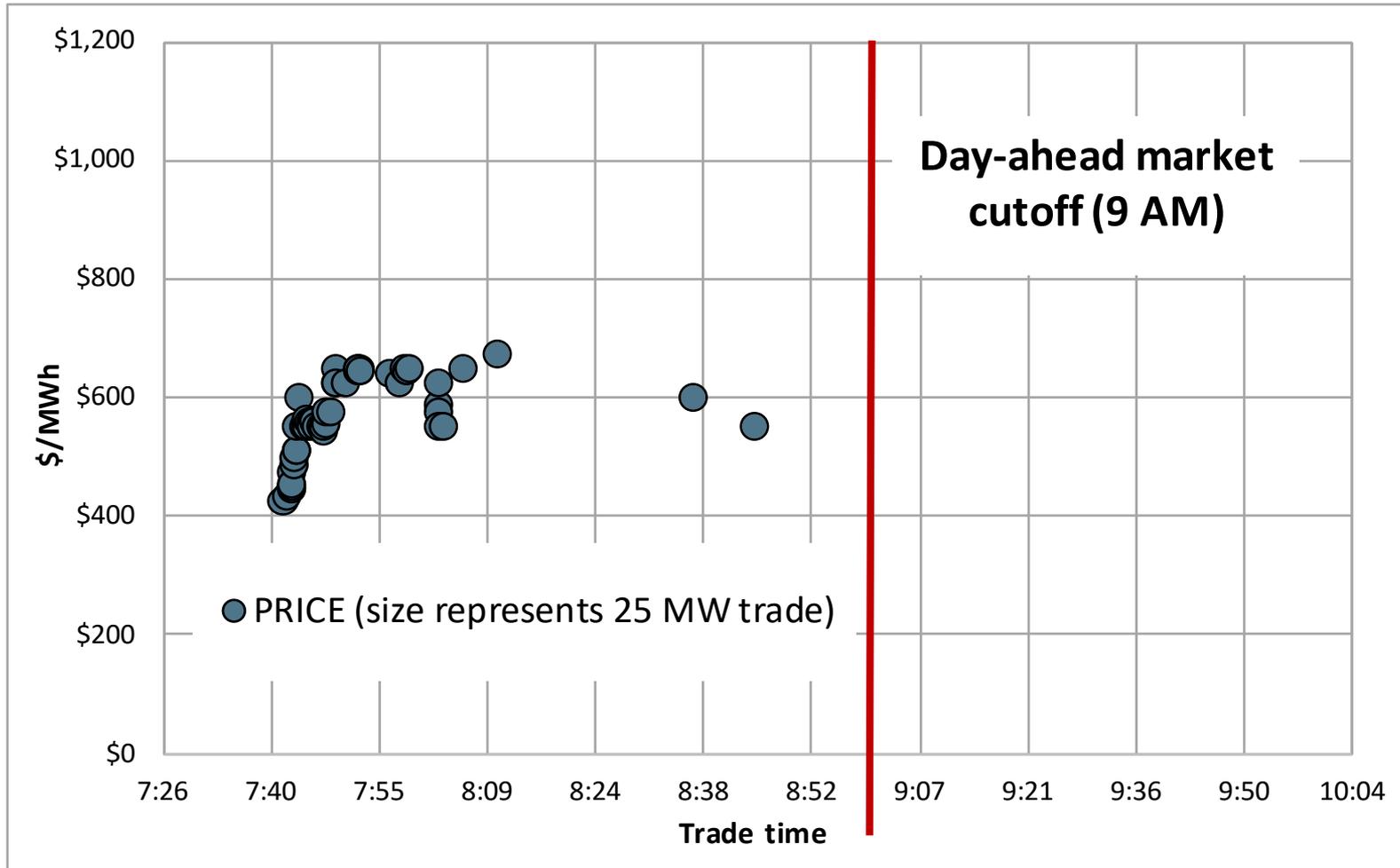
- Over 90 day review period, price index must meet at least one of the following:
  - Average daily volume traded of at least 2,000 MWh
    - 16 hour block x 125 MW = 2,000 MWh
  - Average daily number of transactions of five or more
  - Average daily number of counterparties of five or more

