



California ISO

Market Performance and Planning Forum

Q1

March 20, 2025

CAISO PUBLIC

Forum Reminders:

- This quarterly forum that engages stakeholders in review of market performance issues and in high level dialogue on release planning, implementation and new market enhancements. This is intended to foster open dialogue and sharing of ideas and perspectives
- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- The meeting is structured to stimulate dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try to be brief and refrain from repeating what has already been said so that we can manage this time efficiently.

Instructions for raising your hand to ask a question

- Open the Participant and Chat panels from the bottom right.
- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon 🖐 located on the bottom of your screen.
 - **Note:** *3 only works if you dialed into the meeting.
- Please remember to **state your name** and **affiliation** before making your comment.
- You may also send your question via chat to **Christina Guimera** or to all panelists.
- If you need technical assistance during the meeting, please send a chat to the event producer.

Objective: Enable dialogue on implementation planning and market performance issues

- Review key market performance topics
- Share updates to 2024-2025 release plans, resulting from stakeholders inputs





California ISO

Market Performance and Planning Forum

Agenda – Mar 20, 2025
9 a.m. – 2 p.m. (PST)

Time:	Topic:	Presenter:
09:00 – 09:05	Introduction, Agenda	Christina Guimera, Stakeholder Affairs
9:05 – 09:35	Policy Update	Becky Robinson, Market Policy Development
09:35 – 11:30	Market Performance Update Policy Update	Market Performance and Advanced Analytics Short Term Forecasting
11:30-12:00	Release Update	Trang Vo, Project Management
	2025 MPPF Schedule	Christina Guimera, Stakeholder Affairs

Policy Update

Becky Robinson

Director, Market Policy Development

EDAM Congestion Revenue Allocation

- We are starting a new stakeholder initiative to explore EDAM congestion revenue allocation, given the questions raised in the PacifiCorp OATT filing at FERC.
- We plan to have a targeted scope and hope to bring resolution to these issues quickly, by the time of the May Board of Governors and Governing Body meetings.
- To facilitate that, we are adjusting schedules on some other policy initiatives to make space for stakeholders to devote their attention to this matter.

Assistance Energy Transfer and WEIM Resource Sufficiency Evaluation

- Planned upcoming kick-off for Assistance Energy Transfer extension discussion
 - Tariff provisions currently sunset December 31, 2025
 - Decision informed by analysis of recent peak seasons and WEIM results
 - Metrics related to assistance energy transfers to help inform whether it is working well as-is, or whether we should explore modifications
 - We can consider any additional scope in a subsequent RSEE 3 initiative, which would start later this year, if there is a desire to do so.
- Proposed decisional classification: Joint authority

Price Formation Enhancements (PFE) initiative

- We continue to progress in Phase 2 of our initiative, advancing the development of proposals for scarcity pricing, BAA-level market power mitigation (MPM), and fast-start pricing.
- This initiative has been covering a lot of ground with weekly stakeholder meetings, but we will be adjusting the schedule of stakeholder meetings on this initiative to recognize the need for stakeholder bandwidth discussed earlier.

Greenhouse Gas Coordination (GHG) working group

- GHG accounting for state policies without a price on carbon emissions
 - Issue paper was published in December
 - Moving forward to design policy on an out-of-market GHG “accounting and reporting” approach, introduced and supported by stakeholders
 - Tariff authority may be needed to outline the funding approach
- Stakeholders requested additional GHG metrics and information to help support compliance with different state, local, and corporate programs
 - ISO now reporting average GHG emissions rate monthly and annual
 - Additional metrics reports will become available through the accounting and reporting initiative
 - Finalizing GHG metrics that will be monitored with EDAM launch
- Continued review of GHG design in the WEIM and EDAM
- Proposed decisional classification: Joint authority

Gas Resource Management Initiative

- CAISO staff developing a straw proposal informed by stakeholder comments submitted on March 11
- Comments indicate a desire to focus on enhancing advisory gas burn information in advance of the day-ahead market, exploring exceptional circumstance cost recovery, and ISO coordination with gas pipelines during restrictive operating conditions.
- Some of these changes would be process enhancements, whereas others may require tariff changes.
- Proposed decisional classification: Joint authority

Congestion Revenue Rights (CRRs)

- The ISO has kicked off a working group to enhance the congestion revenue rights (CRR) market
 - The next meeting will be held on March 25, 2025
 - Thus far, the working group has discussed initiative scoping, the current CRR program structure and function for stakeholders, and newly-published ISO analysis on the 2018 reforms
- As part of the 2018 reforms designed to resolve observed inefficiencies with the CRR auction, the ISO committed to:
 - assess the impacts of the proposals and
 - consider more comprehensive changes to the CRR allocation and auction design

- Proposed decisional classification: TBD

Demand and Distributed Energy Market Integration

- The ISO has started a new working group exploring the development or enhancement of participation models and market rules associated with demand response and distributed energy resource participation
 - Kick-off working group call held February 5, 2025
 - Initial working group session on March 3 begins the stakeholder-led scoping for policy development efforts
 - Discussion Paper forthcoming to organize stakeholder feedback and assist with policy prioritization
- Proposed decisional classification: TBD

Storage Design and Modeling

- The ISO hosted monthly full-day stakeholder working group meetings. The next meeting will be April 2, 2025.
- Meetings discussed overviews of topics and stakeholder-requested level-sets on existing storage constraints, planned storage constraints, and use of implied bid spreads.
 - Stakeholders such as Terra-Gen, PG&E, and Vistra presented on hybrid issues, novel participation pathways, and outage management topics
- Issue paper & straw proposal being developed
 - Outage management system enhancements, state-of-charge definition, and nonlinearity

Resource Adequacy (RA) policy development

The ISO is hosting working group meetings and working toward straw proposals.

Track 1: Modeling & Default Standards

- Loss of load expectation modeling
- Updating CAISO default planning reserve margin and default counting rules
- Unforced Capacity (UCAP) in collaboration with the CPUC and other local regulatory authorities
- Accounting for ambient derates due to temperature for RA resources

Track 2: Outage and Substitution & Availability and Performance Incentives

- Updating the ISO's outage and substitution processes
- Reforming availability and performance incentives

Track 3: Backstop Reform

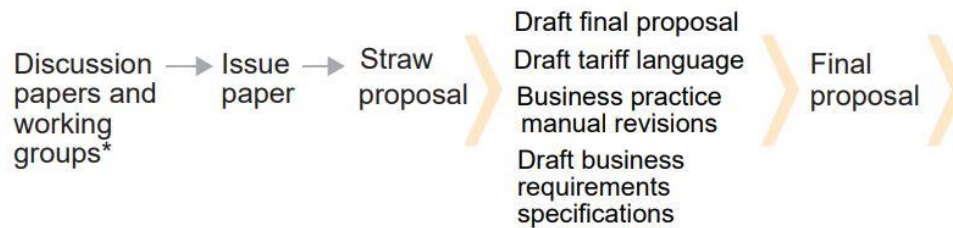
- Increase the ISO's visibility into available backstop capacity
- Increase transparency to stakeholders on backstop decision making
- Updating the current backstop product
- Longer-term solutions for the ISO BAA around curing deficiencies and assigning costs related to the EDAM resource sufficiency evaluation

Policy Initiatives Catalog & Roadmap

- Stakeholders submitted discretionary policy initiative proposals to the ISO during February 2025
- Stakeholder prioritization workshops & Regional Issues Forum Roundtable: April 2025
- Stakeholder prioritization & ranking survey: May 2025

Policy initiative process

PROPOSAL DEVELOPMENT



DECISION



IMPLEMENTATION



Stakeholder meetings, working groups and workshops may occur throughout the process

This represents the typical process, and often stages run in parallel.

**Discussion papers and working groups will be incorporated into the process as needed.*

Policy Initiative Status

		2025			
		Q1	Q2	Q3	Q4
Day Ahead Market Enhancements				Implementation working groups	
Extended Day Ahead Market		Implementation			
Gas Resource Management		Proposal working groups	Policy development		Decision
Greenhouse Gas Coordination		Policy development		Briefing/Decision	
Price Formation Enhancements					
	Scarcity pricing & market power mitigation	Proposal working groups	Straw proposal	Policy development	Final Proposal
	Fast start pricing	Proposal working groups	Straw proposal	Policy development	
WEIM Resource Sufficiency Evaluation Enhancements/AET Extension		Policy development			Decision
Demand and Distributed Energy Market Integration		Scoping working groups			Policy Development
Storage Design and Modeling		Scoping working groups		Policy development	
Congestion Revenue Rights		Scoping working groups	Policy development		
Resource Adequacy Modeling and Program Design		Policy development		Decision	Implementation

Market Performance Update

Agenda for Market Update

- Pricing of multiple contingencies
- Shaping factor enhancement
- Assistance energy transfer
- Ancillary services procurement
- Gas and power prices and market costs
- Energy storage resources
- Load Conformance
- General market performance metrics

Pricing of congestion from multiple contingencies

Market Performance and Advanced Analytics

Each market uses two optimization runs to attain a final market solution

- Each of the CAISO's markets consist of two market optimizations to achieve binding schedules and prices:
 - Scheduling run
 - Pricing run
- The scheduling run performs uneconomical adjustments of schedules and relaxations of constraints based on predefined priorities with corresponding penalty prices (i.e. scheduling parameters)
- The scheduling run is the starting point for the pricing run
- The pricing run uses prices based on the bid cap and floor to clear at economically meaningful prices

Transmission constraints can be relaxed in the scheduling run

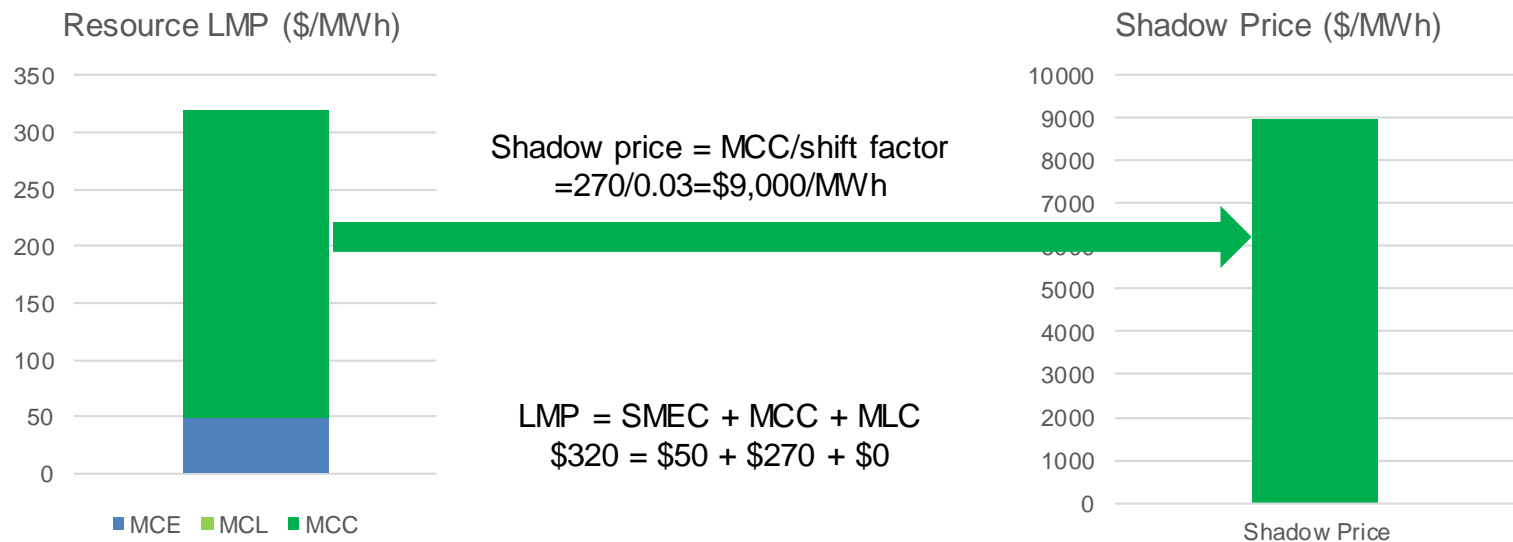
- Penalty prices are used to determine when the market optimization will relax an enforced transmission constraint rather than adjusting supply or demand bids or non-priced quantities to relieve congestion on the constrained transmission facility in the scheduling run
- In the integrated forward market, the penalty price of relaxing the enforced transmission constraint is set to \$5,000/MWh based on the \$1,000/MWh bid cap
- In the real-time market, the penalty price is set to \$1,500/MWh for transmission constraint relaxation based on the \$1,000/MWh bid cap
- When the cost of re-dispatching resources to relieve congestion per MWh on a transmission constraint exceeds the applicable penalty price, the market software will relax the transmission constraint

In addition to thermal limits, CAISO enforces security-based transmission constraints

- CAISO markets enforce:
 - Thermal-limit constraints: flowgates constraints
 - Security-based constraints: nomograms and contingencies
- The market enforces transmission constraints that protect the power system in case of a contingency of an outage of another transmission element
- All enforced contingencies are equally considered without regard to relative impact
- One transmission element typically can be associated with multiple contingencies, and all these contingencies are enforced in the market
- When a transmission constraint is relaxed under multiple contingencies in the scheduling run, high compounded prices in the pricing run can result due to the application of the penalty price for multiple contingencies

Example of high compounded prices in the pricing run

- A transmission constraint is relaxed under nine contingencies in the scheduling run of a fifteen-minute market
- The shadow price of each relaxed transmission constraint and contingency pair is \$1,500/MWh in the scheduling run
- So the total price of the relaxed transmission constraint is nine times the penalty price (\$13,500/MWh) in the scheduling run
- The shadow price of the transmission constraint is \$9,000/MWh in the pricing run and set by the marginal resource with -3% shift factor



Example of high compounded prices in the pricing run (Cont.)

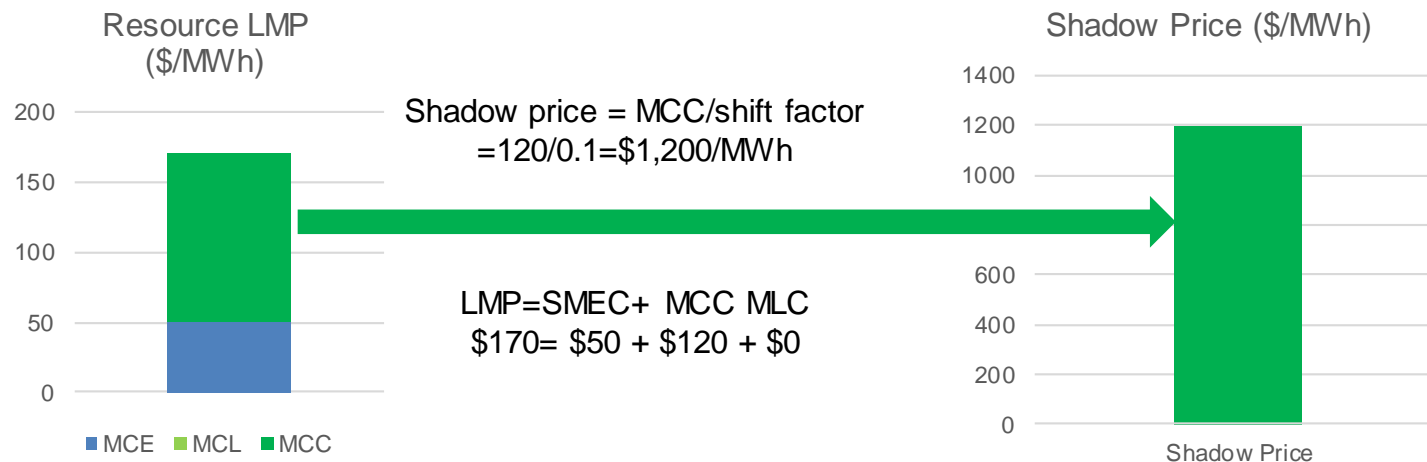
- A pricing node close to the transmission constraint has -30% shift factor and thus has \$2,750/MWh LMP
- The extreme shadow price, high LMP and inefficient resource award for congestion mitigation are due to the application of the penalty price of \$1,500/MWh on the same transmission constraint nine times in the scheduling run

CAISO is exploring an enhancement to the pricing mechanism for multiple contingencies. Example

- A transmission constraint is relaxed under nine contingencies in the scheduling run of a fifteen-minute market
- The shadow price of the most relaxed transmission constraint and contingency pair is \$1,500/MWh in the scheduling run
- The shadow price of the remaining eight pairs of relaxed transmission constraint and contingency is zero in the scheduling run
- Therefore, the total shadow price of the relaxed transmission constraint is \$1,500/MWh in the scheduling run

Example of the proposed enhancement (Cont.)

- The shadow price of the transmission constraint is \$1,200/MWh in the pricing run which is set by a marginal resource with -10% shift factor



- If a pricing node close to the transmission constraint has -30% shift factor, it has \$410/MWh LMP
- The enhancement addresses the extreme shadow price, high LMP and inefficient resource award for congestion mitigation by pricing the most relaxed contingency in the scheduling run

The CAISO plans to enhance the pricing mechanism to price the most relaxed contingency in the scheduling run when a transmission constraint is relaxed under multiple contingencies

- The market optimization will only price the most relaxed contingency among all relaxed contingencies for a transmission constraint at the penalty price in the scheduling run
- This will address the compounded pricing due to transmission constraint relaxation under multiple contingencies
- All credible contingencies determined by operations studies will continue to be enforced in the market
- The CAISO will proceed with a change for the Business Practice Manual for Market Operations

Ancillary services procurement in CAISO's markets

Market Performance and Advanced Analytics

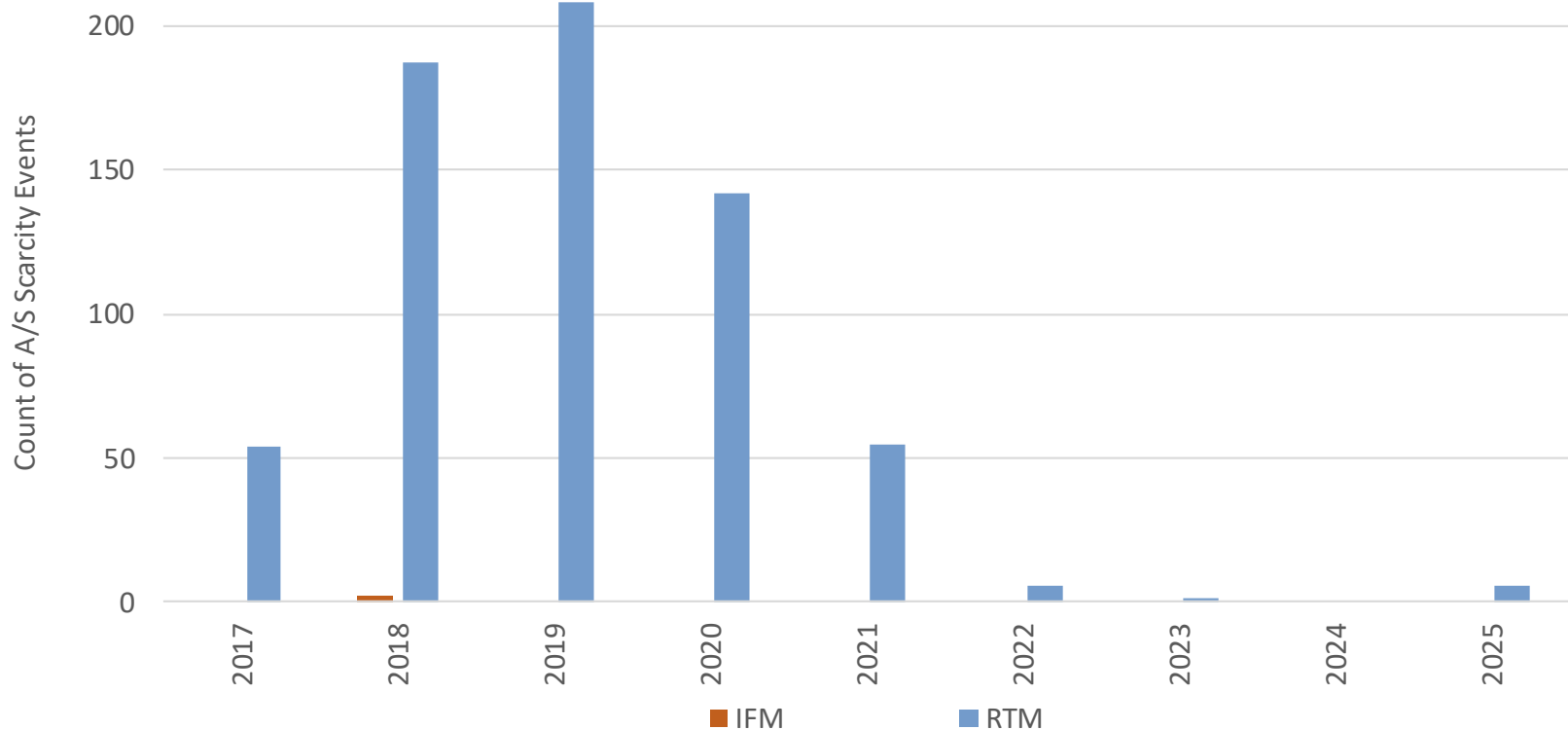
Ancillary Service (A/S) procurement in CAISO markets

- The ISO procures 100% of A/S Requirements in IFM to meet NERC Contingency Reserve Requirements for the CAISO's forecast of CAISO Demand
- A/S can be procured incrementally in the real time market
- Regulation Up and Regulation Down requirements estimated based on historical regulation use
- Contingency Reserve (Spin and Non-Spin) Requirements are the greater of:
 - Most Severe Single Contingency
 - 3% of Hourly Load + 3% of Hourly Generation
 - Online Photovoltaic Solar: ~10% of the hourly sum of all the solar resources MW at-risk
- A/S procurement may be blocked for certain units that are unable to deliver the A/S; i.e., congestion stranding A/S procurement

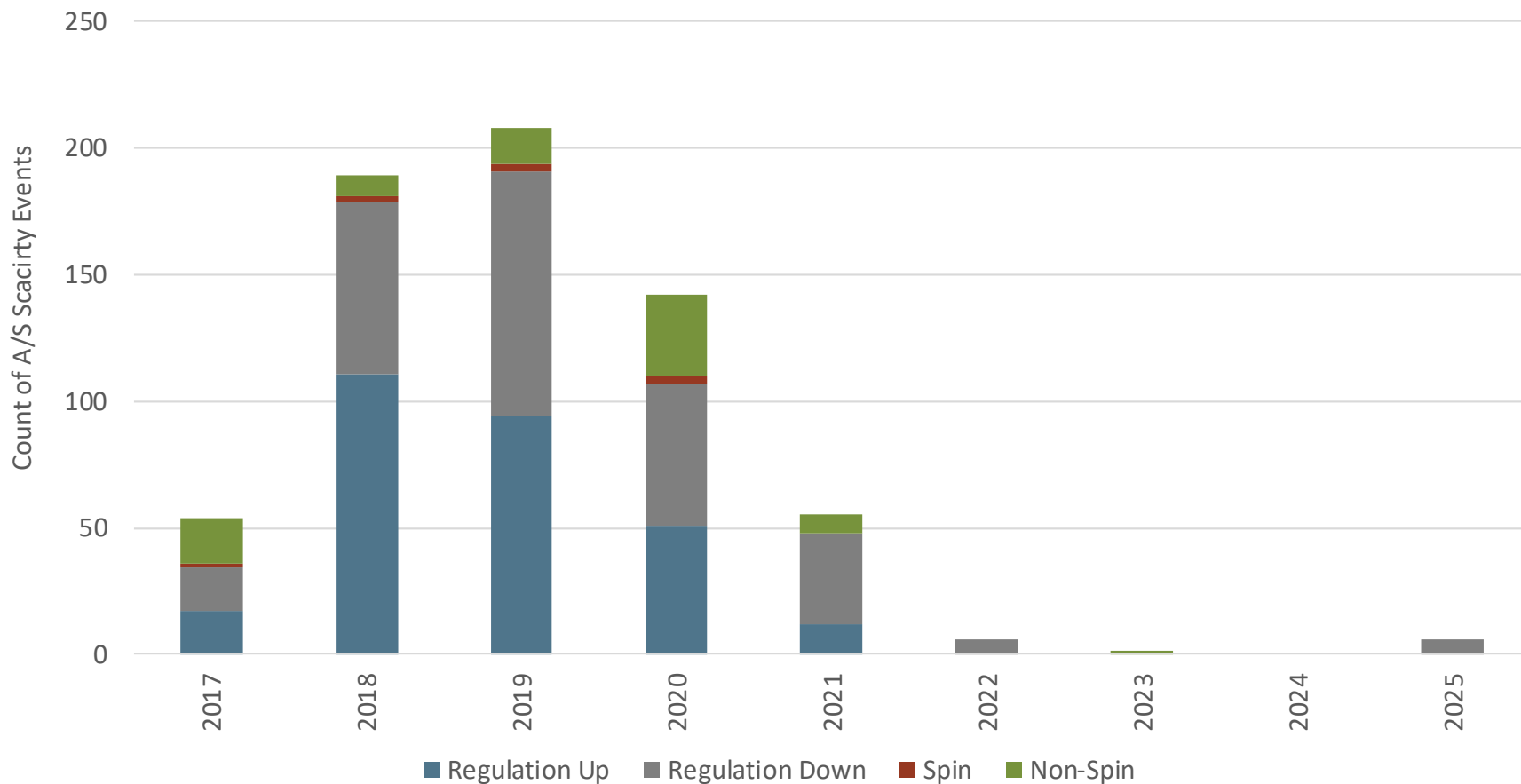
Ancillary Service Scarcity Events

- The majority of scarcity events occur in RTM when IFM A/S is lost.
- Major drivers of A/S re-procurement in RTM:
 - EMS/Telemetered High and Low limits are used from the resources in RTM instead of static certified limits.
 - Attenuation factors account for impacts to SOC for providing both Energy and A/S.
 - Resource outages.
 - Increase in RTM requirements from IFM requirements due to changing system conditions.

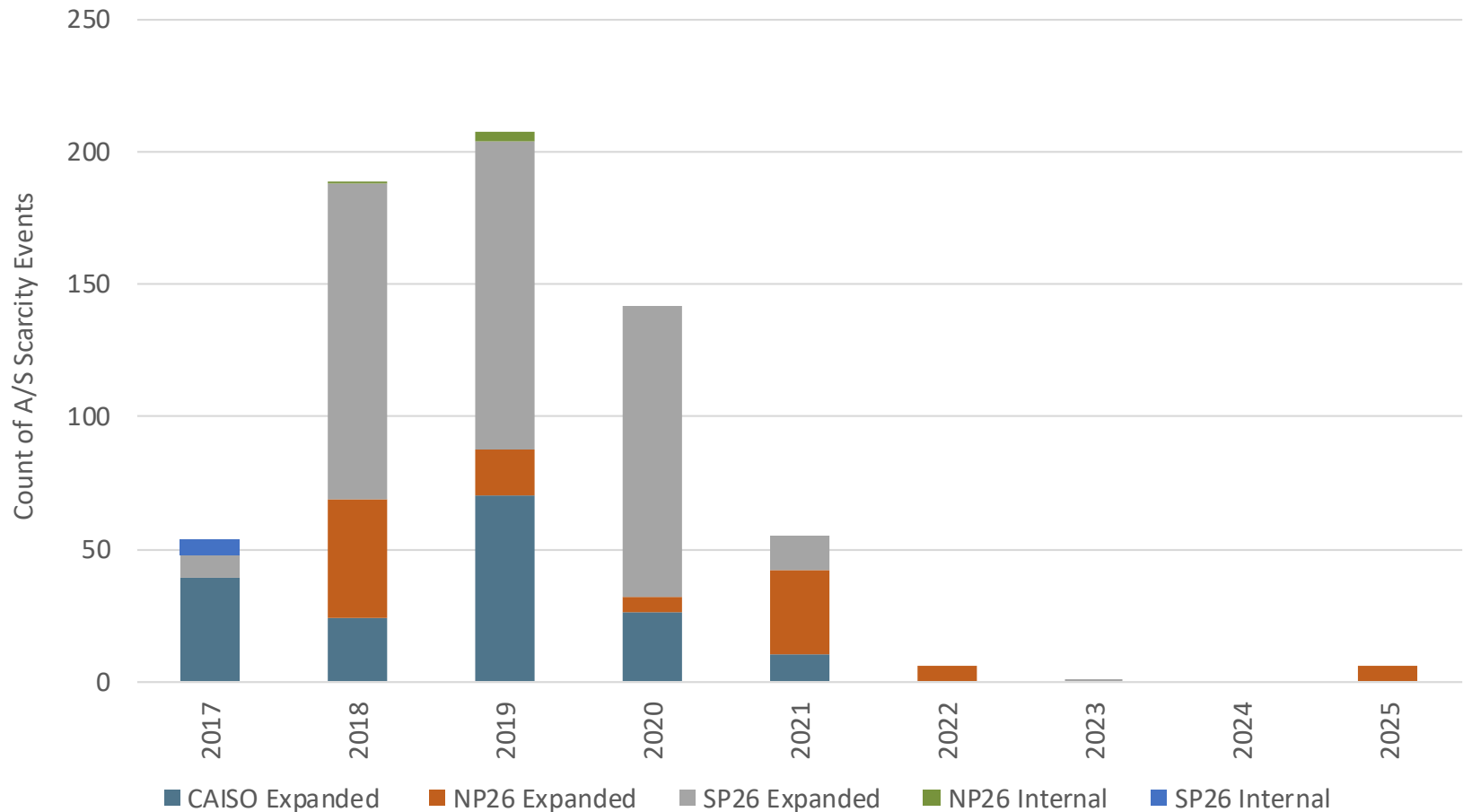
A/S Scarcity Events are infrequent in recent years due to large amounts of Storage resources now offering A/S



Ancillary Service Scarcity Events by Type of Service



Ancillary Service Scarcity Events by Region



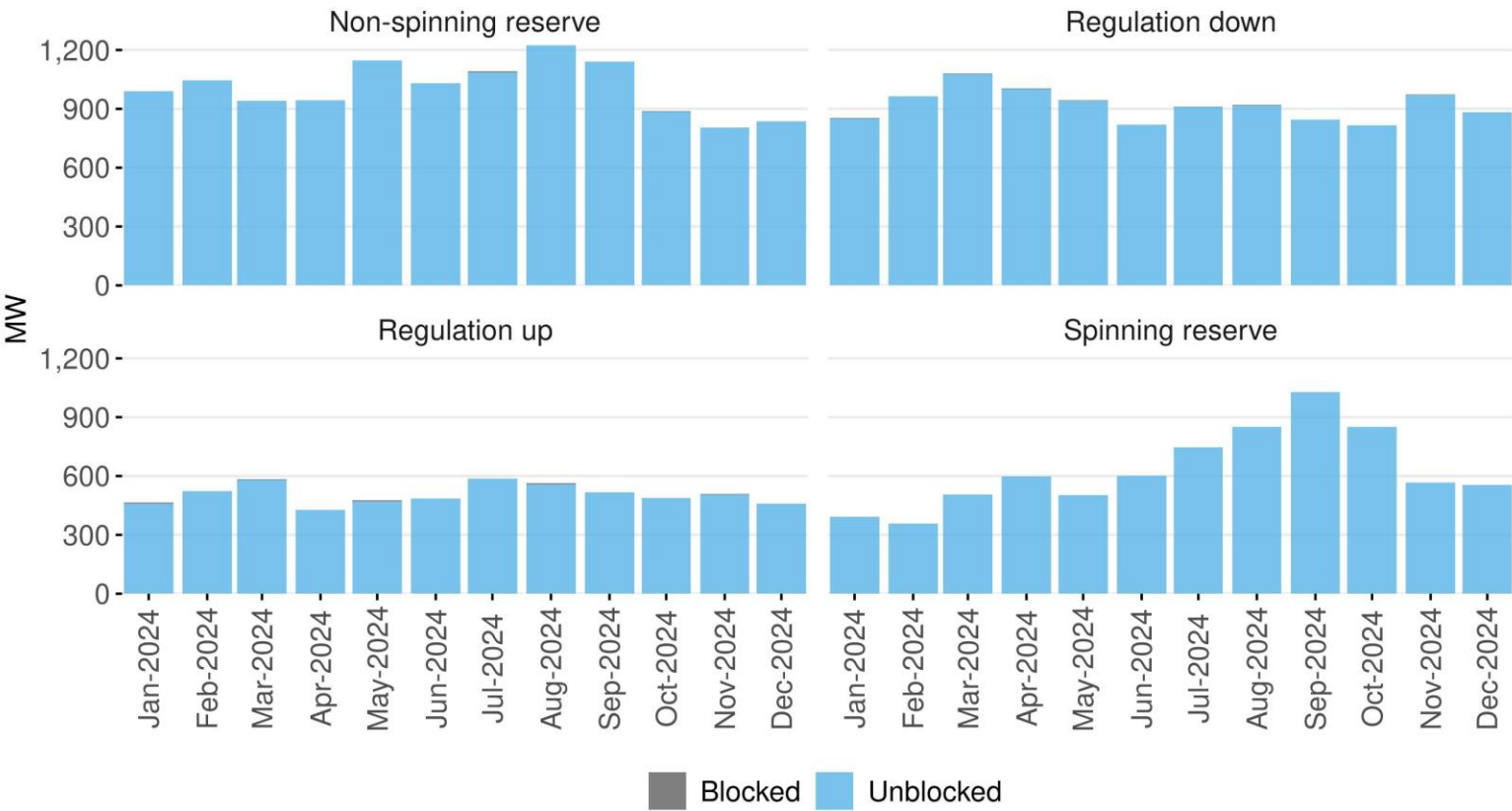
February 2025 Events

- Six Scarcity Events occurred from February 7-9, 2025:

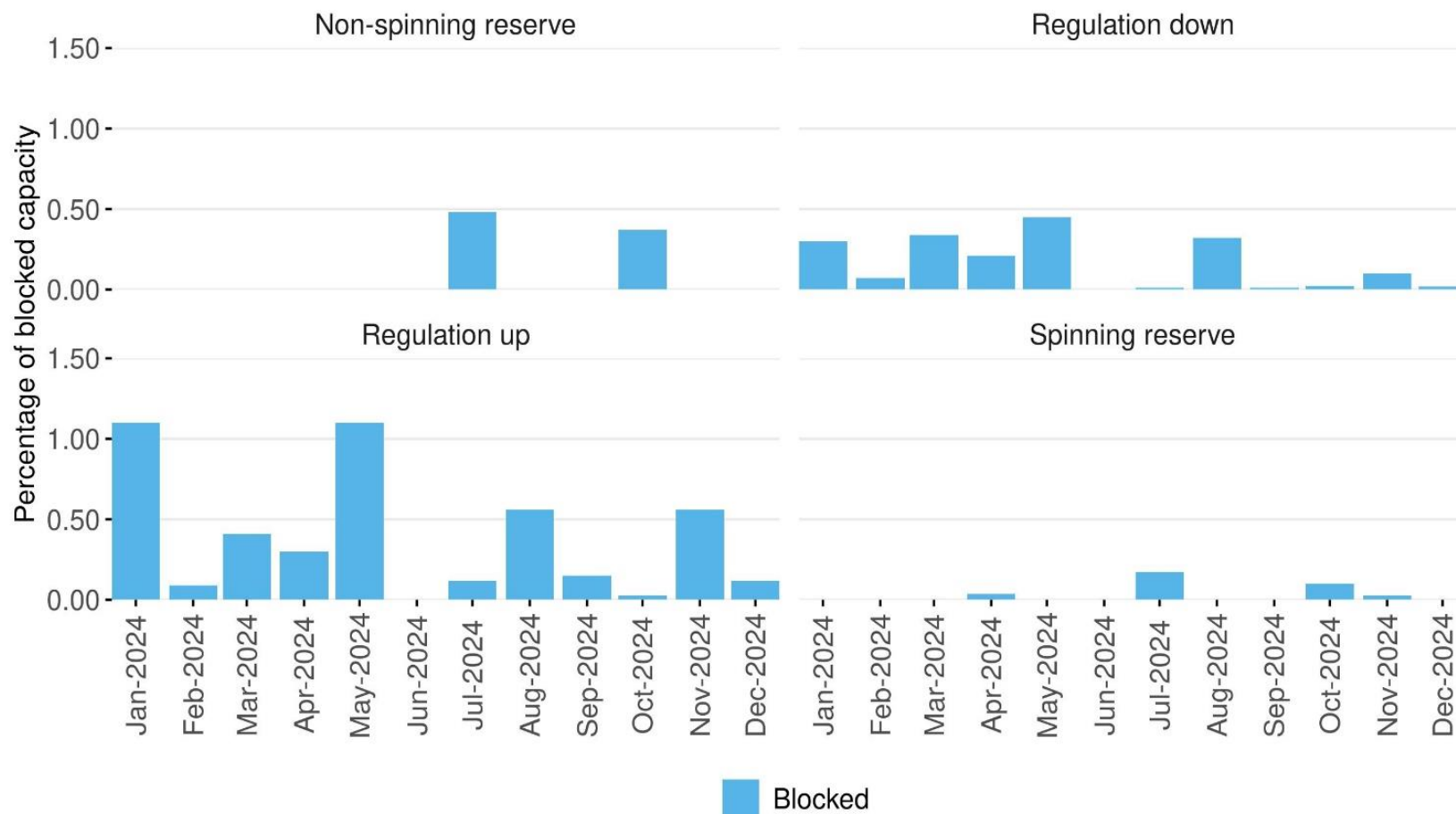
Trade Date	Hour Ending	Interval	Ancillary Service	Region	Shortfall (MW)	Percentage of Requirement
Feb 07	16	2	Regulation Down	NP26_EXP	2.93	0.5%
Feb 08	15	3	Regulation Down	NP26_EXP	24.35	3.95%
Feb 08	16	2, 3	Regulation Down	NP26_EXP	9.15	1.8%
Feb 09	15	2	Regulation Down	NP26_EXP	9.89	1.4%
Feb 09	15	3	Regulation Down	NP26_EXP	17.89	2.5%

- Main driver was large loss of IFM Regulation Down from a storage resource with insufficient EMS limits.
- Procuring Regulation Down is challenging when Northern California has negative energy pricing.

