

Memorandum

To: ISO Board of Governors
From: Eric Hildebrandt, Executive Director, Market Monitoring
Date: September 15, 2021
Re: Department of Market Monitoring update

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides a summary of key aspects of market performance during summer 2021.

- Overall performance of the day-ahead and real-time markets remained highly competitive, despite several periods of extremely high region-wide loads and prices.
- During high load periods, bilateral market prices in other balancing areas were often significantly higher than ISO market prices, reflecting extremely tight supply conditions in these other regions.
- Demand for exports to balancing areas in the southwest increased and net imports into the ISO decreased significantly during net peak hours on many high load days.
- As a result of changes made last year to the ISO's process for setting export scheduling priorities, significant volumes of exports clearing the day-ahead market were curtailed through the residual unit commitment process on the highest load days. On these days, some exports rebid into the real-time market cleared, ultimately meeting high demand in other regions.

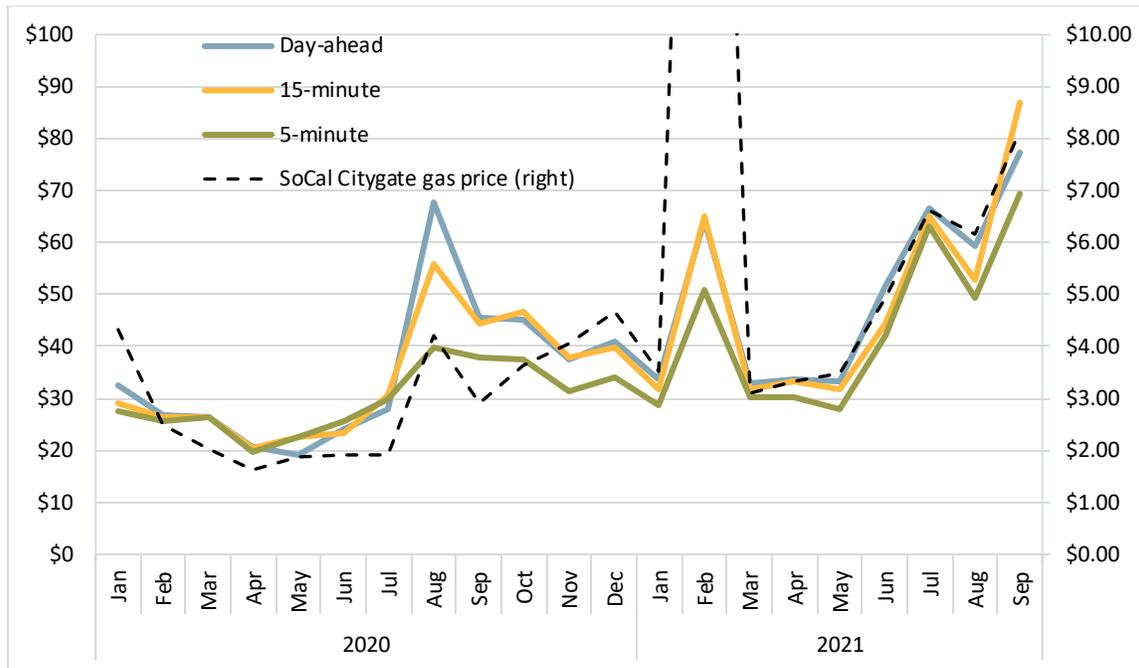
OVERALL MARKET PERFORMANCE

Overall performance of the day-ahead and real-time markets remained highly competitive, despite several periods of extremely high region-wide loads and prices. As shown in Figure 1, average prices from June to September were somewhat higher in 2021 than in 2020. The higher prices in these months reflect a combination of higher region-wide load and higher gas prices.

Electricity prices in western states typically follow natural gas price trends because natural gas units are often the marginal source of generation in the ISO and other regional markets. The black dashed line in Figure 1 represents the monthly average gas price at SoCal

Citygate, a major hub for gas trading in Southern California. Higher gas prices there often result in higher electricity prices across the ISO footprint because gas resources in the south may be marginal on a system level.