***Major Western trading hubs easily meet these over 90 day period, but not on all days when market is tightest***

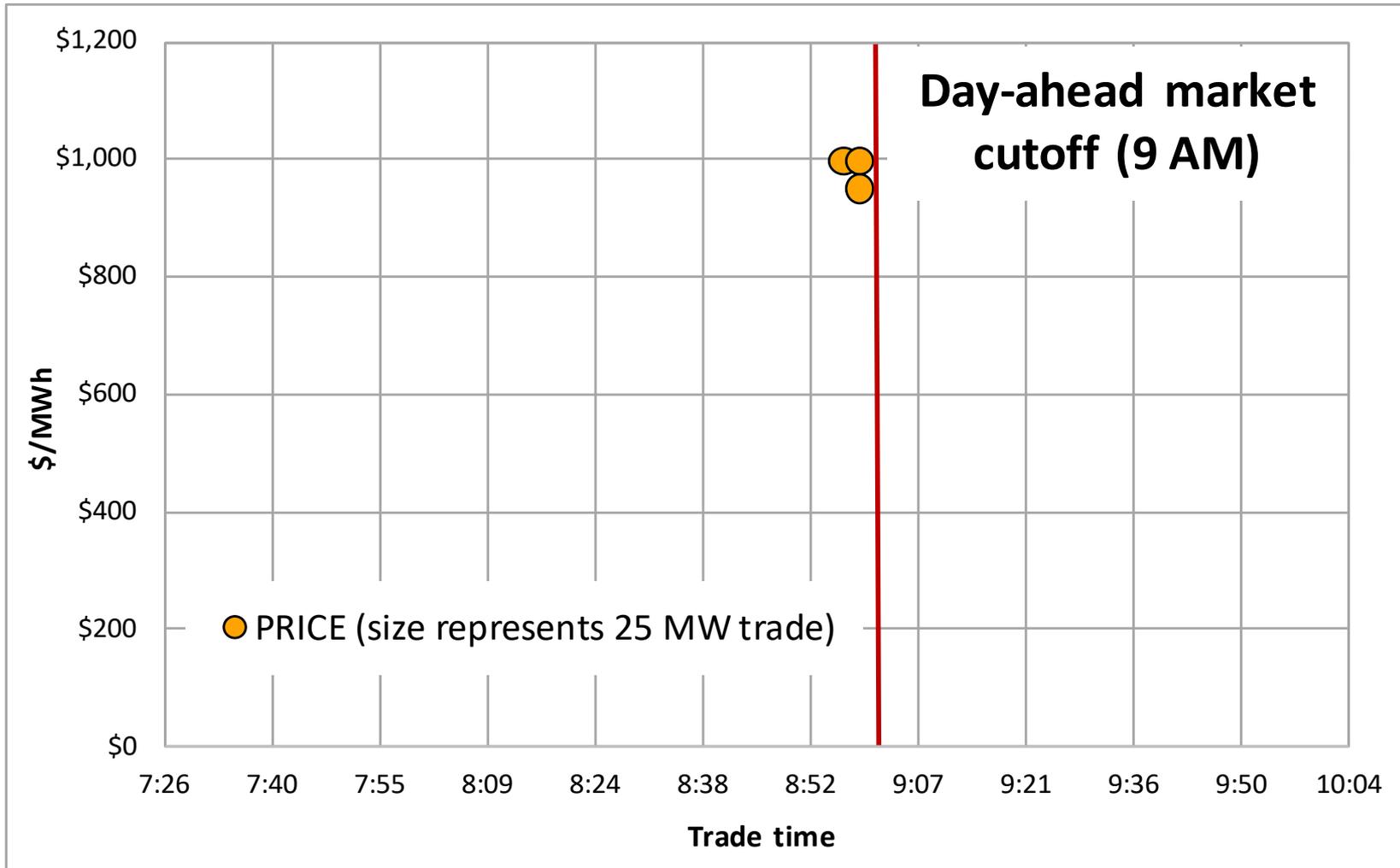
# High electric market prices for ICE at trading hubs outside CAISO triggered increase in CAISO import bid cap and penalty price to \$2,000