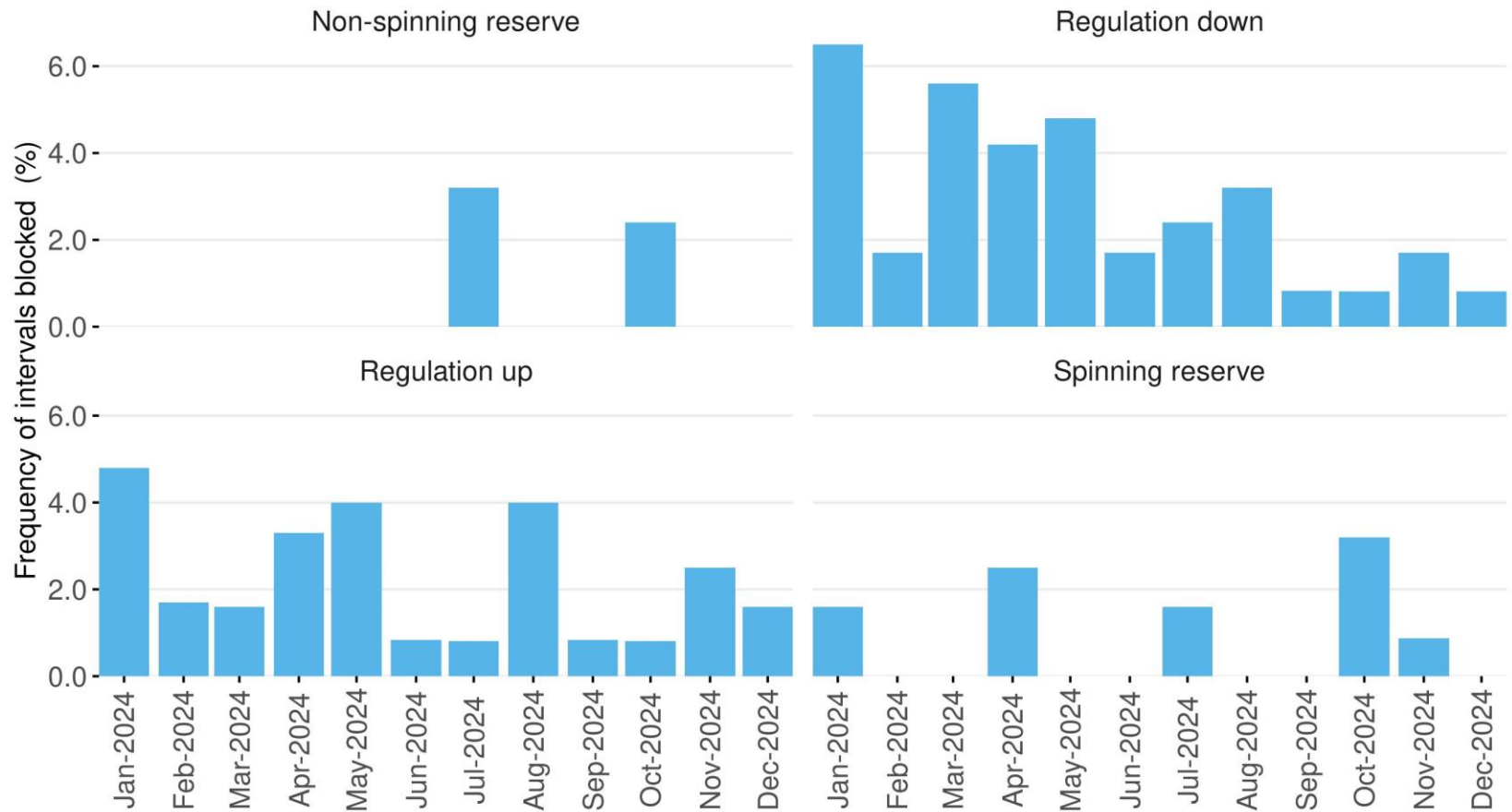
Based on 2024 procurement, A/S blocked events are infrequent and *de minimus* across all type of A/S



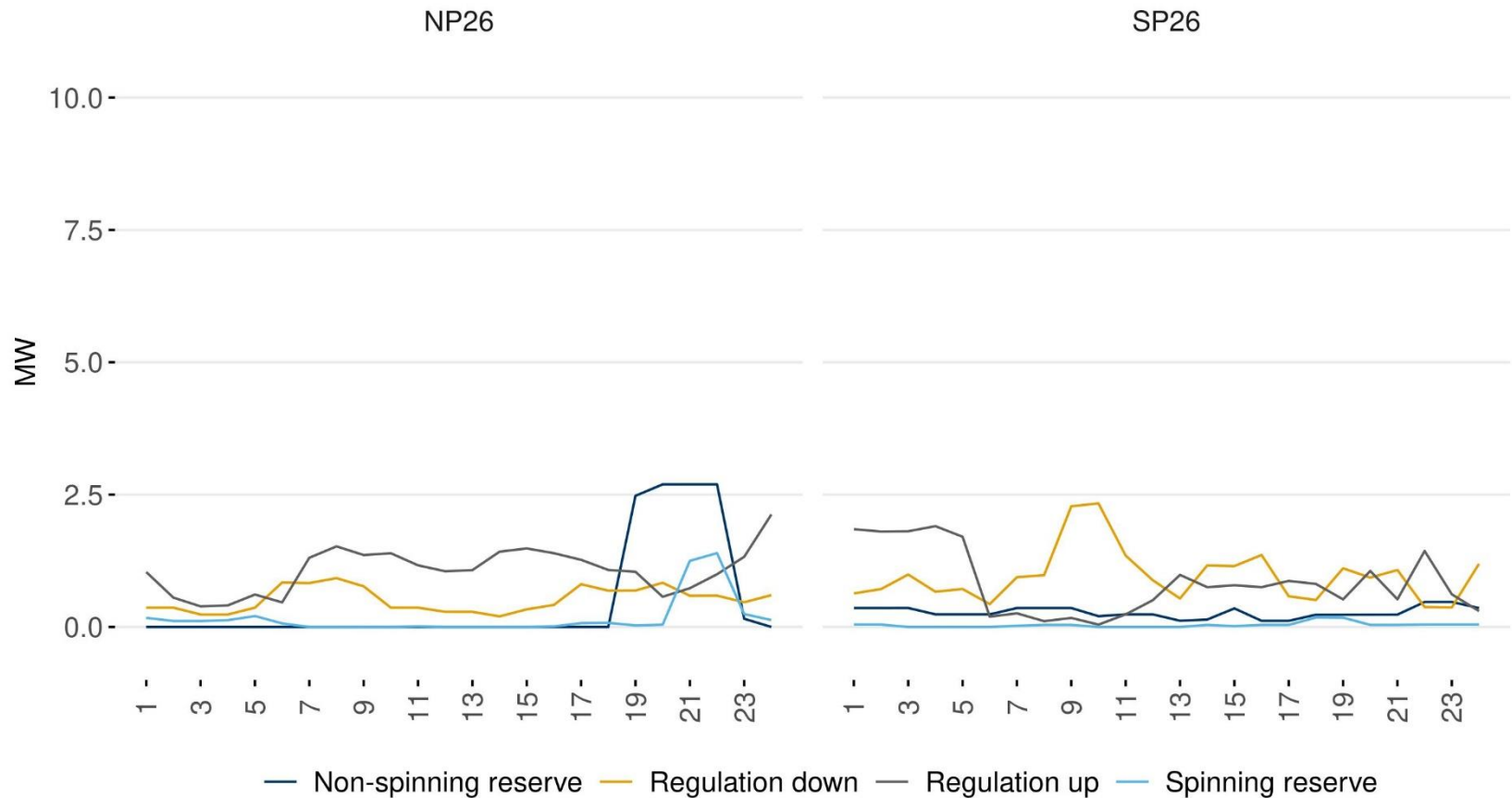
Upward regulation observed the largest volume of blocked capacity across all types of A/S



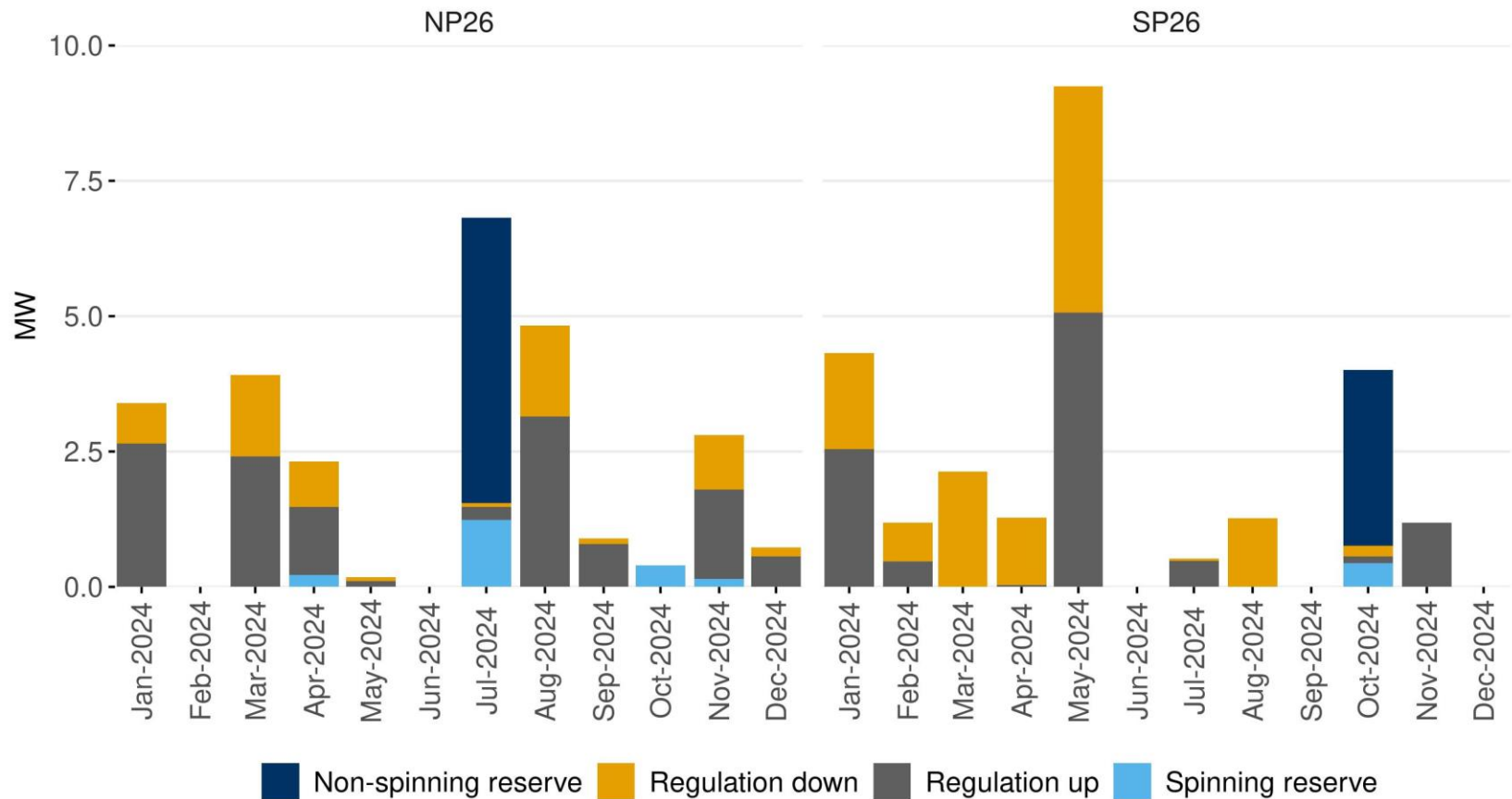
The frequency of intervals with blocked A/S is relatively low, with the highest frequency observed for regulation during the January 2024 winter conditions



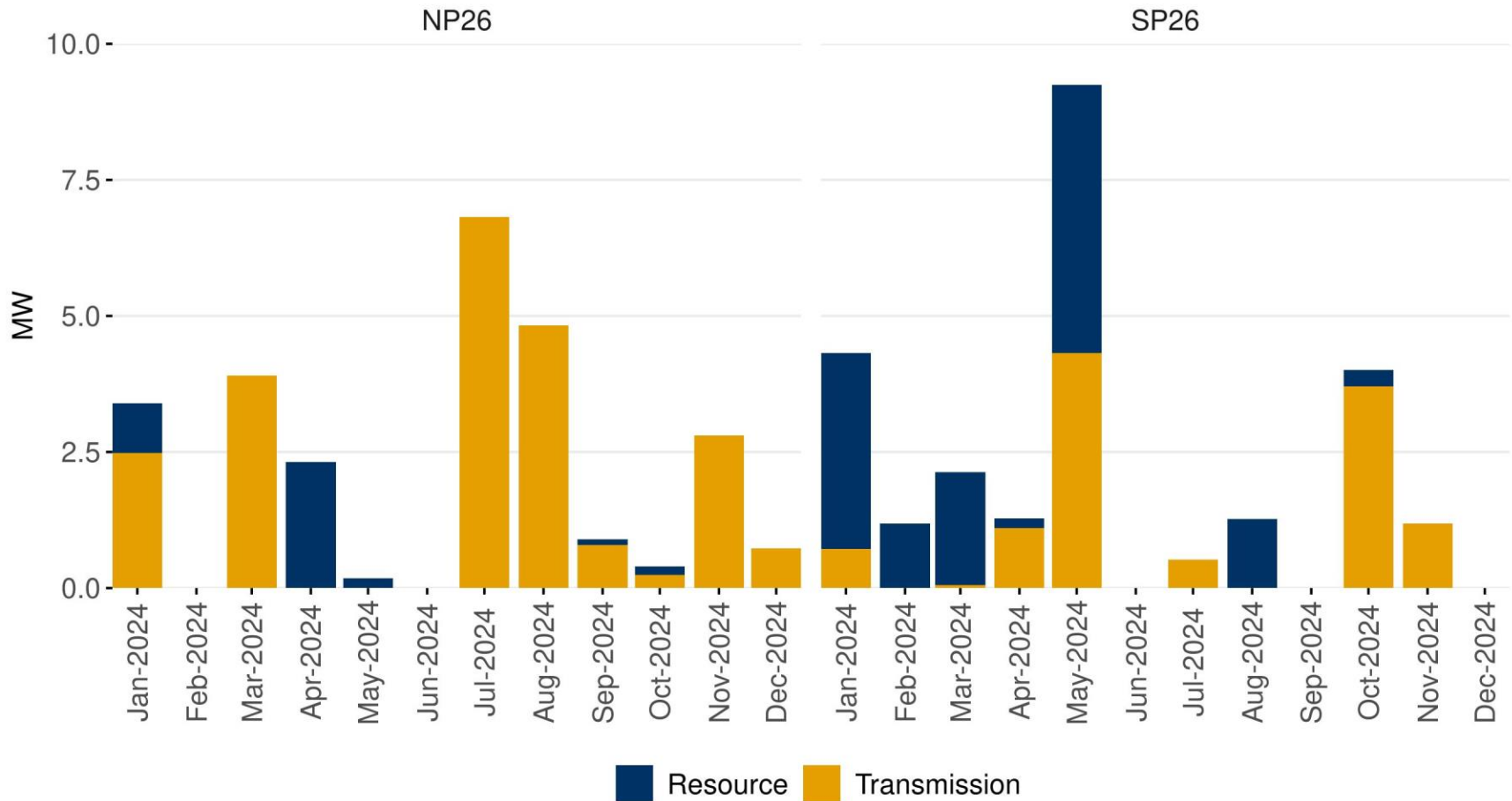
Hourly profile of all blocked ancillary services in 2024 were minimal for all hours in both NP26 and SP26 regions



Regulation up and down account for most of the capacity blocked among the four types of A/s in both NP26 and SP26



In 2024, transmission constraint was the primary driver for blocking A/S capacity



Shaping factor enhancement

Market Performance and Advanced Analytics

Hourly energy price shaping factor enhancements implemented effective DAM TD 11/16/24

- Hourly energy price shaping factor used in calculation of Maximum Import Bid Price (MIBP)
- MIBP used to cost-verify bids for imports/virtuals/storage resources above \$1,000/MWh as per FERC Order 831
- Enhancements to shaping factor made after Maximum Import Bid Price Analysis Workshop on May 28, 2024
 - CAISO presented analysis and discussed potential improvements to the shaping factor
 - Stakeholders provided feedback regarding the formulation of the shaping factor
 - Shaping factor formulation was consequently enhanced to align the days used in the calculation

May 28 workshop: <https://www.caiso.com/meetings-events/topics/miscellaneous-meetings>

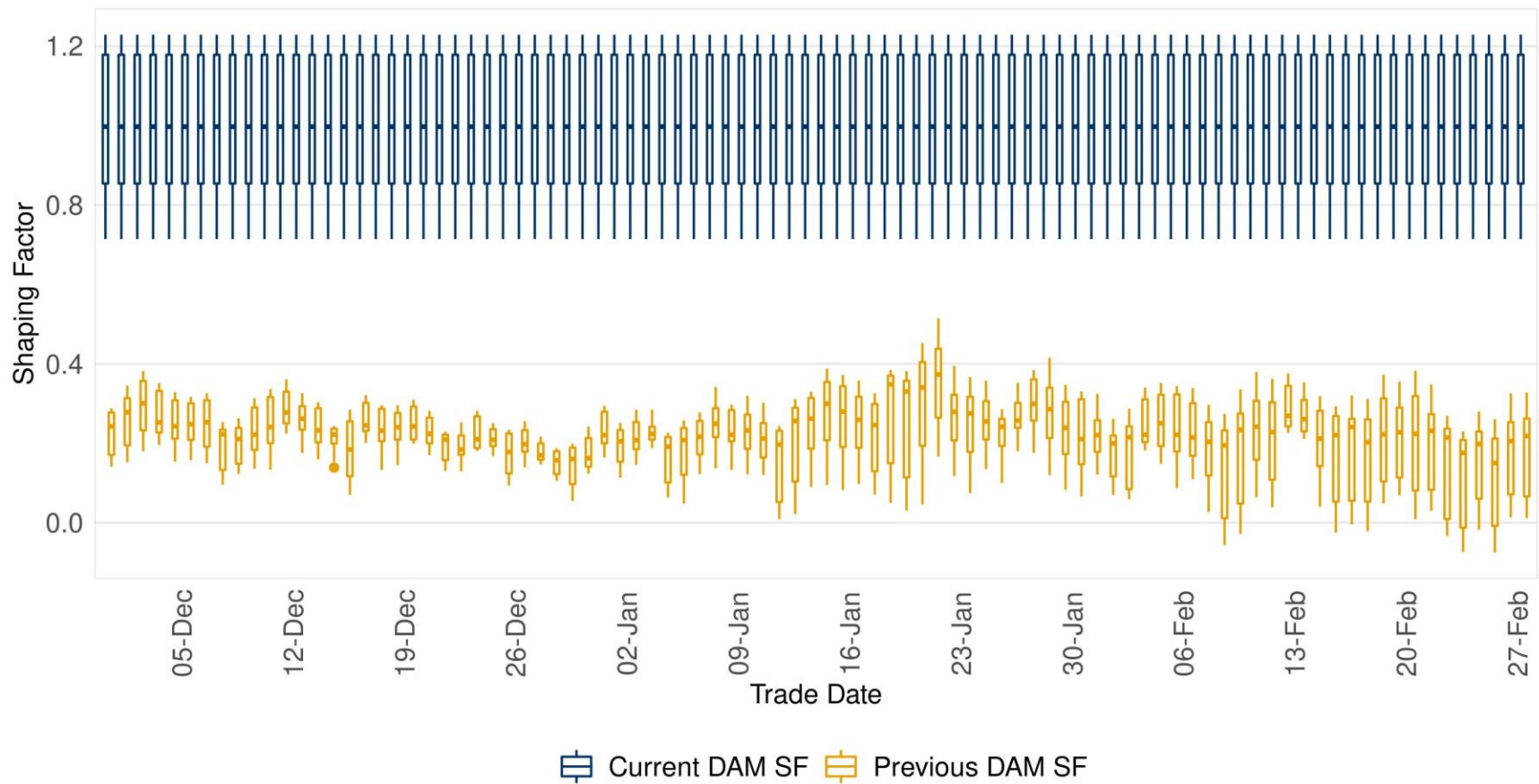
White paper: <https://www.caiso.com/documents/whitepaper-maximum-import-bid-shaping-factor.pdf>

Presentation: <https://www.caiso.com/documents/presentation-maximum-import-bid-price-workshop-may-28-2024.pdf>

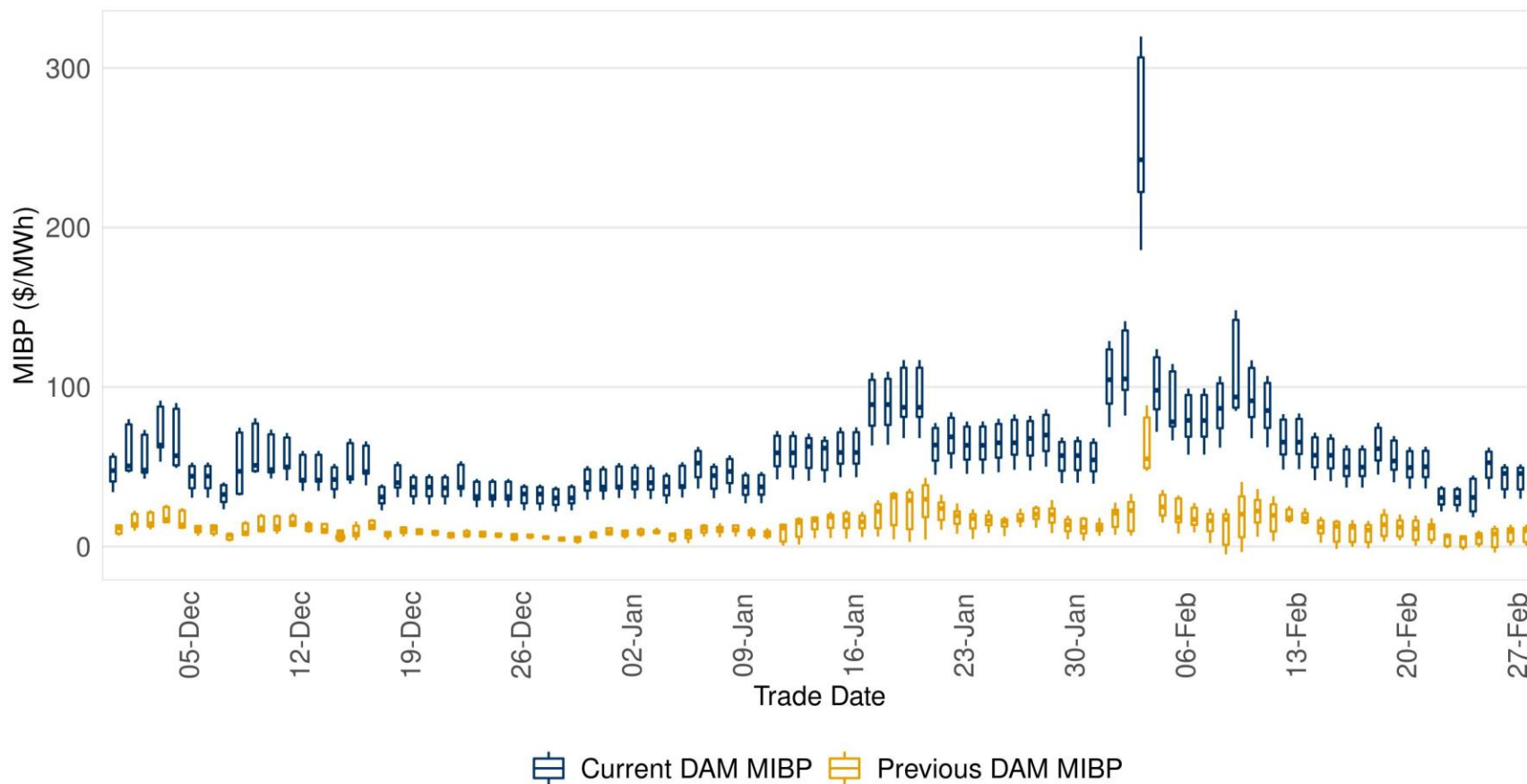
Highlights from shaping factor and MIBP analysis for December 2024 to February 2025

- Shaping factor values daily average equals 1
- Shaping factor values do not change unless there is a new high-priced day
- Shaping factor values are higher than previous shaping factor methodology
- MIBP values are also higher as a result, since MIBP relies on the shaping factor
- MIBP reached highest value on February 4, 2025

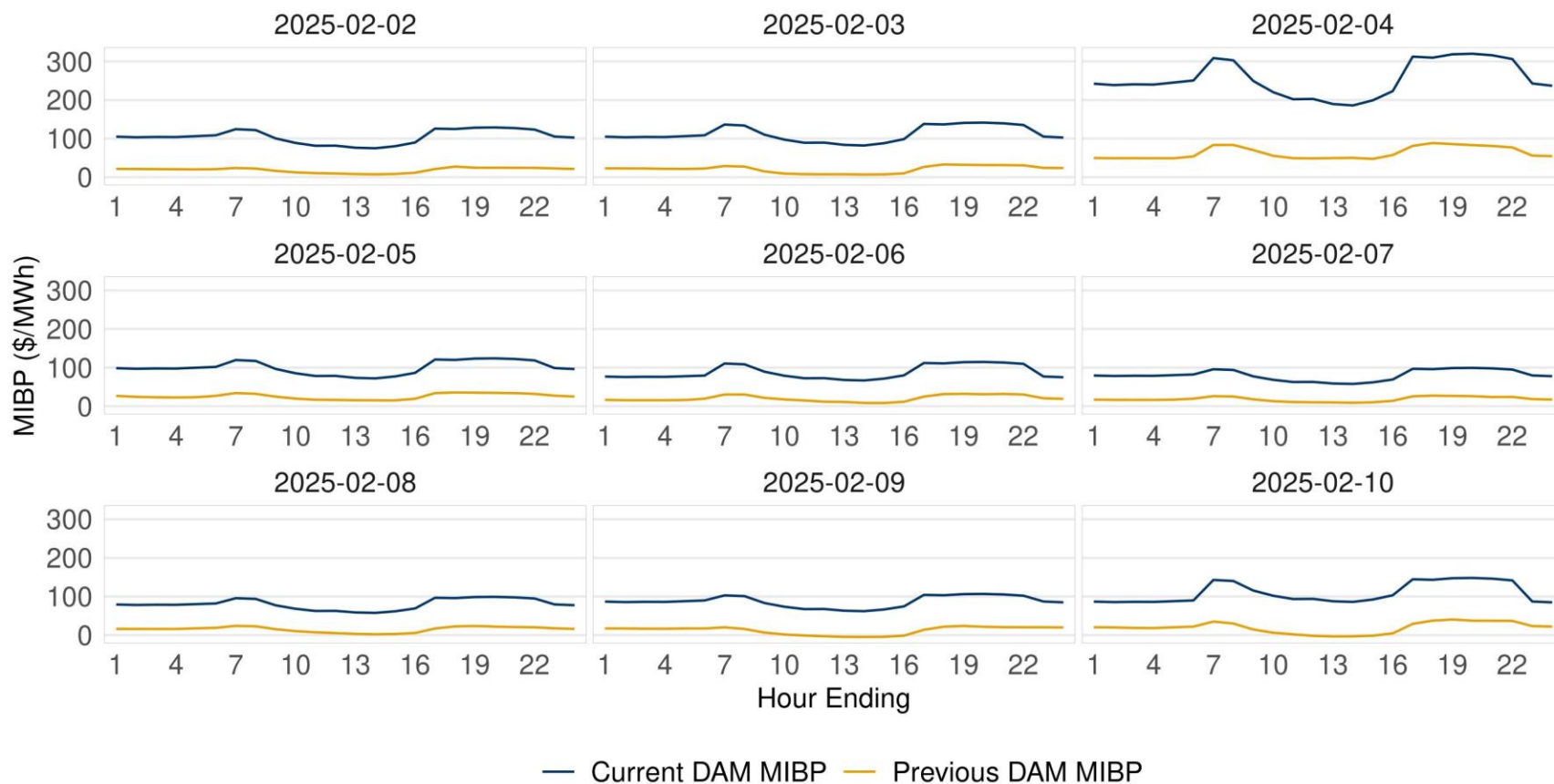
Current shaping factors are higher than the previous formulation; are the same value each day due to referencing the same high-priced day; daily mean = 1



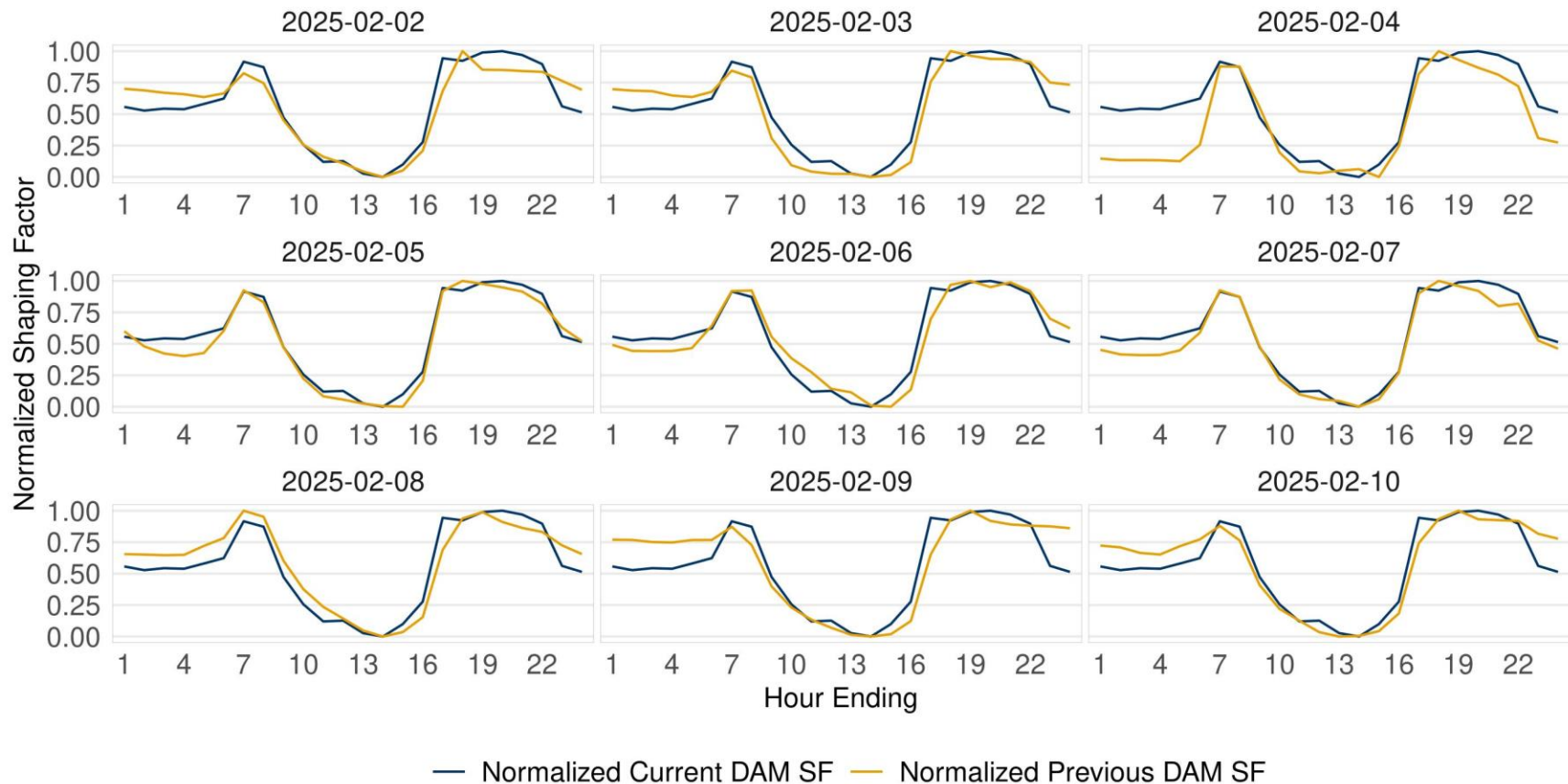
Consequently, current MIBP values are higher than the previous formulation; MIBP reached \$319.74/MWh on February 4 in HE 20



