



Memorandum

To: ISO Board of Governors and Western Energy Markets Governing Body

From: Eric Hildebrandt, Executive Director, Market Monitoring

Date: December 11, 2024

Re: Department of Market Monitoring report

This memorandum does not require ISO Board of Governors or WEM Governing Body action.

EXECUTIVE SUMMARY

The September 2024 Department of Market Monitoring report provided a summary of market conditions and performance of balancing areas in the Western Energy Imbalance Market (WEIM) for the summer months of June, July, and August of 2024.¹ This memo provides a short summary of some additional topics for the third quarter, July through September, of 2024.

- Despite higher loads, overall prices across the WEIM were significantly lower compared to the third quarter of 2023, due largely to lower natural gas prices. System-wide 15-minute market prices averaged \$40/MWh, down 31 percent from Q3 2023.
- Average 15-minute market prices were about 10 percent higher than average 5-minute market prices. Much of this difference was from 15-minute market prices exceeding 5-minute market prices in California, the Desert Southwest, and Intermountain West regions during evening peak net load hours.
- Several notable changes occurred in the types of resources used to meet load in the third quarter of 2024 compared to last year. Coal generation in the Intermountain West region decreased by 1,220 MW (27 percent) while natural gas generation increased by 810 MW (28 percent). Average hourly net imports into the Pacific Northwest region, excluding WEIM transfers, decreased by around 1,380 MW, as average hydro production increased significantly across all hours.
- The average volume of WEIM transfers across the system was around 4,560 MW, down about 10 percent from Q3 2023.

¹ September Memorandum to ISO Board of Governors and Western Energy Markets Governing Body, Department of Market Monitoring, September 20, 2024: <https://www.caiso.com/documents/department-of-market-monitoring-update-sep-2024.pdf>

- Operators in most WEIM balancing areas made notable manual adjustments to their real-time market load forecasts on average across the quarter. Generally, the load adjustments were much larger in the 5-minute market than in the 15-minute market, with exceptions being the Bonneville Power Administration and the California ISO balancing areas.

MARKET TRENDS

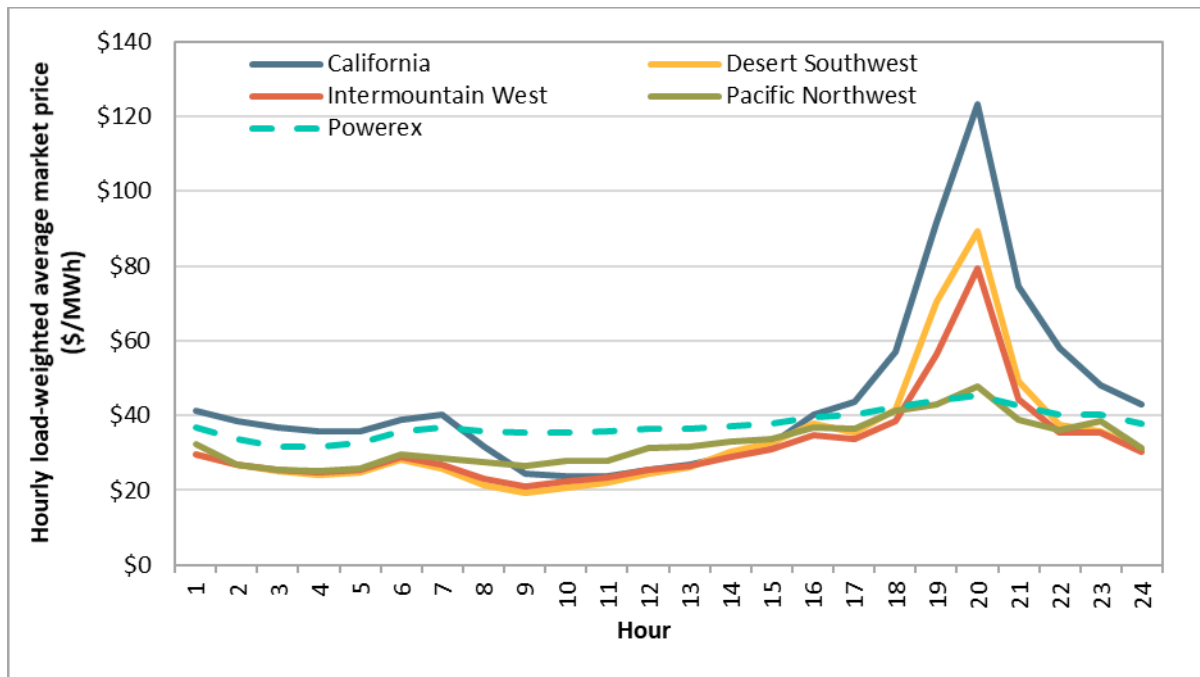
Hourly 15-minute market and 5-minute market prices by region

