



Memorandum

To: ISO Board of Governors and Western Energy Markets Governing Body
From: Eric Hildebrandt, Executive Director, Market Monitoring
Date: August 19, 2026
Re: Department of Market Monitoring report

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

EXECUTIVE SUMMARY

This memo provides a summary by the Department of Market Monitoring (DMM) of market performance and trends from May to July 2026 related to new day-ahead market features implemented as part of the extended day-ahead market (EDAM).

- Prices in the real-time markets tracked closely with prices in the day-ahead market for the three balancing areas participating in EDAM. Day-ahead market and 15-minute market prices averaged around \$26/MWh, while prices in the 5-minute market averaged about \$28/MWh.
- PacifiCorp West was a net importer on average in all hours. During high solar production hours 8 to 18, the CAISO balancing area exported on average around 230 MW to PacifiCorp West. During the non-solar hours, PacifiCorp East exported on average around 170 MW to PacifiCorp West.
- Prices for imbalance reserve have been low overall. Prices have been less than \$5/MWh in the majority of hours across all balancing areas.
- Between May and July, total payments for upward imbalance reserve were around \$7.9 million while payments for downward imbalance reserve were around \$2.7 million.
- Gas and solar resources made up around 58 percent and 12 percent of upward imbalance reserve schedules, respectively.
- Wind and solar resources made up around 75 percent of downward imbalance reserve schedules.

- Failures of the extended day-ahead market resource sufficiency evaluation were very infrequent for all three balancing areas. Failures occurred on only three days between May and July.
- Average hourly reliability capacity up procurement was about 1,550 MW from May through July 2026, compared to 1,470 MW during the same period in 2025.
- Average hourly reliability capacity down procured from May through July 2026 was around 670 MW.
- The CAISO balancing area made significantly less adjustments to residual unit commitment load in May to July 2026 compared to the same period of 2025.
- Average monthly residual unit commitment costs were \$10.3 million from May through July 2026, similar to \$10.6 million during the same period in 2025, despite the addition of two balancing areas.
- Despite resource adequacy resources being able to bid above \$0/MWh since May 2026, residual unit commitment prices were lower from May through July 2026 (\$6/MWh) compared to the same period in 2025 (\$10/MWh).
- DMM estimates that congestion revenue allocation payments to PacifiCorp areas from CAISO balancing area congestion should be around \$386 thousand in May, -\$157 thousand in June, and -\$199 thousand in July. The ISO has previously reported that these payments were \$1.05 million in May, \$1.33 million in June, and \$822 thousand in July. DMM's understanding is that the amounts previously reported by the ISO were affected by a settlements error and that the correct payments should be closer to DMM's estimates.
- Despite PacifiCorp East and PacifiCorp West not having virtual bidding at their nodes, load under-scheduling was not notably more prevalent in those balancing areas than in the CAISO balancing area.
- A majority of the greenhouse gas quantity from outside the CAISO attributed as serving California load in the day-ahead market was from gas resources in PacifiCorp East.

EXTENDED DAY-AHEAD MARKET TRENDS

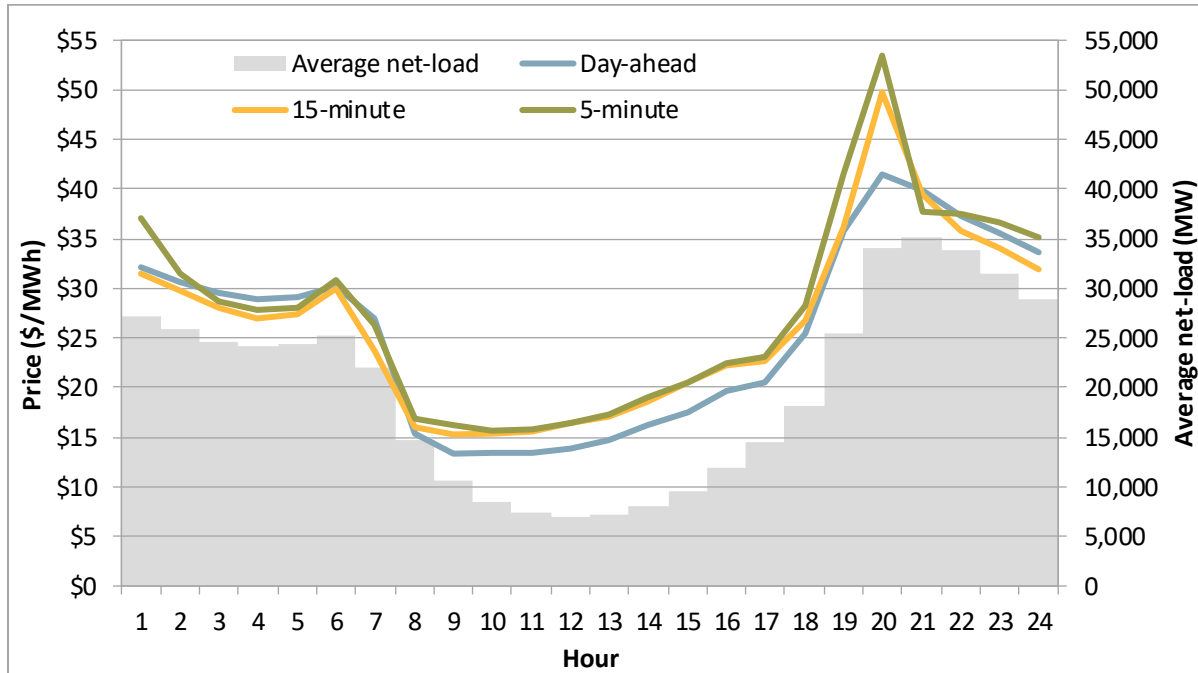
Prices

Figure 1 shows average load-weighted prices across the three balancing areas participating in the extended day-ahead market from May to July. Average hourly prices for the day-ahead (blue line), 15-minute (gold-line), and 5-minute (green line) markets are shown on the left axis, while average hourly net load (grey bars) is shown on the right axis.

- Average prices peaked in hour-ending 20 in all markets, while net load peaked in hour-ending 21 (35,193 MW).

- Prices were similar on average across the three markets. Day-ahead market and 15-minute market prices averaged around \$26/MWh, while prices in the 5-minute market averaged \$28/MWh.

Figure 1. Hourly load-weighted average energy prices for balancing areas in day-ahead market (May–July 2026)



Transfers and transfer limits

Figure 2 shows average net transfers between EDAM balancing areas between May and July. Figure 3 summarizes average transfer capacity made available to transfer energy between EDAM areas in the day-ahead market during the same period.

- EDAM transfer capacity was relatively limited but still supported energy transfers between balancing areas and resource diversity in the day-ahead market.
- PacifiCorp West was a net importer on average in all hours. During high solar production hours from hour 8 to 18, the CAISO balancing area exported on average around 230 MW to PacifiCorp West. During the non-solar hours, PacifiCorp East exported on average around 170 MW to PacifiCorp West.