Figure 1. Average ISO energy market prices (2020 and 2021)¹

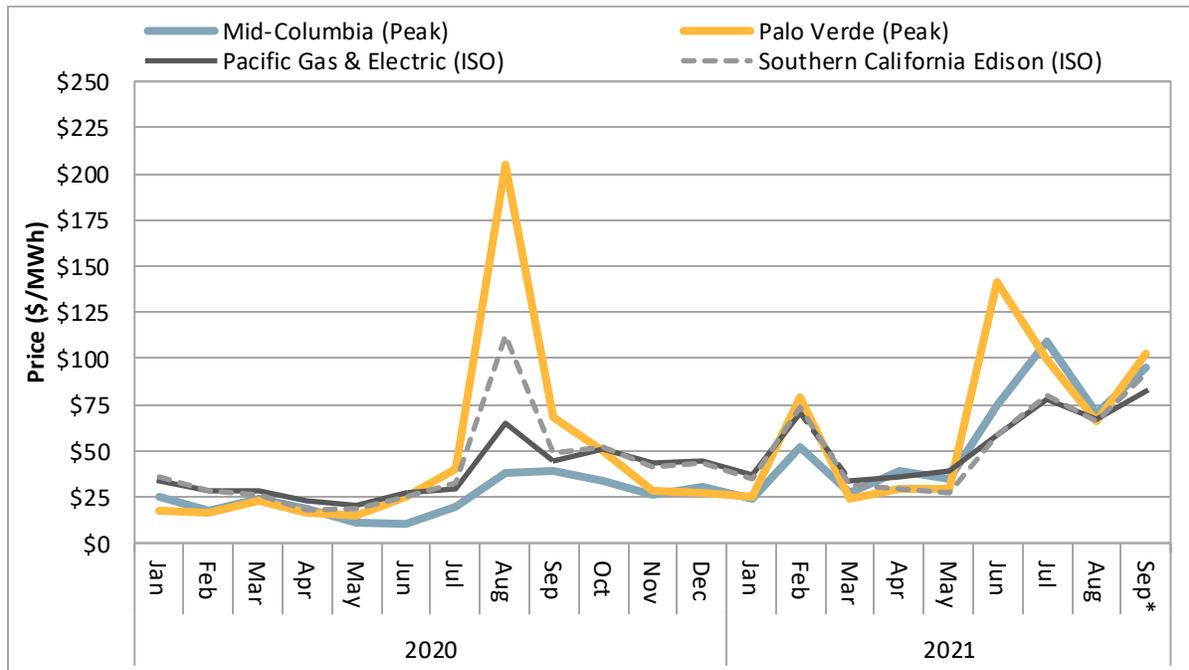


During high load periods, bilateral market prices in some other balancing areas were often significantly higher than ISO market prices, reflecting extremely tight supply conditions in these other regions. On June 17, 2021, prices at Mead and Palo Verde hubs exceeded the \$1,000/MWh WECC soft offer cap, requiring sellers to submit cost justification for sales made above this cap to FERC.

As shown in Figure 2, monthly average peak hour prices at Palo Verde, a major hub in the Southwest (shown in yellow), exceeded prices in the ISO during the months June to September in both 2020 and 2021. In 2021, monthly average prices at Mid-Columbia, a major hub in the Northwest, also exceeded prices in the ISO in June, July and in the early part of September.

¹ September 2021 data reflects September 1 through September 13 only.