Figure 1 and Figure 2 show third quarter weighted average hourly prices for the 15-minute and 5-minute markets across regions.²

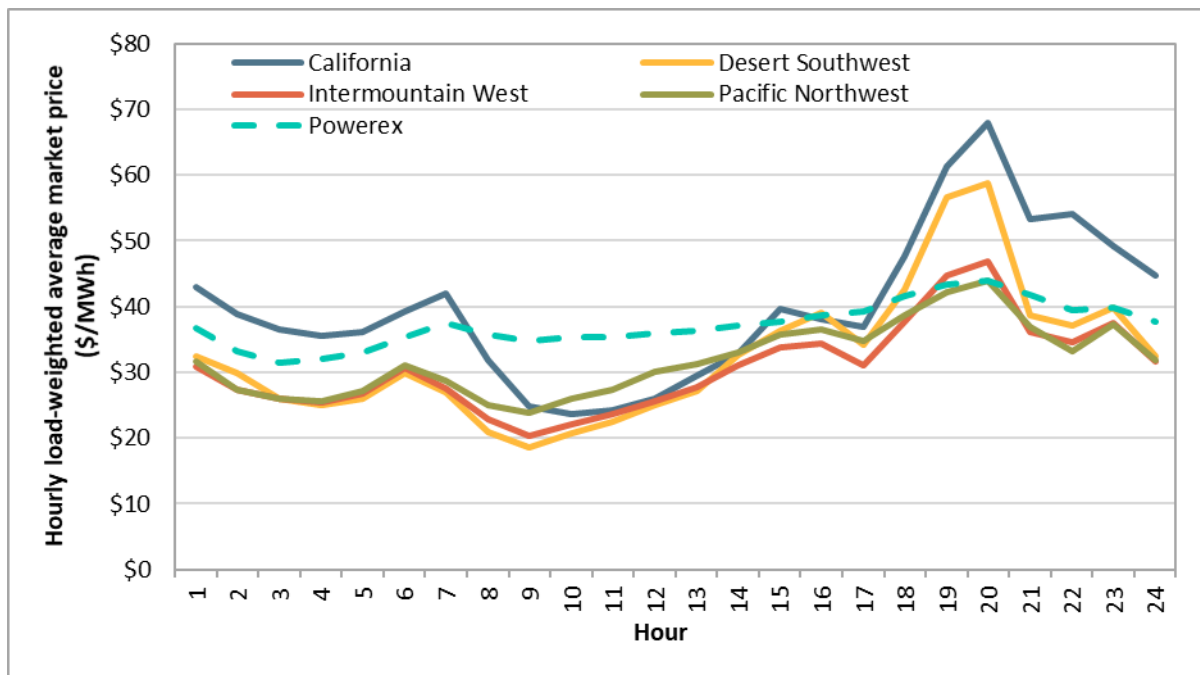
- Across the Western Energy Imbalance Market, 15-minute market prices averaged \$40/MWh, about 10 percent more than the load weighted average 5-minute market prices.
- During the evening peak net load hours, 15-minute market prices were significantly higher than 5-minute market prices in the California, Intermountain West, and Desert Southwest regions.
- In the 15-minute market, the California region's peak average hourly price was \$123/MWh during hour-ending 20.
- The Desert Southwest and Intermountain West peak average hourly prices were \$89/MWh and \$80/MWh, also during hour-ending 20.
- These 15-minute market, peak period prices were about \$30/MWh to \$55/MWh higher than each region's corresponding 5-minute market prices.