Figure 2. Average day-ahead market net EDAM transfers between balancing areas (May–July 2026)

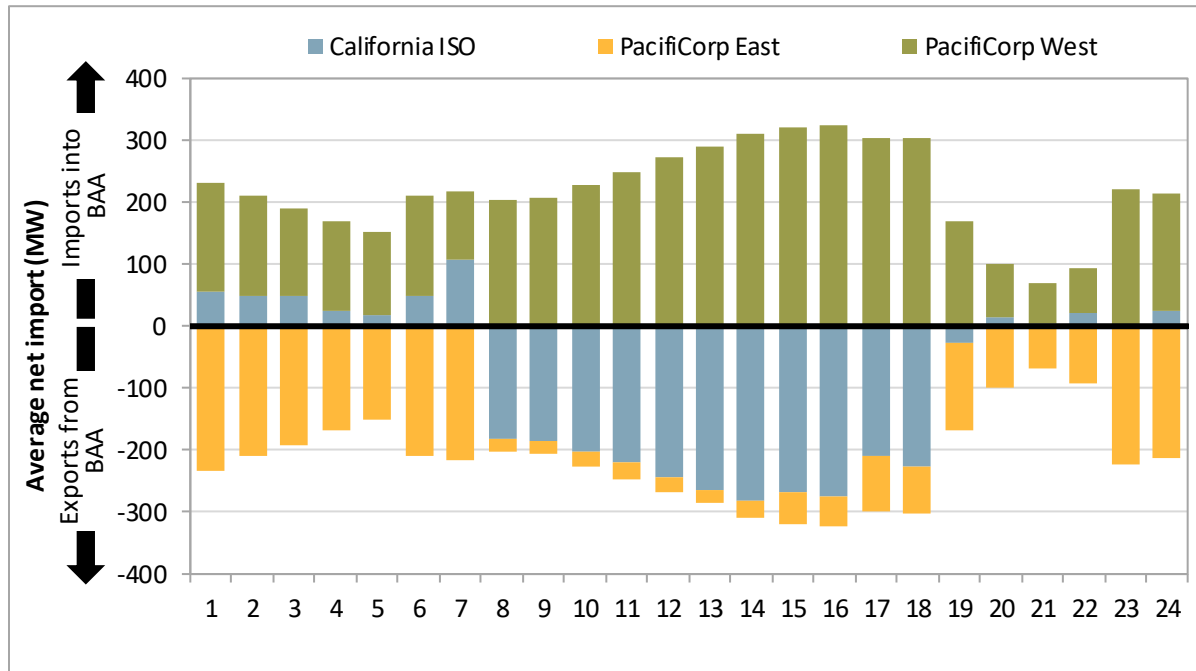
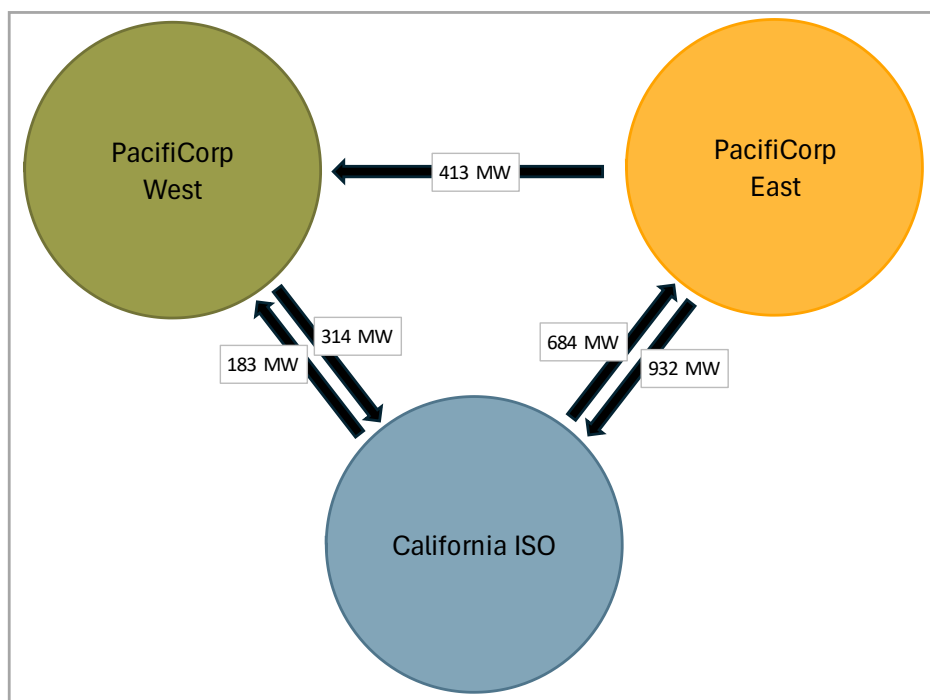


Figure 3. Average day-ahead market transfer limits between balancing areas (May–July 2026)



Imbalance reserves

Figure 4 shows average imbalance reserve requirements for each balancing area participating in the day-ahead market.

- The CAISO area accounted for roughly 70 percent of total imbalance reserve requirements.
- Total imbalance reserve requirements were highest in hours 7, 8, 18, and 19. These hours include the morning and evening solar ramp, which typically have the highest levels of uncertainty.

Figure 4. Imbalance reserve requirements by hour and balancing area (May–July 2026)

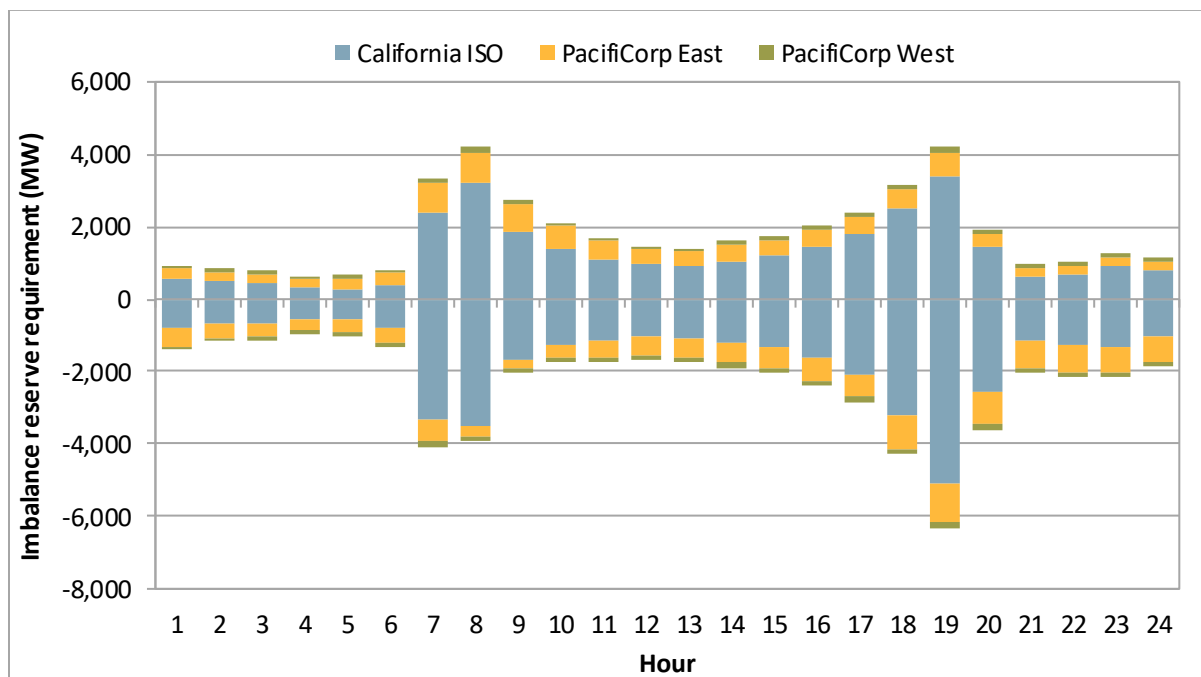


Figure 5 and Figure 6 summarize schedules for upward and downward imbalance reserve by fuel type. The black line shows the combined CAISO, PacifiCorp East, and PacifiCorp West imbalance reserve requirement.