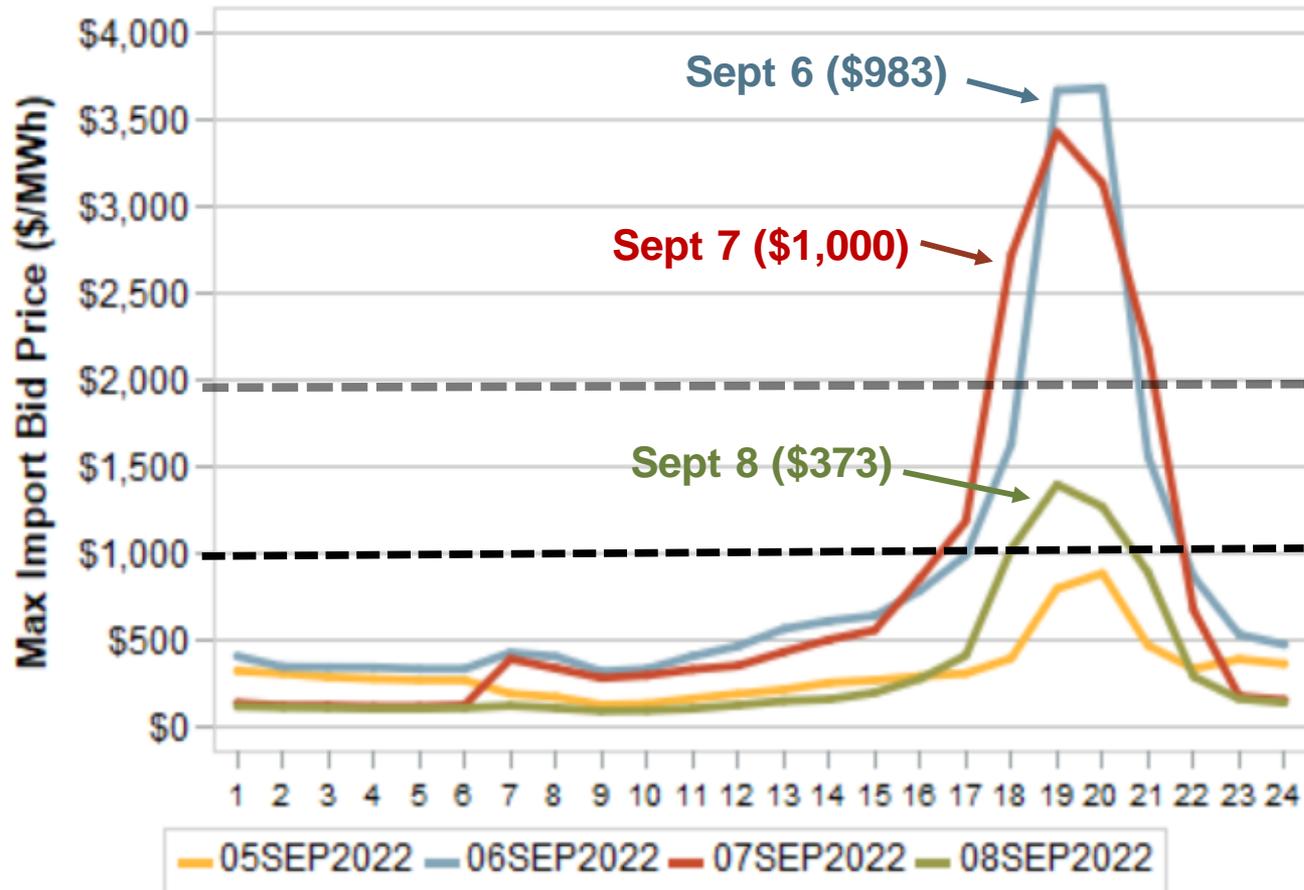
# Mid-Columbia ICE trades (Sep 6, 2022)