² The California region includes CAISO, BANC, TIDC, and LADWP. The Desert Southwest region includes NEVP, AZPS, TEPC, SRP, PNM, WALC, and EPE. The Intermountain West includes PACE, IPCO, NWMT, and AVA. The Pacific Northwest includes AVRN, BPA, TWPR, PGE, PSEI, and SCL. Powerex is categorized separately due to transmission limitations that frequently isolate it from the rest of the WEIM system.

**Figure 1. Weighted average hourly 15-minute market prices by region
(July–September 2024)**



**Figure 2. Weighted average hourly 5-minute market prices by region
(July–September 2024)**

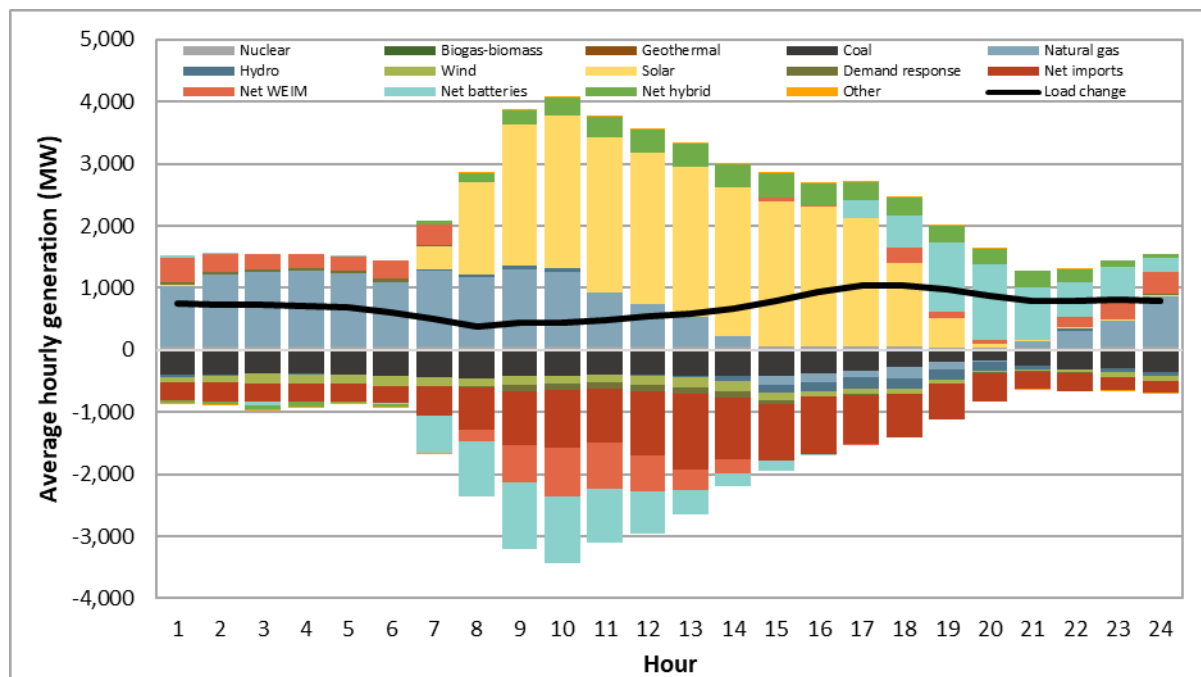


Change in regional generation by fuel type

Figures 3 through 6 show the change in hourly generation by fuel type between the third quarters of 2023 and 2024 for each WEIM region. In the charts, positive values represent increased generation relative to the same time last year, and negative values represent a decrease in generation. Change in total load is denoted by the black line.

- Average hourly battery discharge in the Desert Southwest and California regions increased relative to the third quarter of 2023 by 310 MW (130 percent) and 550 MW (87 percent), respectively.³
- Coal generation in the Intermountain West region decreased by 1,220 MW (27 percent) while natural gas generation increased by 810 MW (28 percent).
- Average hourly net imports into the Pacific Northwest region, excluding WEIM transfers, decreased by around 1,380 MW, as average hydro production increased significantly across all hours.