MIBP hourly profile during highest MIBP days from February 2 to February 10 show MIBP is highest during evening peak and morning peak



The current and previous shaping factor hourly trends diverge from each other as their formulations use hourly DA SMEC prices from different days

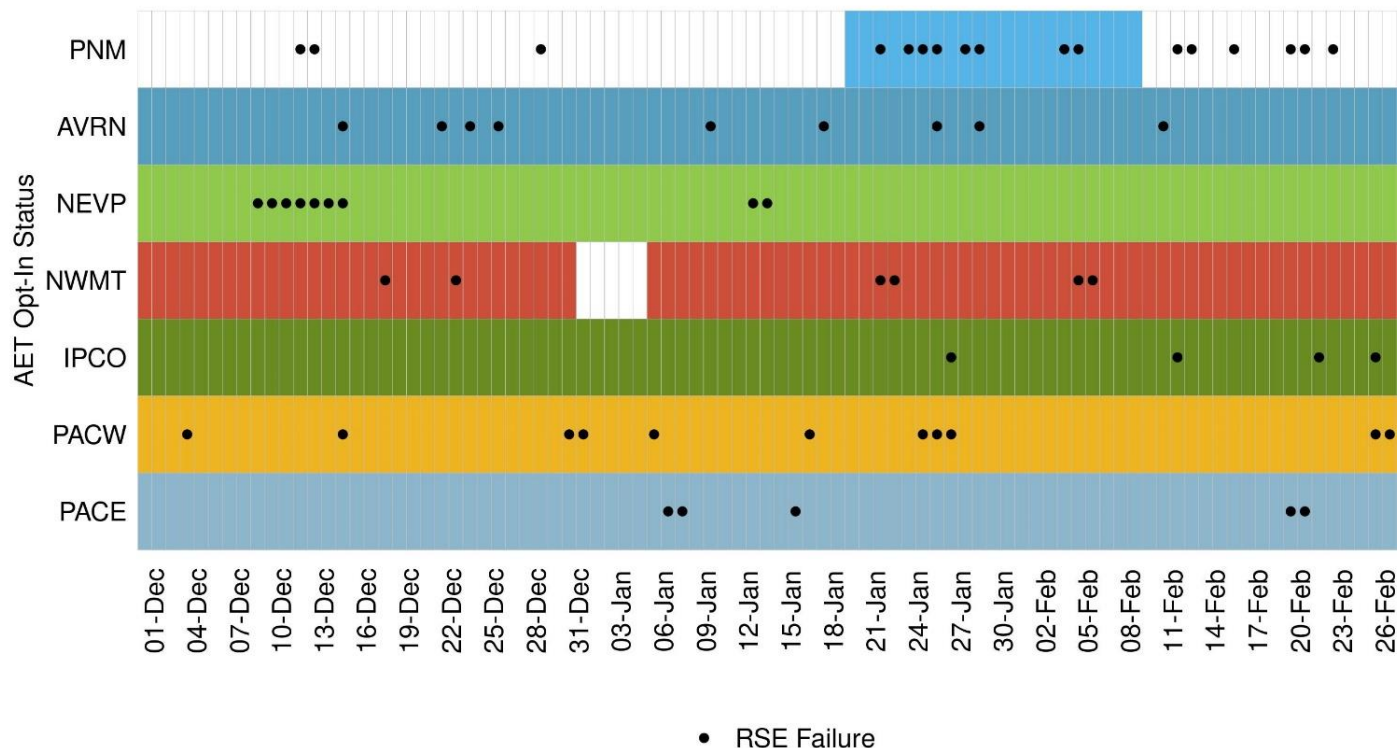


Assistance energy transfer

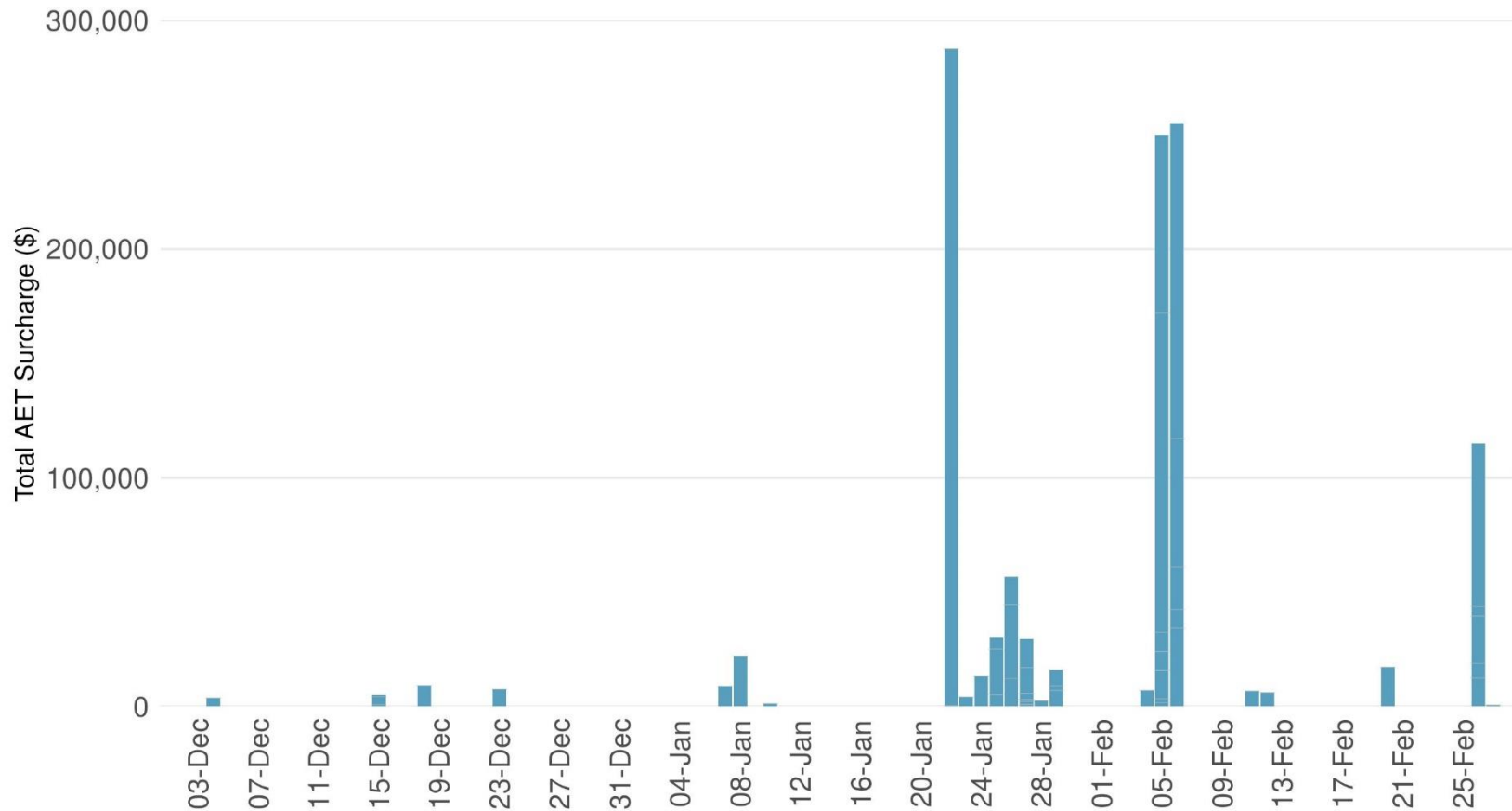
Market Performance and Advanced Analytics

The WEIM facilitated balancing area access to assistance energy transfer (AET) program during winter conditions in 2025

- There were seven WEIM balancing areas opting into the assistance energy transfer (AET) program during winter conditions in 2025
- This program allows areas to receive energy transfers when they do not meet resource sufficiency requirements



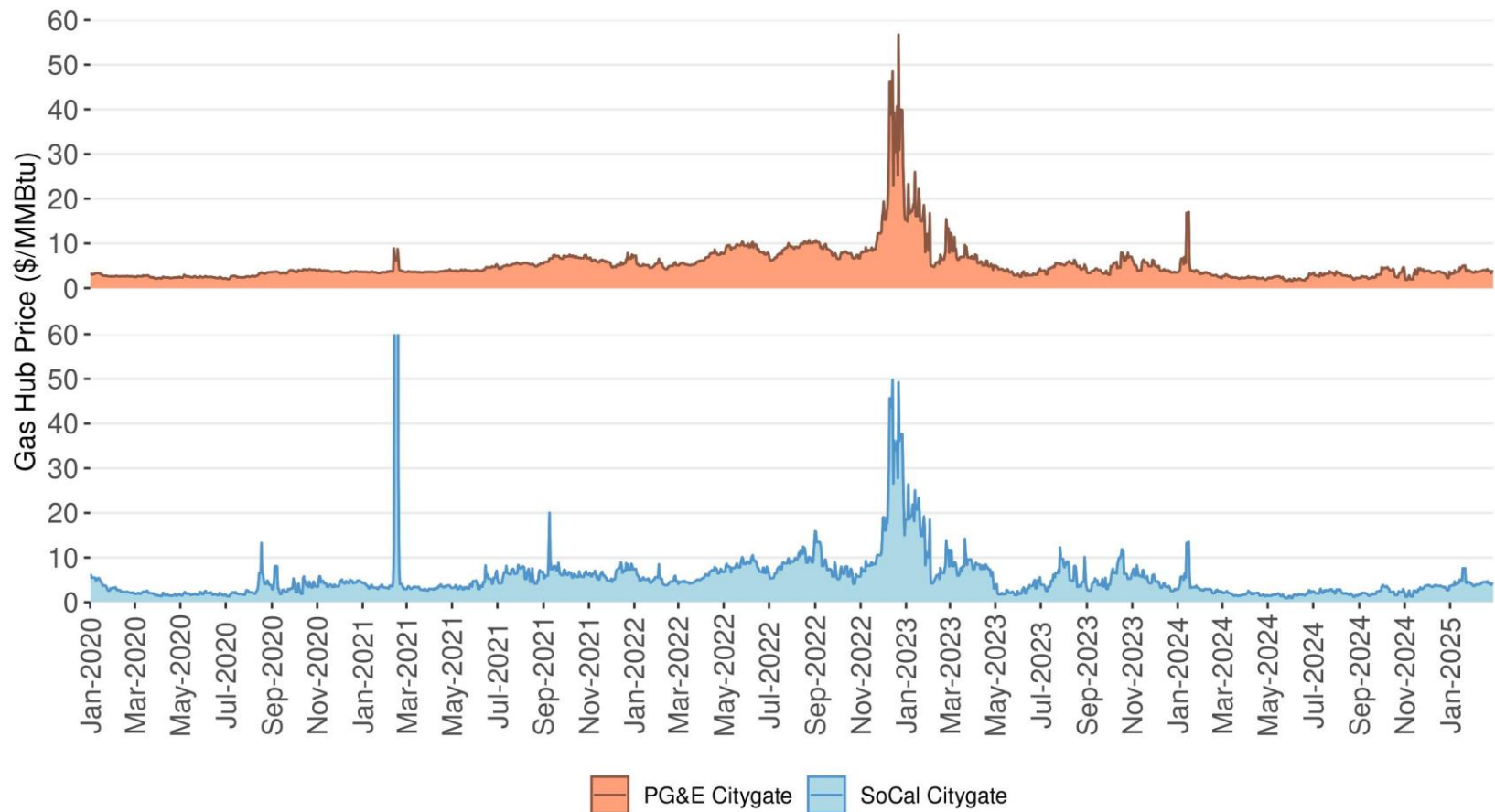
The total AET surcharges assessed were about \$1.15 million for all the BAAs that opted in



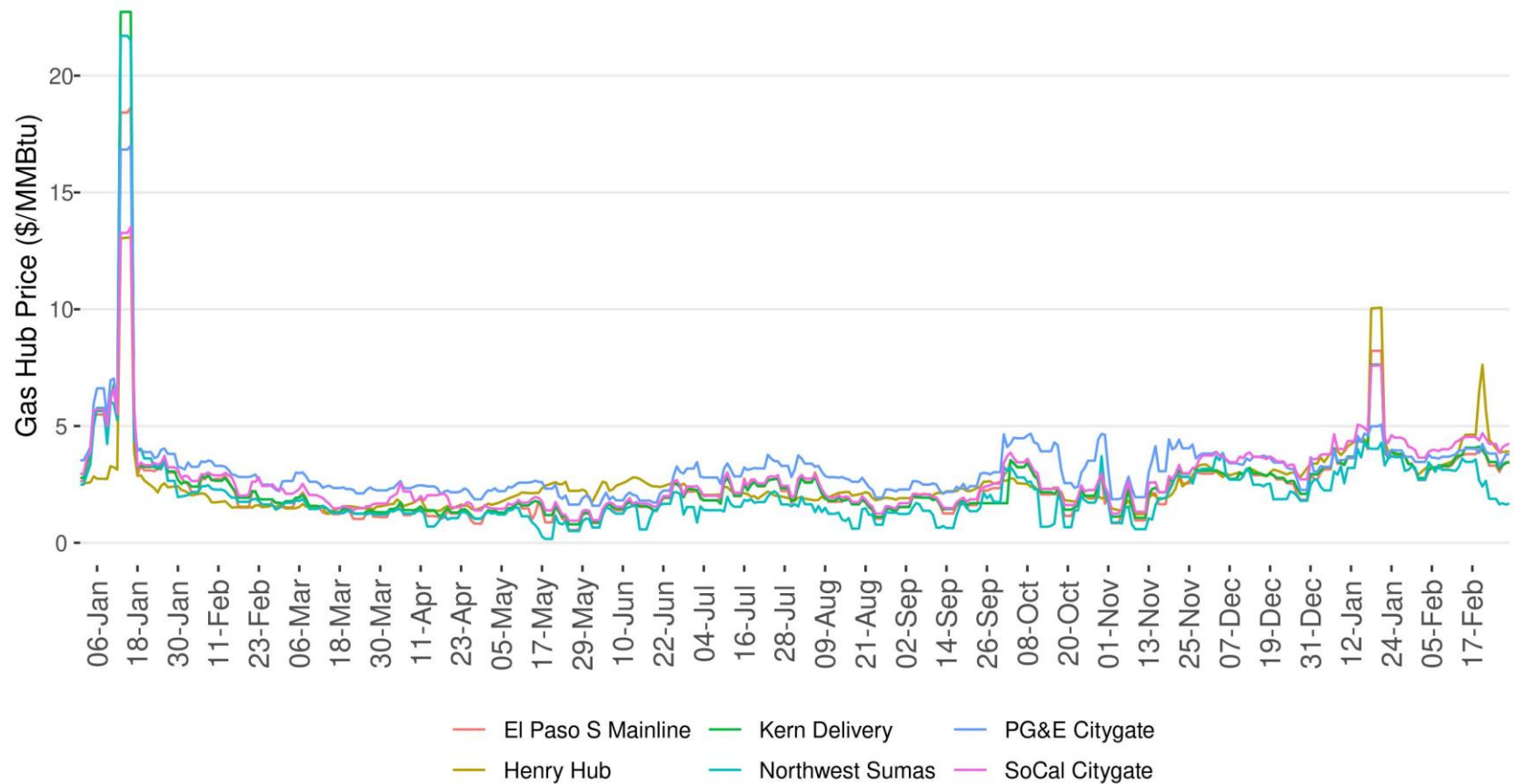
Gas and Power index prices, and market costs

Market Performance and Advanced Analytics

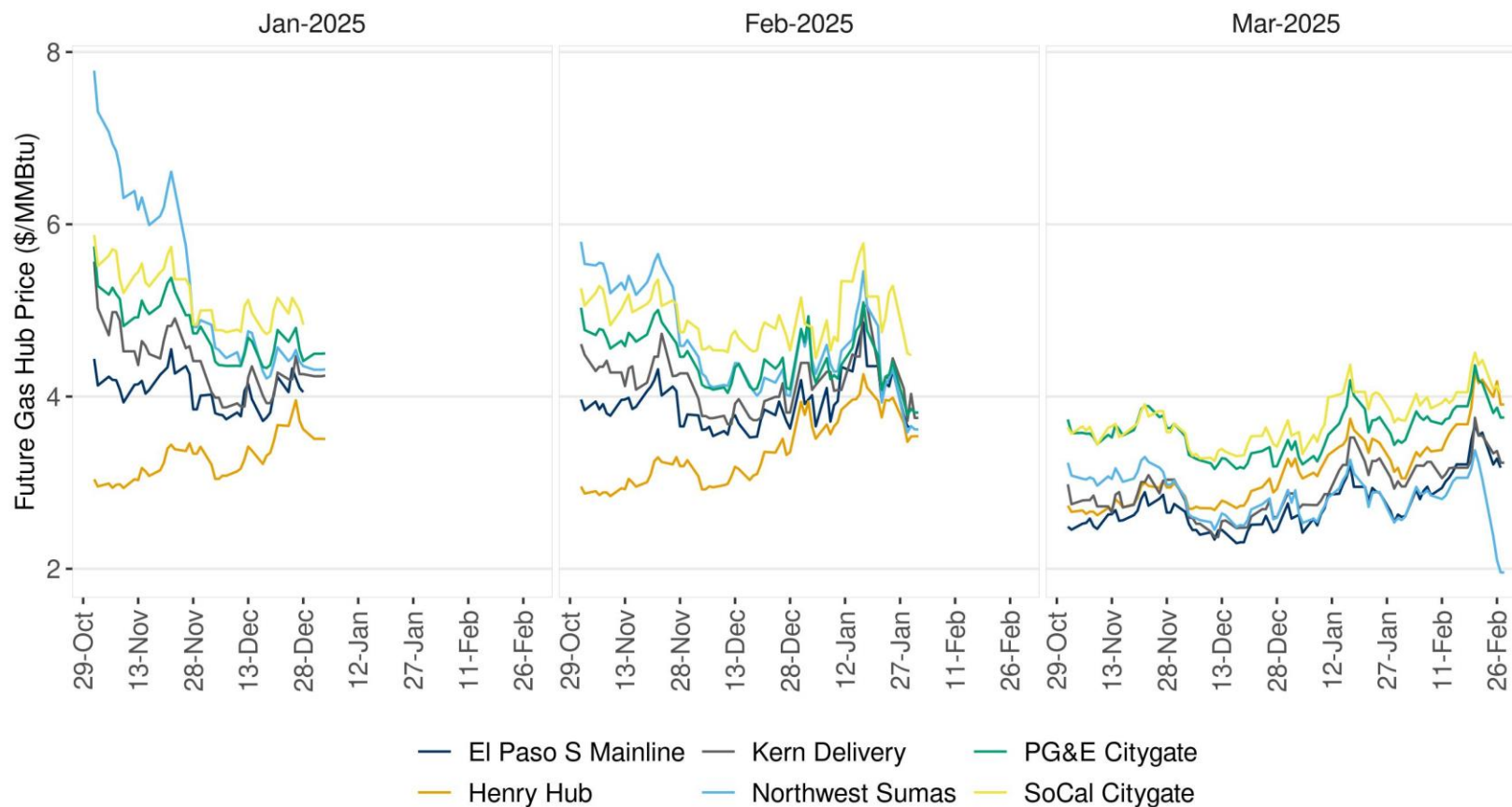
California next-day gas prices has seen lower levels in January 2025 compared to January 2024



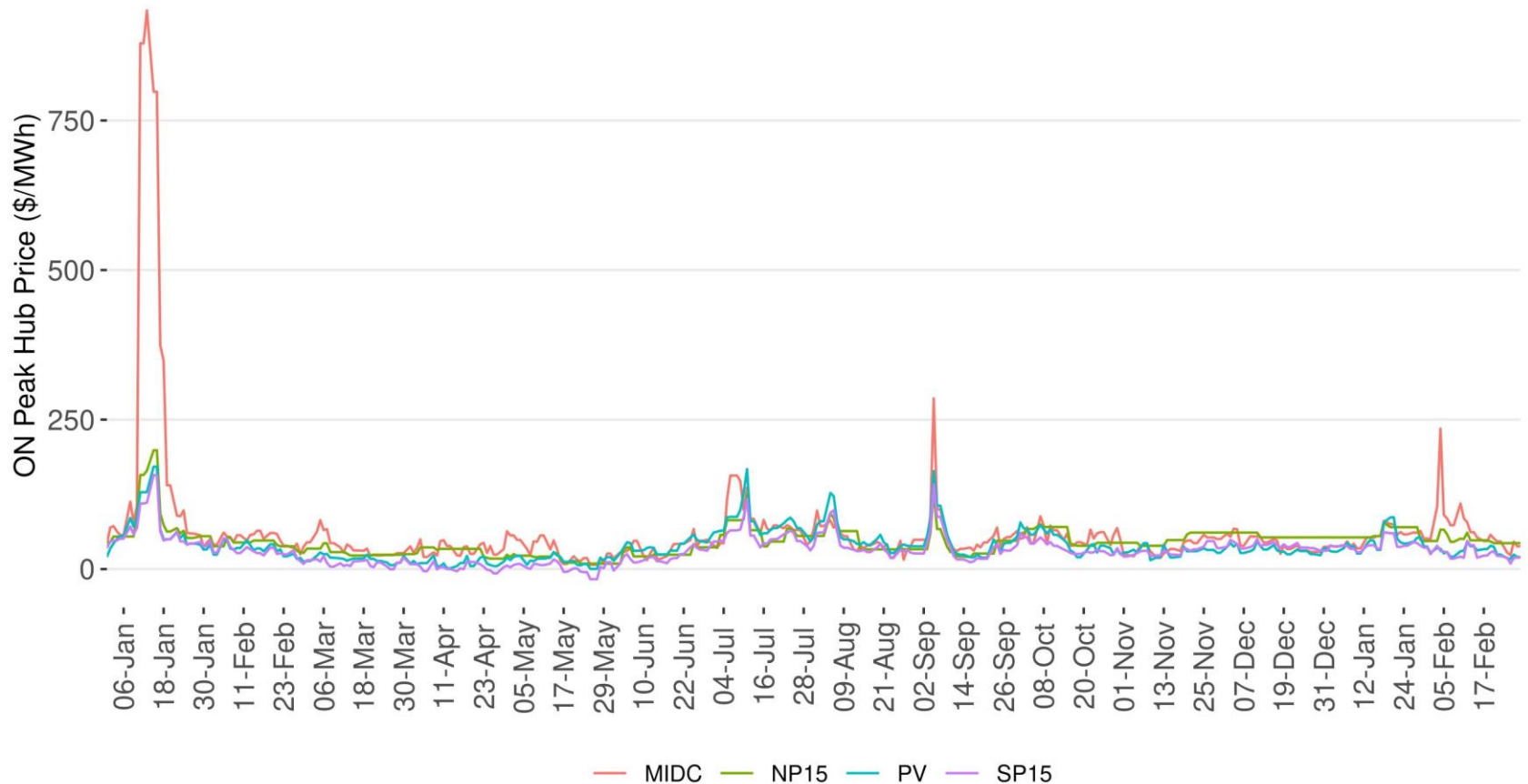
Western next-day gas prices reached elevated levels in mid-January 2025



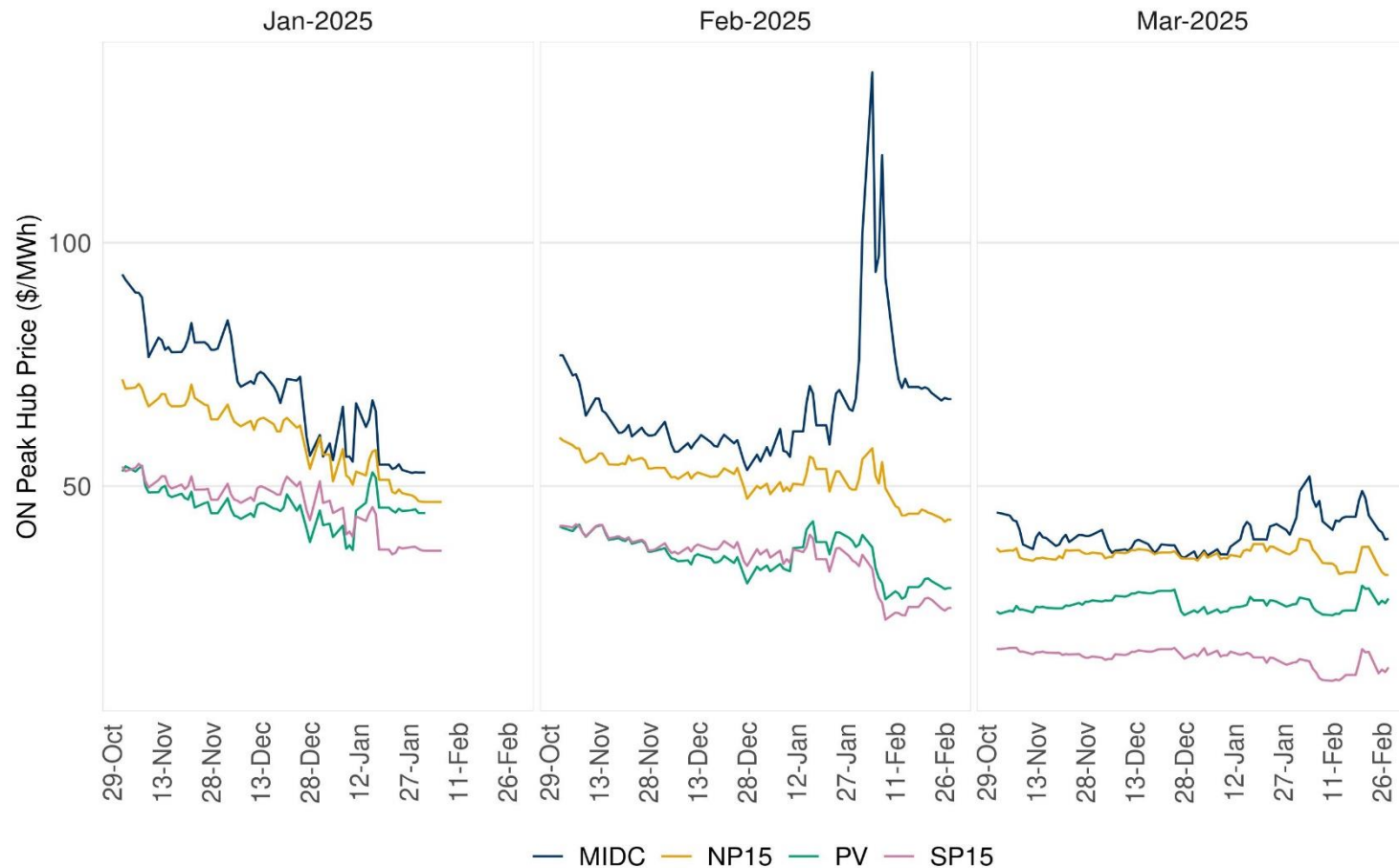
Future gas prices for winter 2025 declined during year-end trading but spiked in January 2024



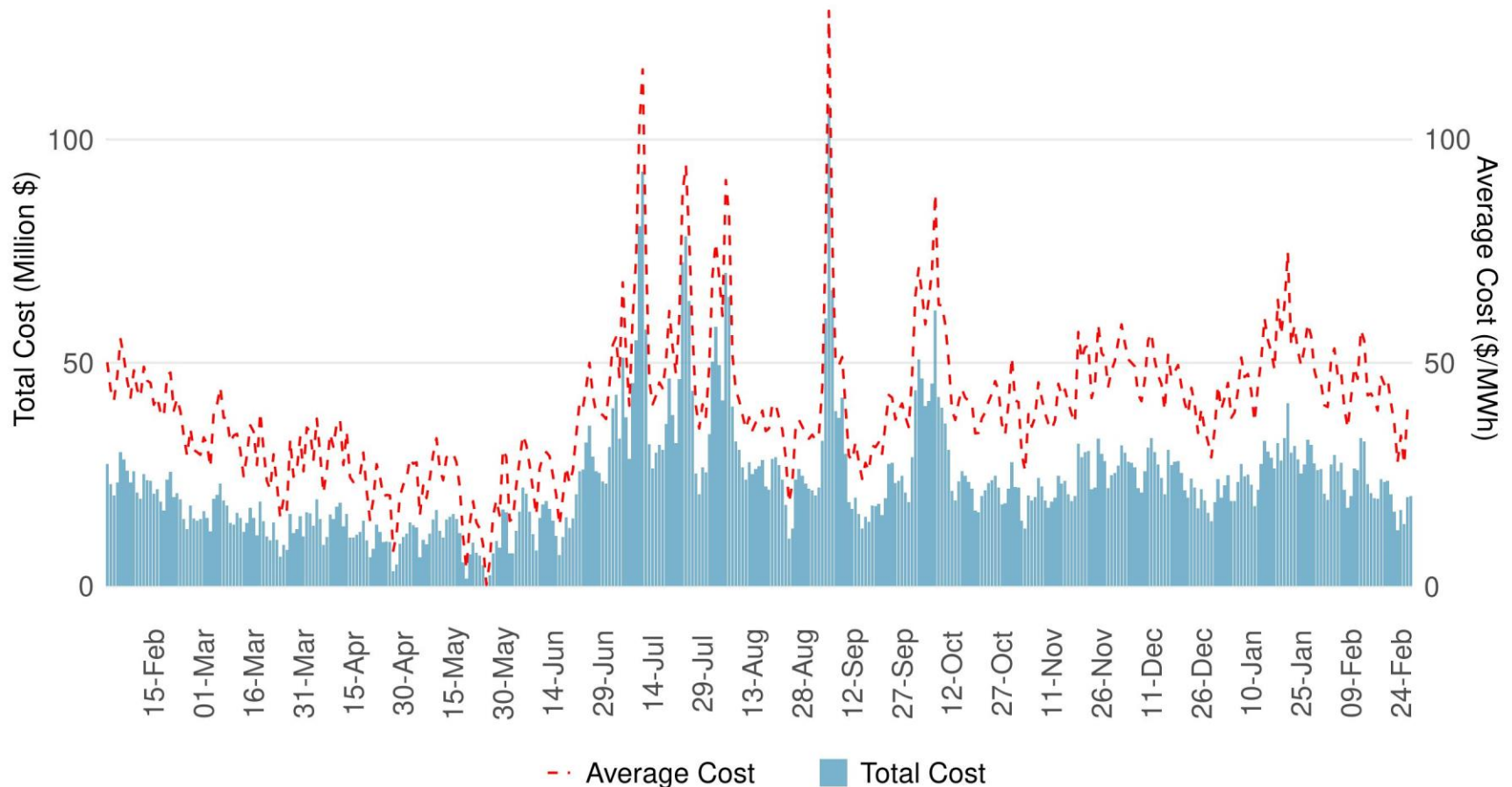
Next-day on-peak bilateral power prices reached elevated price of \$235/MWh on February 4, 2025



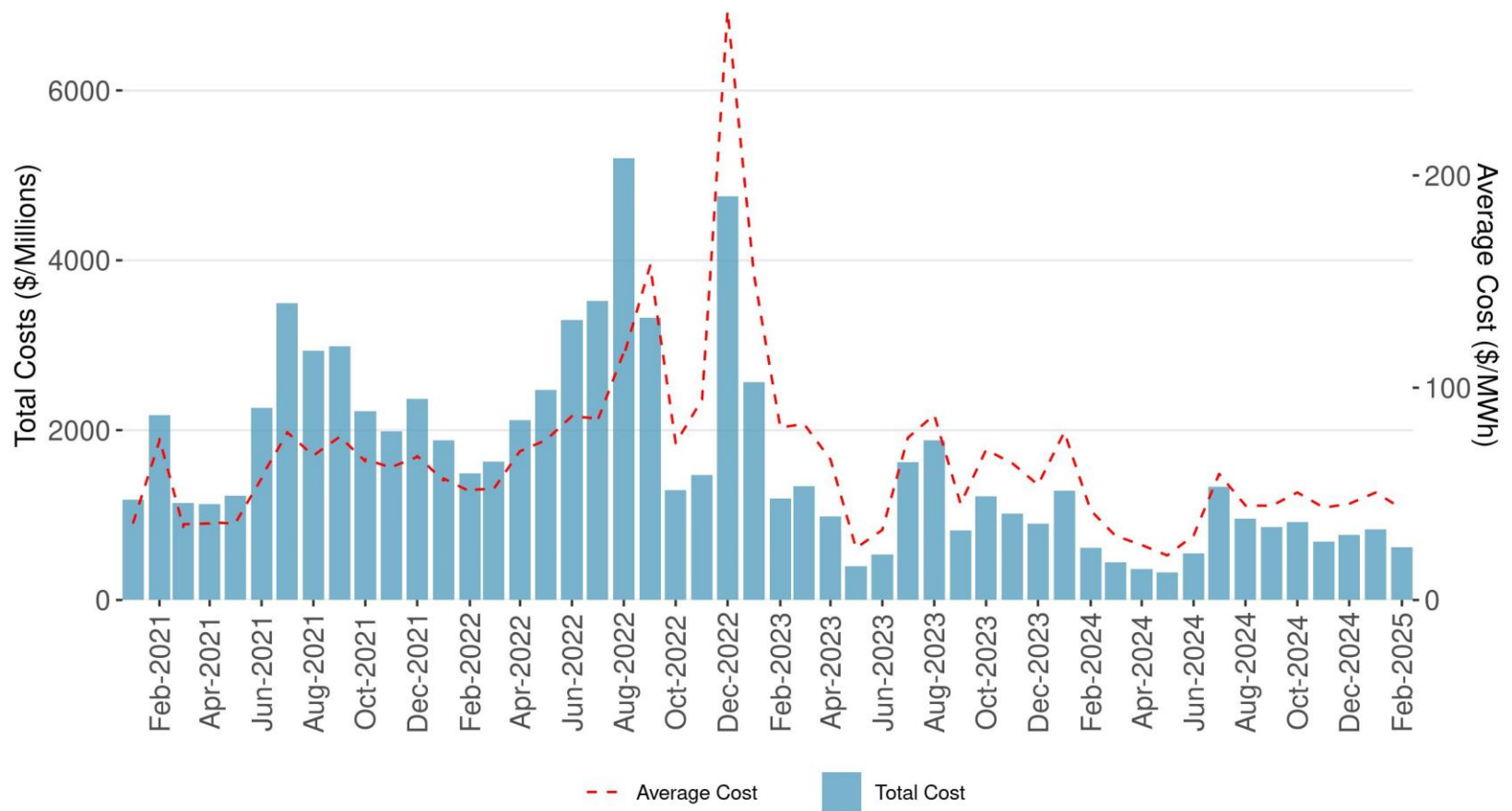
Future on-peak bilateral power prices for January and February 2025 ranges between \$50/MWh to \$140/MWh and remains low for March 2025.