- For upward imbalance reserves, gas resources made up around 58 percent of the schedules. Solar resources made up around 12 percent of upward imbalance reserve schedules. These are from solar resources that were decrementally dispatched below forecast to provide energy, but which can provide upward reserve capacity up to forecasts.
- Wind and solar resources combined made up around 75 percent of the downward imbalance reserve schedules.

Figure 5. Average upward imbalance reserve procurement by fuel type (May–July 2026)

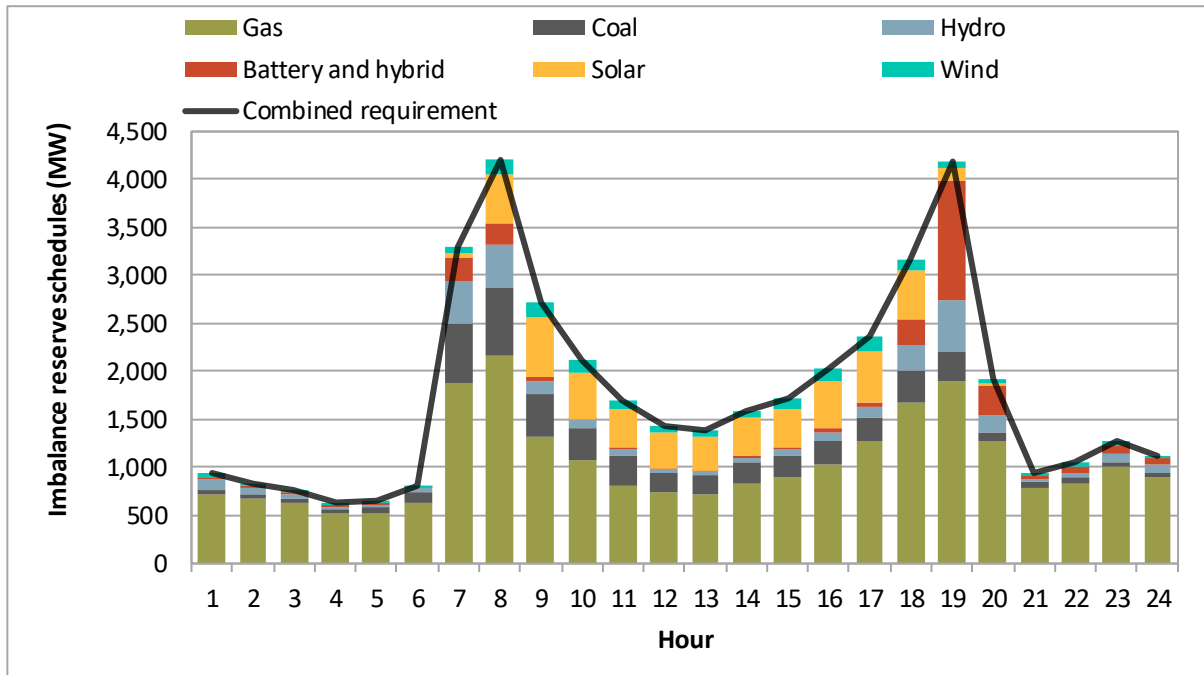


Figure 6. Average downward imbalance reserve procurement by fuel type (May–July 2026)

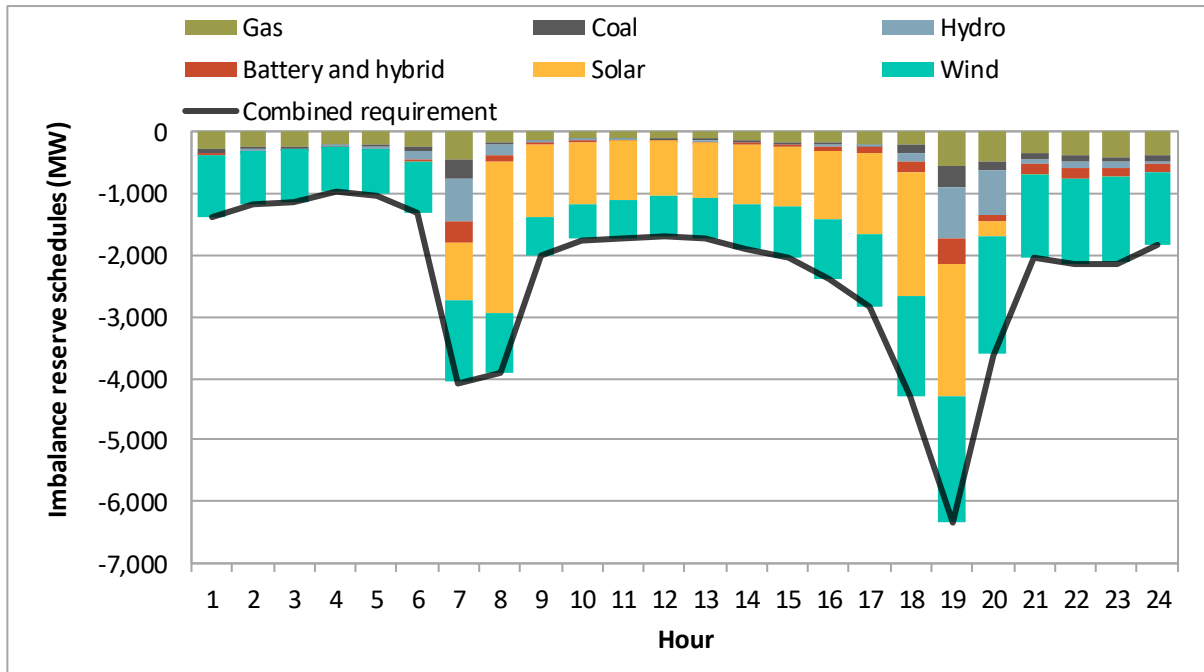
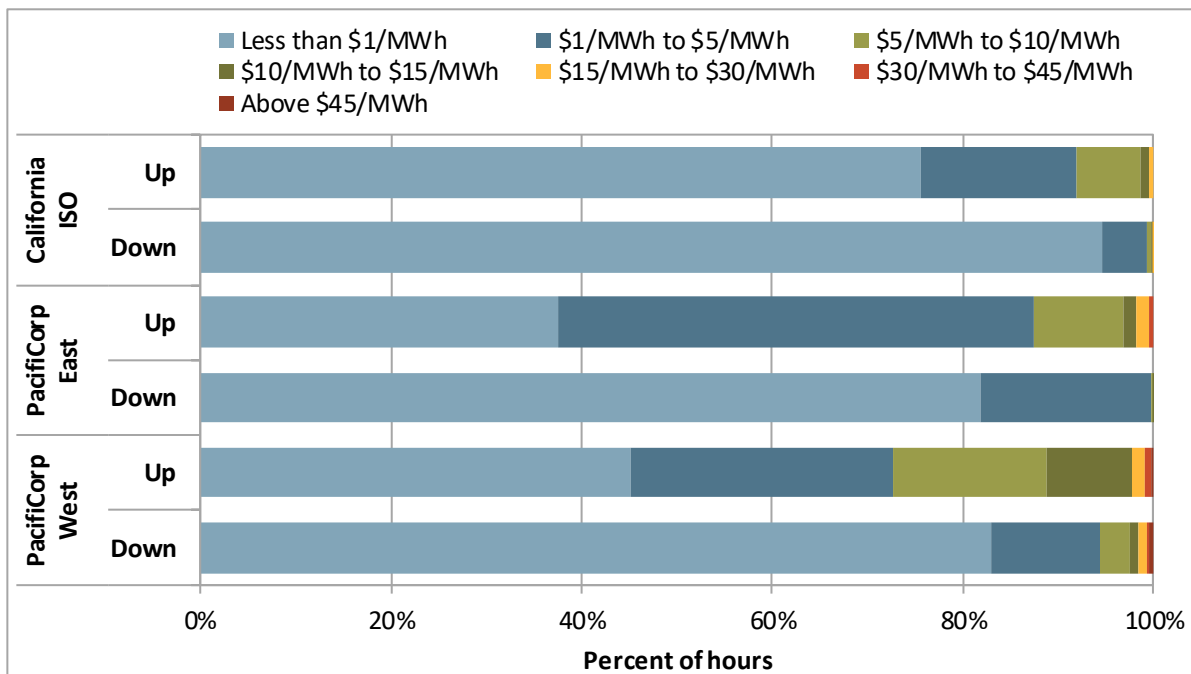