Figure 3. Change in average hourly generation by fuel type in the Desert Southwest region in Q3 2024 compared to Q3 2023



³ In order to have a meaningful overall statistic on the change in battery usage for energy, this statistic refers to battery discharge only. The figures show hourly average change in *net* battery generation.

Figure 4. Change in average hourly generation by fuel type in the California region in Q3 2024 compared to Q3 2023

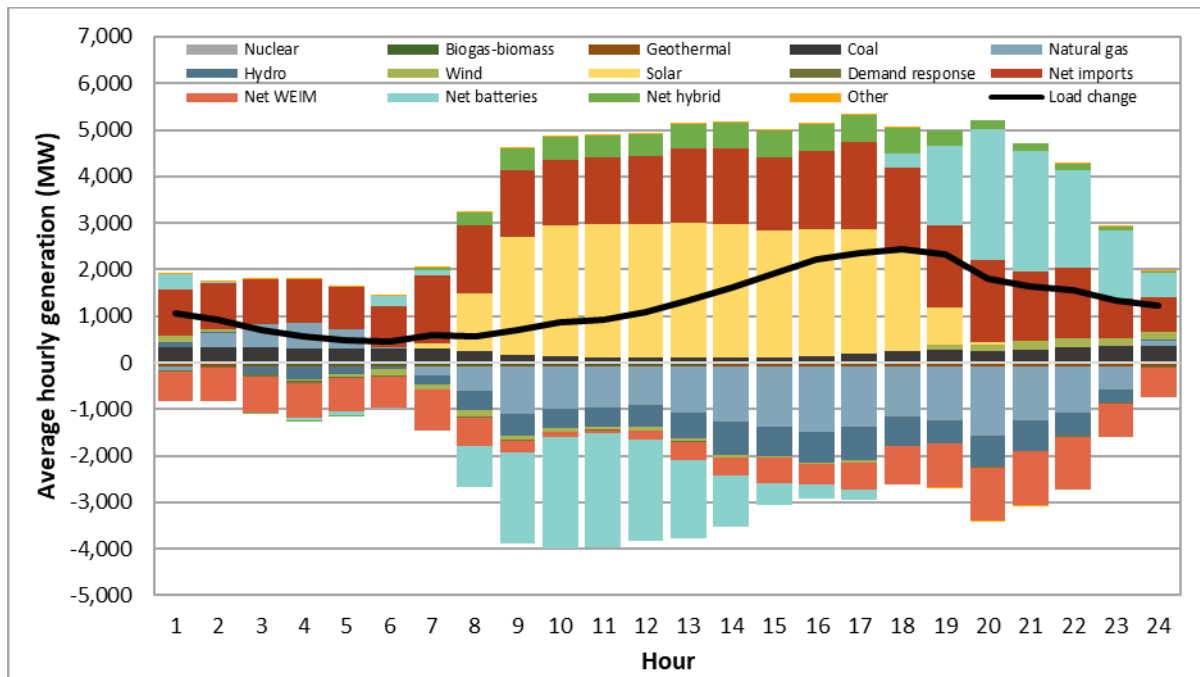


Figure 5. Change in average hourly generation by fuel type in the Intermountain West region in Q3 2024 compared to Q3 2023