Figure 2. Average peak hour bilateral and ISO prices (2020 and 2021)²

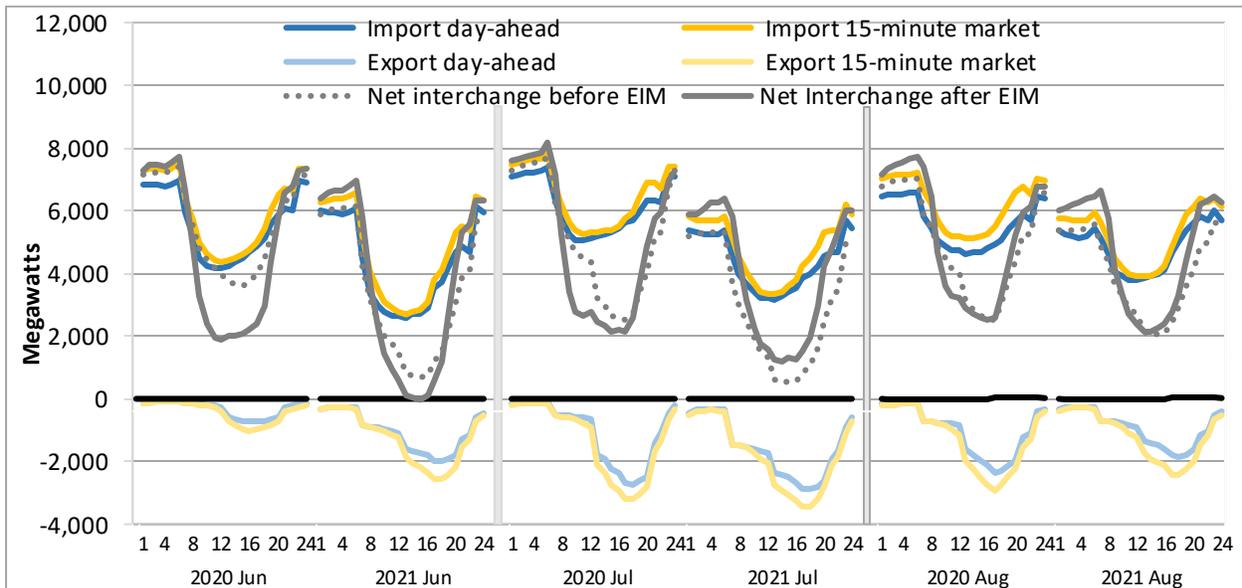


EXPORTS AND NET IMPORTS

Demand for exports to balancing areas in the southwest increased and net imports into the ISO decreased significantly during net peak hours on many high load days. As shown in Figure 3, average gross imports were lower in June, July and August, compared to 2020 (see darker yellow and blue lines). Gross exports were up significantly in June compared to the year before, and remained about equal in July and August compared to 2020 (see lighter yellow and blue lines). The average net interchange (imports less exports), was lower in each month as well, with and without inclusion of interchanges made through the Western Energy Imbalance Market.

² September 2021 reflects data for trades between September 1 and September 13.

Figure 3. Average hourly imports and exports by month (2020 and 2021)



As a result of changes made last year to the ISO's process for setting export scheduling priorities, significant volumes of exports clearing the day ahead market were curtailed through the residual unit commitment process on most of the highest load days. As shown in Figure 4, on some high load days more than 2.5 GW of exports cleared in the day-ahead market were cut in the residual unit commitment process.

Exports that clear the day-ahead process are automatically scheduled in the real-time market with a relatively high scheduling priority, while exports that do not clear the residual unit commitment process are not. Some day-ahead market exports that did not clear the residual unit commitment process were rebid into the real-time market and cleared, ultimately meeting high demand in other regions.

As shown in Figure 5, real-time exports on these days included exports with day-ahead priority, as well as lower priority self-schedules and economic bids entered in the real-time market.

By limiting the quantity of exports entering the real-time market with a scheduling priority above native load to the quantity feasible in the residual unit commitment process, market rule changes implemented in September 2020, more effectively position the ISO's market to reliably meet both native load and day-ahead high priority export demand in the real-time market in the summer of 2021.