Figure 7 summarizes the frequency of imbalance reserve prices by price range.¹ Figure 8 shows total monthly payments for imbalance reserve.²

- Prices for imbalance reserve have been low overall. Prices have been less than \$5/MWh in the majority of hours across all balancing areas.
- Between May and July, total payments for upward imbalance reserve were around \$7.9 million while payments for downward imbalance reserve were around \$2.7 million—or around \$10.6 million combined.

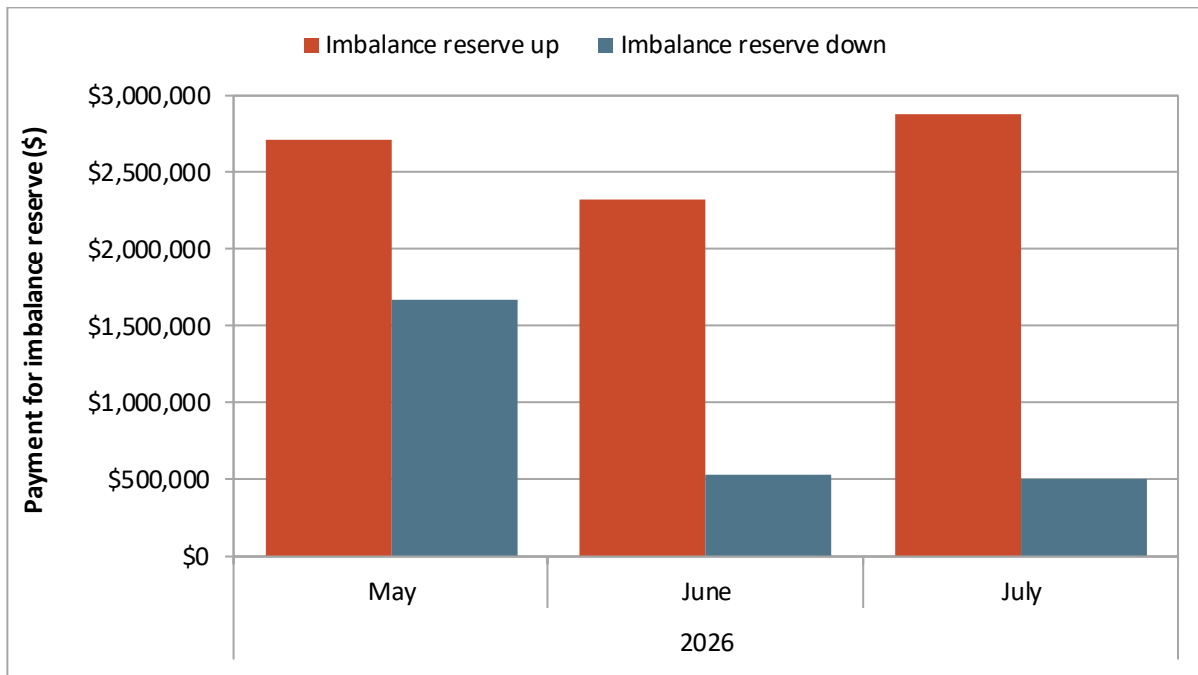
Figure 7. Frequency of imbalance reserve prices by price range (May–July 2026)



¹ This figure summarizes the shadow price on each balancing area's constraint for procuring imbalance reserve up or down, and does not consider prices that may exist at the nodal level that are the result of internal congestion.

² This information is based on settlement values available at the time of drafting. Settlement information is subject to updates that can occur within the settlements timeline.

Figure 8. Total monthly payments for imbalance reserve by direction



Day-ahead resource sufficiency evaluation failures

Failures of the extended day-ahead market resource sufficiency evaluation were very infrequent for all three balancing areas. Failures occurred on only three days between May and July. Table 1 summarizes each of these failures.

Table 1. Day-ahead resource sufficiency evaluation failures (May–July 2026)

Balancing area	Date	Number of hours	Source of insufficiency
PacifiCorp West	4-May-26	9	Imbalance reserve up (8 hours) / imbalance reserve down (1 hour)
PacifiCorp East	17-Jun-26	1	Imbalance reserve
	13-Jul-26	3	Regulation up

Residual unit commitment procurement and operator adjustments

Figure 9 shows average hourly residual unit commitment procurement by balancing area from May 2025 through July 2026. Prior to May 2026, all residual unit commitment procurement was for the CAISO balancing area. Beginning in May 2026, values include both reliability capacity up (shown as positive) and reliability capacity down (shown as negative) across all balancing areas participating in the day-ahead market.

Figure 10 shows the average hourly residual unit commitment operator adjustments on each day of 2025 (red) and each day of 2026 through July (blue). Operators in each day-ahead market balancing area can adjust their area's residual unit commitment target load requirement to ensure there is sufficient capacity with real-time must-offer obligations to account for uncertainty that may materialize between the day-ahead and real-time markets. The imbalance reserve product is intended to address much of this same uncertainty.