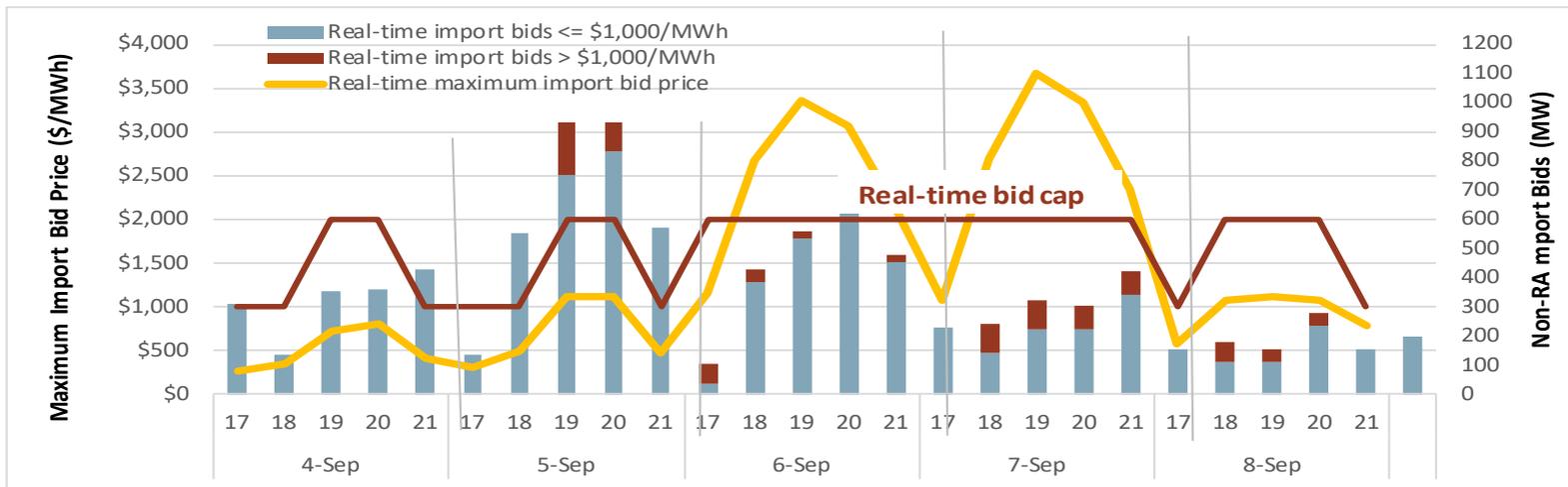
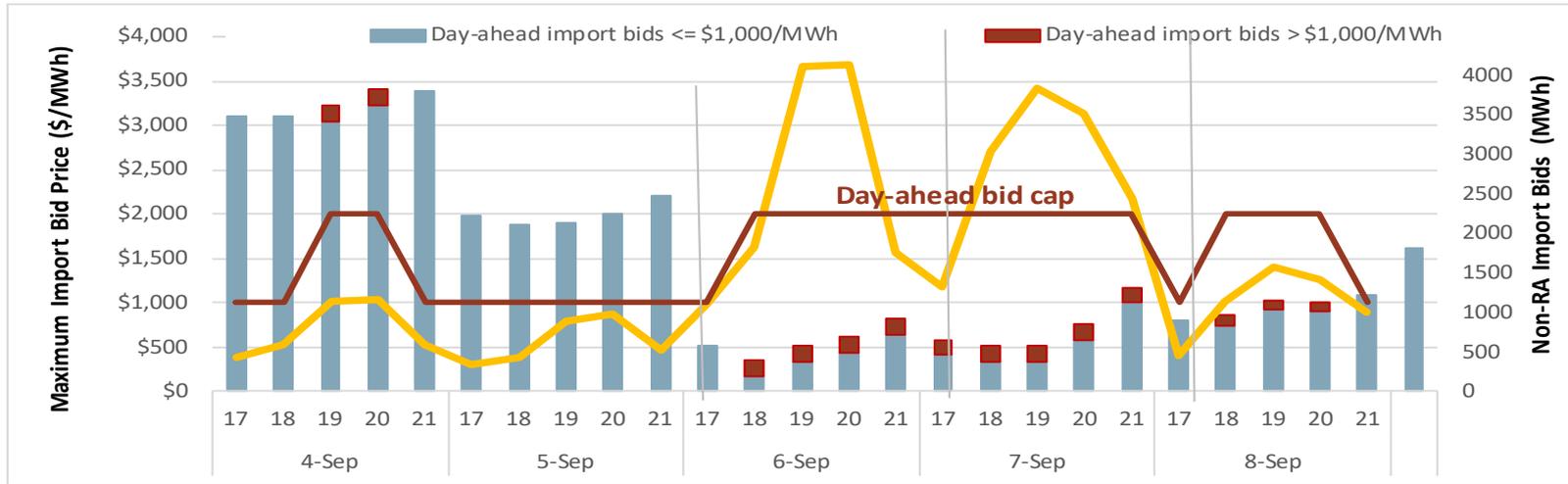
# Palo Verde ICE trades (Sep 6, 2022)