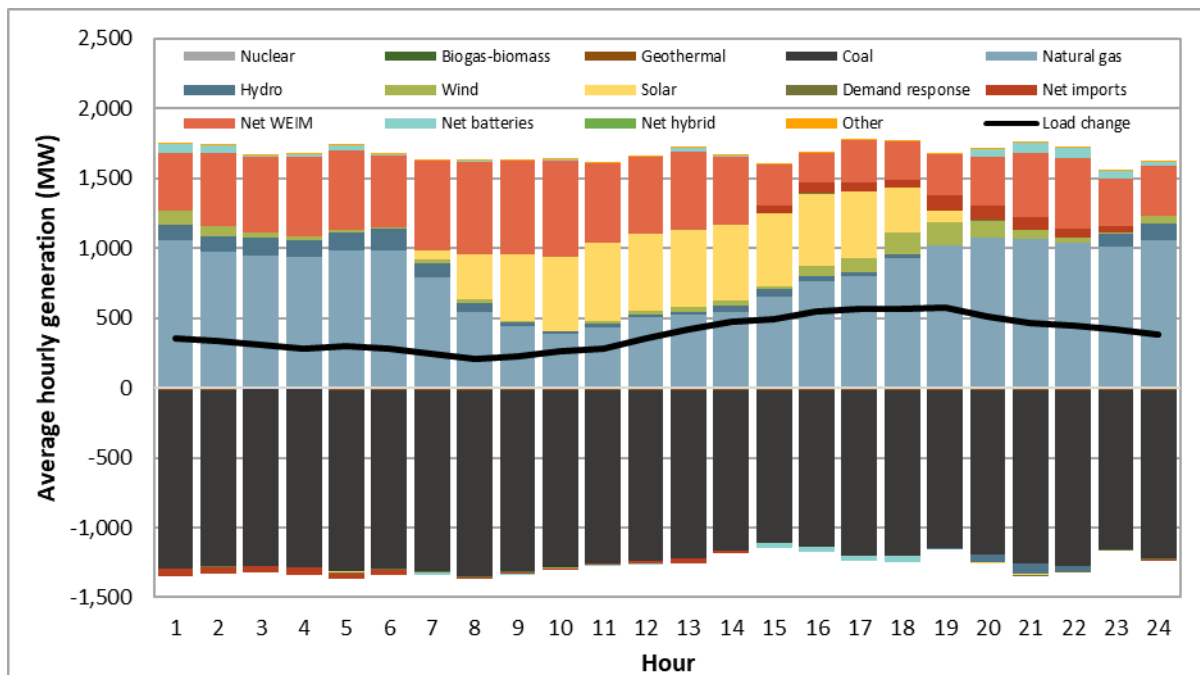
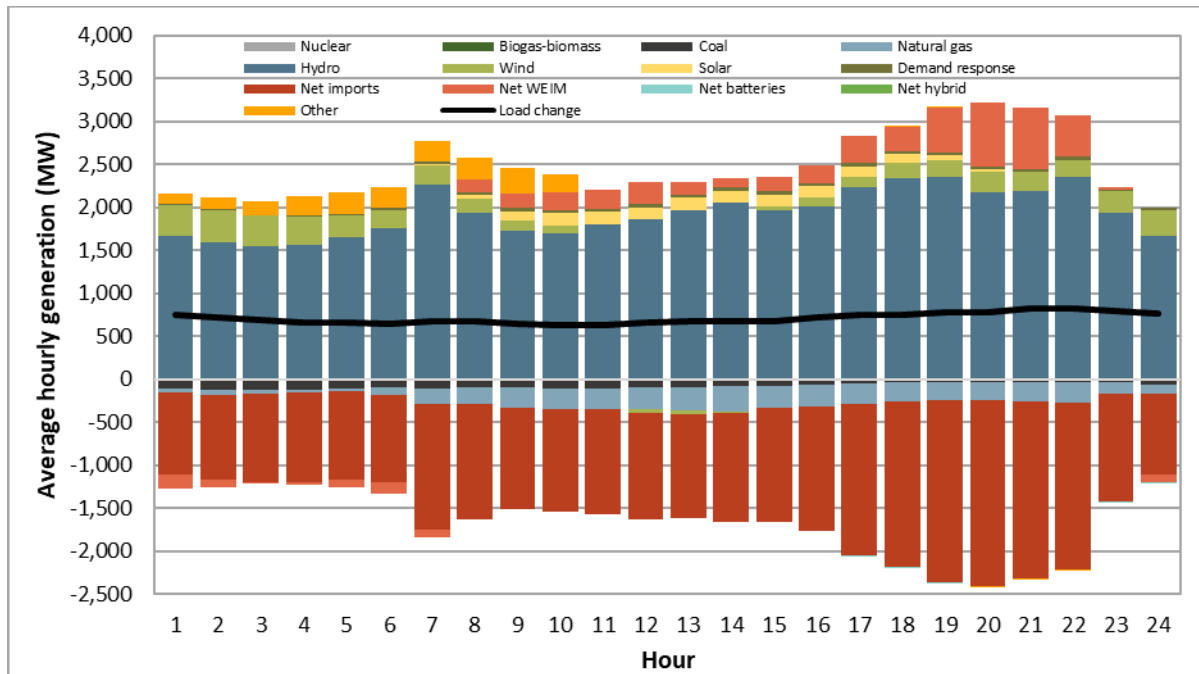