- Average hourly reliability capacity up (RCU) procurement, including minimum load, was about 1,550 MW from May through July 2026, compared to 1,470 MW during the same period in 2025 and about 1,500 MW over the 12 months prior to May 2026.
- Average hourly reliability capacity down procured from May through July 2026 was around 670 MW.
- The CAISO balancing area procured the large majority of reliability capacity from May through July 2026, accounting for 97 percent of reliability capacity up and 92 percent of reliability capacity down.
- PacifiCorp East procured 2 percent of reliability capacity up and 7 percent of reliability capacity down. PacifiCorp West procured 1 percent of reliability capacity up and 1 percent of reliability capacity down.
- The CAISO balancing area made significantly less adjustments to residual unit commitment load in May to July 2026 compared to the same months of 2025. The CAISO balancing area made no adjustments in May 2026 and made adjustments on only two days in June 2026. Average hourly adjustments in July 2026 were 125 MW, down from 835 MW in July 2025.

Figure 9. Average hourly residual unit commitment procurement by balancing area

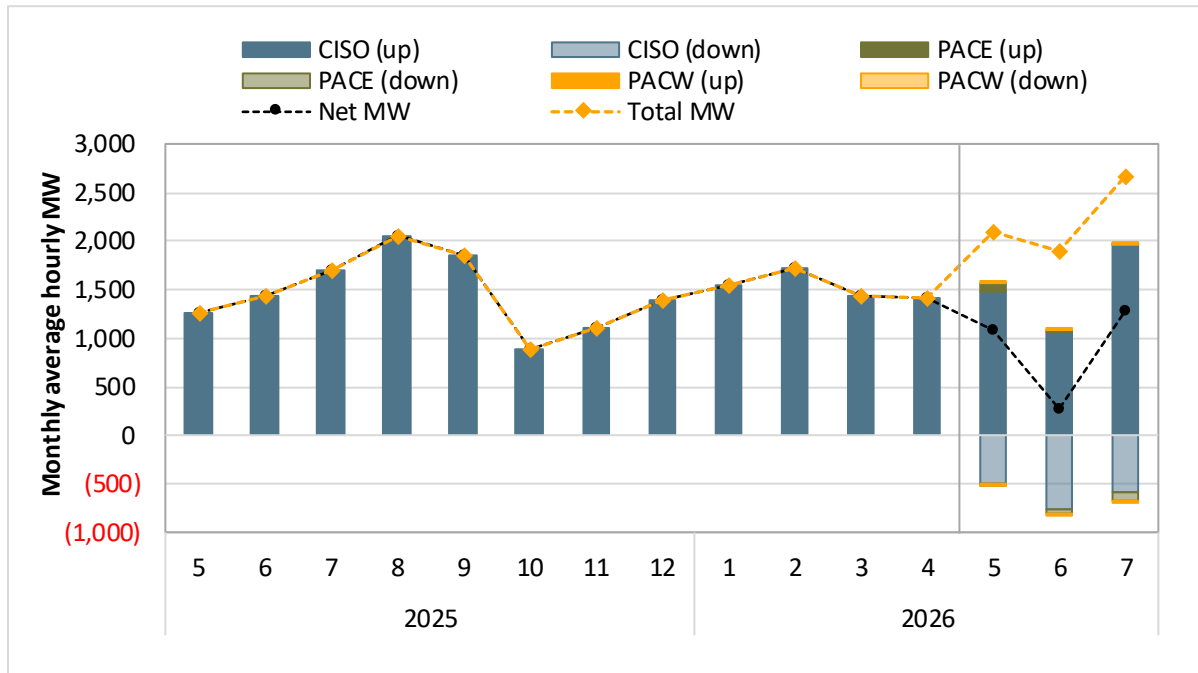
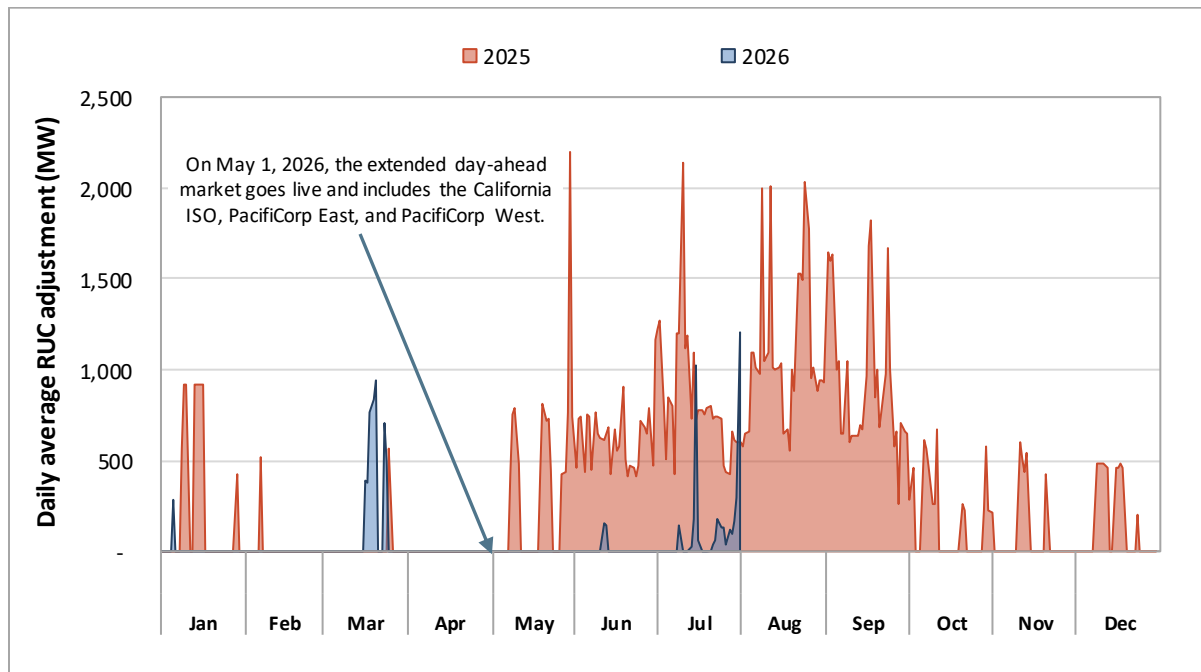


Figure 10. Residual unit commitment adjustments (Jan 2025 – July 2026)



Residual unit commitment costs

Figure 11 shows monthly total residual unit commitment costs and weighted average residual unit commitment prices from May 2025 through July 2026. Costs reflect each resource's residual unit commitment award multiplied by each resource's locational marginal price, including minimum load MW.

Prior to May 2026, all resource adequacy capacity in the CAISO balancing area had to submit \$0/MWh bids into the residual unit commitment process, and this capacity would not receive payments for any awards they received. Only the non-resource adequacy portion of residual unit commitment schedules received payments, accounting for about 2 percent of total residual unit commitment procurement over the 12 months before the launch of EDAM.

Beginning in May 2026, resource adequacy capacity can bid above \$0/MWh, but the payments made to resource adequacy capacity may be credited back to load serving entities upon mutual agreement between the resource and load serving entity.