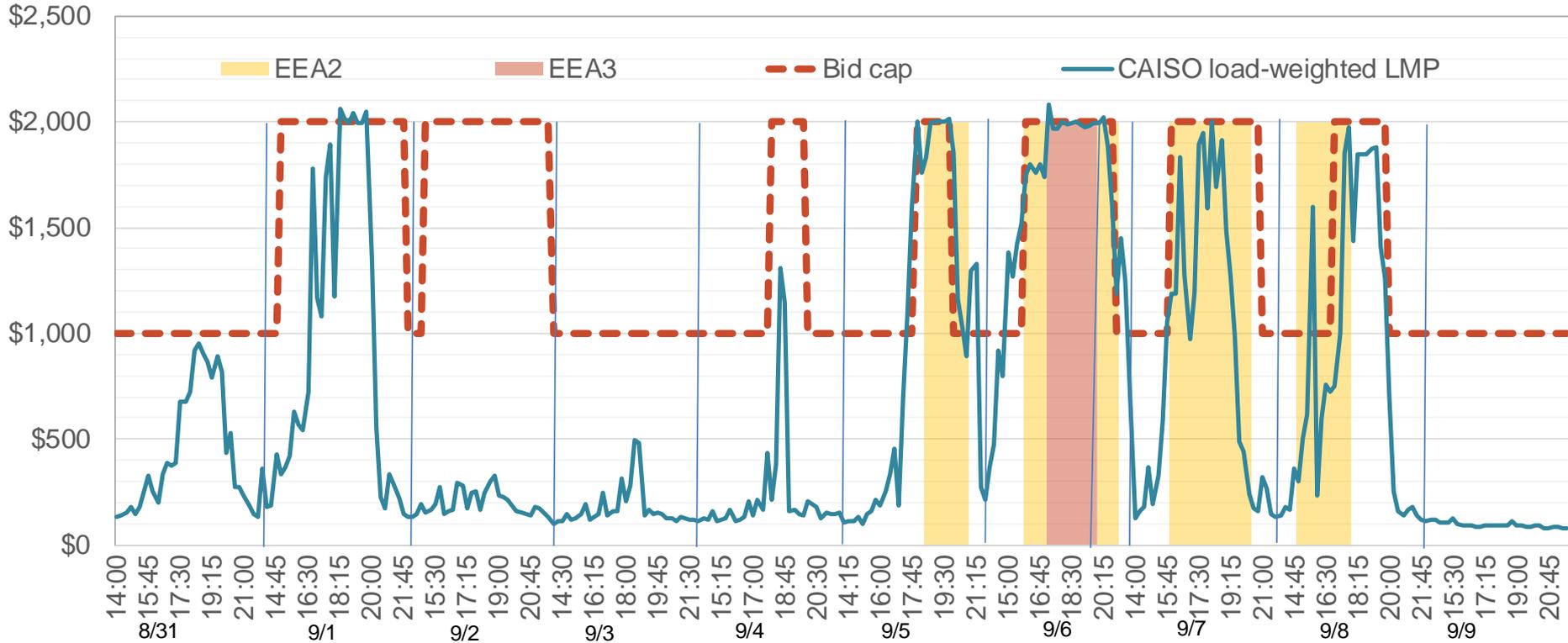
ICE prices for 16 hour blocks converted to hourly Maximum Import Bid Prices (MIBP) based on historical shape of CAISO hourly prices.