Figure 6. Change in average hourly generation by fuel type in the Pacific Northwest region in Q3 2024 compared to Q3 2023



Western Energy Imbalance Market transfers

Figure 7 summarizes the average volume of WEIM transfers in the 5-minute market by hour during the last five quarters.⁴ Over the third quarter of 2024, the average volume of transfers across the system was around 4,560 MW, down about 10 percent from Q3 2023.

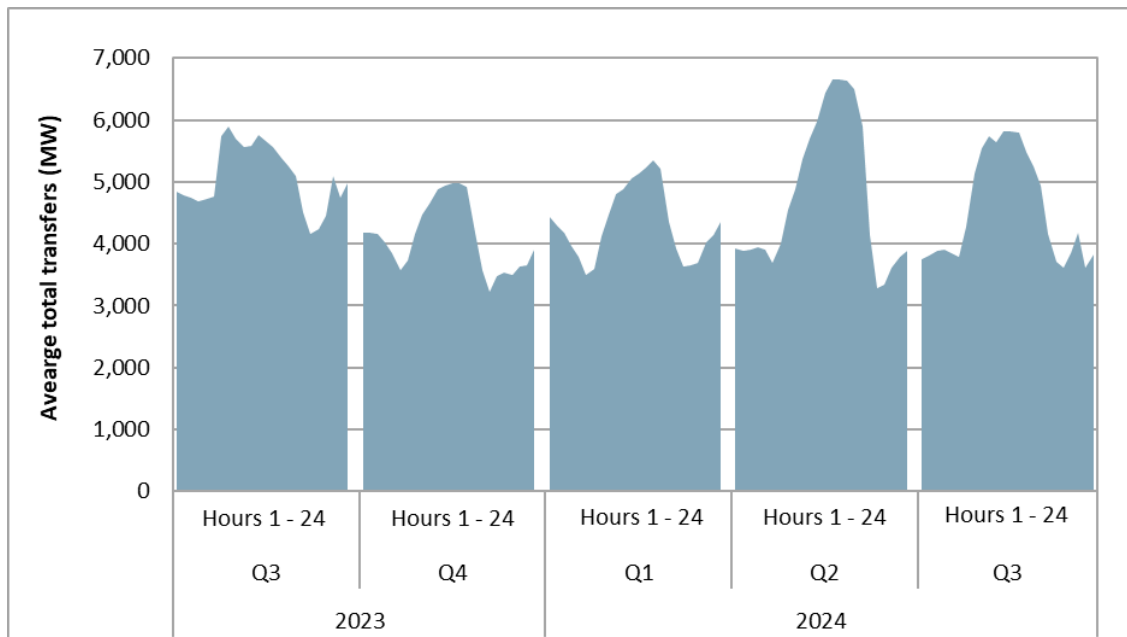
Figure 8 shows average inter-regional transfers during the quarter. The bars show *net* WEIM transfers for each region by hour. Net WEIM exports for a region are shown as positive and net WEIM imports for a region are shown as negative.⁵

- During the mid-day hours, regional WEIM transfers are typically highest, with significant levels of exports from the CAISO balancing area.
- During the peak hours—when net load in the WEIM system was highest—regional WEIM transfers were relatively low.
- Overall, balancing areas in the Desert Southwest and Intermountain West regions were exporting during this peak period, out to balancing areas in the California and Pacific Northwest regions.