Figure 12 shows that, from May through July 2026, about 5 percent of resource adequacy capacity on average was subject to mutual agreement (transitional measure) that credited payments back to the load serving entity, while payments for the remaining capacity were retained by resources.³

- Average monthly residual unit commitment costs were \$10.3 million from May through July 2026, similar to the \$10.6 million during the same period in 2025, despite the addition of two balancing authority areas under EDAM.
- In the year prior to May 2026, total residual unit commitment costs averaged about \$10.6 million per month, but actual payments to non-resource adequacy capacity accounted for only 2 percent of this.
- The majority of costs from May through July 2026 were for CAISO balancing area reliability capacity up payments (82 percent), followed by CAISO reliability capacity down (13 percent) and PacifiCorp East reliability capacity up (3 percent).
- Only about 2 percent of CAISO balancing area reliability capacity payments were subject to mutual agreements that credited payments back to load serving entities.
- Despite resource adequacy resources being able to bid above \$0/MWh since May 2026, weighted average residual unit commitment prices were lower from May through July 2026 (\$6/MWh) than during the same period in 2025 (\$10/MWh)

³ The transitional measures data shown for May and June is based on the July 2026 election records rather than the May or June records. This is because the tariff provides a 60-day grace period following the day-ahead market enhancements implementation on May 1, 2026. During this window, resource/load serving entity pairs could elect transitional measures at any point through late June and have the election applied retroactively to May 1 through resettlement. For resource/load serving entity pairs that elected transitional measures during the 60-day grace period, CAISO resettled May and June to transfer the resource adequacy overlap revenue from the resource to the load serving entity.

Figure 11. Monthly residual unit commitment costs and prices

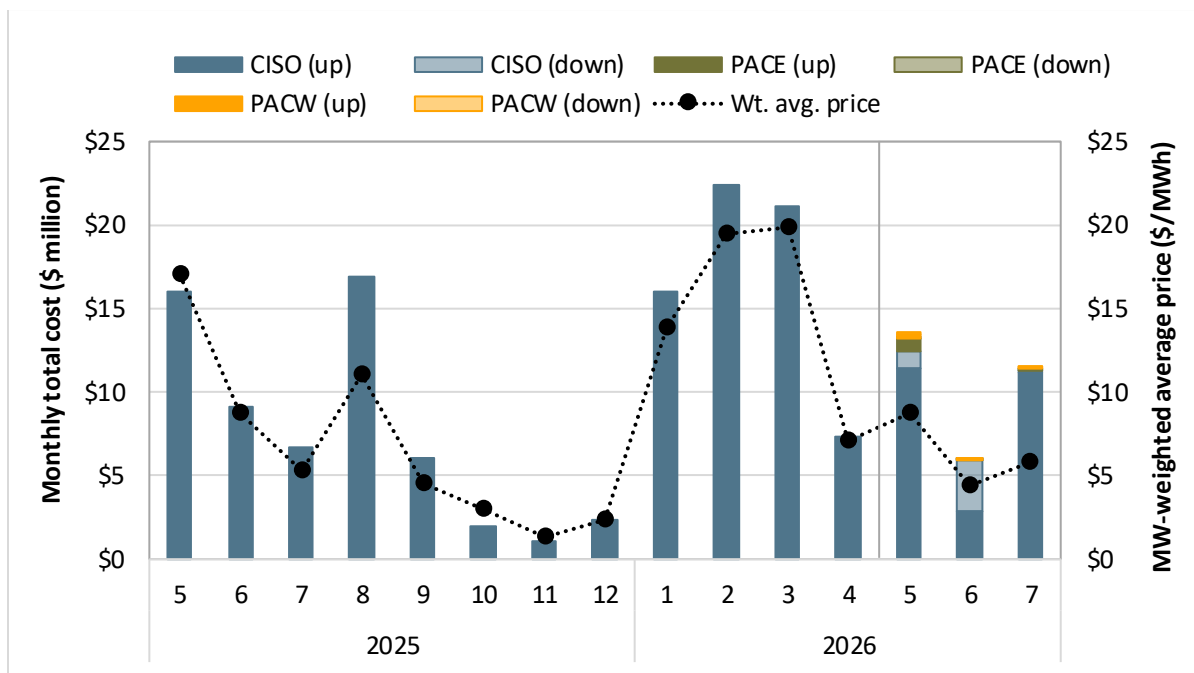
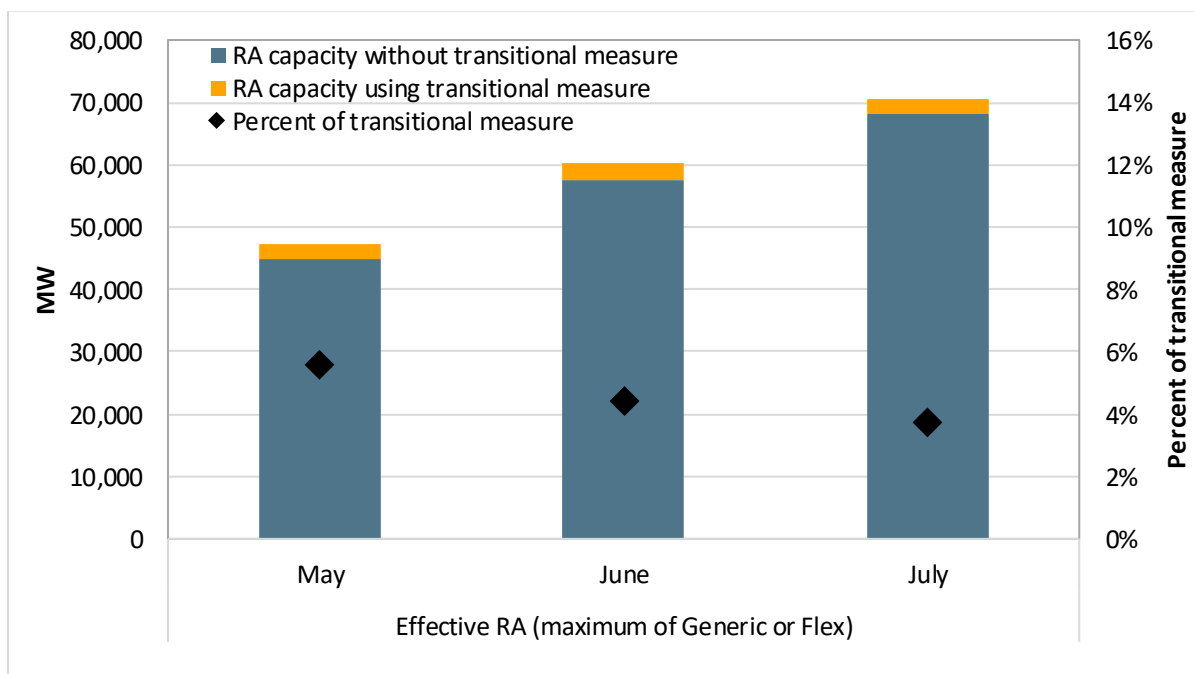


Figure 12. RA capacity subject to mutual agreements (transitional measure)