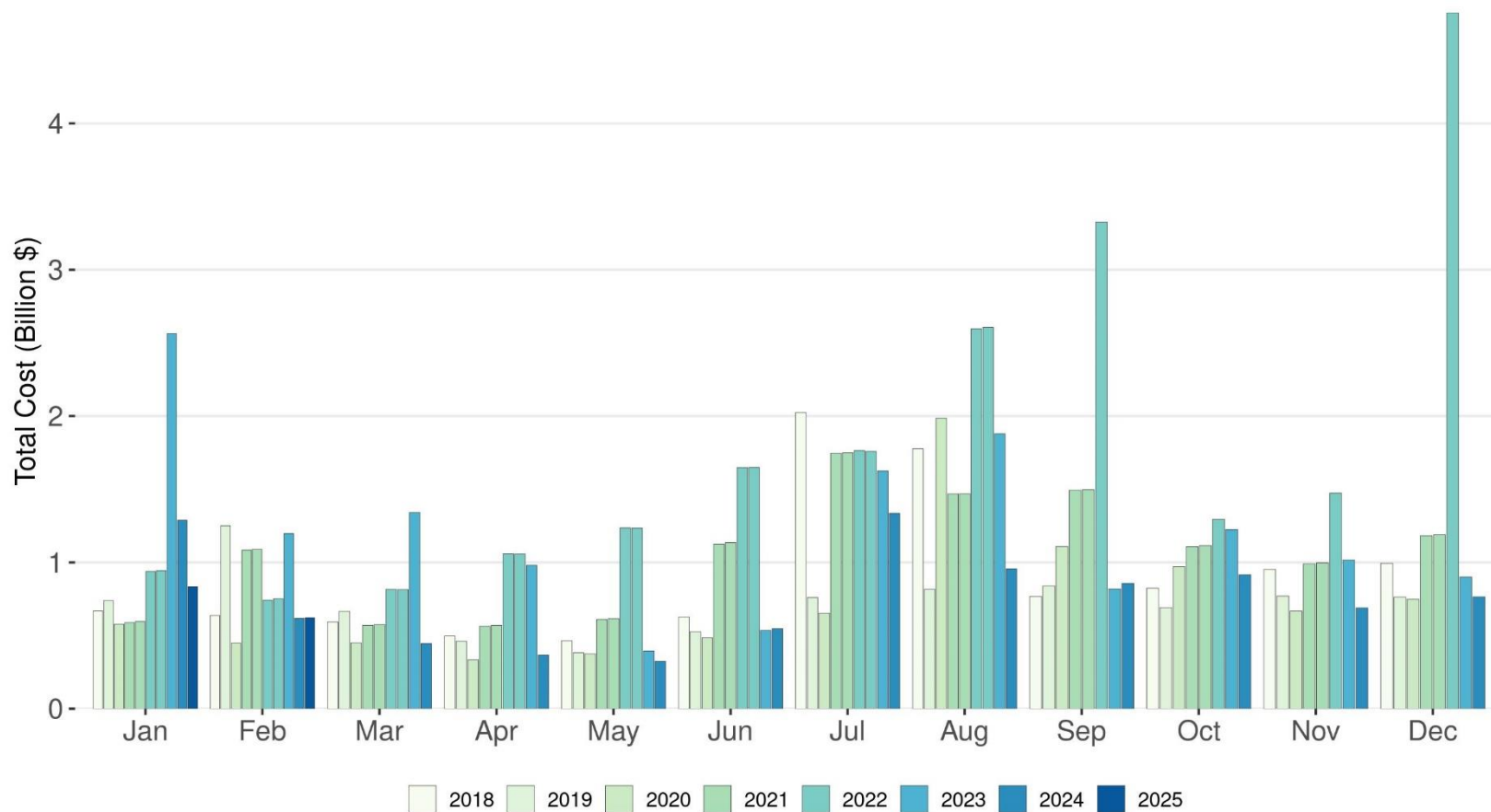
Daily market costs reached the highest level on January 21, 2025



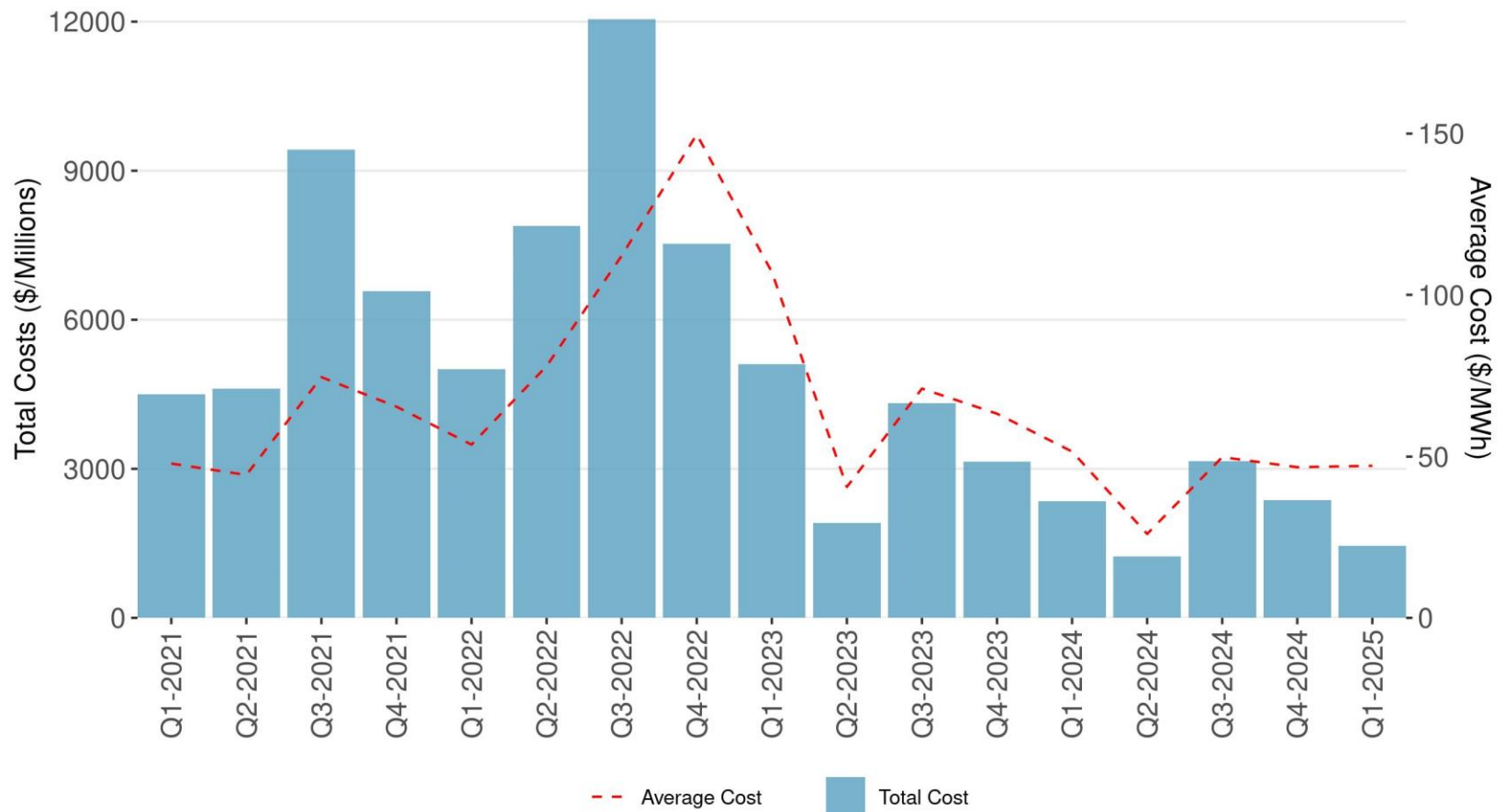
Monthly totals for January and February 2025 remained low compared to previous years



Monthly totals for January 2025 is lower than previous year.



Q3 2024 total costs are \$2.3B higher than Q4 2024 total costs

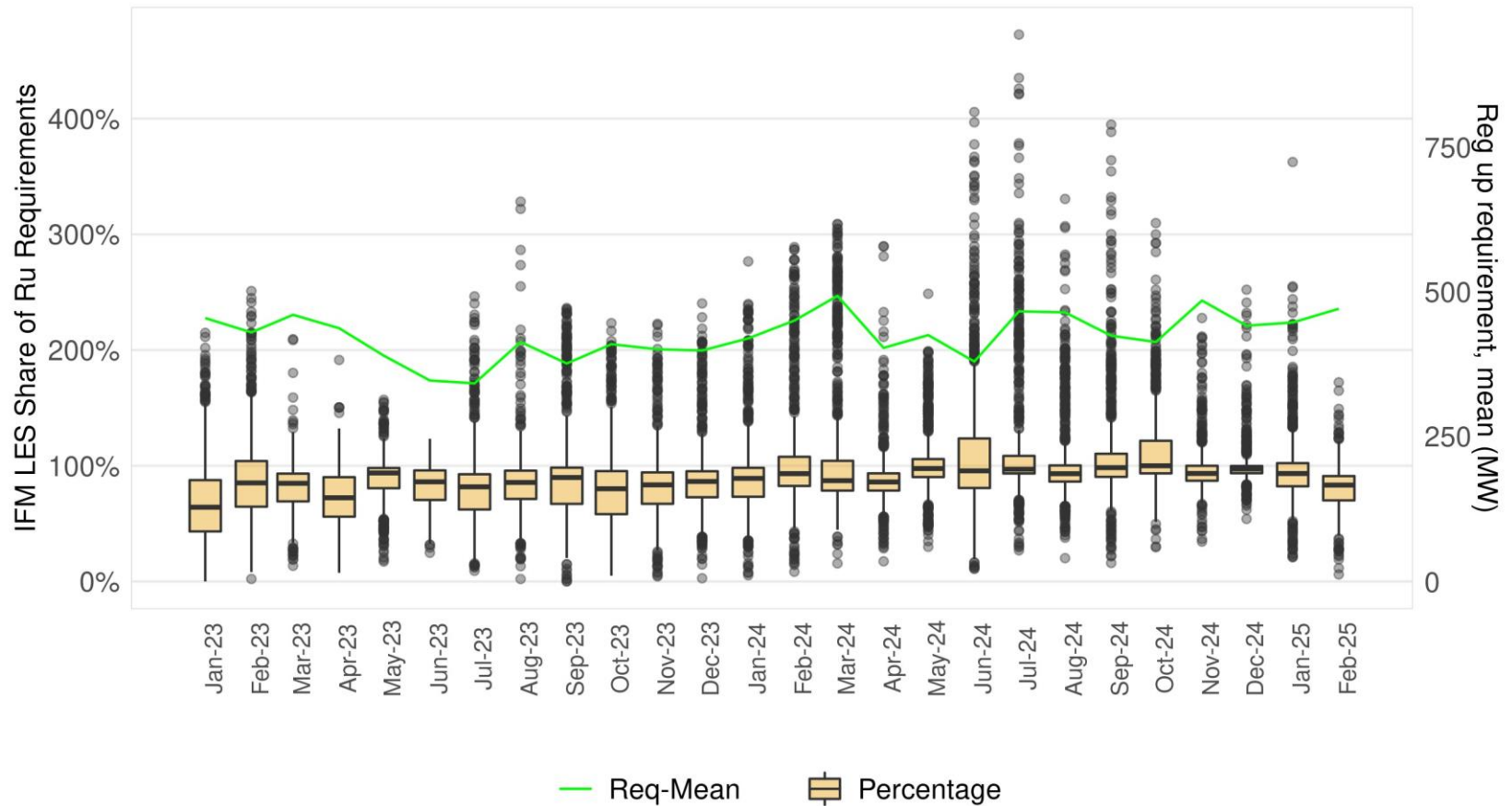


Note: Q1 2025 includes data for January and February

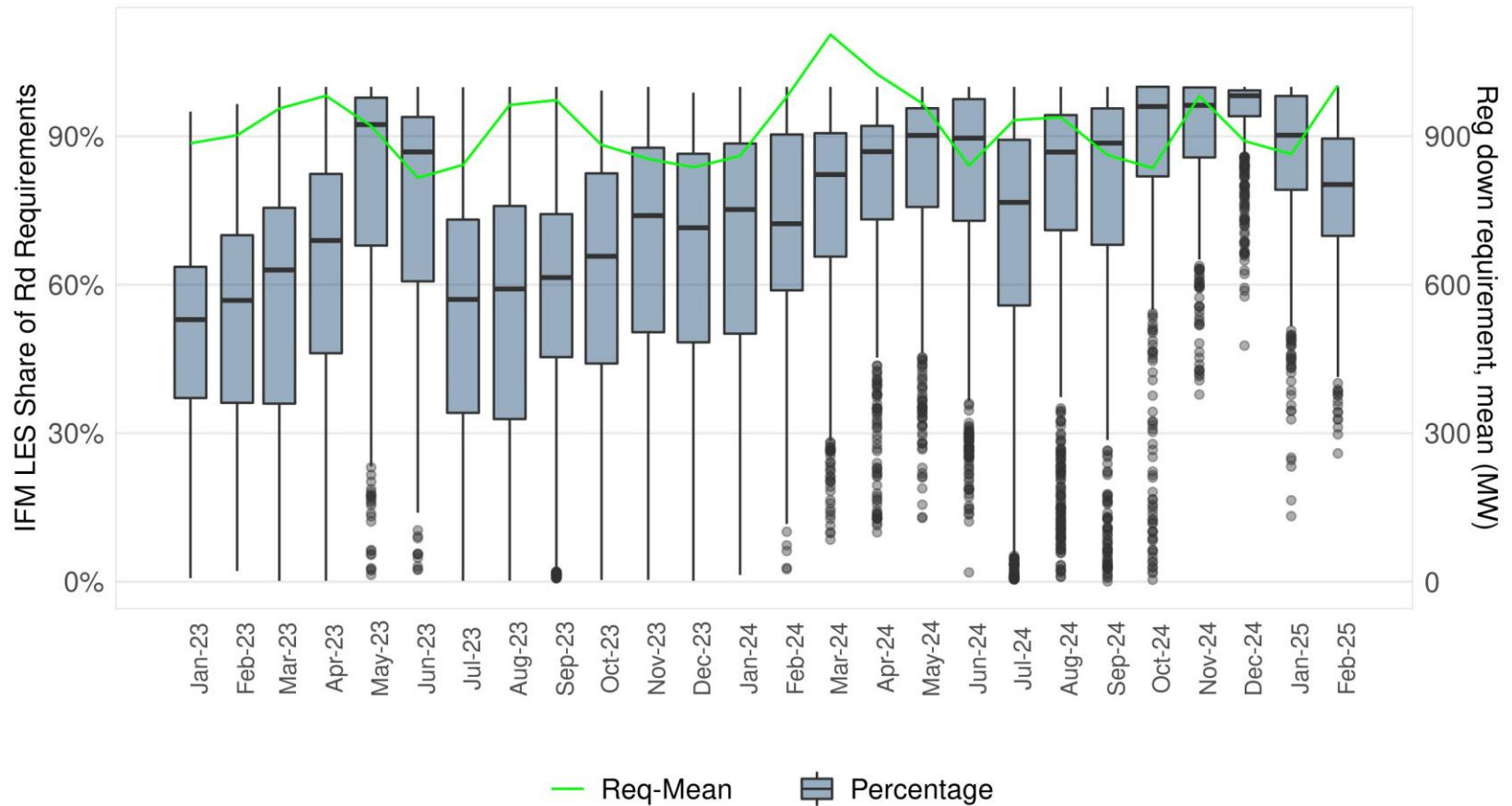
Storage resource update

Market Performance and Advanced Analytics

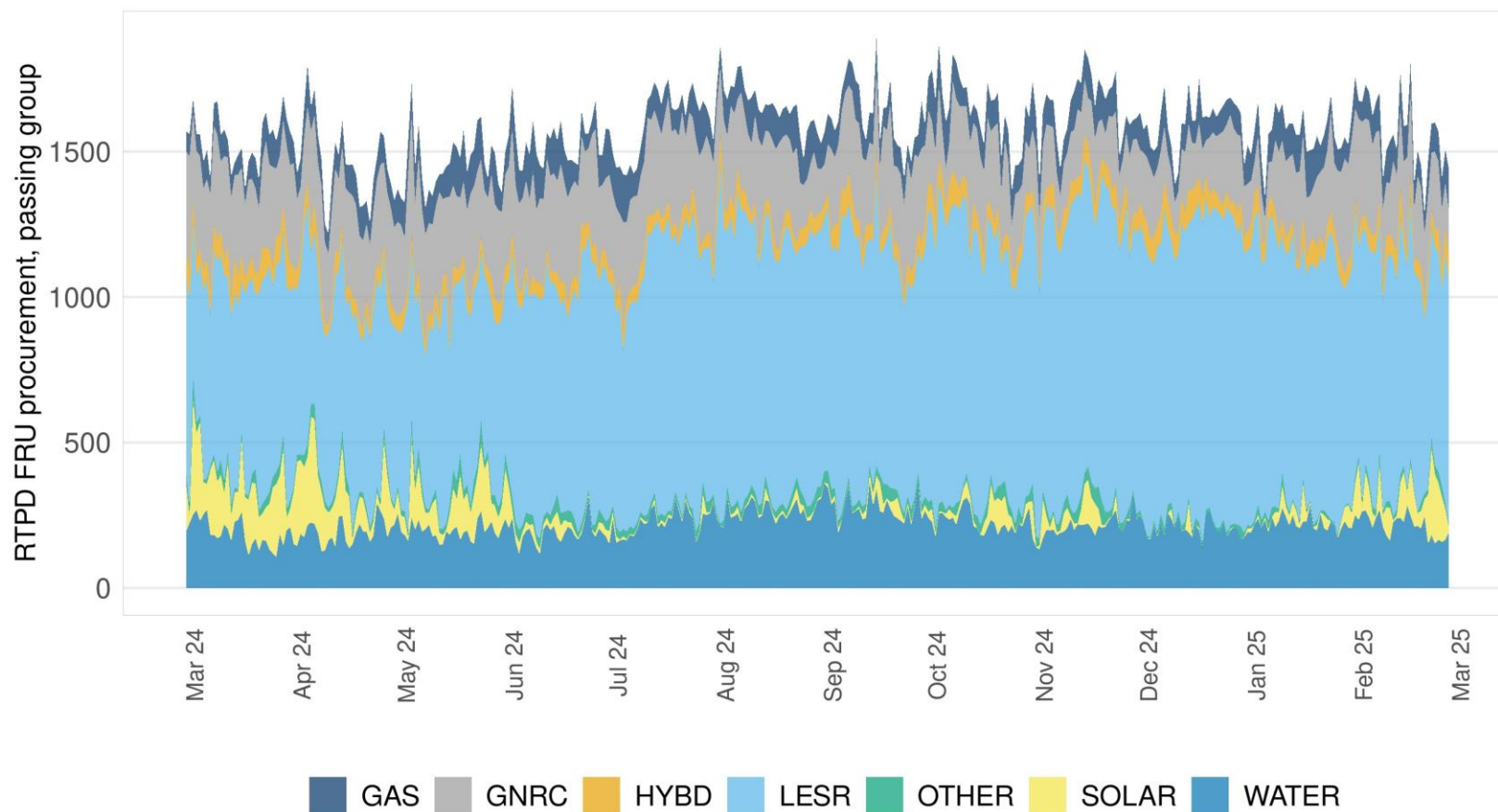
The market for upward regulation market continue to be saturated by storage resources procuring over 100 percent of the requirements



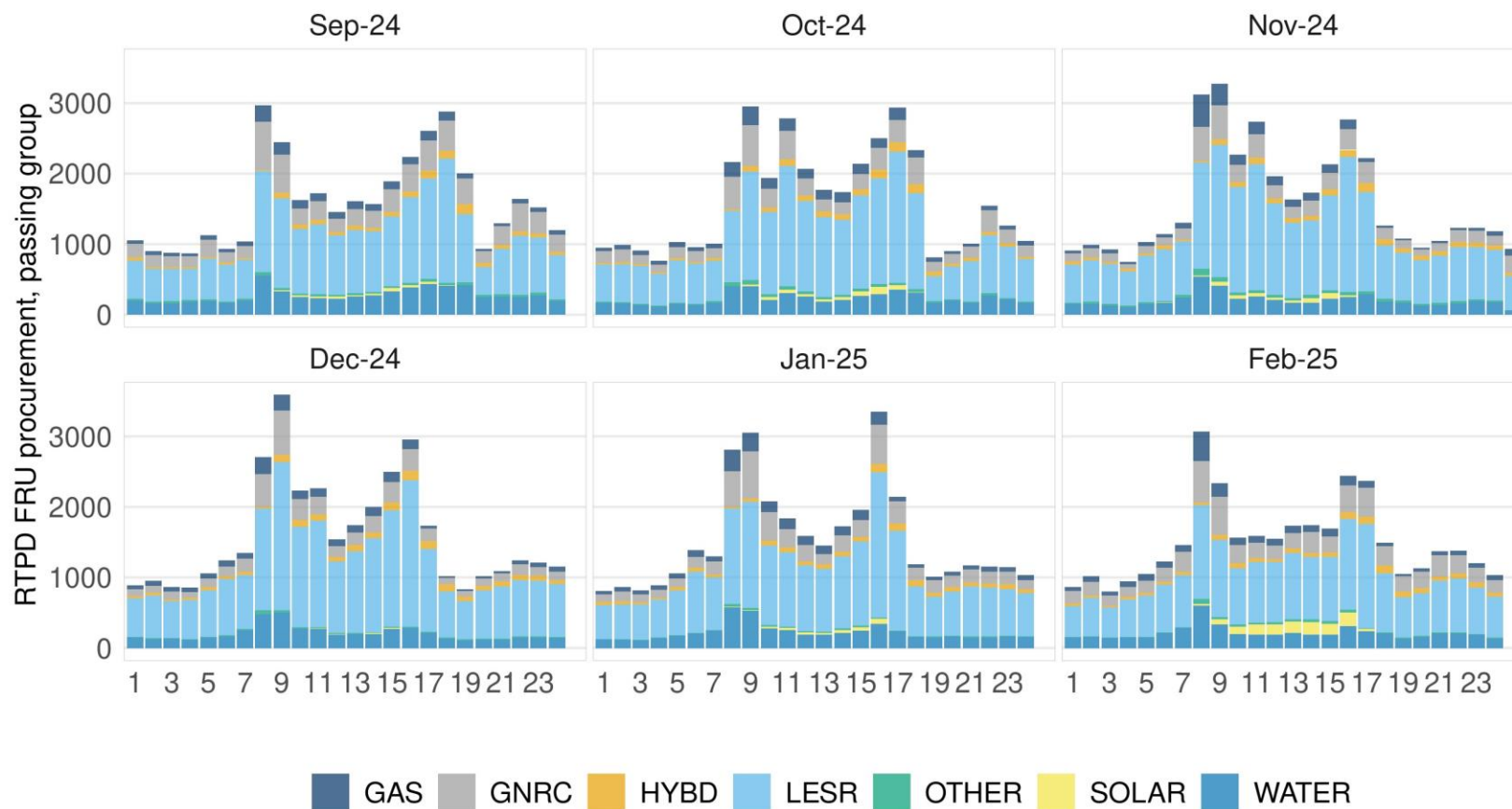
Procurement of regulation down continue to be dominated by storage resources



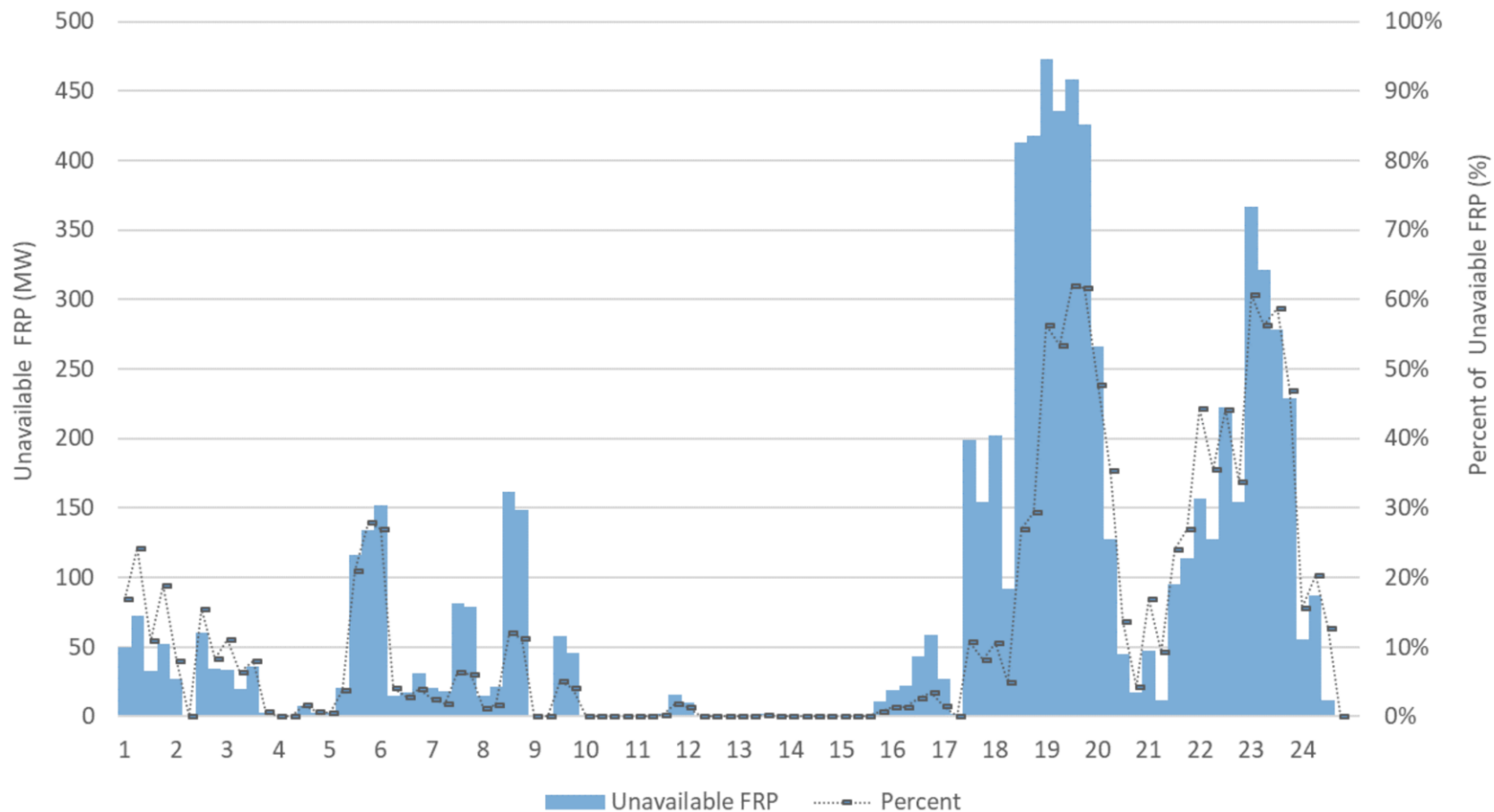
Upward FRP procurement is supported by various types of technologies with the main share coming from storage resources



Storage resources tend to support upward FRP procurement throughout the day



Unsupported FRP due to lack of state of charge can be as high as 60 percent of the procured capacity



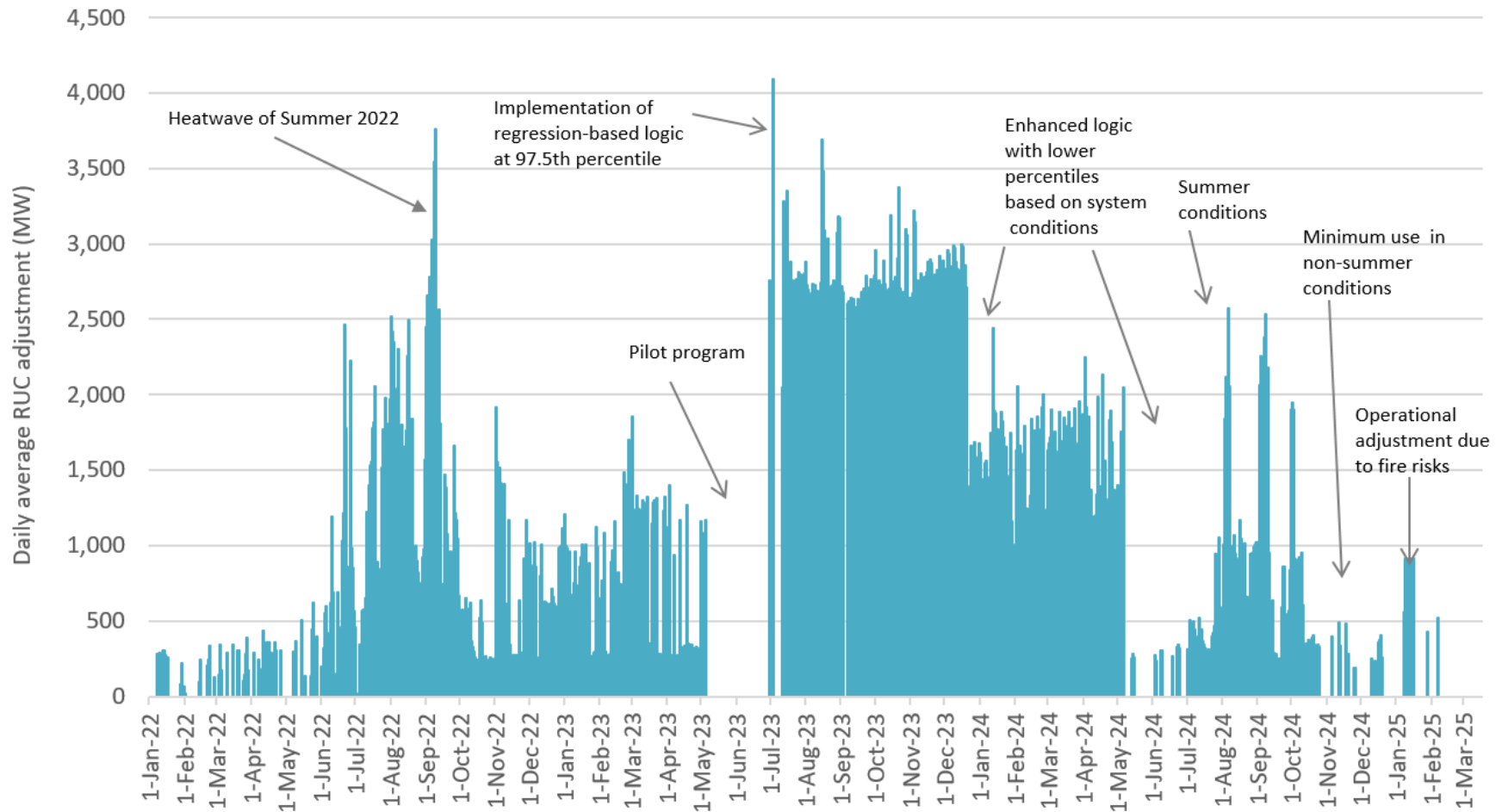
The FRP awarded to storage resources may not be deliverable due insufficient state of charge

- Current formulation of state of charge does not consider the impact to the state of charge when delivering FRP
- Since a large share of FRP is procured by storage resources, it may not provide material ramp to the real-time market
- Through the analysis of FRP performance, the ISO has identified the need to enhance the logic to account for state of charge when storage resources procure FRP
- This item has been incorporated in the stakeholder discussion of Storage resources