# \$2,000 bid cap attracted limited quantity of additional imports into CAISO market



# Hours with \$2,000/MWh bid cap closely matched hours when EEA2 and EEA3 were declared on September 5-7, 2022.

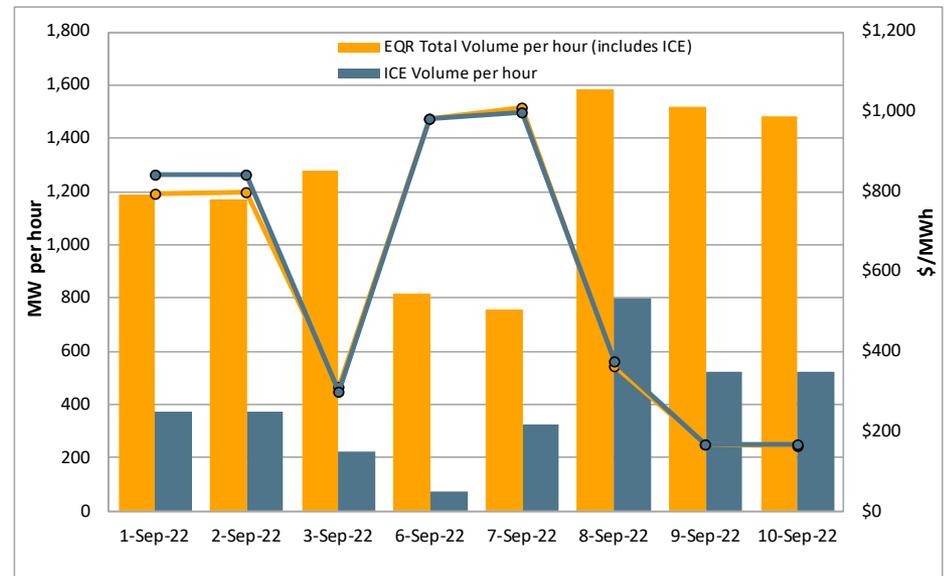
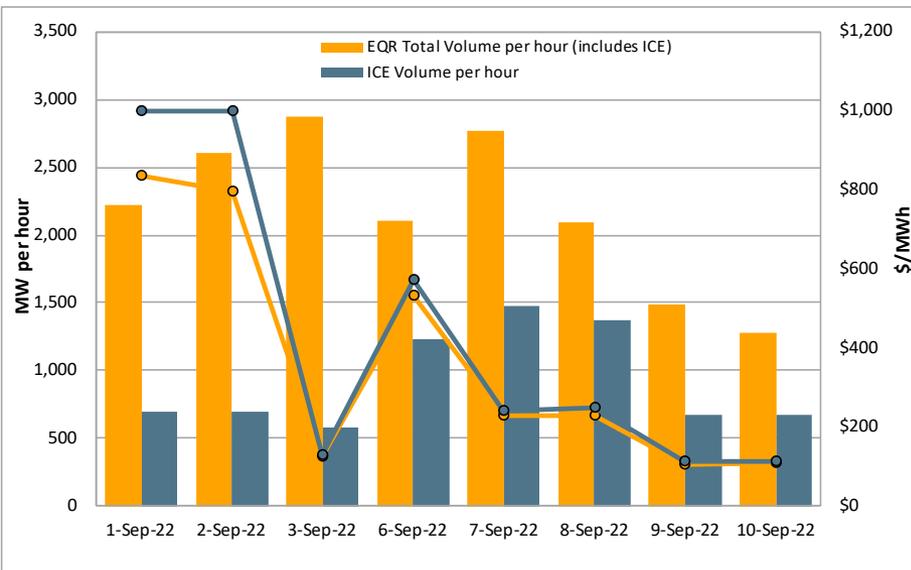