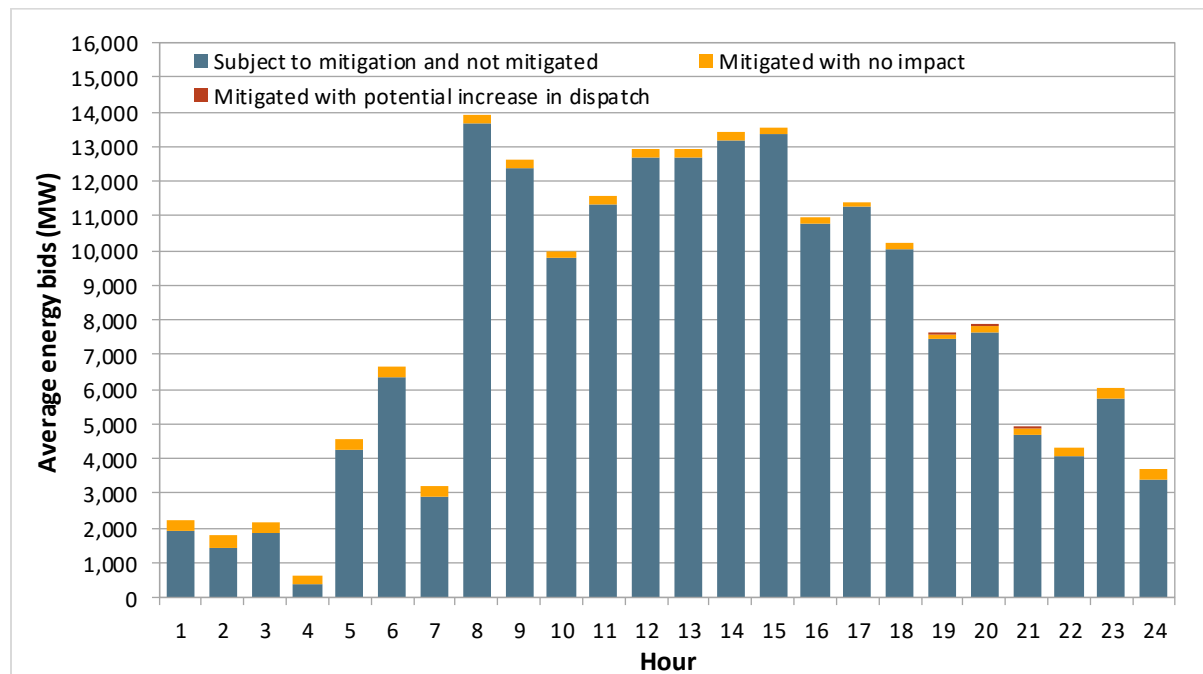


Residual unit commitment local market power mitigation

Figure 13 shows the average hourly reliability capacity up bids from May through July 2026 that were subject to local market power mitigation but were not mitigated (blue bars), bids that were actually mitigated but the mitigation did not result in any increase in awards (yellow bars), and mitigated bids that potentially resulted in increased awards (red bars). Reliability capacity down bids are not subject to local market power mitigation.

- About 89 percent of the bids subject to mitigation were due to every resource in PacifiCorp East being subject to potential mitigation when EDAM transfer congestion was into PacifiCorp East from the CAISO balancing area in the residual unit commitment local market power mitigation run.
- Only 241 MW per hour of bids subject to residual unit commitment mitigation ended up being mitigated over the three months.
- The average hourly potential increase in residual unit commitment awards from local market power mitigation was less than 1 MW.

Figure 13. Average reliability capacity up bids considered for mitigation (May–July 2026)



Congestion revenue allocation

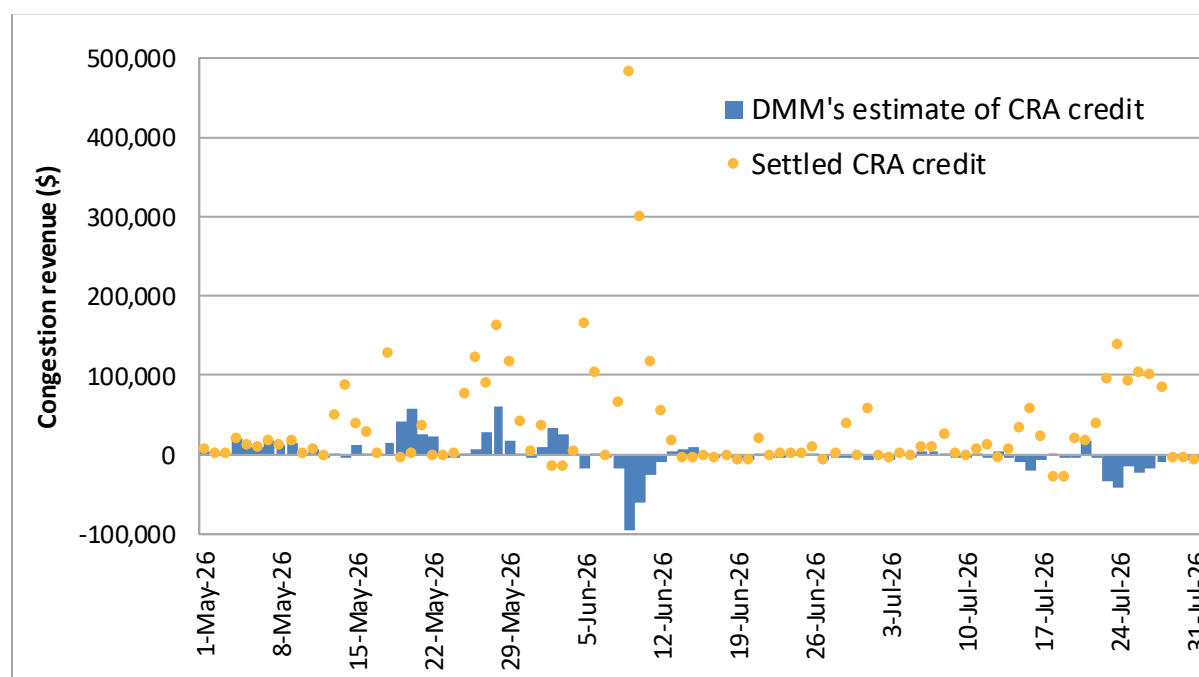
Under the ISO's transitional design for allocating congestion revenue in EDAM balancing areas, a portion of day-ahead parallel flow congestion revenues is returned to

the EDAM areas where market participants have paid prices that include those congestion costs, rather than to the balancing area where the constraint occurs. This policy is designed to help manage the cost of congestion for transmission customers exercising their eligible firm transmission rights.

Due to a settlements error, PacifiCorp balancing areas have received higher overall congestion revenue credit payments than is appropriate, according to DMM's estimates. Figure 14 shows DMM's estimate of daily total congestion revenues from CAISO balancing area congestion to be returned to PacifiCorp areas compared to the settled amounts.

DMM estimates the appropriate credit to PacifiCorp areas to be nearly \$386 thousand in May 2026, -\$157 thousand in June, and -\$199 thousand in July. Total congestion revenue credits paid to PacifiCorp areas were \$1.05 million, \$1.33 million, and \$822 thousand, respectively. DMM expects future resettlements to revise these payments downward, closer to DMM's estimated amounts.