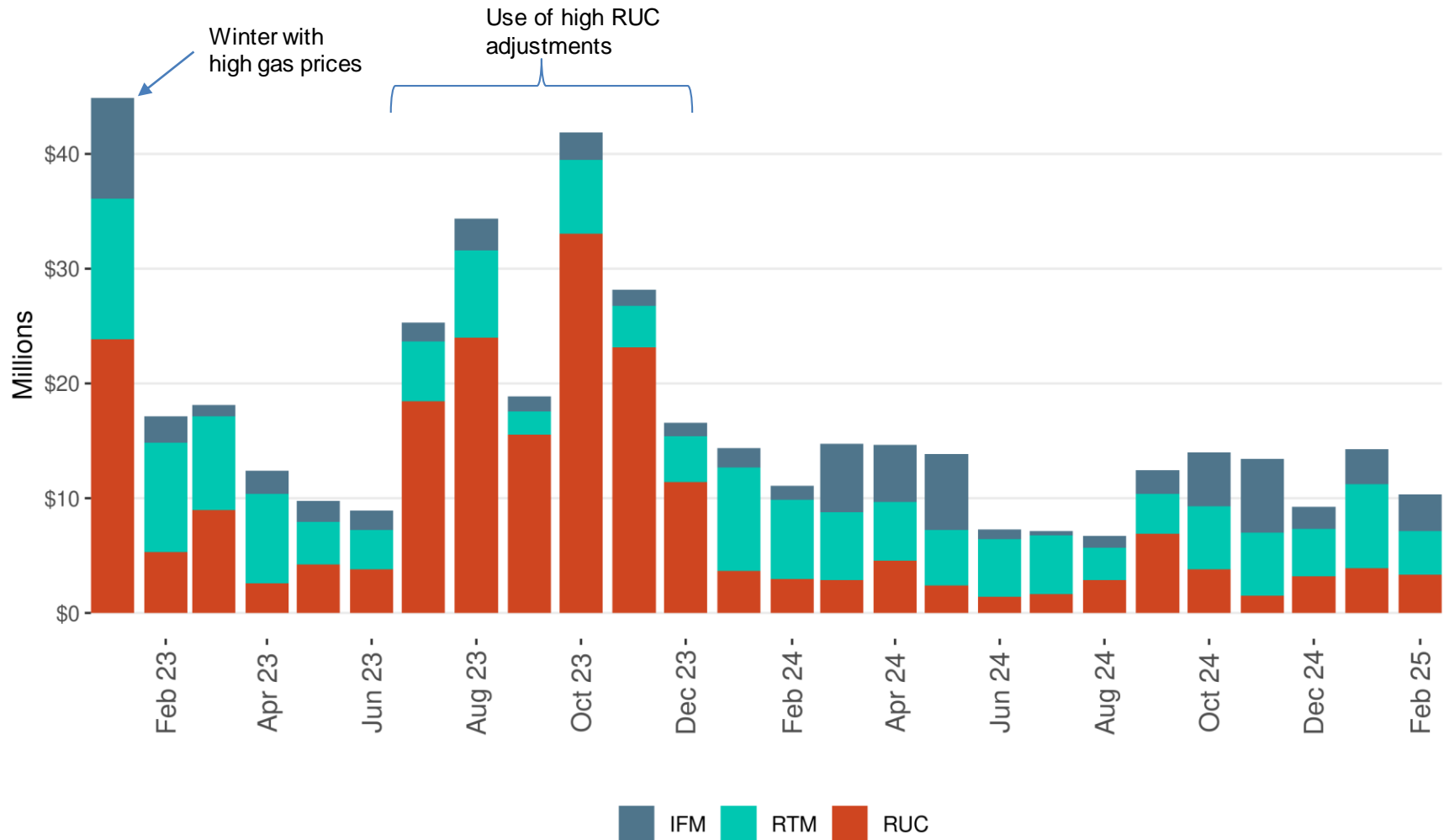
Load Conformance

Market Performance and Advanced Analytics

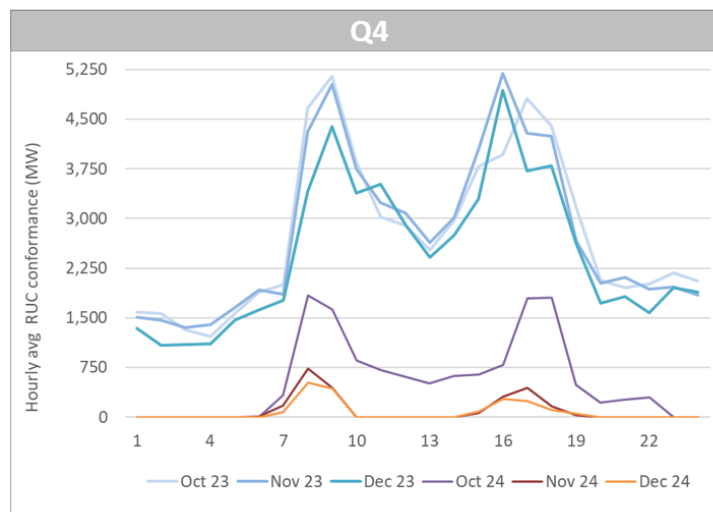
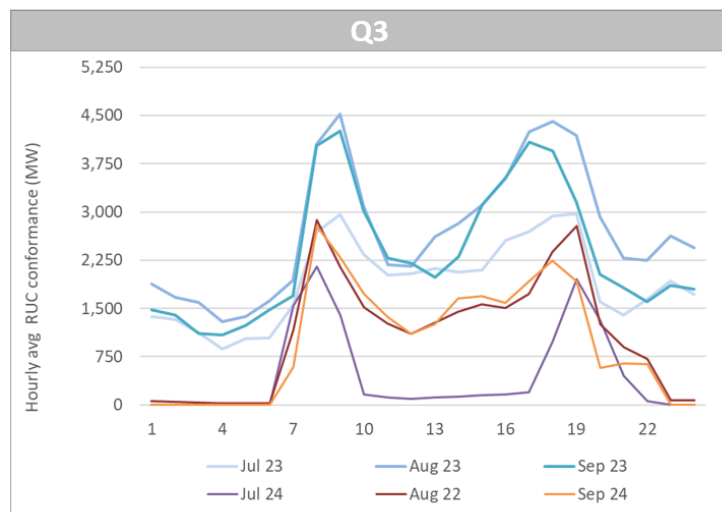
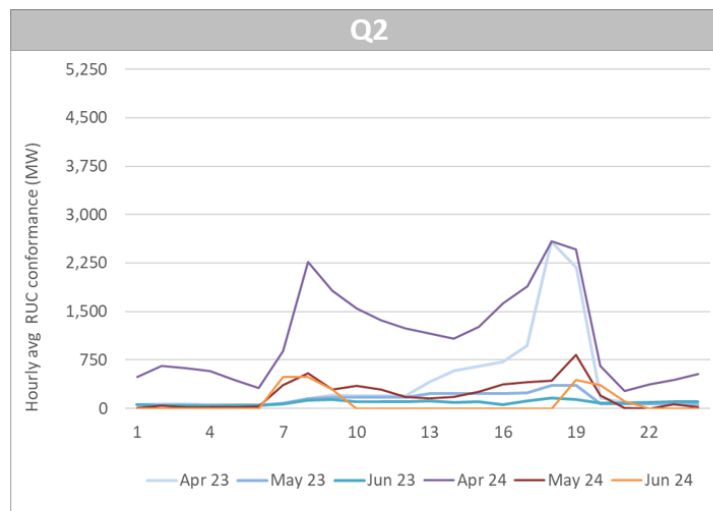
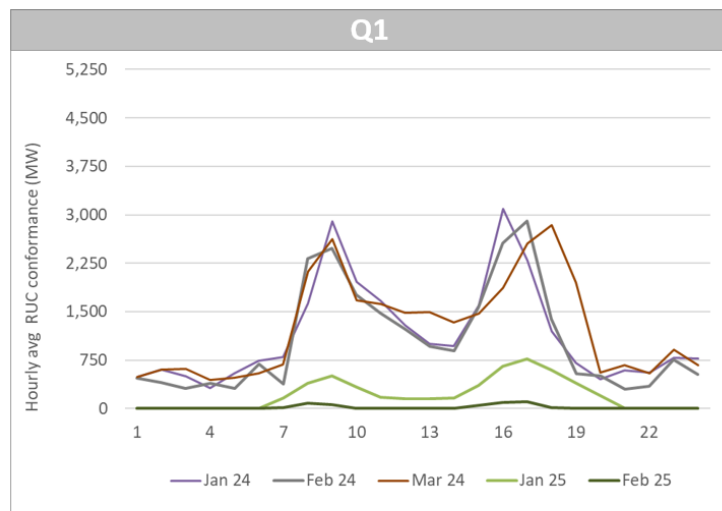
Between Oct 2024 and mid March 2025, there has been no RUC adjustments in about 70 percent of the days



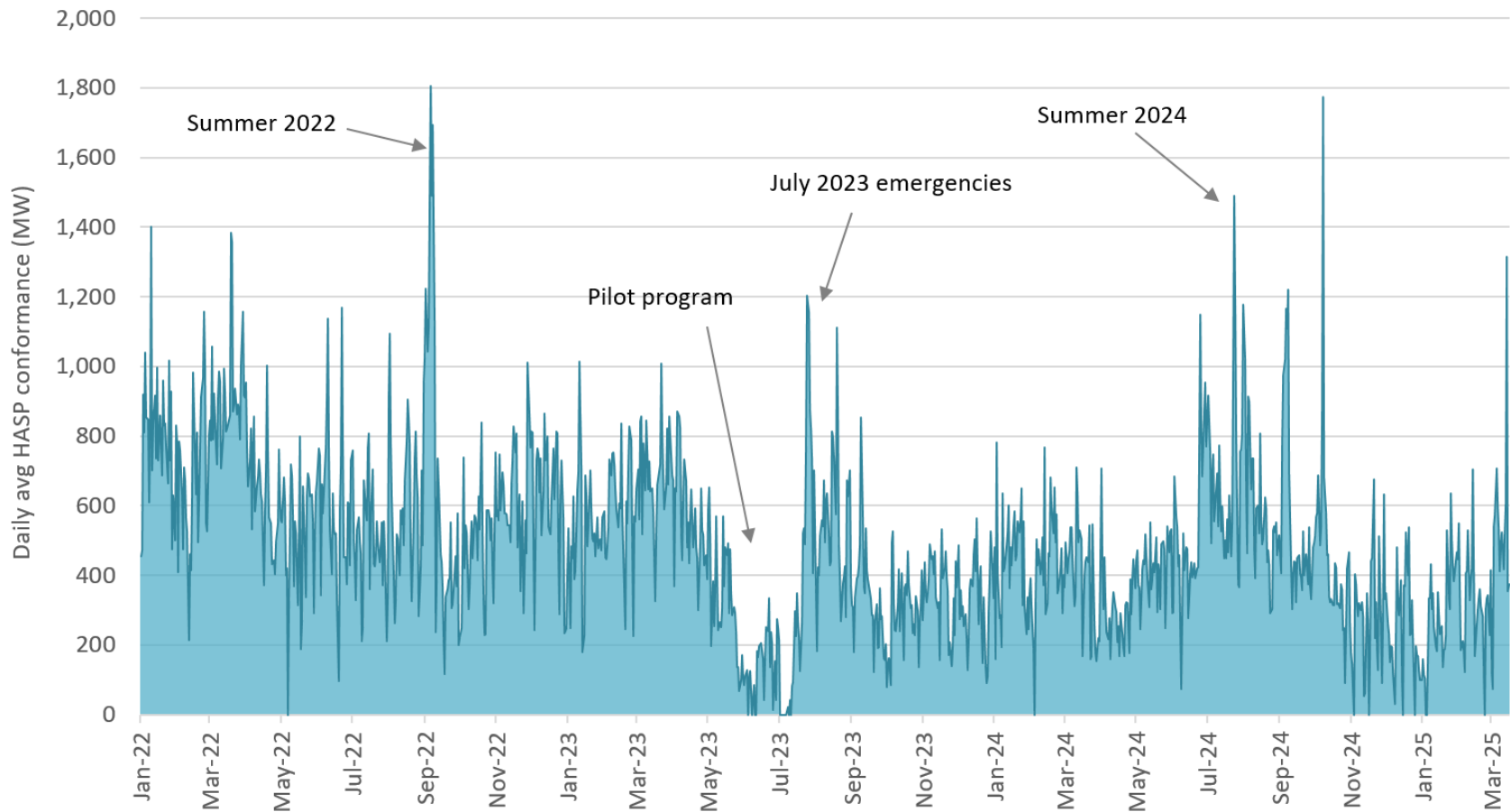
High bid cost recovery in RUC subsided since the enhancement to the requirement estimates in December 2023



The hourly profile in winter months have shown low level of RUC adjustments



ISO continues to assess the root causes for the need to use load conformance in real time



General Market Performance Metrics

Energy Storage Performance

Energy storage enhancements Track 2 was activated on November 1, 2023

- The original state of charge equation

$$SOC_{i,t} = SOC_{i,t-1} - \left(EN_{i,t}^{(+)} + \eta_i EN_{i,t}^{(-)} \right) \frac{\Delta T}{T_{60}}$$

$$\underline{SOC}_{i,t} \leq SOC_{i,t} \leq \overline{SOC}_{i,t}$$

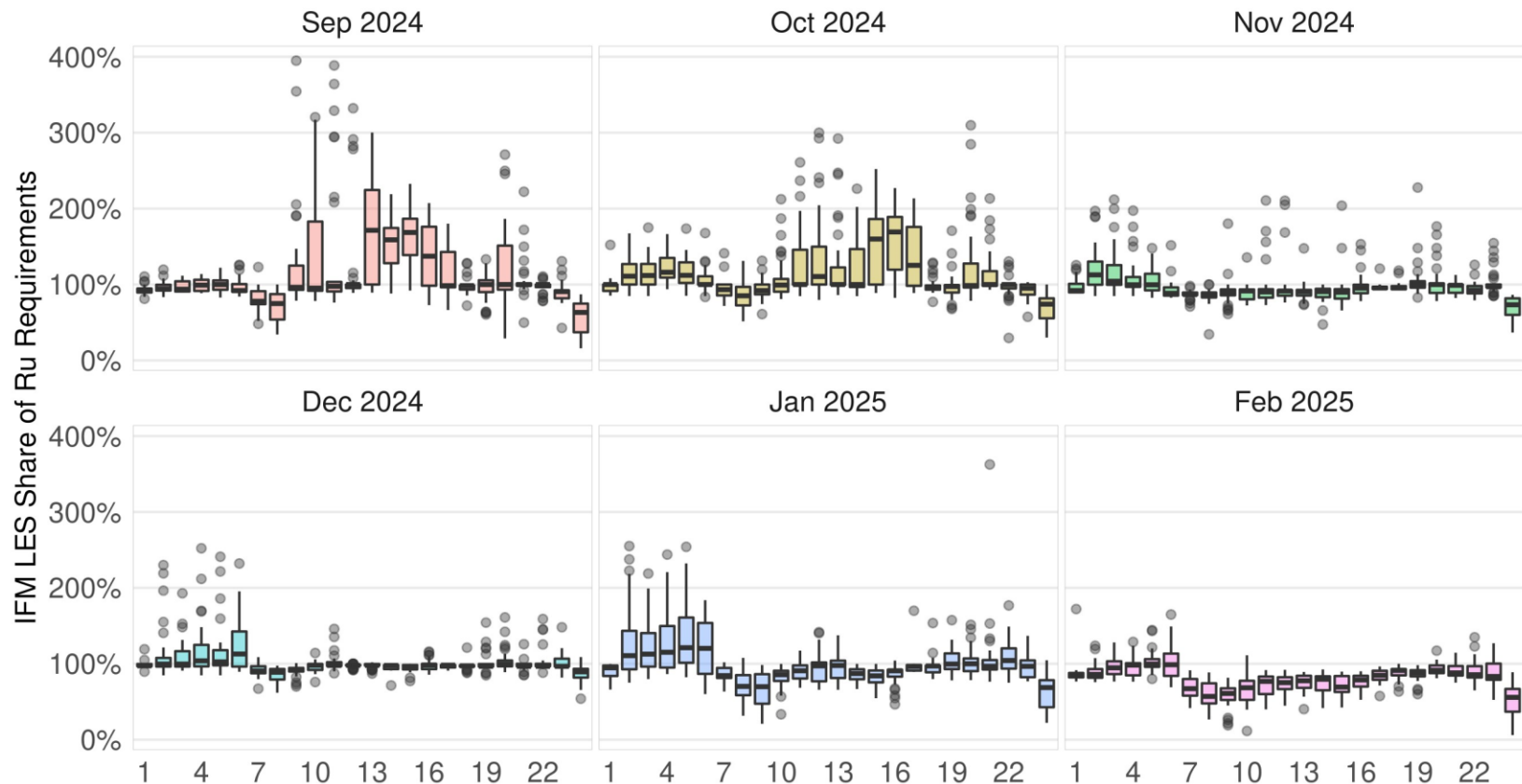
(SOC: original SOC with energy impact only)

- A new set of constraints is introduced

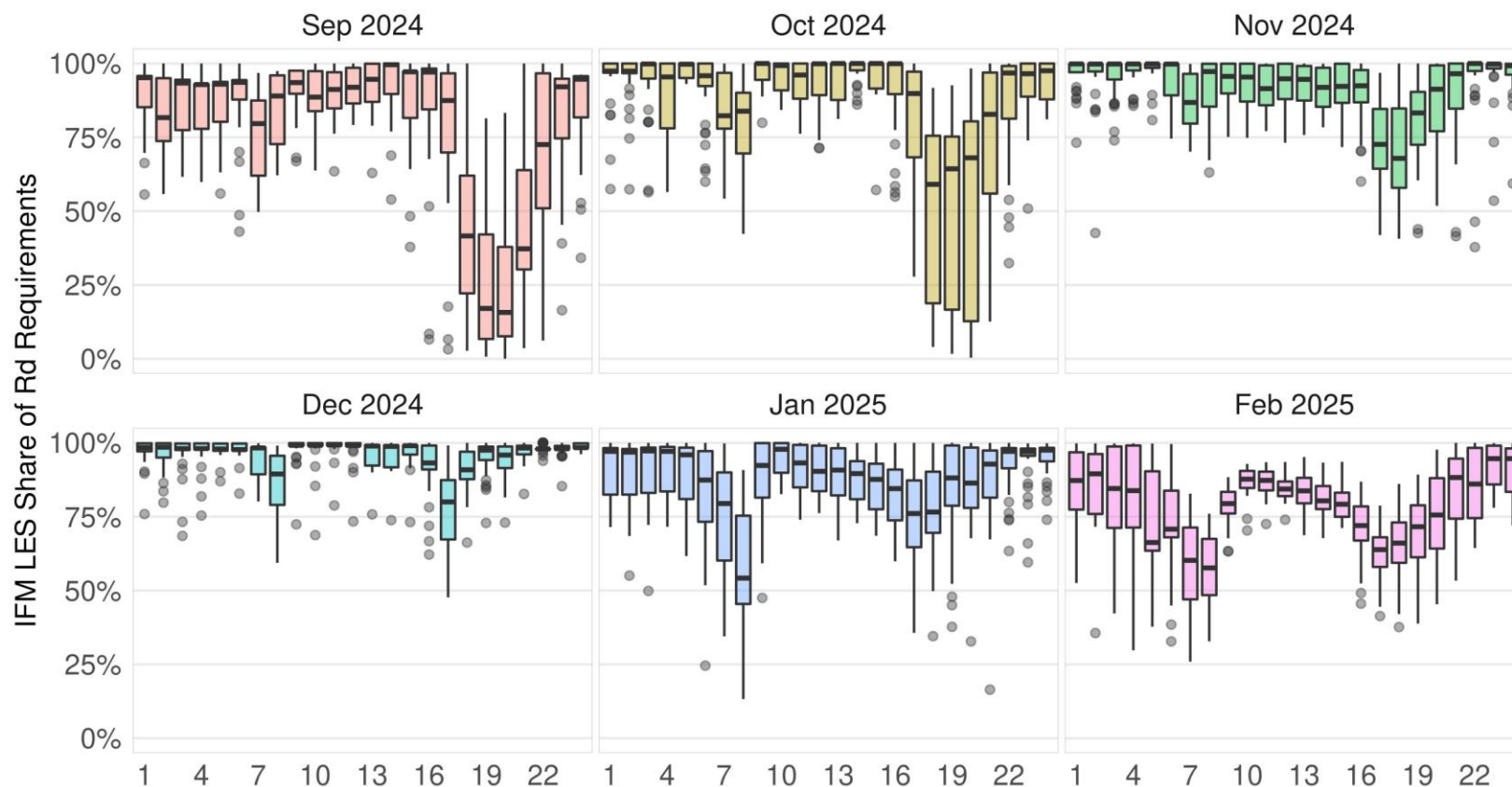
$$SOC_{i,t}^{AT} = SOC_{i,t-1}^{AT} - \left(EN_{i,t}^{(+)} + \eta_i EN_{i,t}^{(-)} + \textcolor{blue}{ATRU}_t RU_{i,t} - \textcolor{blue}{ATRD}_t \eta_i RD_{i,t} \right) \frac{\Delta T}{T_{60}}$$

(SOC^{AT} : SOC with attenuation factors)

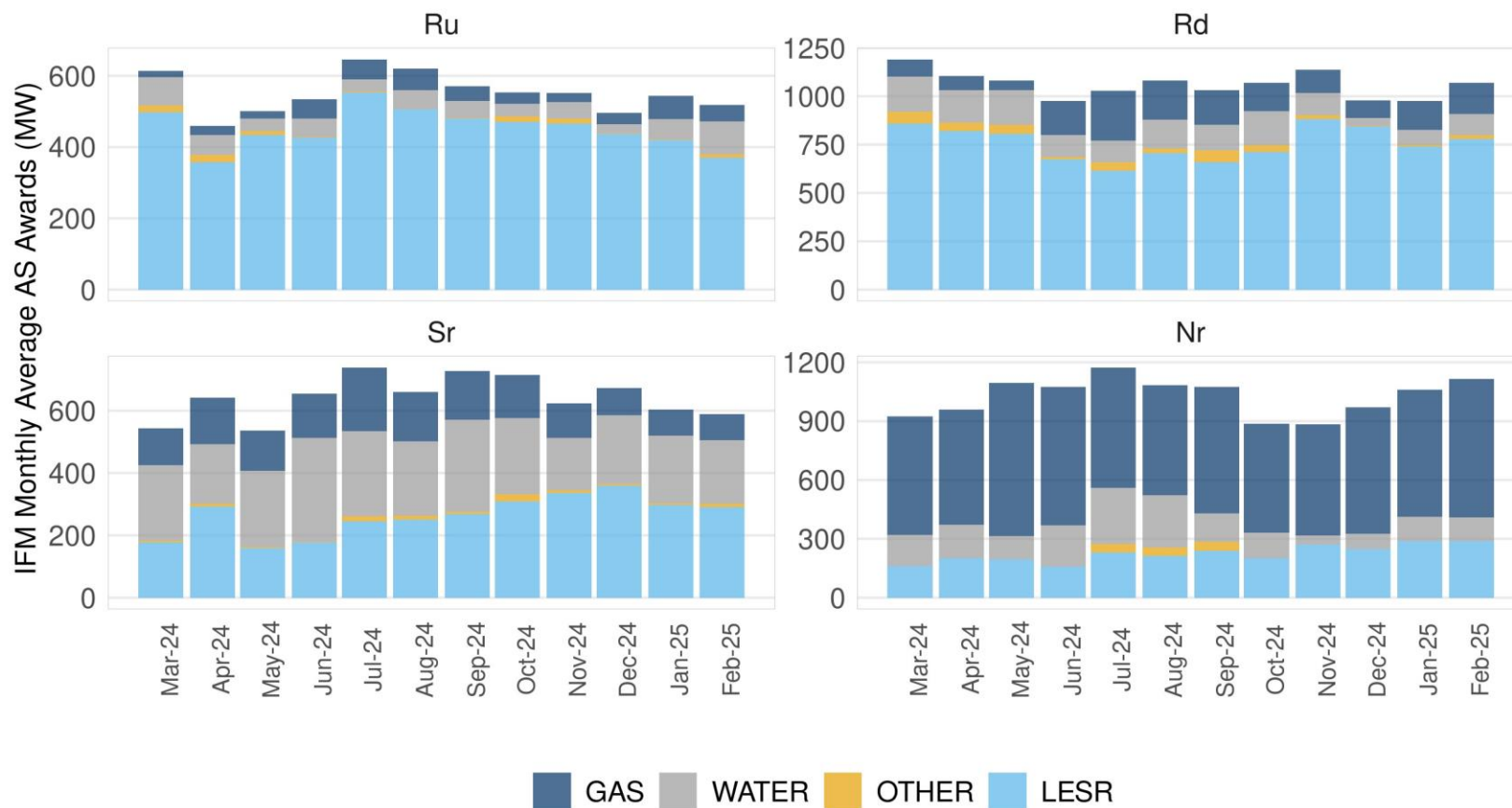
No material change in the hourly profile of the LESR percentage share of the Ru requirement after implementation of enhancements



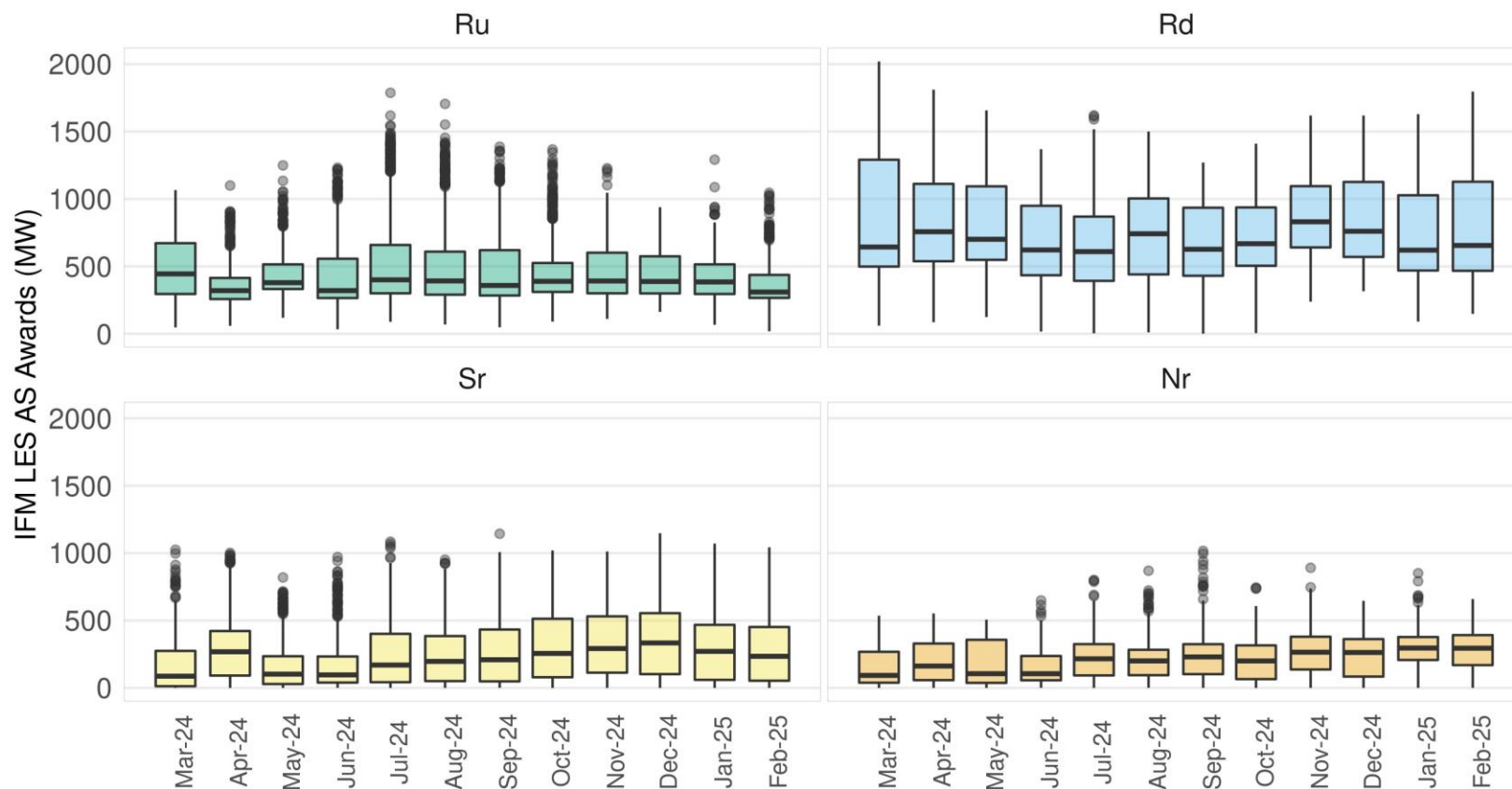
No material change in the hourly profile of the LESR percentage share of the Rd requirement



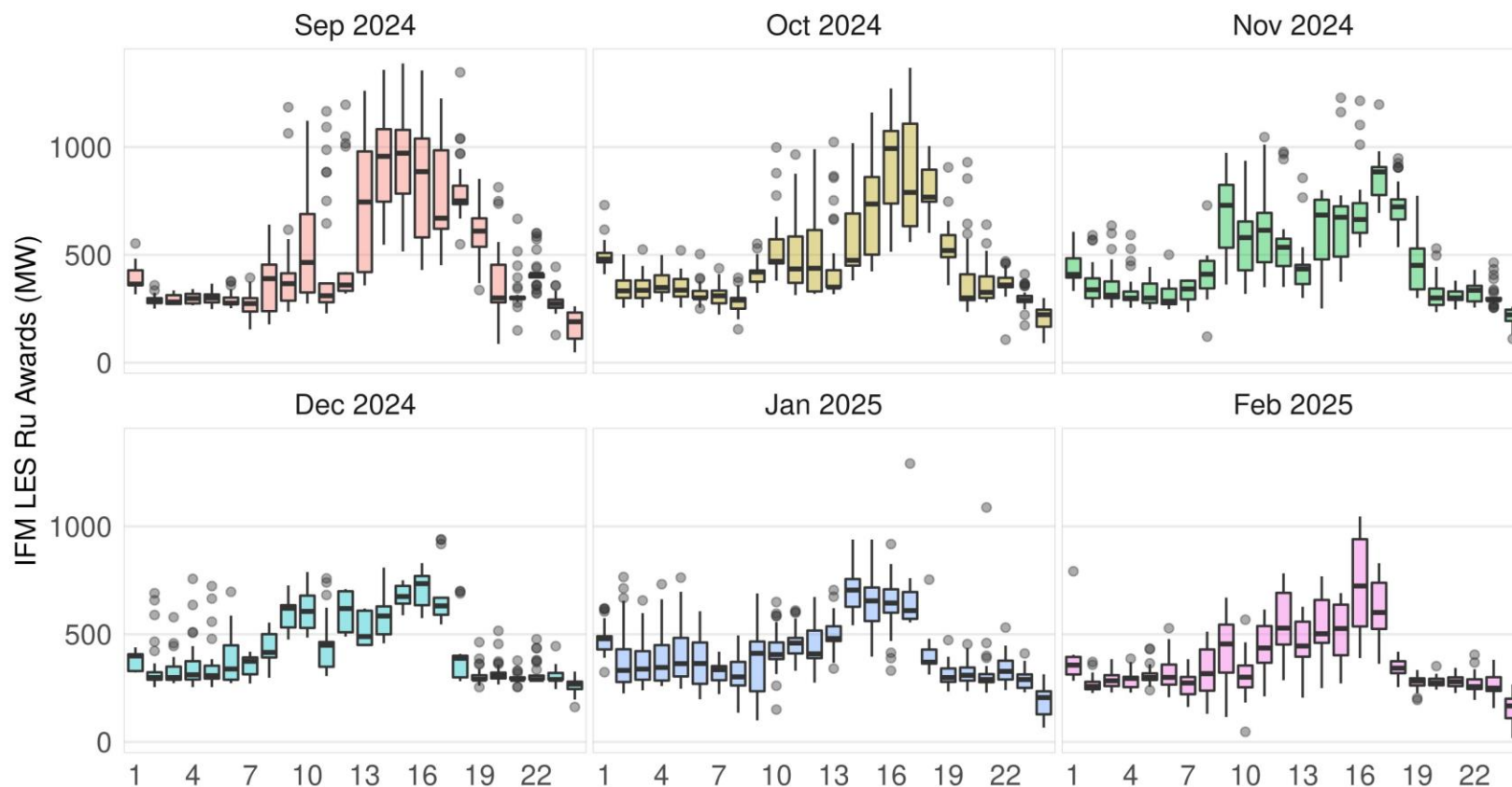
Monthly average IFM AS awards for storage shows no significant change in pattern



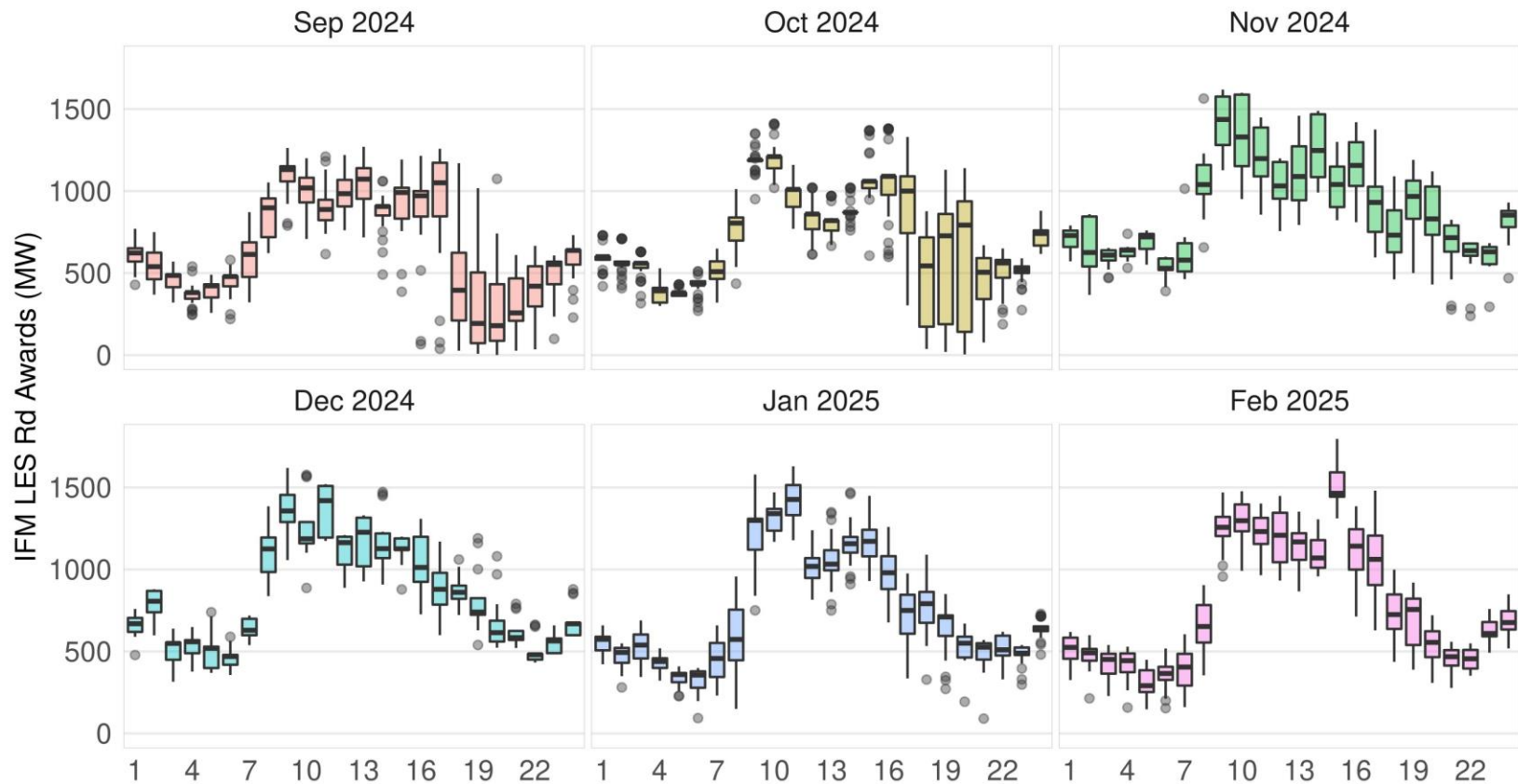
Monthly IFM AS market awards show no significant change in pattern