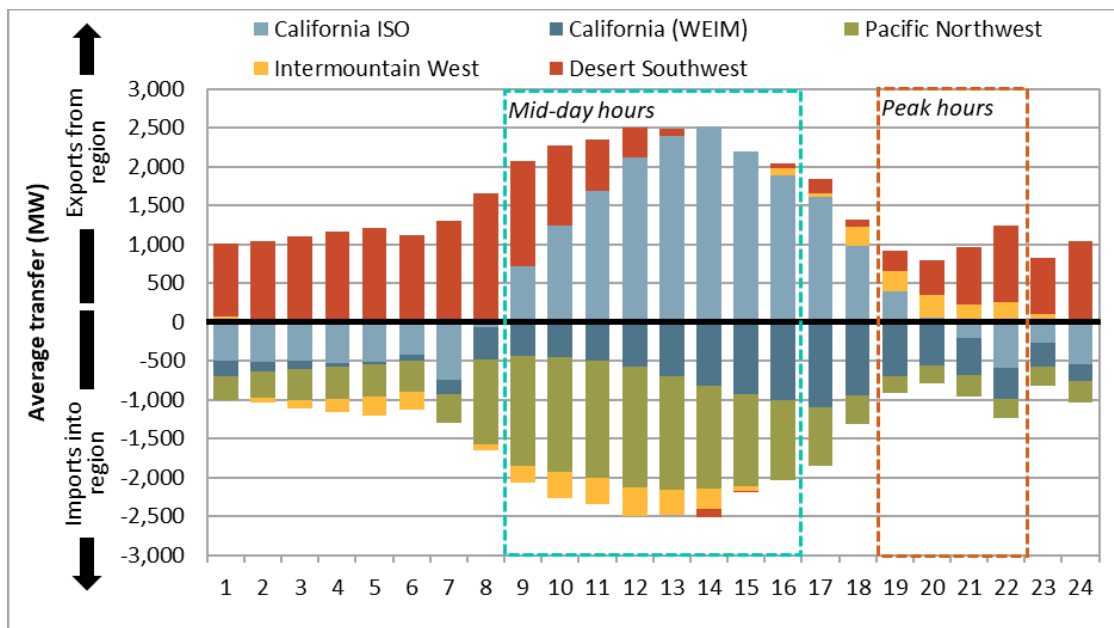
⁴ WEIM transfers in this section exclude the fixed bilateral transactions between WEIM entities (base WEIM transfer schedules), and therefore reflect only *dynamic* WEIM transfer schedules optimized in the market.

⁵ Note this is the inverse of how WEIM transfers are shown in Figures 3 through 6 above.

**Figure 7. Average dynamic WEIM transfer volume by hour and quarter
(5-minute market)**



**Figure 8. Average dynamic inter-regional WEIM transfers by hour
(5-minute market, July–September, 2024)**



Imbalance conformance

Operators in WEIM balancing areas can manually adjust the load forecasts used in the real-time markets in order to help maintain system reliability. The ISO refers to this as *imbalance conformance*. These adjustments are to account for potential modeling inconsistencies and inaccuracies, and to create additional unloaded ramping capacity in the real-time market.

Figure 9 shows each balancing area's 15-minute market and 5-minute market average hourly imbalance conformance as a percentage of that area's average load over the third quarter.⁶

- Generally, imbalance conformance levels were much higher in the 5-minute market than the 15-minute market.
- One exception was the Bonneville Power Administration, which made similarly significant adjustments on average to both its 15-minute and 5-minute market load forecasts.
- Another exception was the California ISO balancing area, which made much larger load adjustments in the 15-minute market than in the 5-minute market over evening peak net load hours. This contributed to the average price differences between the 15-minute and 5-minute markets over these hours discussed above.