Figure 14. Congestion revenue credit returned to PacifiCorp areas (May 1 – July 31, 2026)



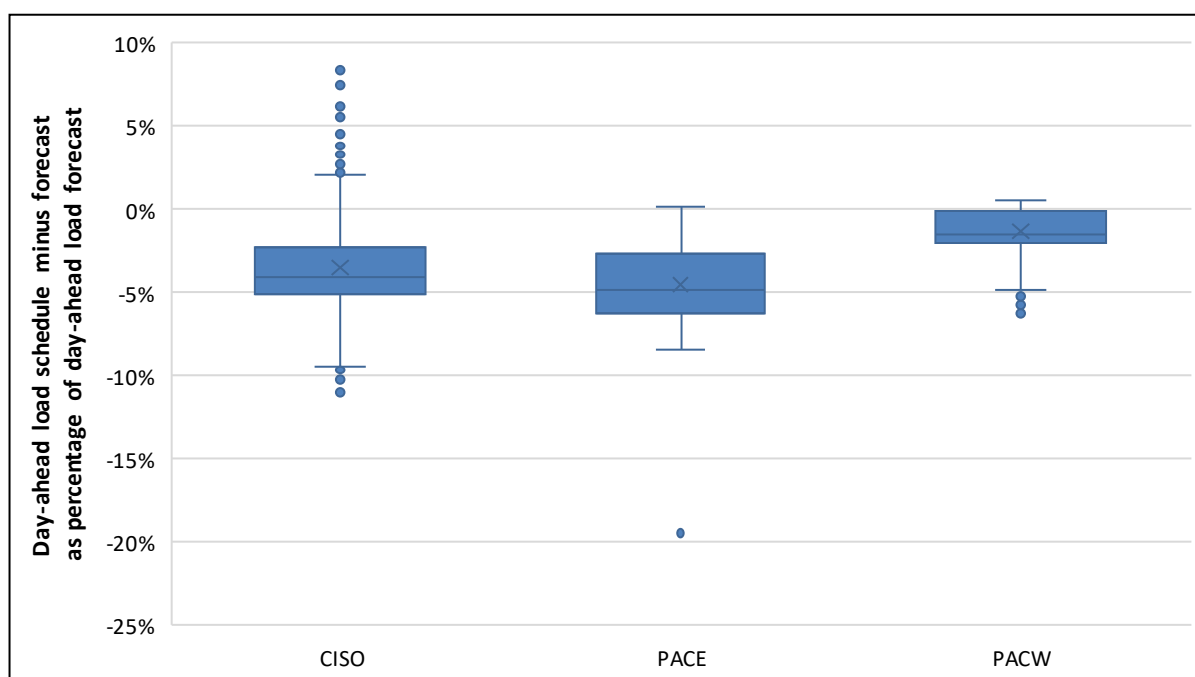
Load scheduling

Figure 15 shows each balancing area's May through July 2026 distribution of the amount by which load was scheduled below the day-ahead load forecast, expressed as a percentage of that day-ahead load forecast. The box plots show each balancing area's minimum value, first quartile, median, third quartile, and maximum value, along with the interquartile range and any outliers.

Virtual demand can decrease incentives for load serving entities to under-schedule their day-ahead market load forecast. This is because virtual demand can converge day-ahead prices with expected real-time prices even if load serving entities schedule less than their day-ahead forecast. There is no virtual bidding at nodes in PacifiCorp East or PacifiCorp West.

Despite neither PacifiCorp East nor PacifiCorp West having virtual bidding at their nodes, load under-scheduling was not notably more prevalent in those balancing areas than in the CAISO balancing area.

Figure 15. Distribution of day-ahead load under-scheduling as a percentage of day-ahead load forecast (May–July 2026)



Greenhouse gas attributions

Figure 16 shows the average hourly quantity of schedules outside of California attributed as serving California load for greenhouse gas (GHG) accounting purposes. Figure 16 includes average greenhouse gas constraint prices weighted by delivered GHG quantities across all markets from May to July 2026.

Figure 17 shows the cleared greenhouse gas quantity in the day-ahead market by fuel type from May to July 2026.

As shown in these charts:

- In all markets, greenhouse gas attribution and prices were lower during the mid-day solar hours than during morning and evening non-solar hours.

- A majority of the greenhouse gas quantity attributed as serving California load in the day-ahead market was from gas resources in PacifiCorp East.

Figure 16. Average hourly greenhouse gas price and cleared quantity (May–July 2026)

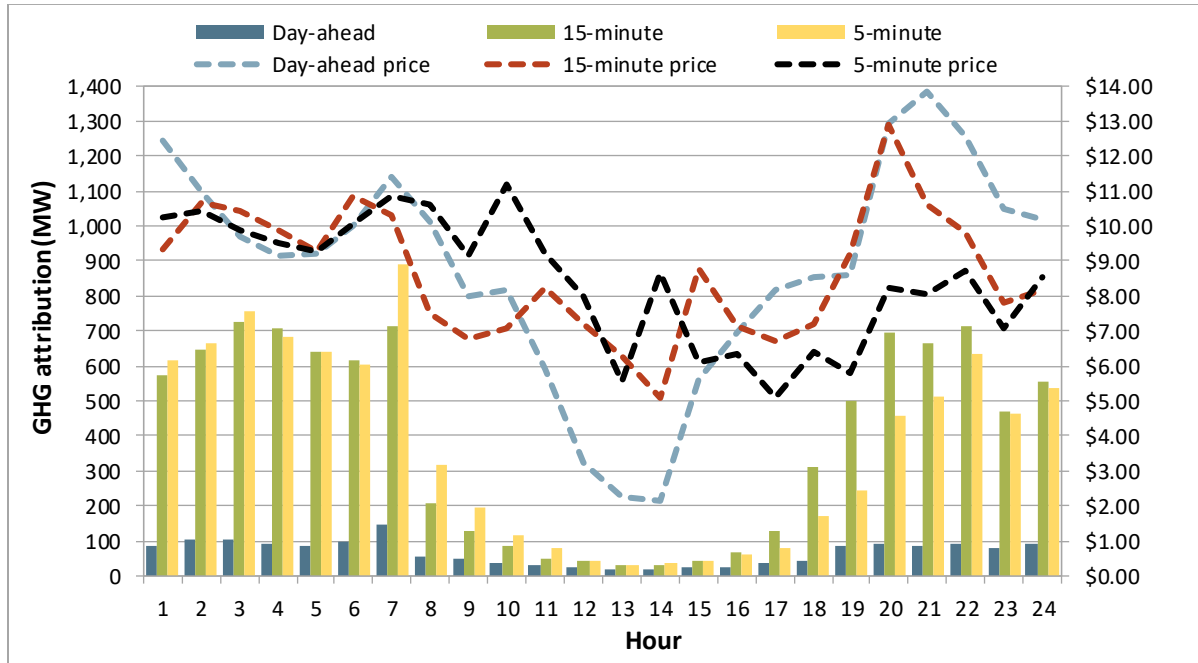


Figure 17. Day-ahead market average hourly greenhouse gas cleared quantity by fuel type (May–July 2026)