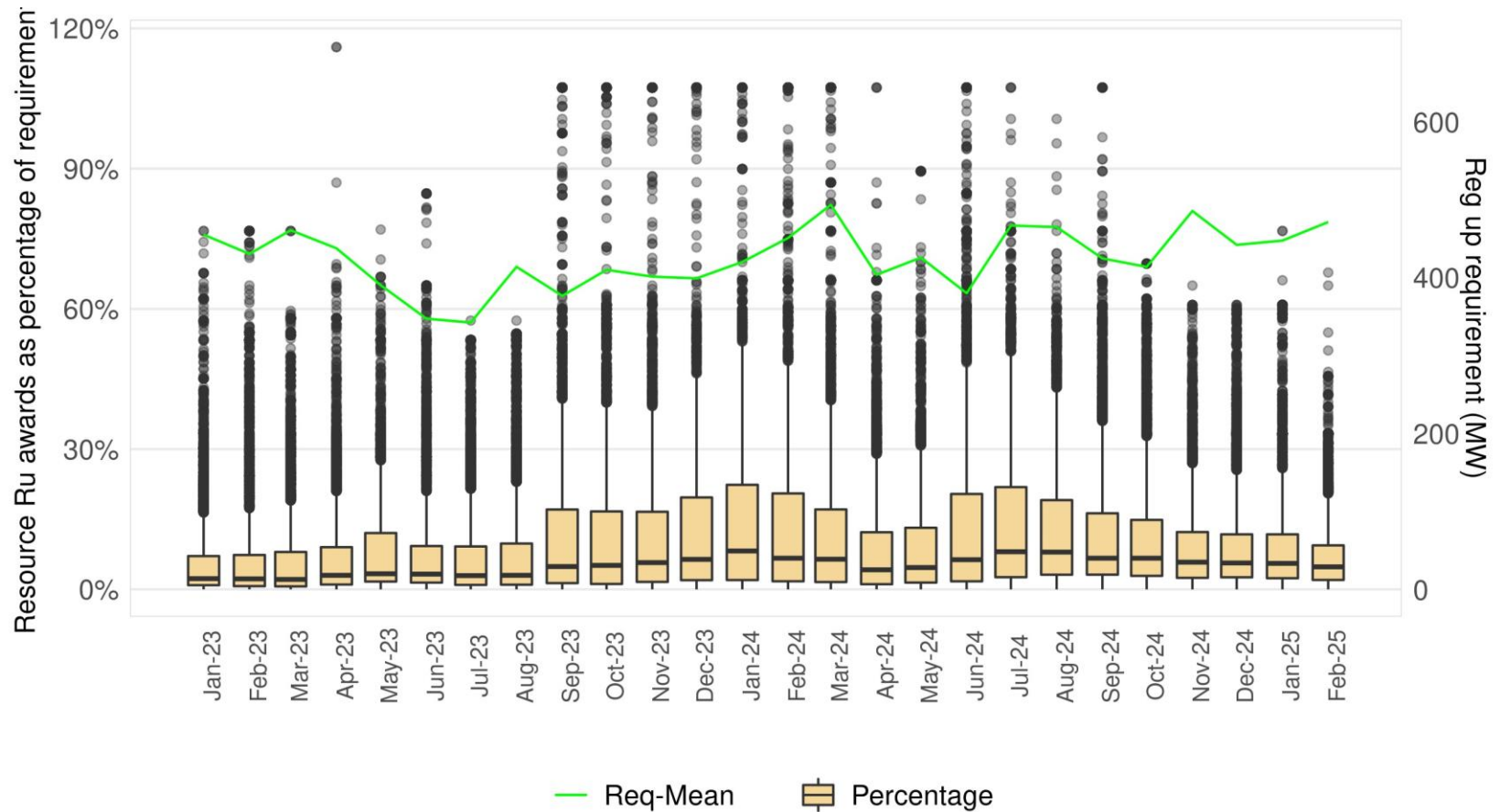
Regulation up awards in the day-ahead market have not seen a material change in trend



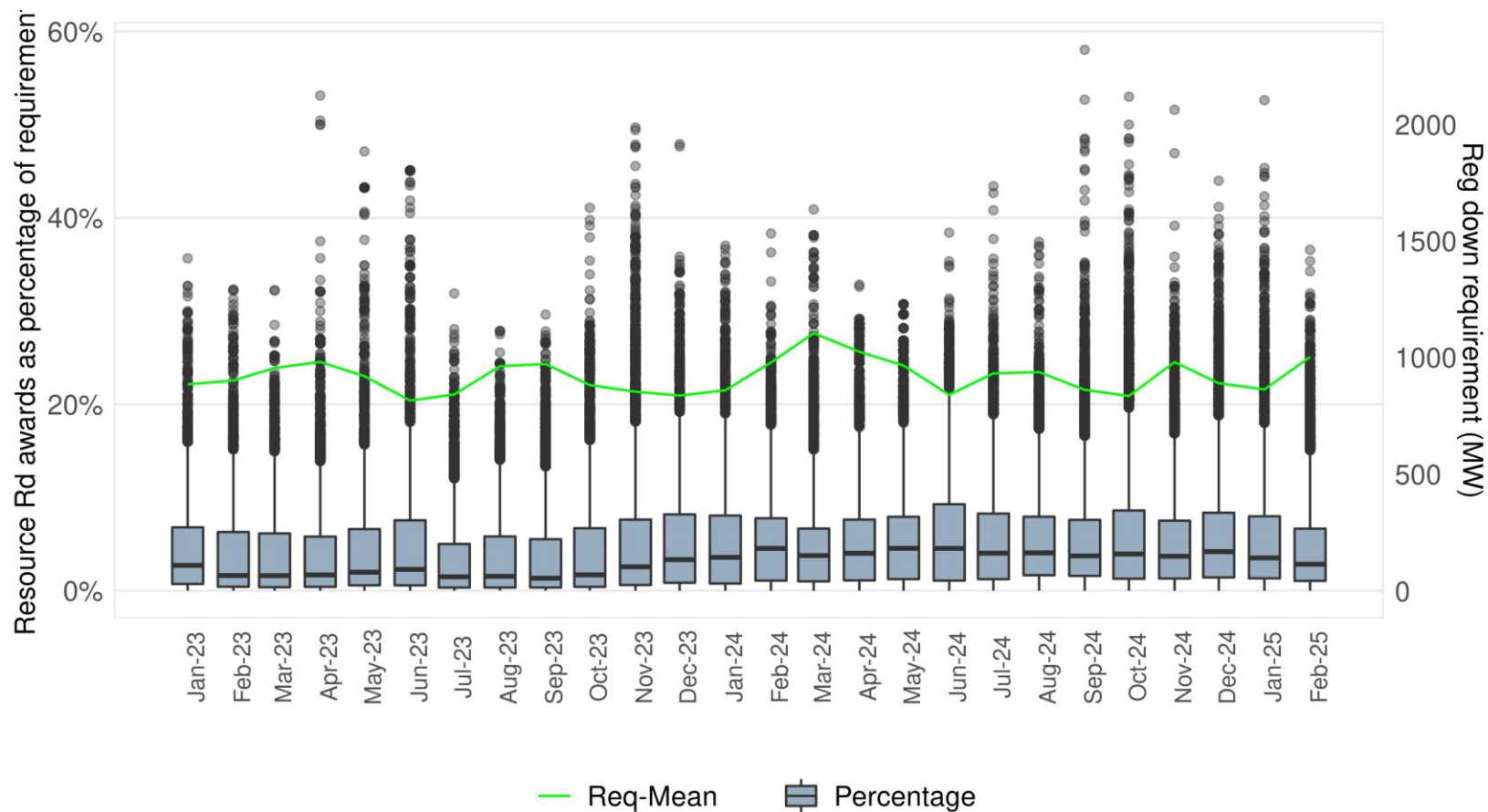
Regulation down awards in the day-ahead market have not seen a material change in trend



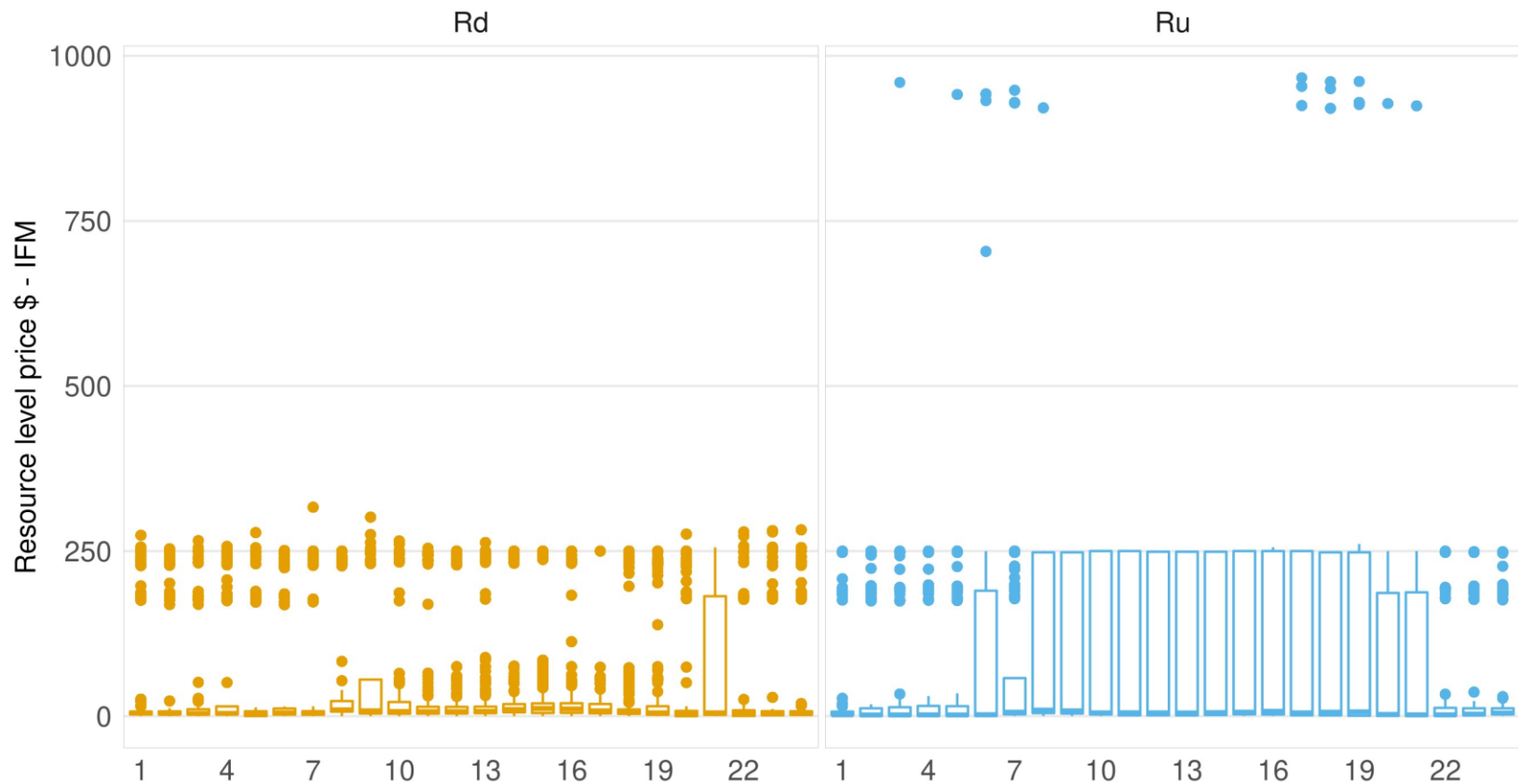
The relative size of Regulation award on individual resources tends to be within typical ranges



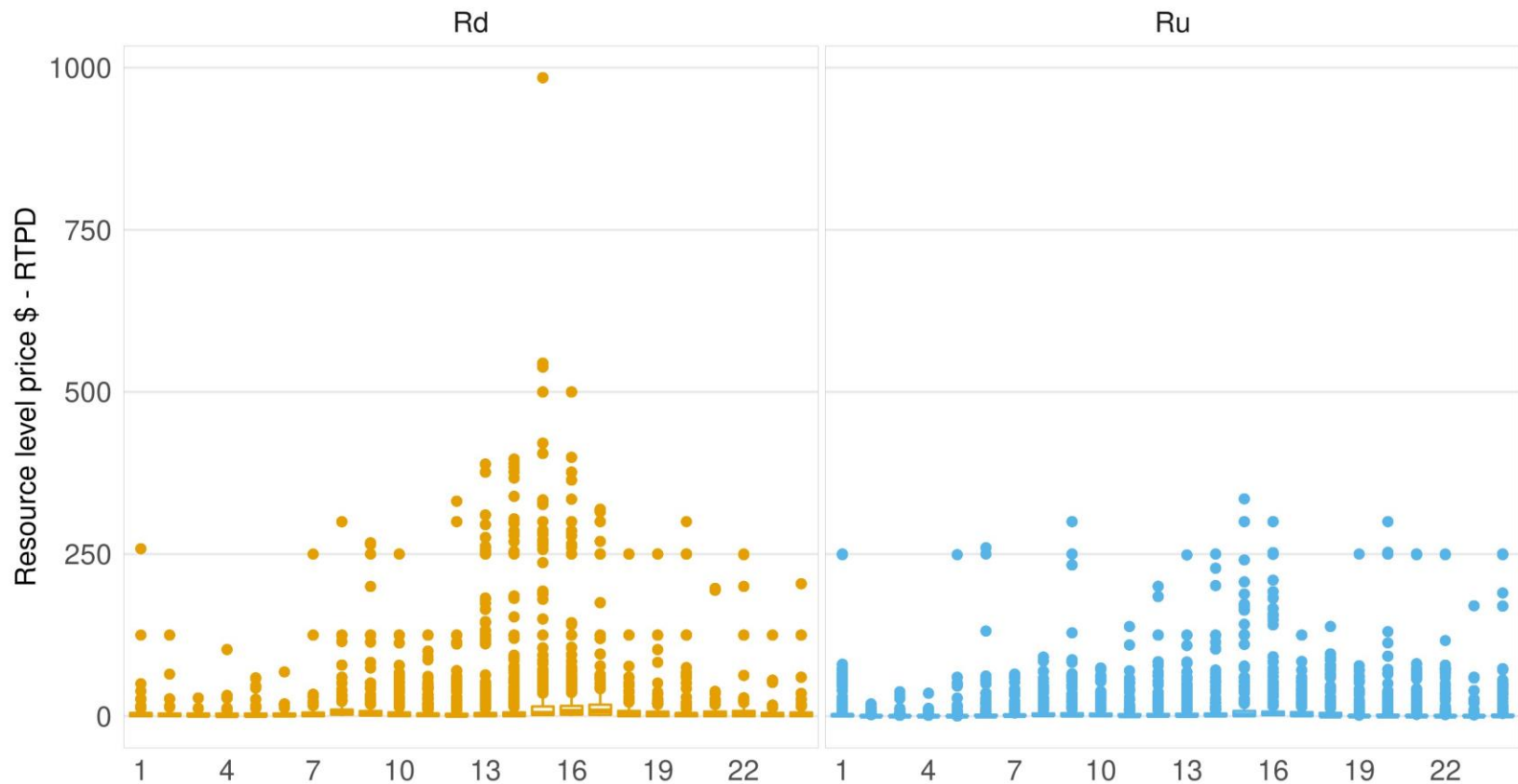
Resource Rd awards as percentage of Rd requirement sees not notable change in pattern with enhancements



IFM Resource level regulation prices have not seen negative since the implementation of the enhancements



Real-time resource level regulation prices have not been negative since the implementation of the enhancements

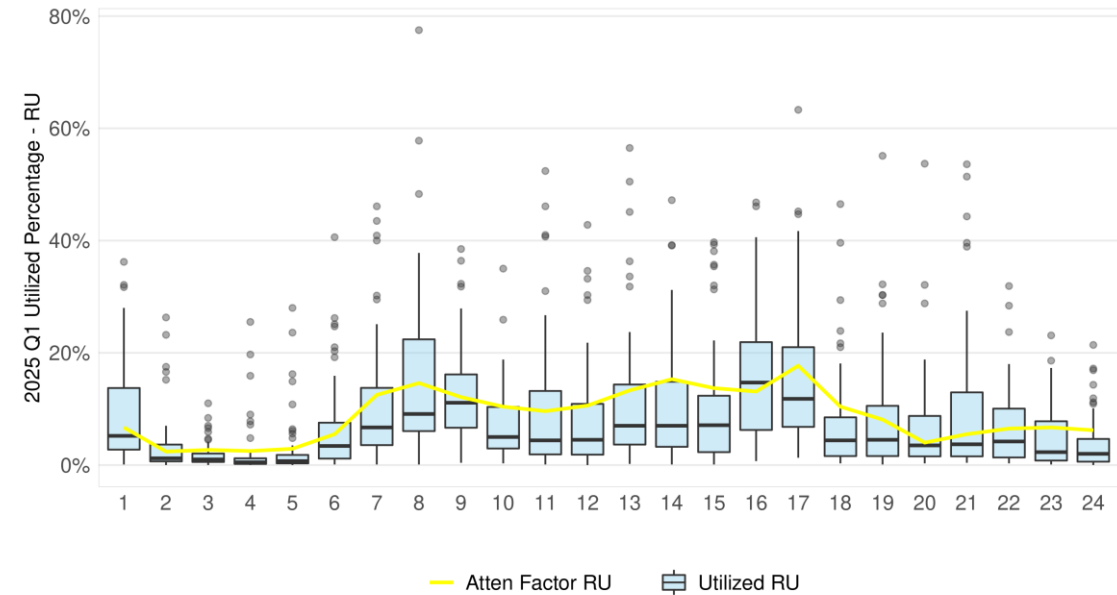
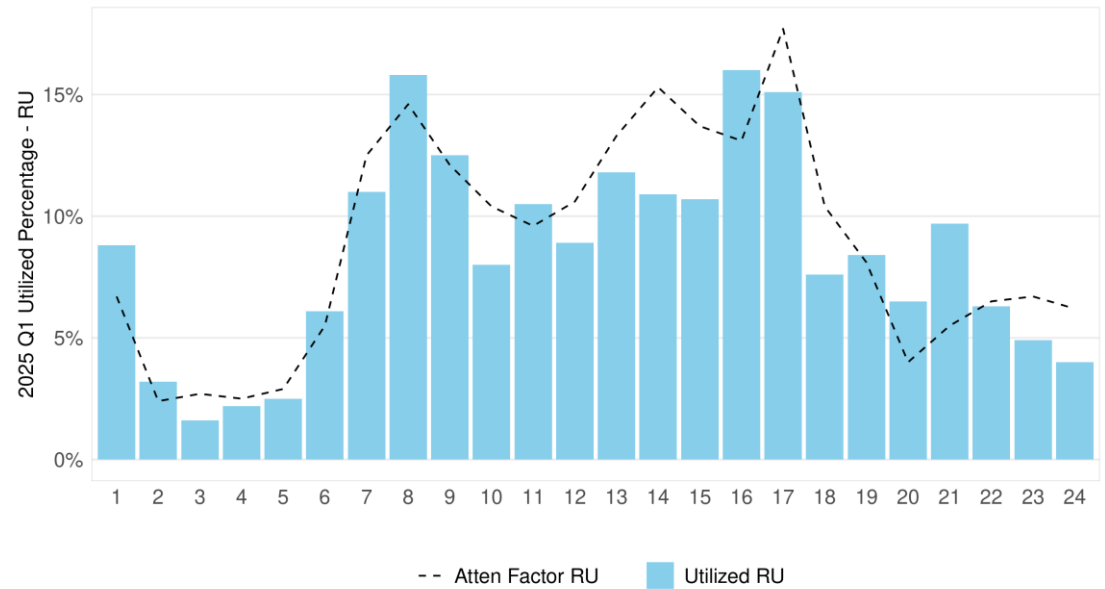


As part of the storage enhancements, the ISO estimates attenuation factors for each calendar season

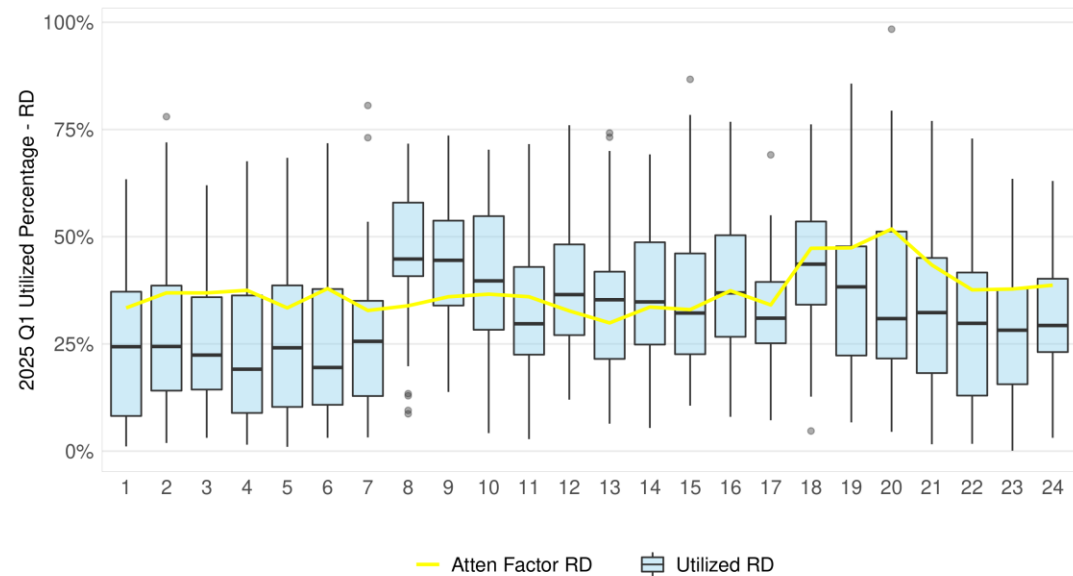
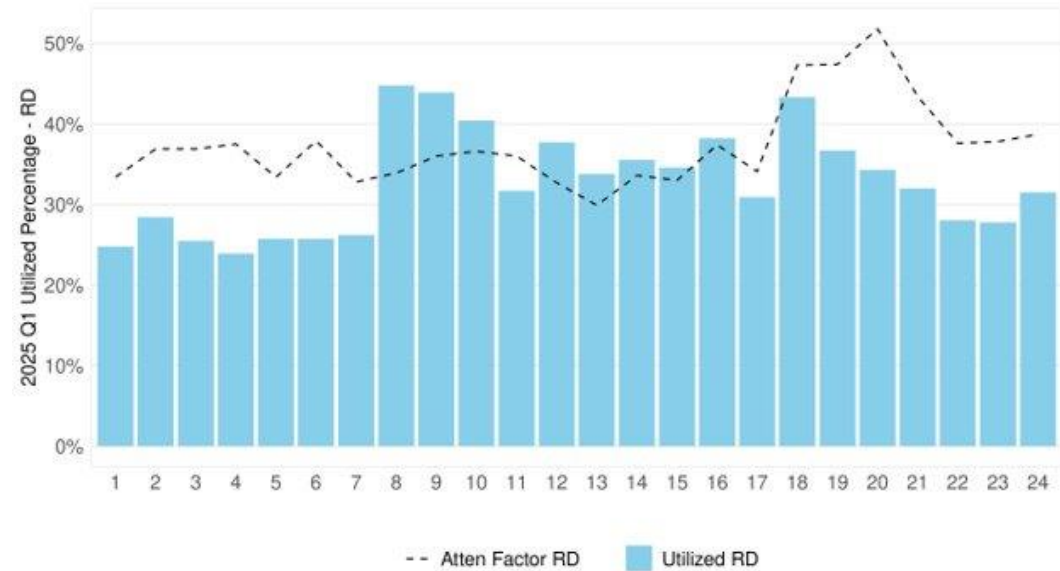
- Estimating the actual utilization of regulation
- Data: the corresponding quarter from the prior year
- Metric:
 - a) Data source: resource level AGC setpoint vs. DOP
 - b) Reference: RTPD regulation awards
 - c) System aggregated percentages

$$\text{Percentage utilization } Ru(Rd) = \frac{\text{Total utilized } Ru(Rd)}{\text{Total } Ru(Rd) \text{ awards}}$$

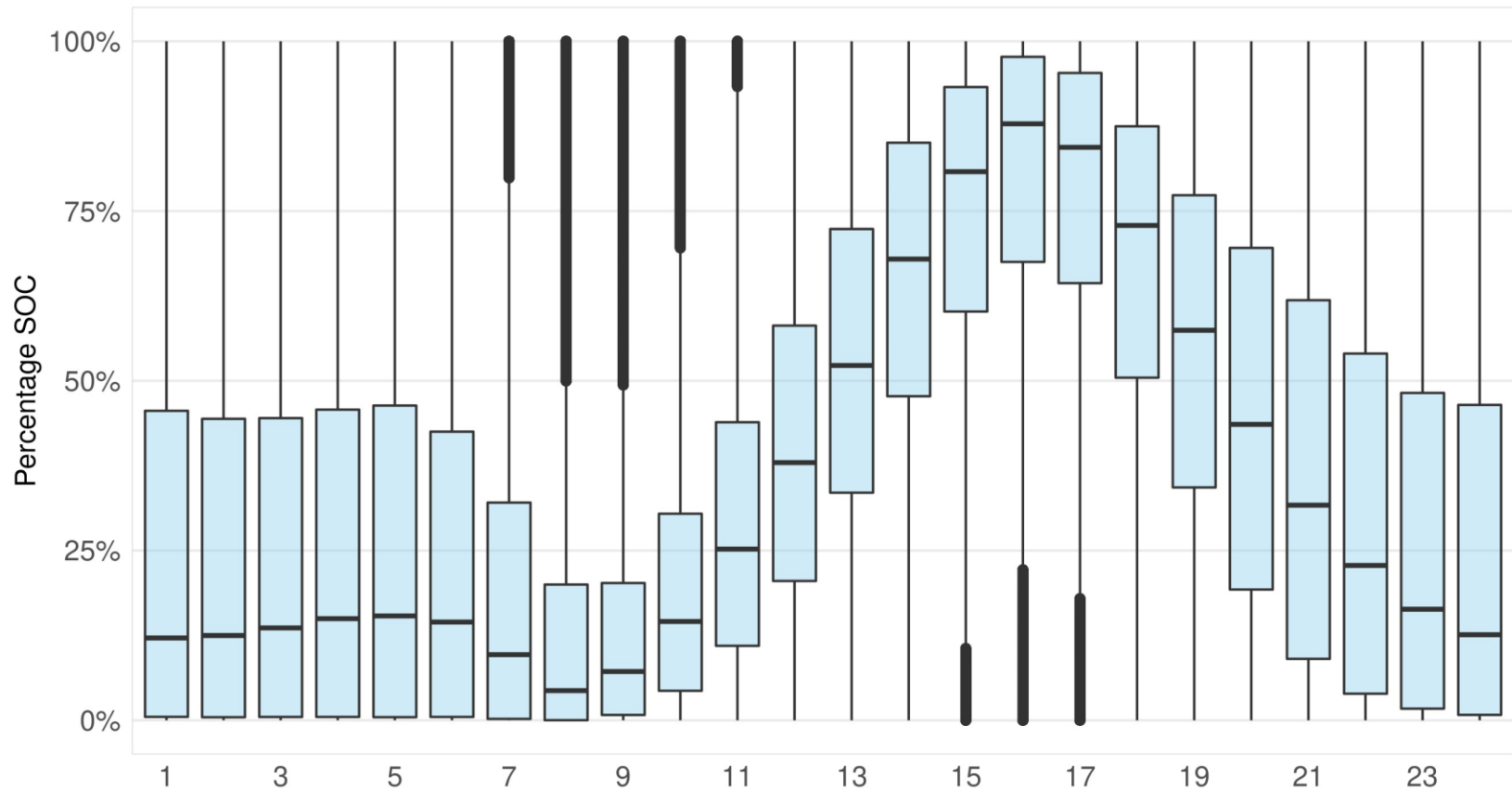
2025 Q1 (Jan – Feb) Actual utilization of regulation up remains relatively low



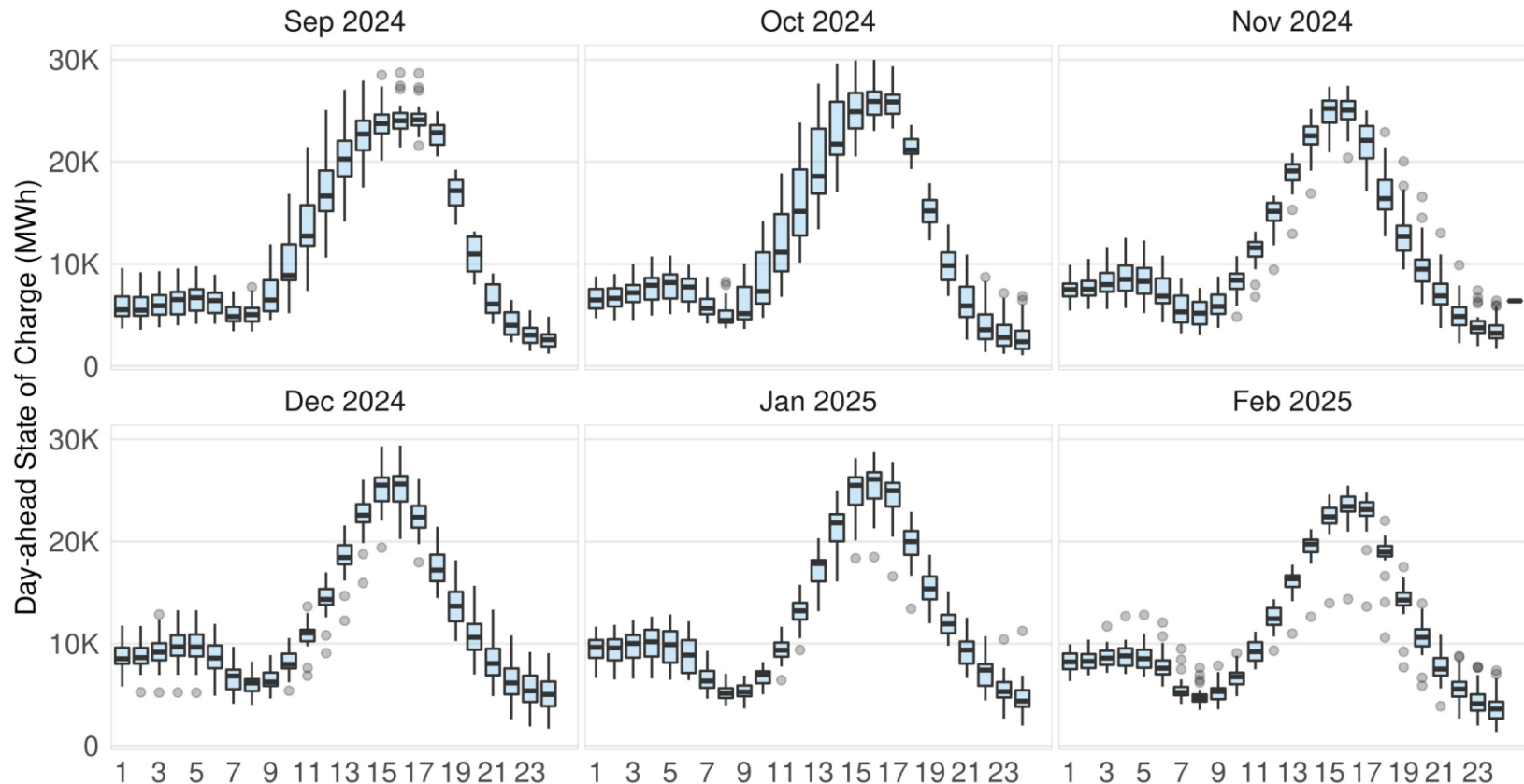
2025 Q1 (Jan – Feb) Actual utilization for regulation down continues to be high



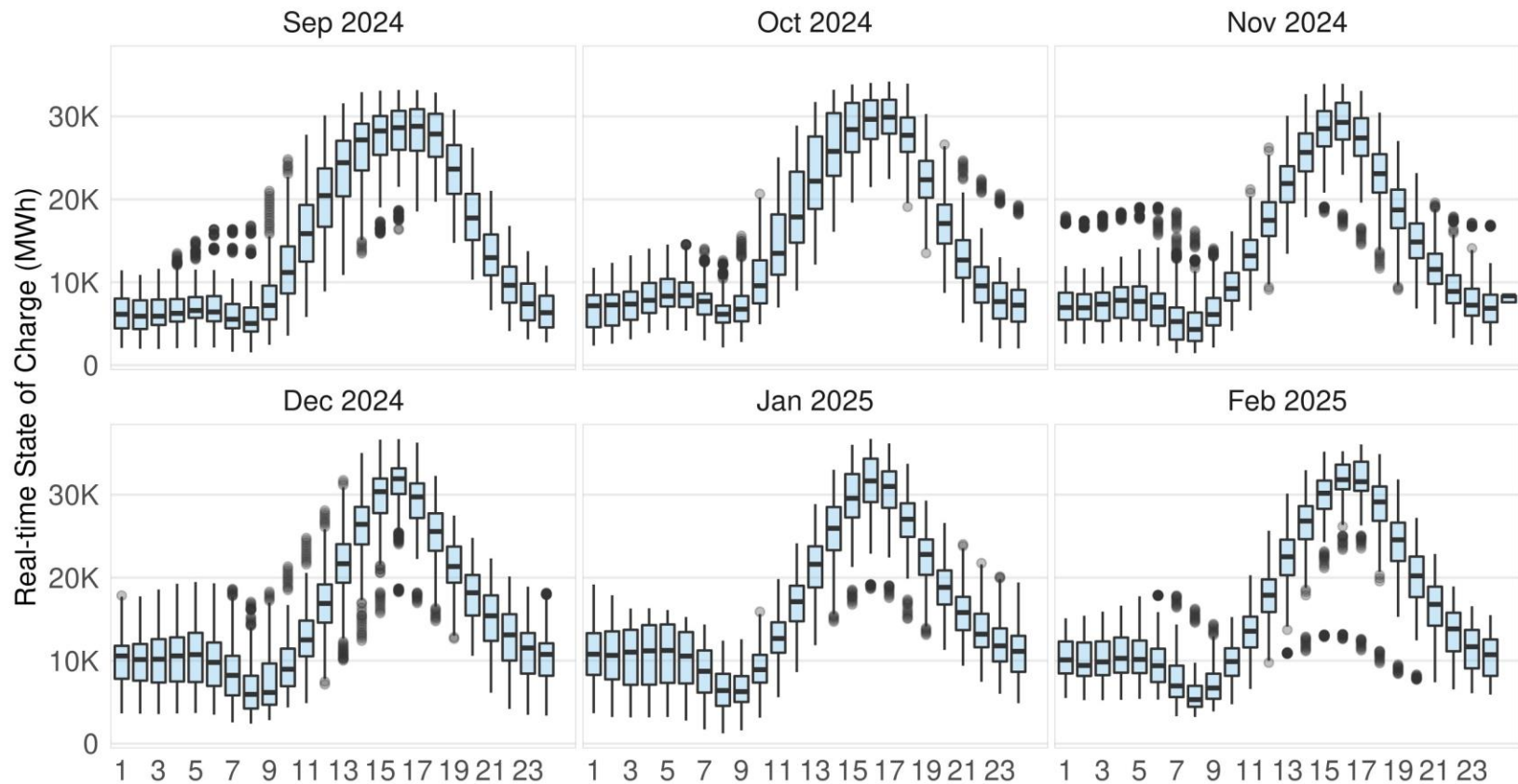
Most of the time storage resources have SOC below full capacity for months from Dec 2024 to Feb 2025