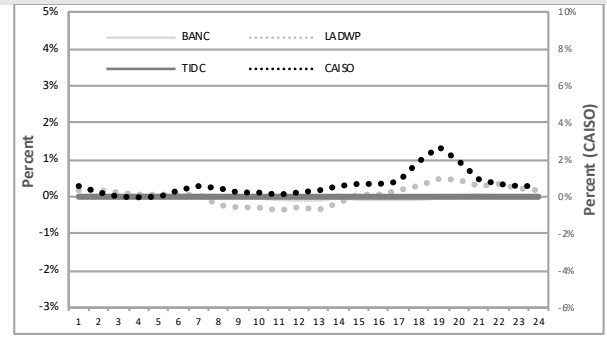
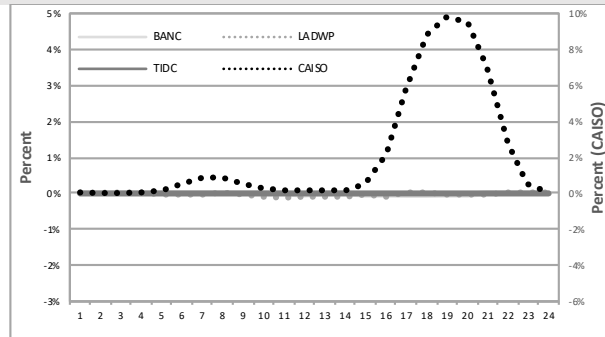
⁶ Avangrid Renewables and PowereX are not shown in this figure. Avangrid Renewables is a generation-only entity and therefore load conformance cannot be measured as a percent of load. PowereX is not a balancing authority area like other participating WEIM entities and instead uses residual capability of the BC Hydro system to participate in the WEIM. PowereX therefore does not have the ability to enter load bias in the market.

Figure 9. Hourly average imbalance conformance as a percent of average load in the real-time markets (Q3 2024)

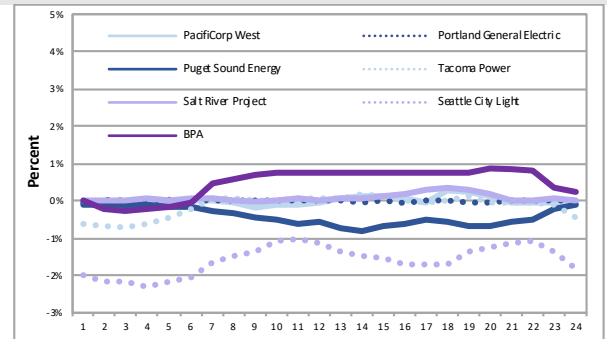
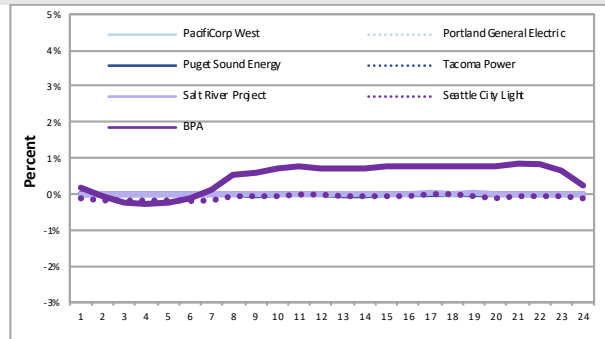
15-minute market

5-minute market

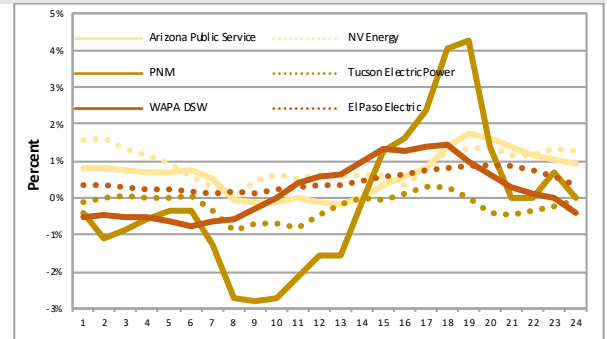
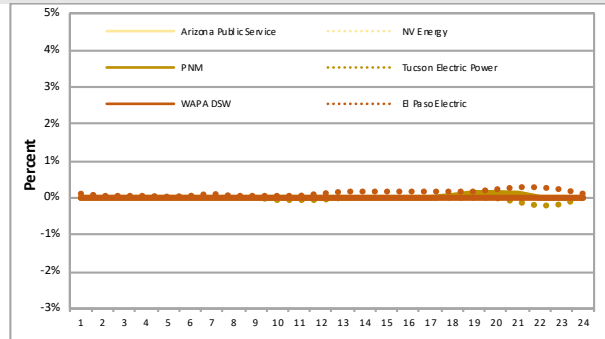
California WEIM



Pacific Northwest



Desert Southwest



Intermountain West