Figure 4. Cleared day-ahead exports in peak hours on high load days³

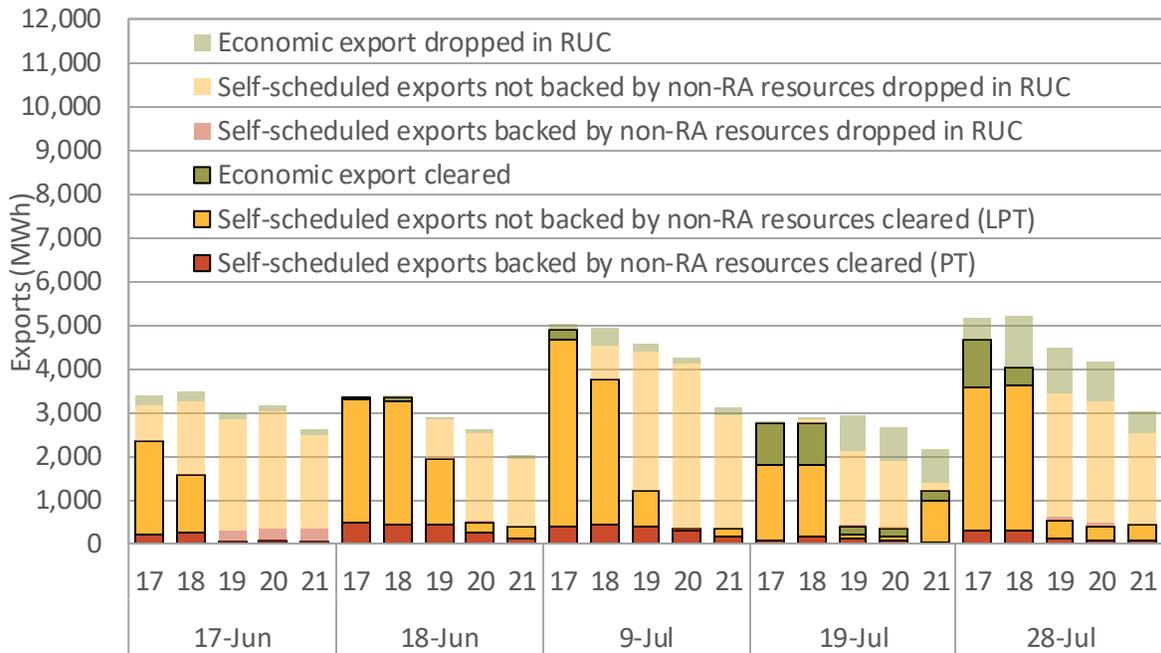
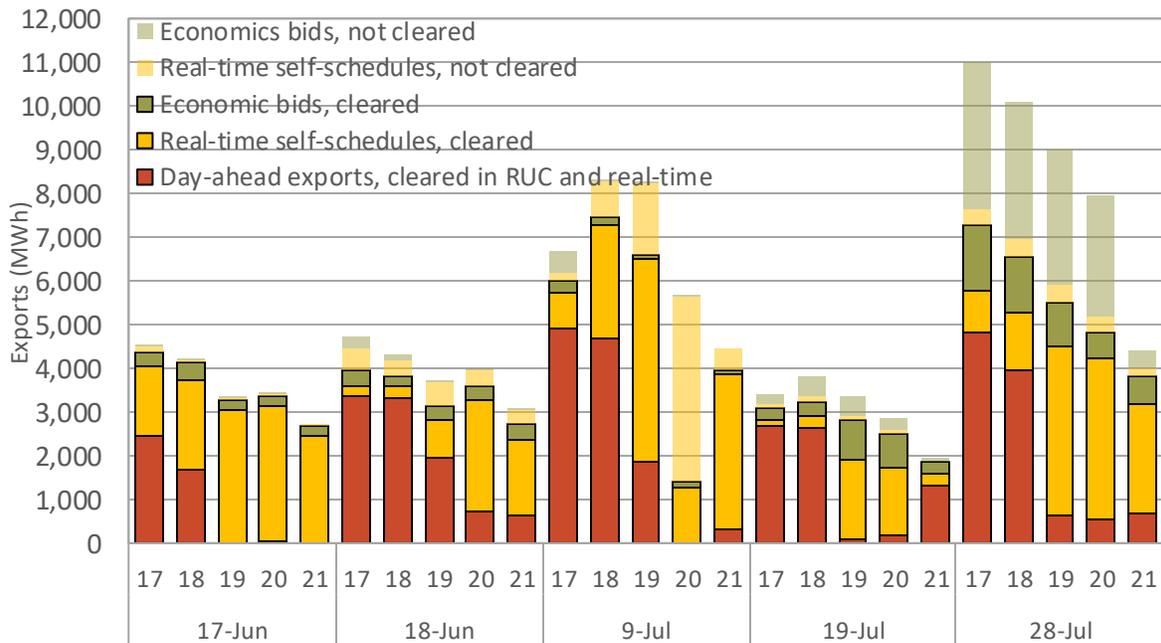


Figure 5. Real-time export bids in peak hours on high load days



³ Exports in Figures 4 and 5 exclude transactions using wheeling naming conventions (e.g., -W- or -WHL-). These excluded transactions are not identified as wheels by the day-ahead market when the import leg of the wheel is not properly registered as a counter resource. Excluded transactions are not identified as wheels by the real-time market when the import leg of the wheel is not properly registered as a counter resource in the real-time market (even if that registration was made in the day-ahead market).