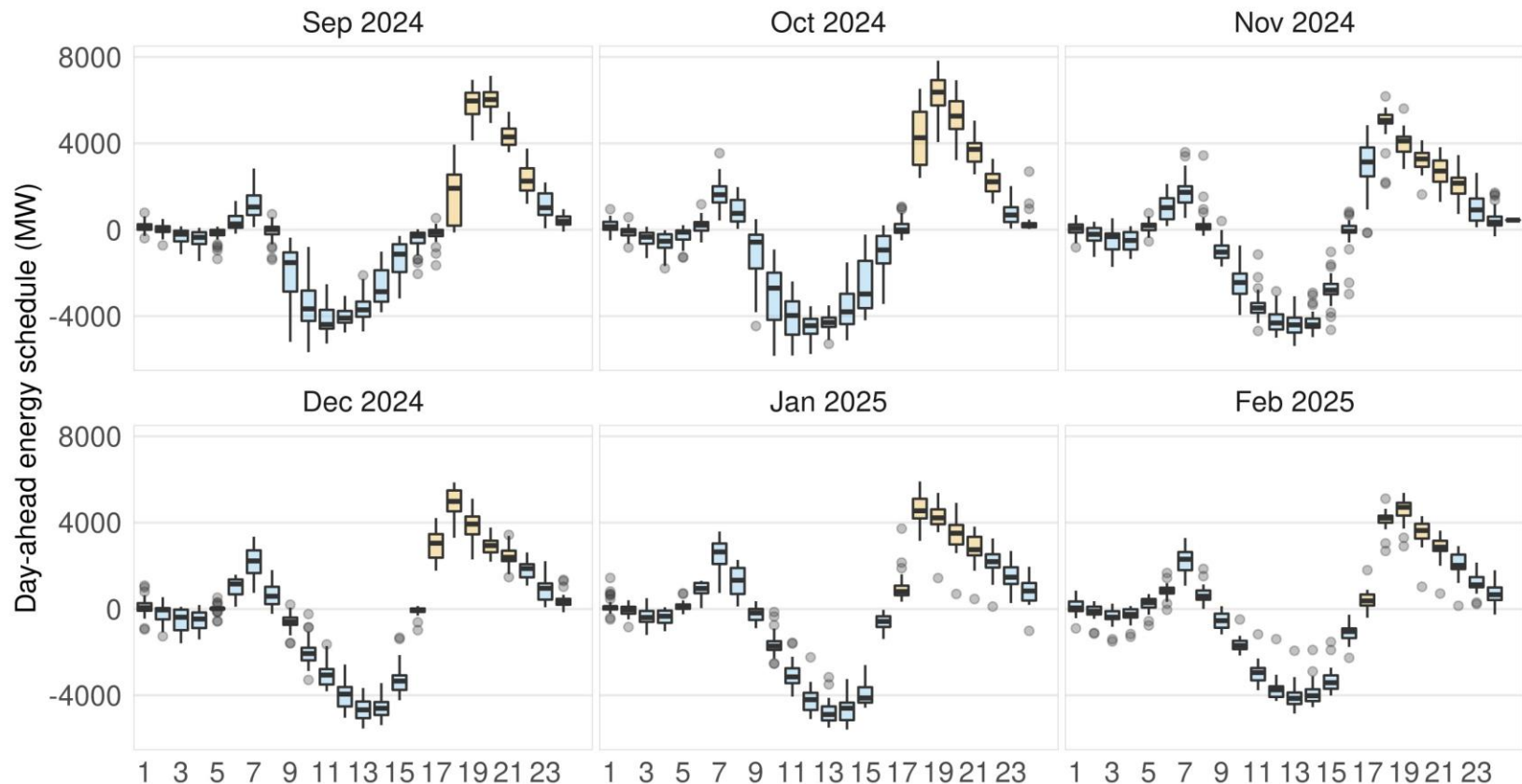
Day-Ahead state of charge for storage resources is typically achieved between hour ending 16 and 17



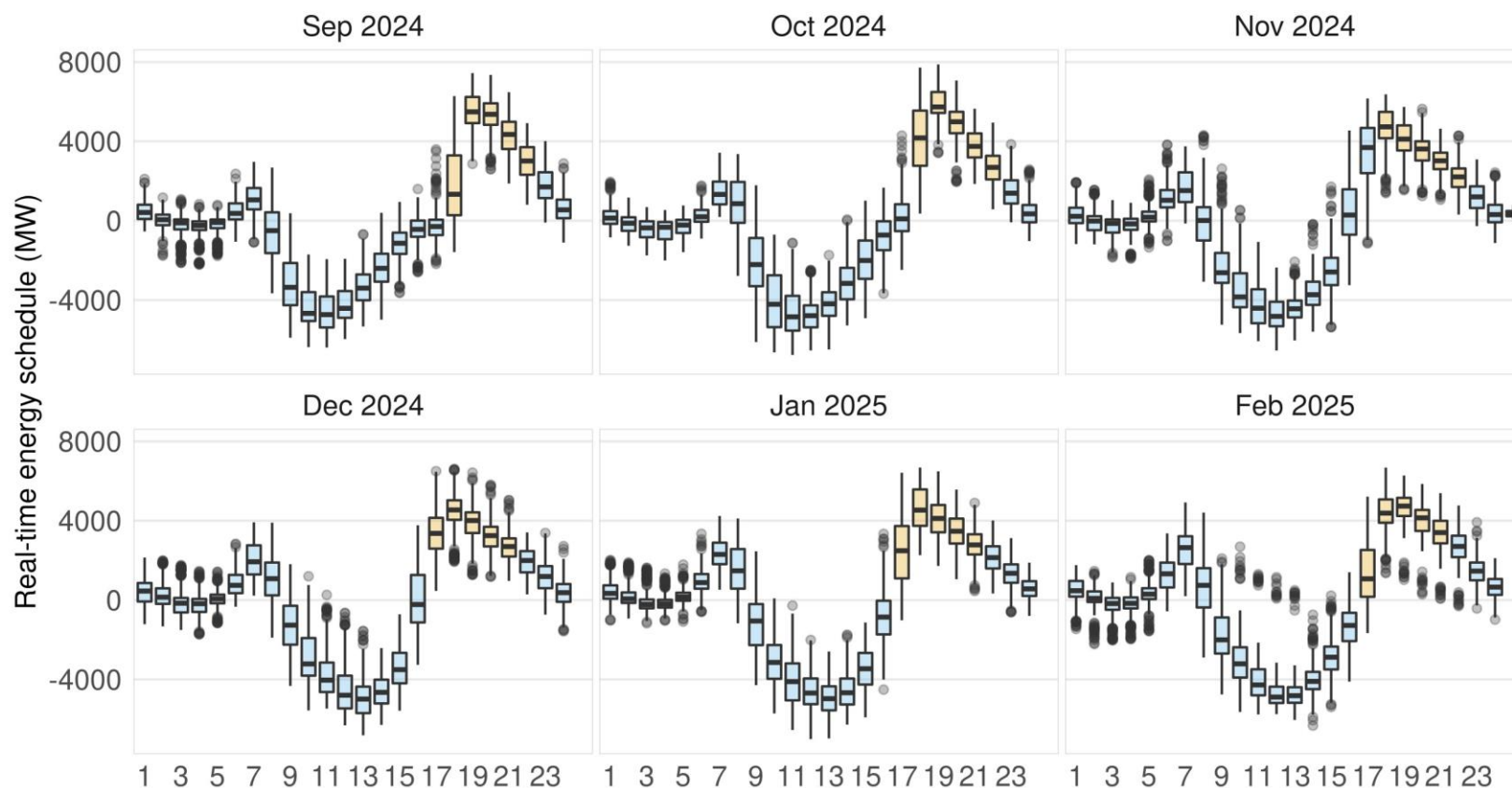
Real-Time State of charge for storage resources was in line with the day-ahead state of charge



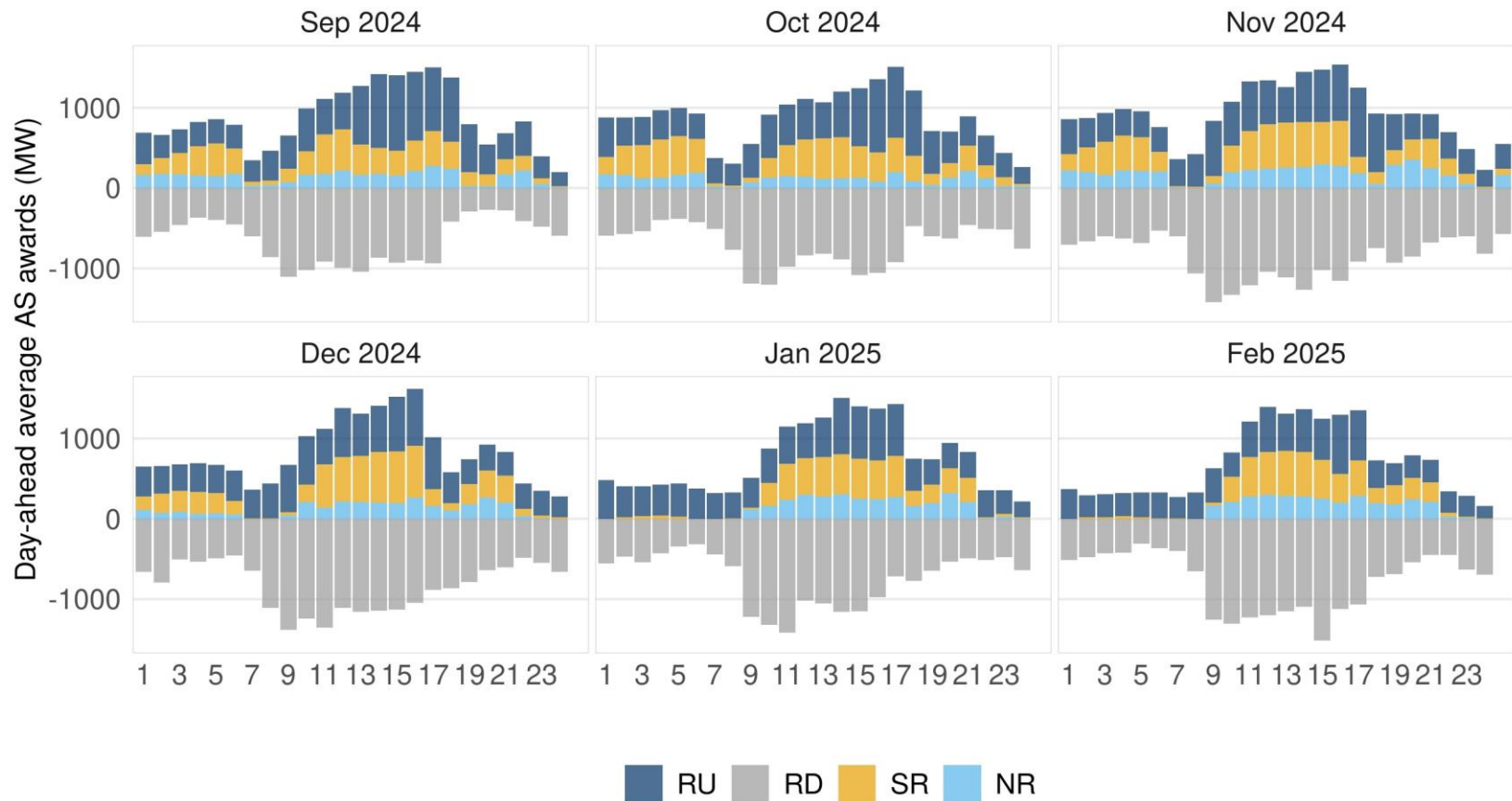
Storage resources were consistently charging during solar hours and discharging during net load peaks



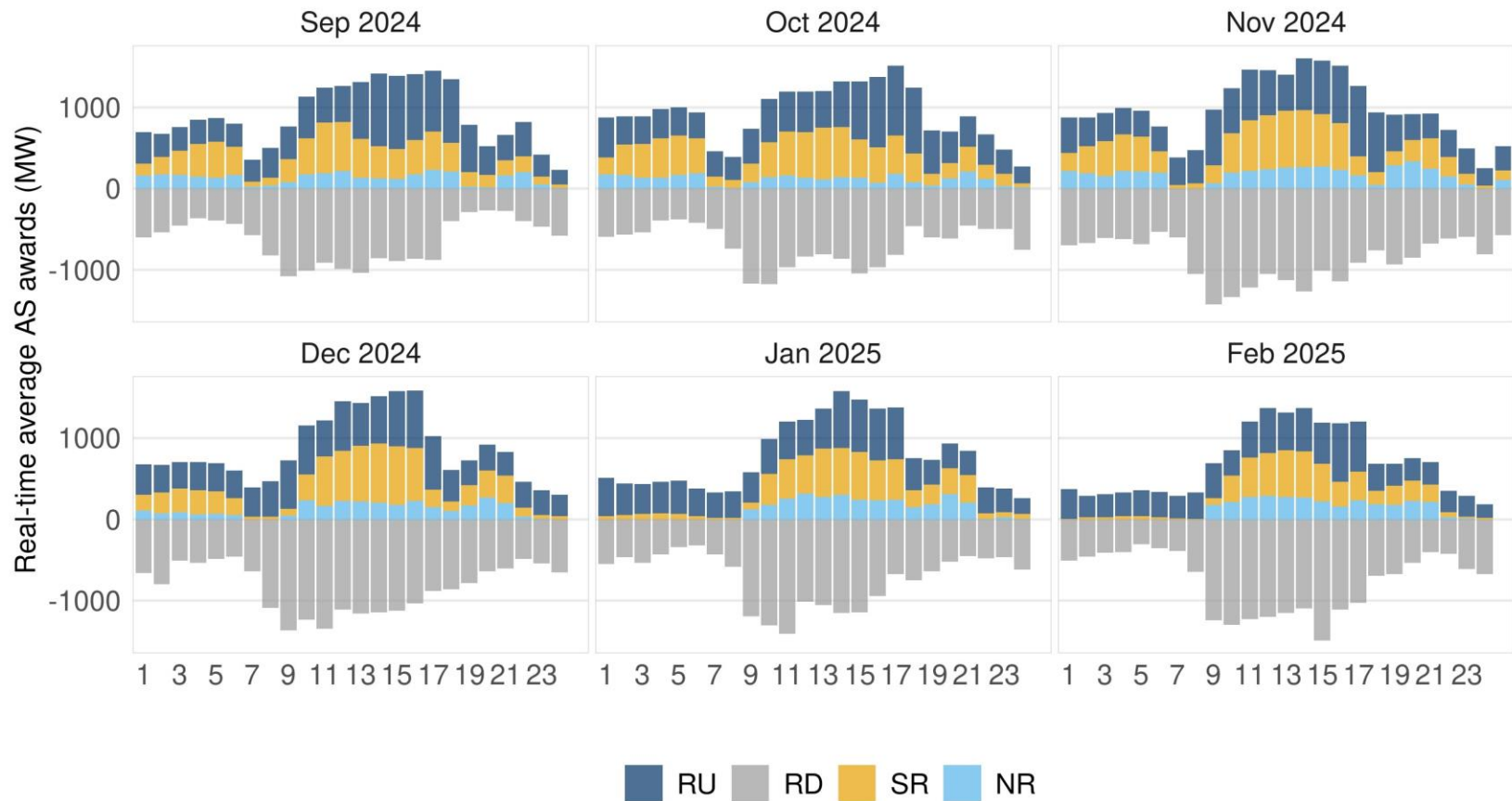
Storage resources were consistently charging during solar hours and discharging during net load peaks



Storage resources procure mostly regulation while in recent months they have also increased the provision of Spinning reserves. Day Ahead

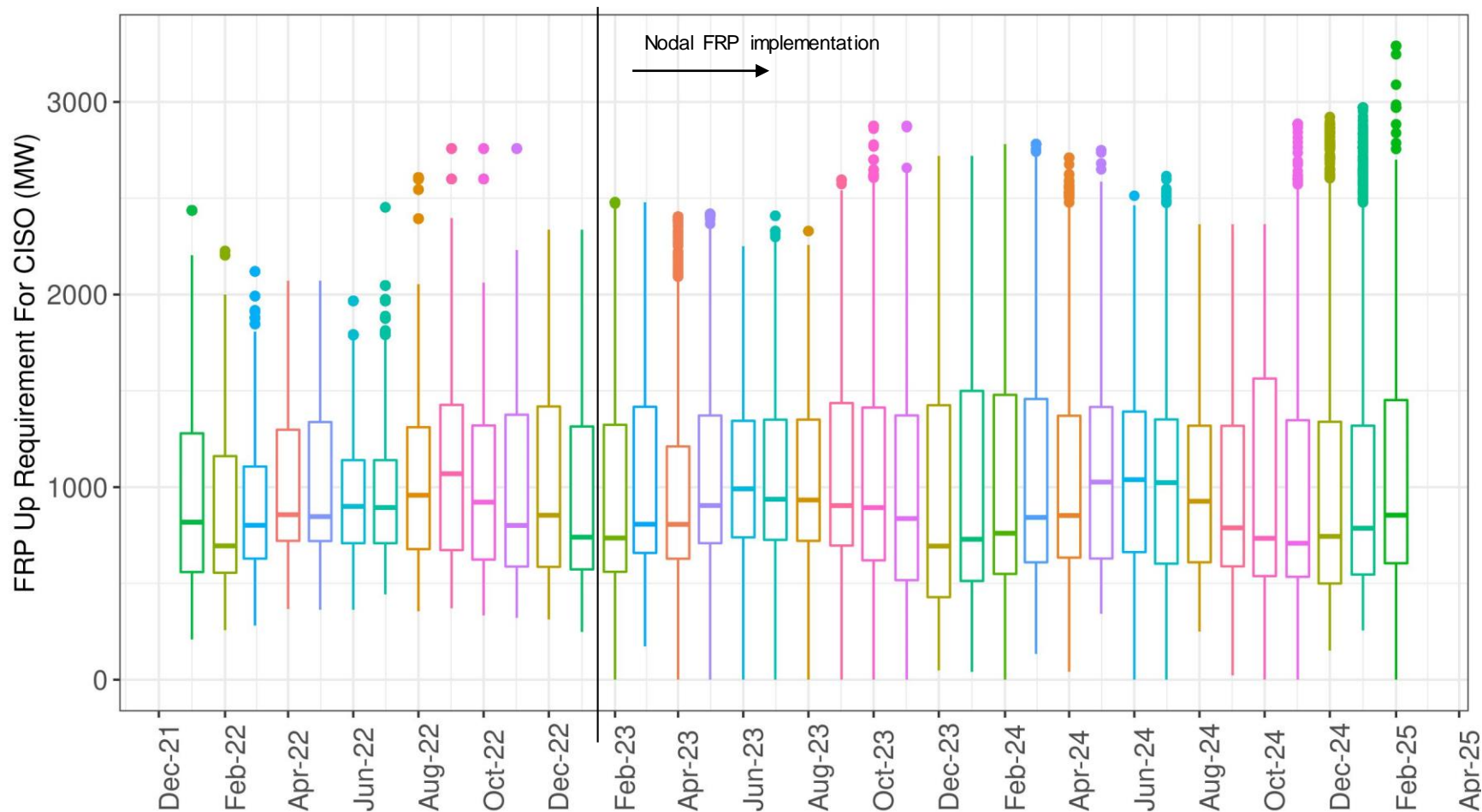


Storage resources procure mostly regulation while in recent months they have also increased the provision of Spinning reserves. Real time

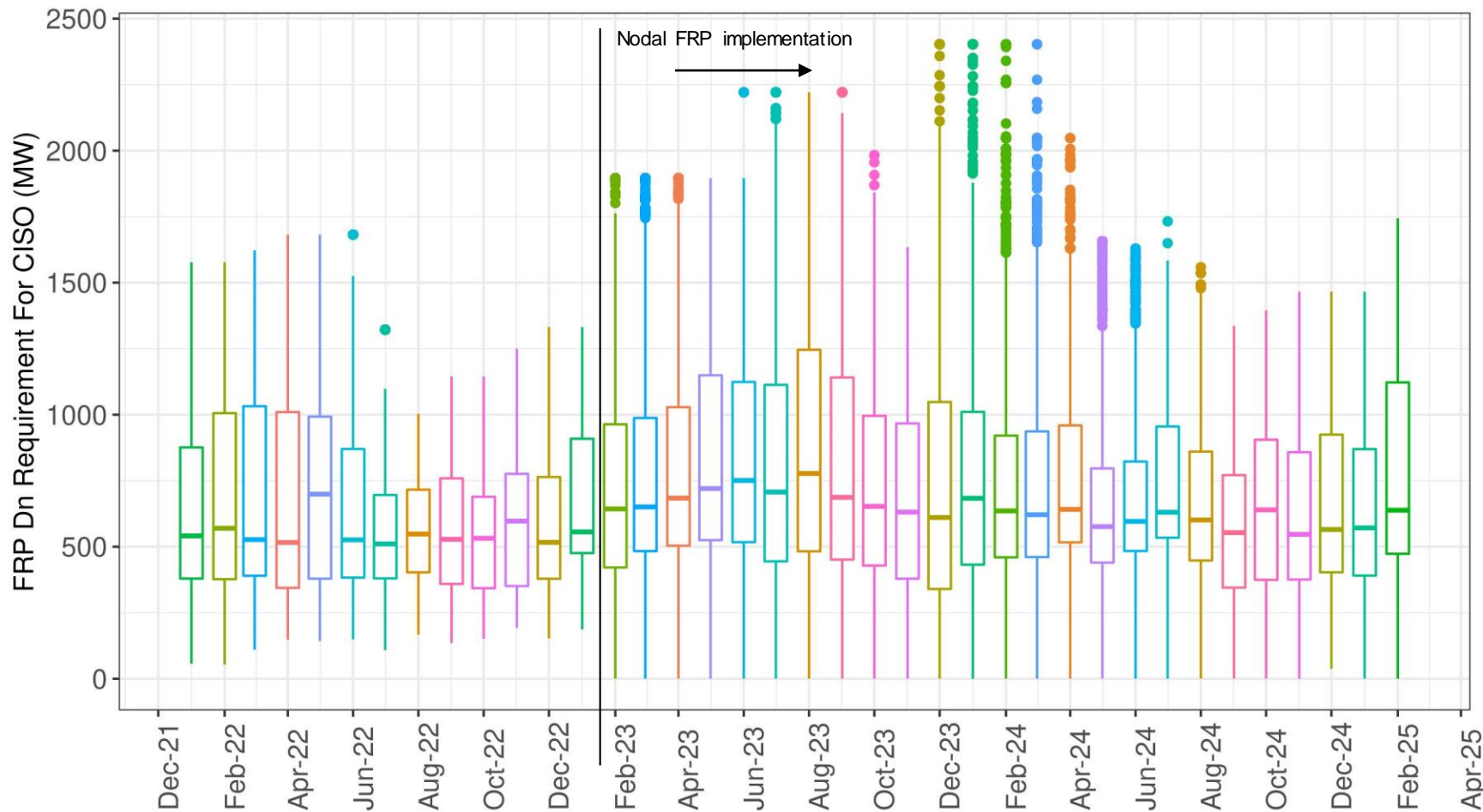


Flexible Ramping Product

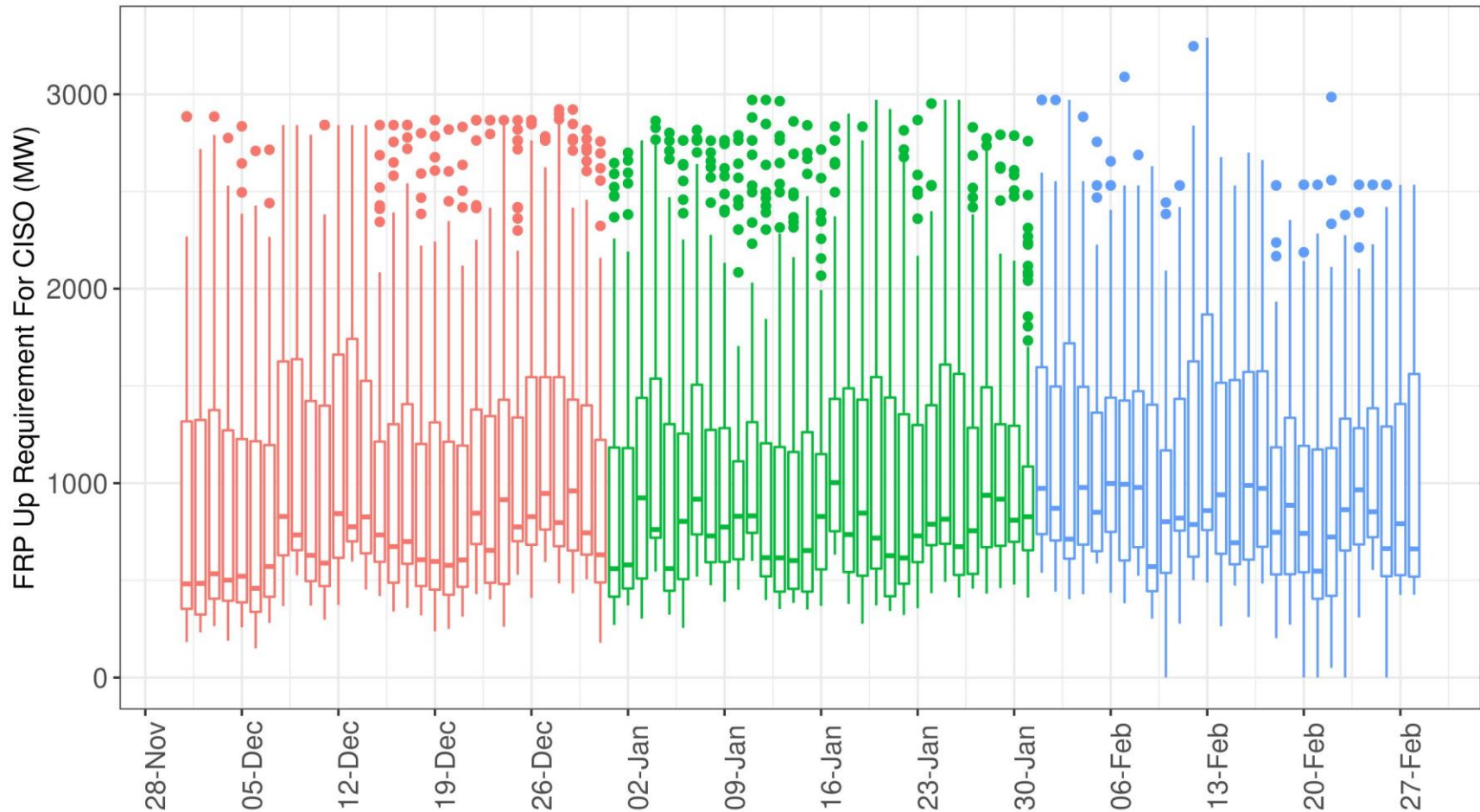
FRP Up Requirement for CAISO area remain within typical ranges



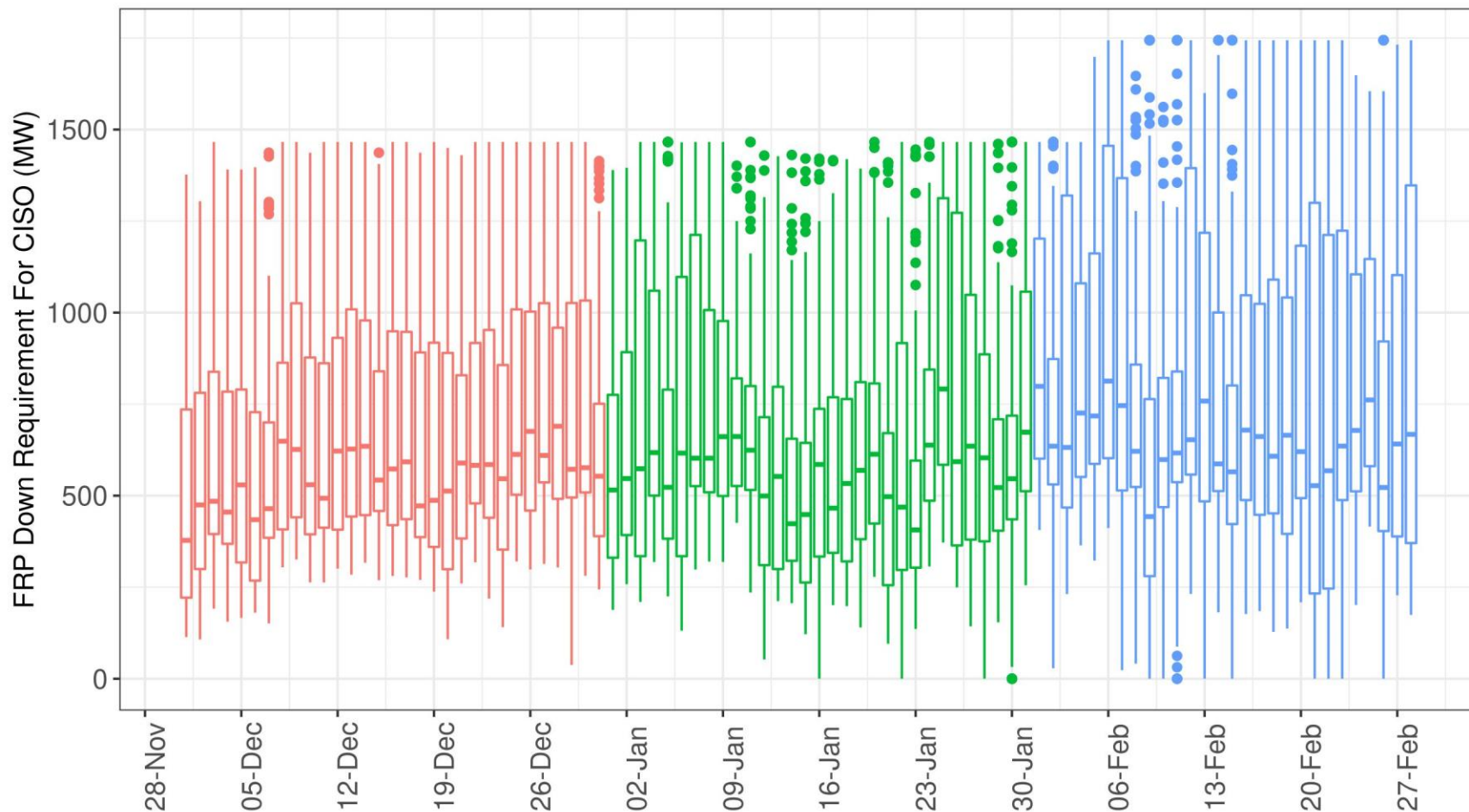
FRP Down Requirement for CAISO area remain within typical ranges



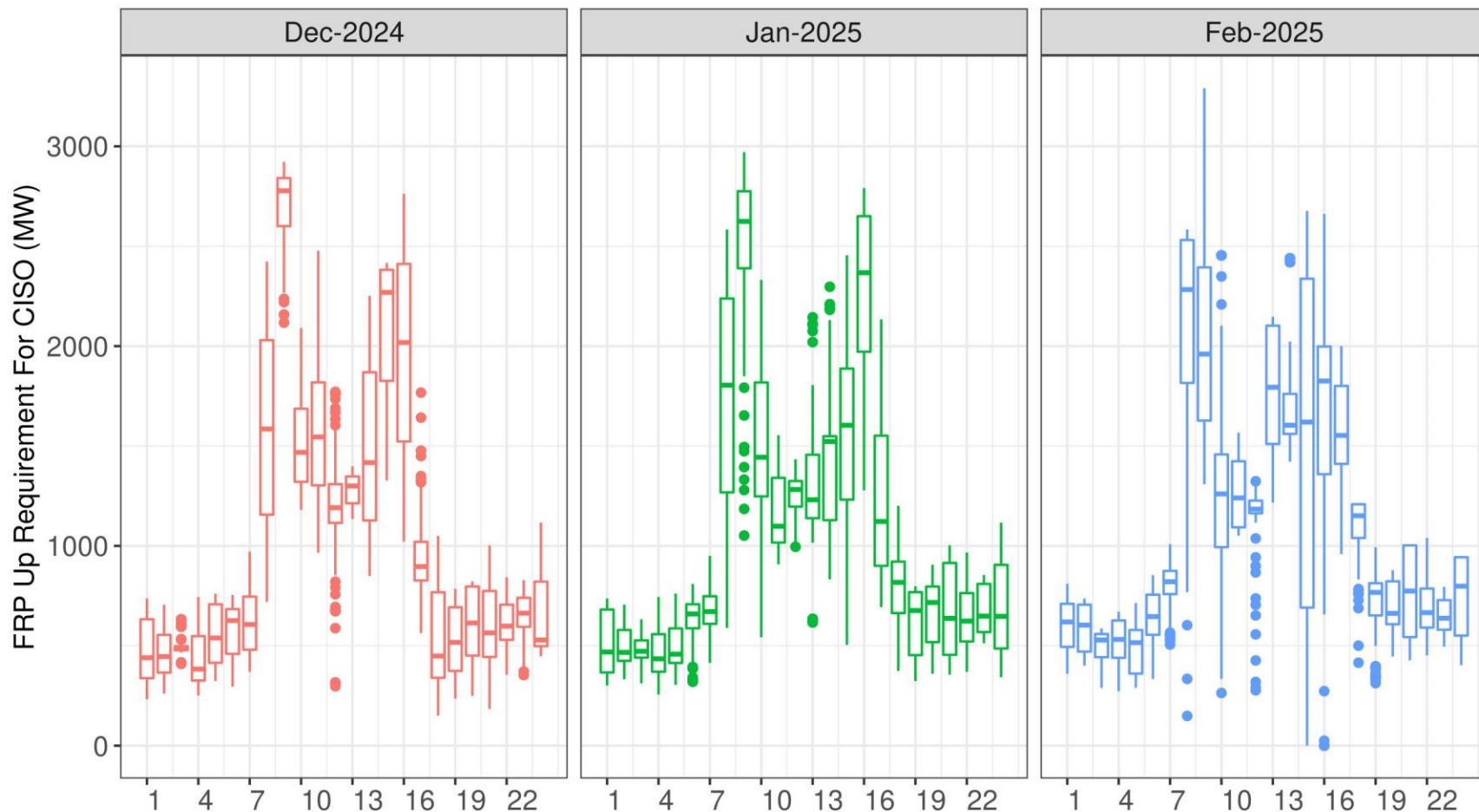
The daily distribution of FRP Up requirement in the last 3 months for CAISO area exhibits a steady trend