# Analysis shows that ICE prices generally consistent with broader bilateral market as reported in EQR

## ICE vs EQR volumes and prices (2022)

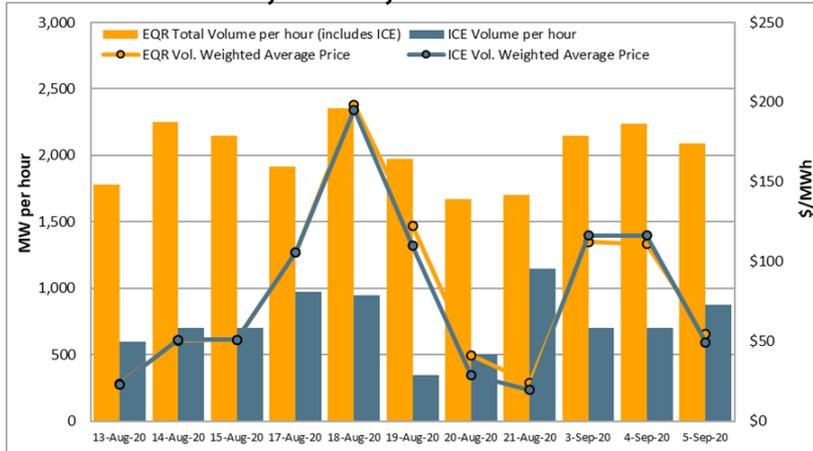
### Mid-C, 2022, HE 7 to 22

### Palo Verde, 2022, HE 7 to 22

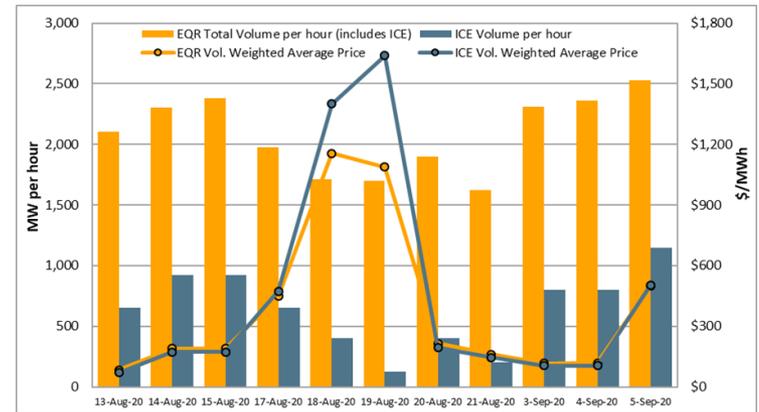


# ICE vs EQR volumes and prices (2020 and 2021)

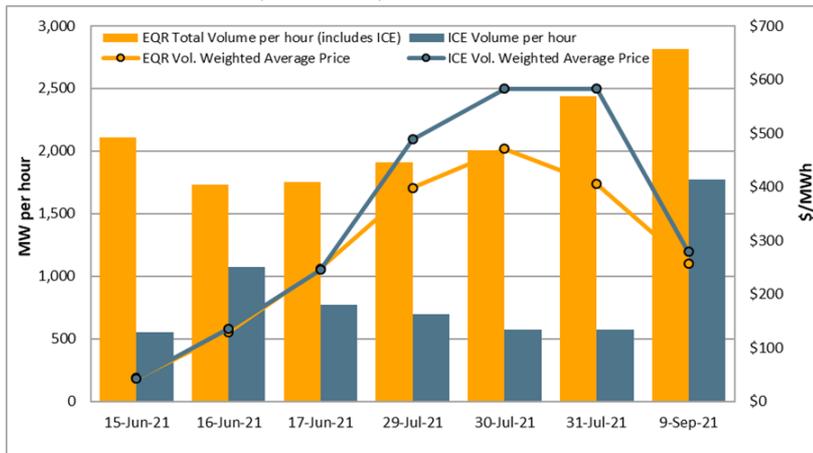
## Mid-C, 2020, HE 7 to 22



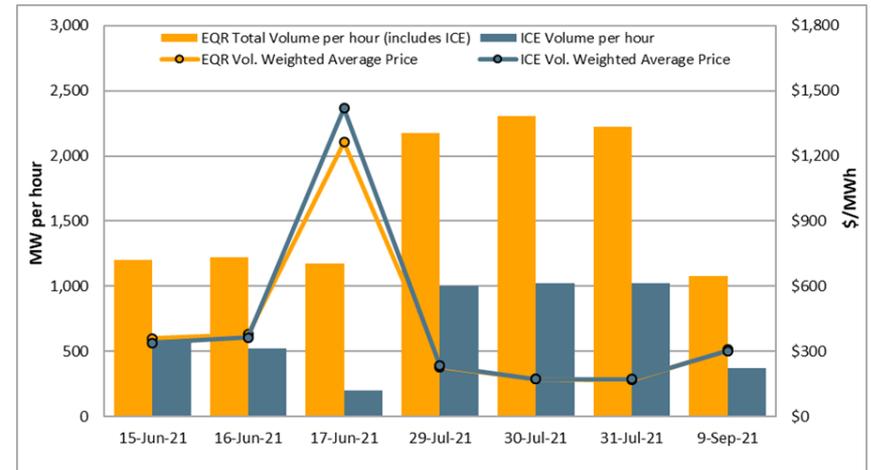
## Palo Verde, 2020, HE 7 to 22



## Mid-C, 2021, HE 7 to 22



## Palo Verde, 2021, HE 7 to 22



# Potential discussion issues

- Observations/experience of MMUs in markets
- Liquidity and transparency of gas and electric bilateral markets
- Potential circularity of ICE and non-ICE transaction prices settled on ICE index prices
- Consistency of ICE and EQR data do not prove competitiveness of ICE or other bilateral transactions