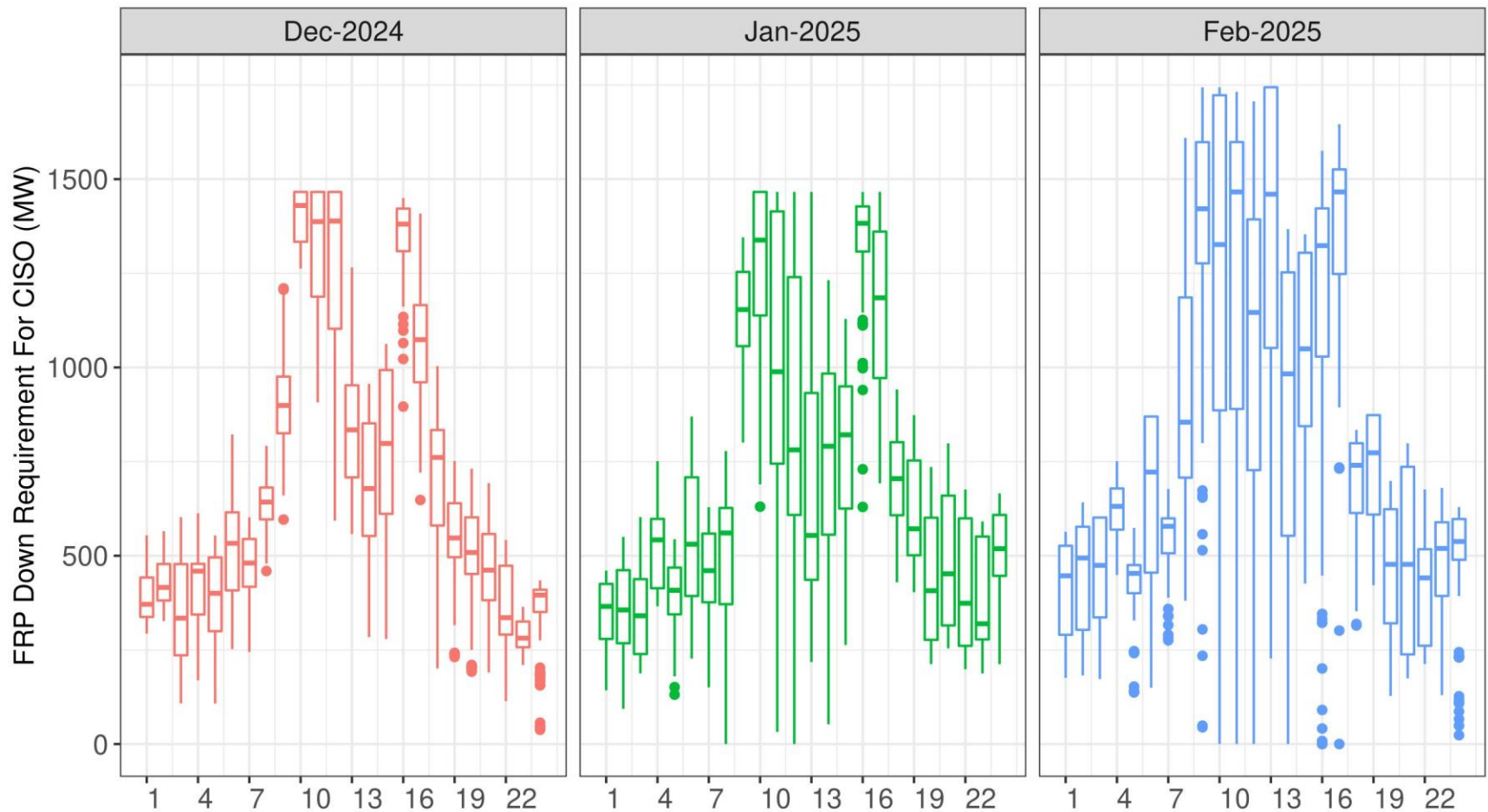
The daily distribution of FRP Down requirement in the last 3 months for CAISO area exhibits a steady trend



The hourly profile of upward FRP tends to follow a pattern of morning and evening peaks

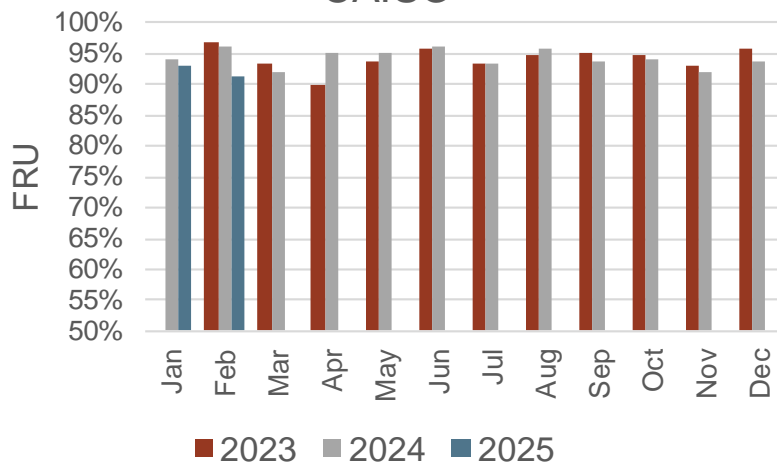


The hourly profile of downward FRP tends to follow a complementary pattern to the upward FRP, with higher values in midday hours

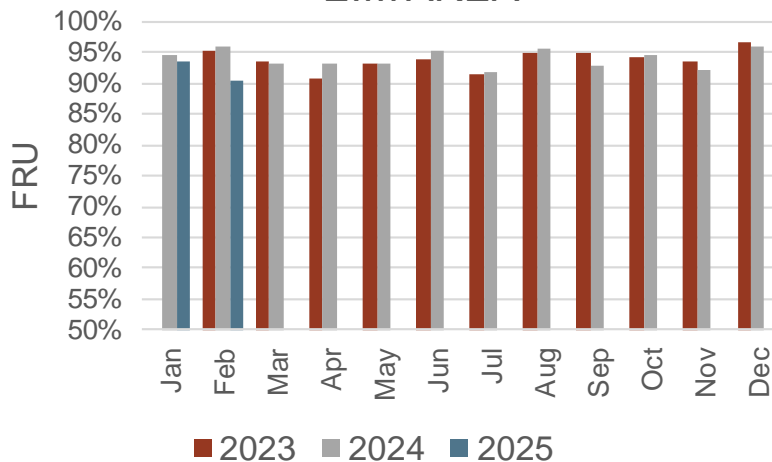


FRP Coverage

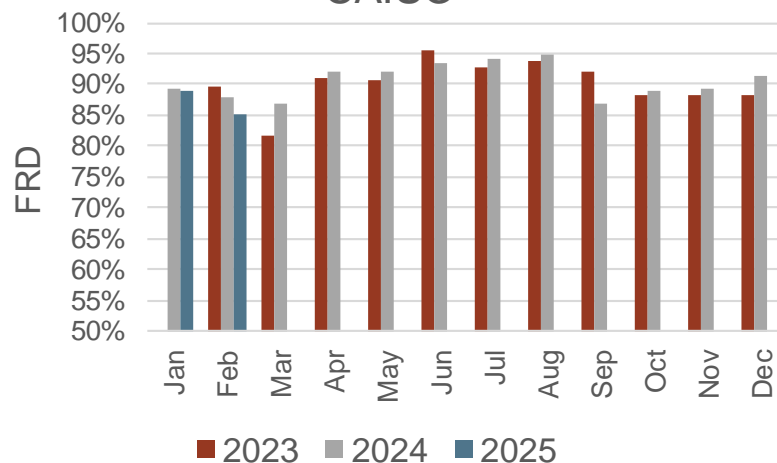
CAISO



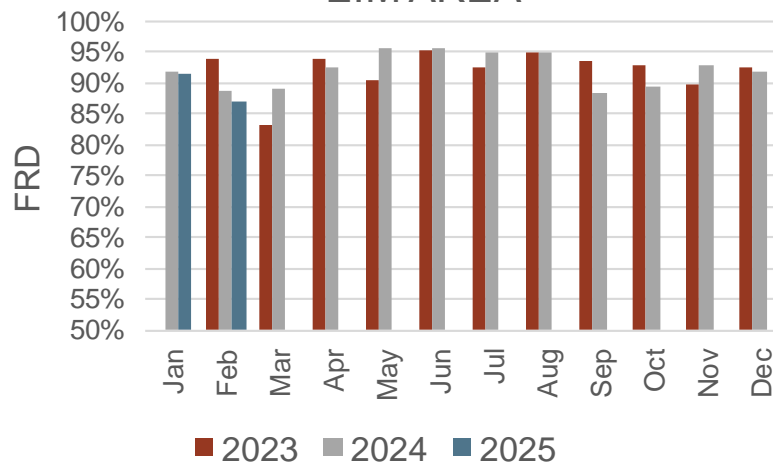
EIM AREA



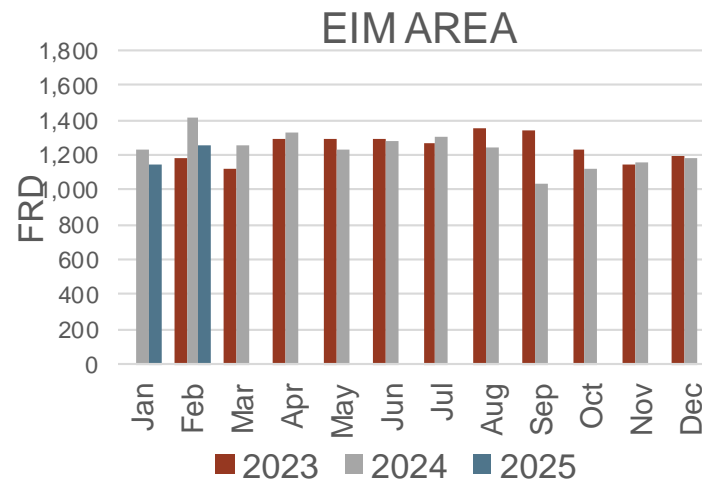
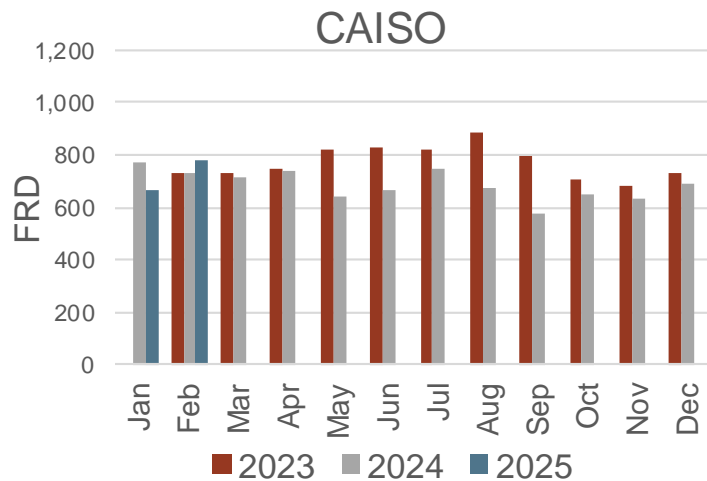
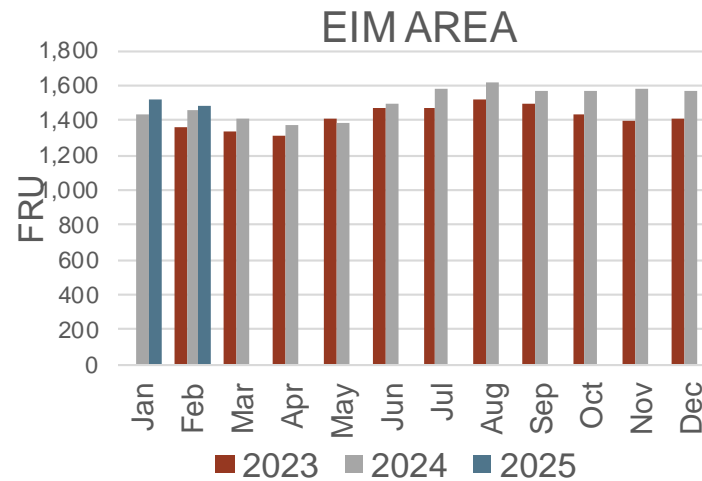
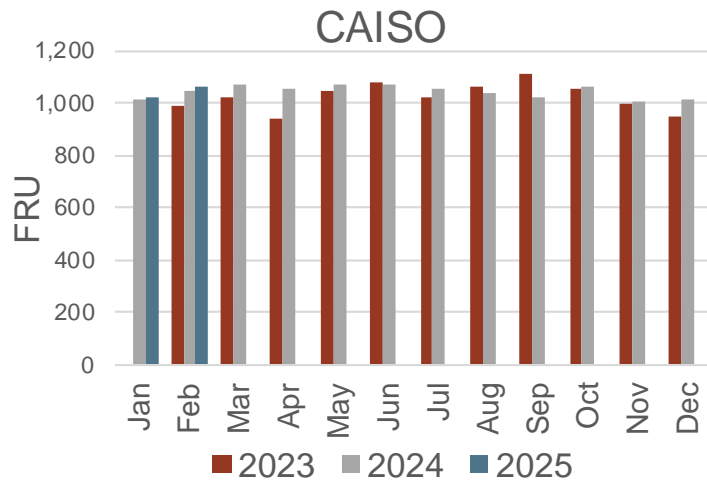
CAISO



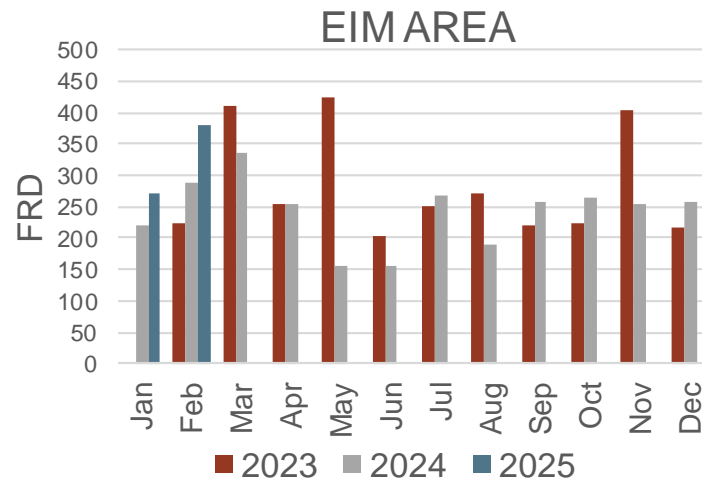
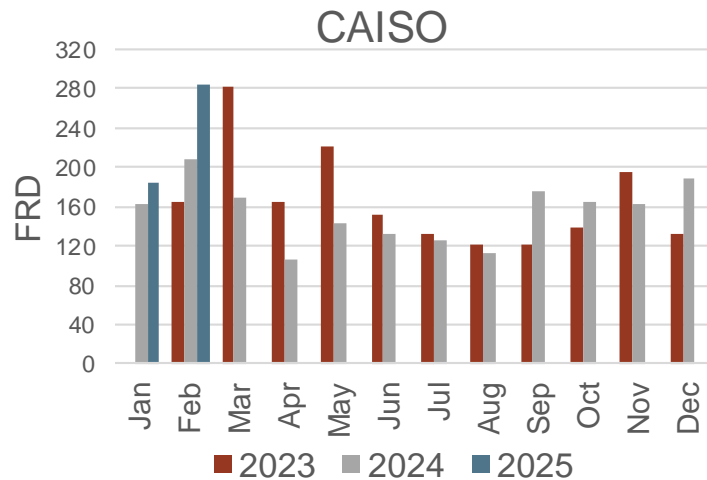
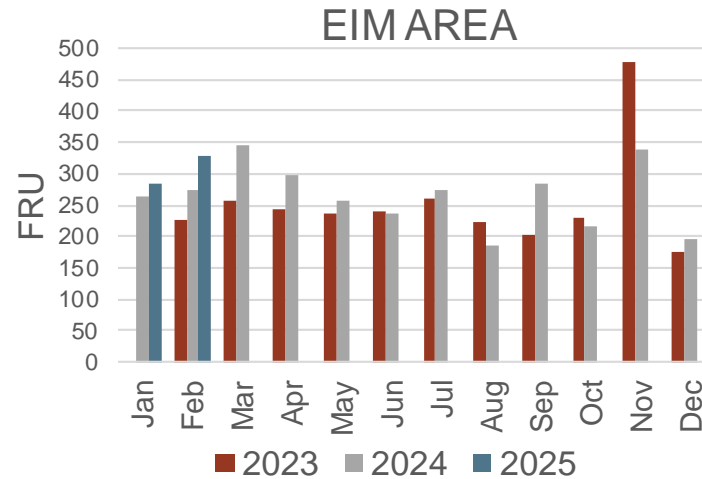
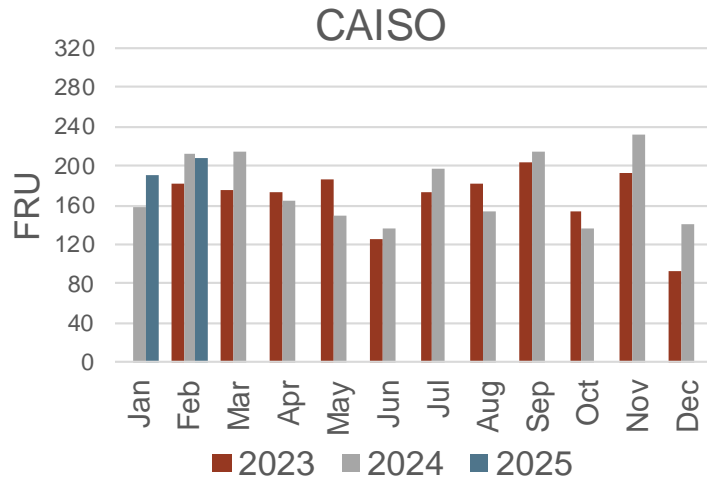
EIM AREA



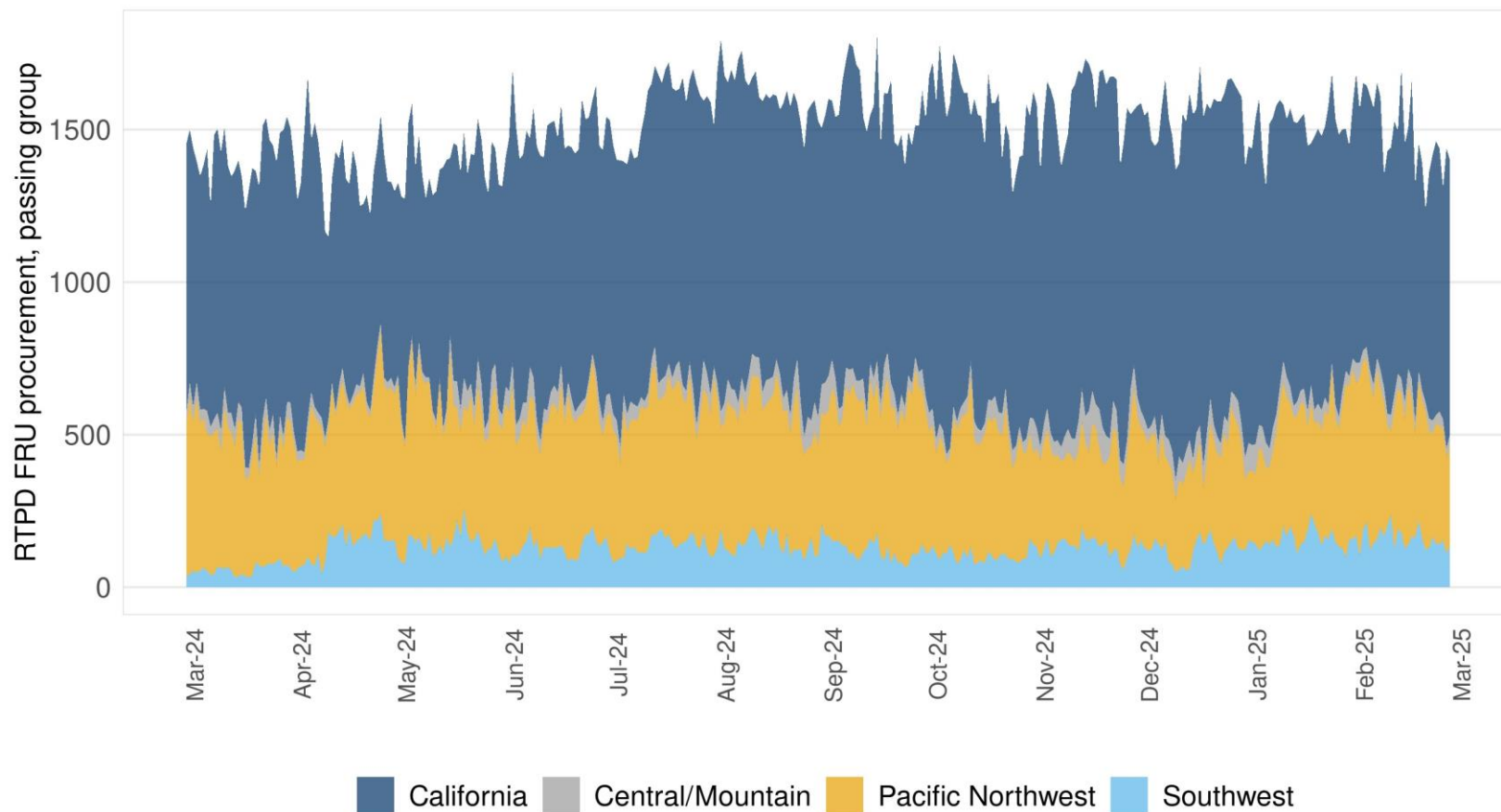
FRP Requirement



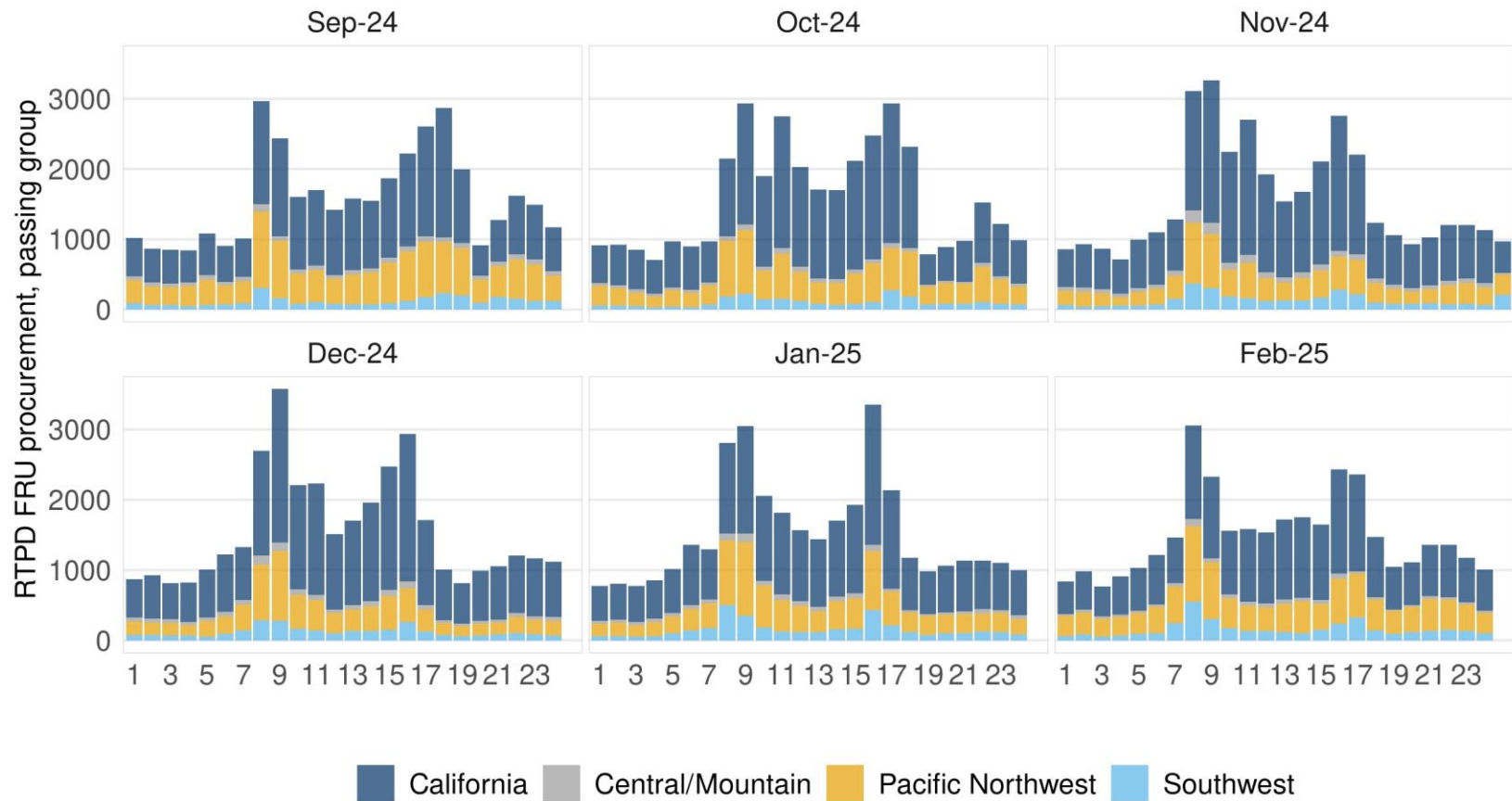
FRP Exceedance



Upward FRP is largely procured from areas in the Pacific Northwest and California

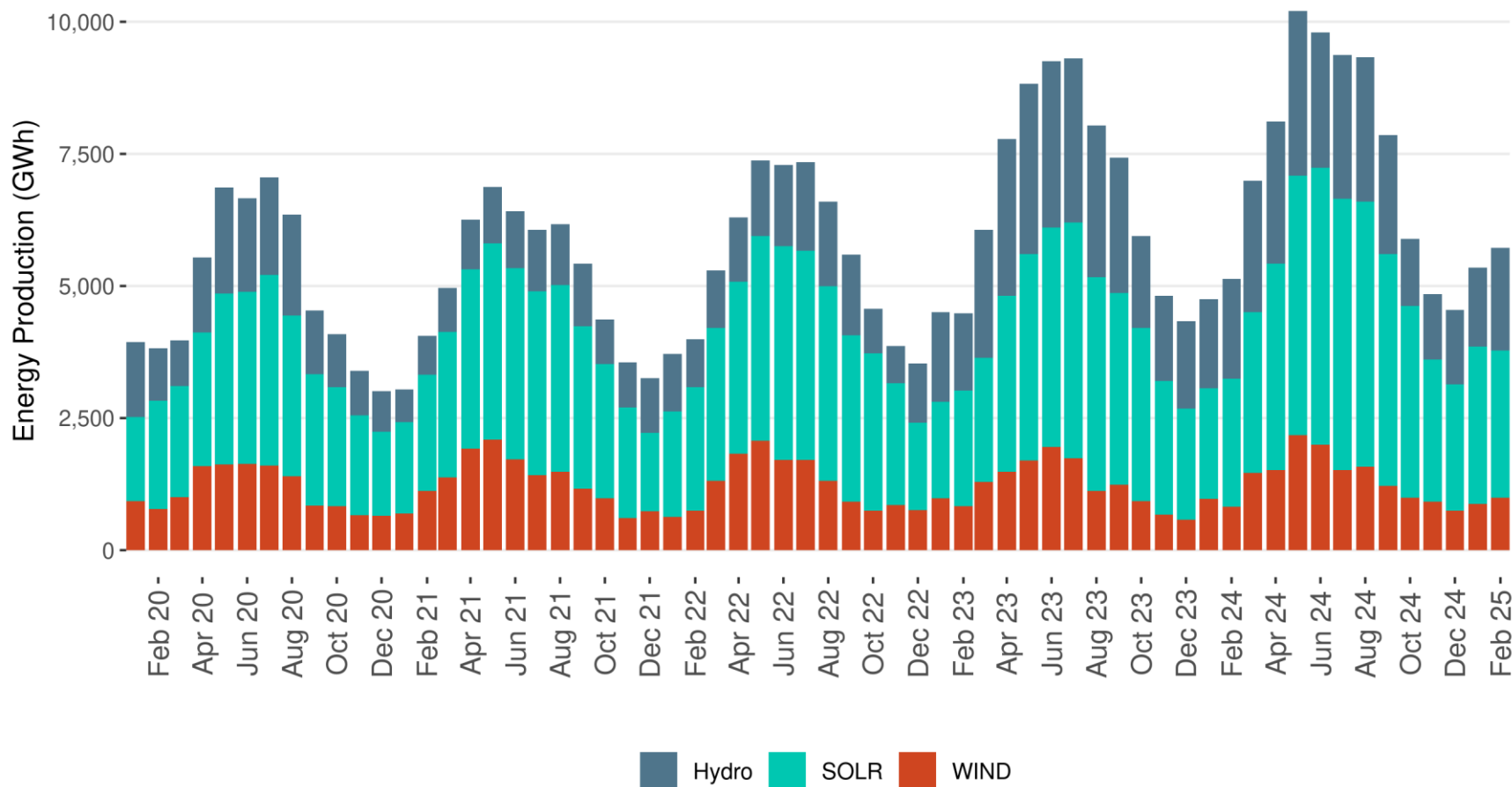


Upward FRP procurement from CAISO area is largely occurring in the peak hours

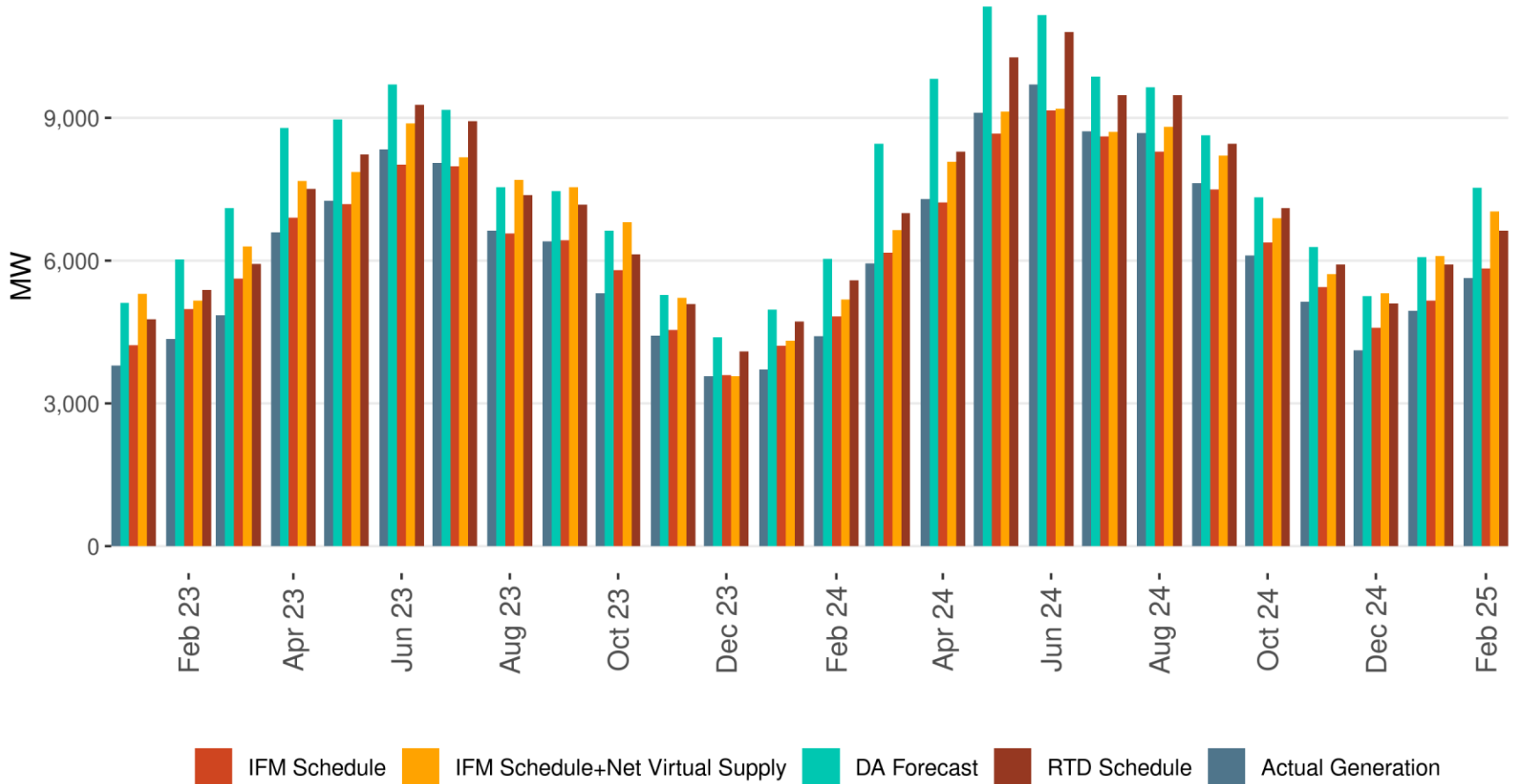


General performance metrics

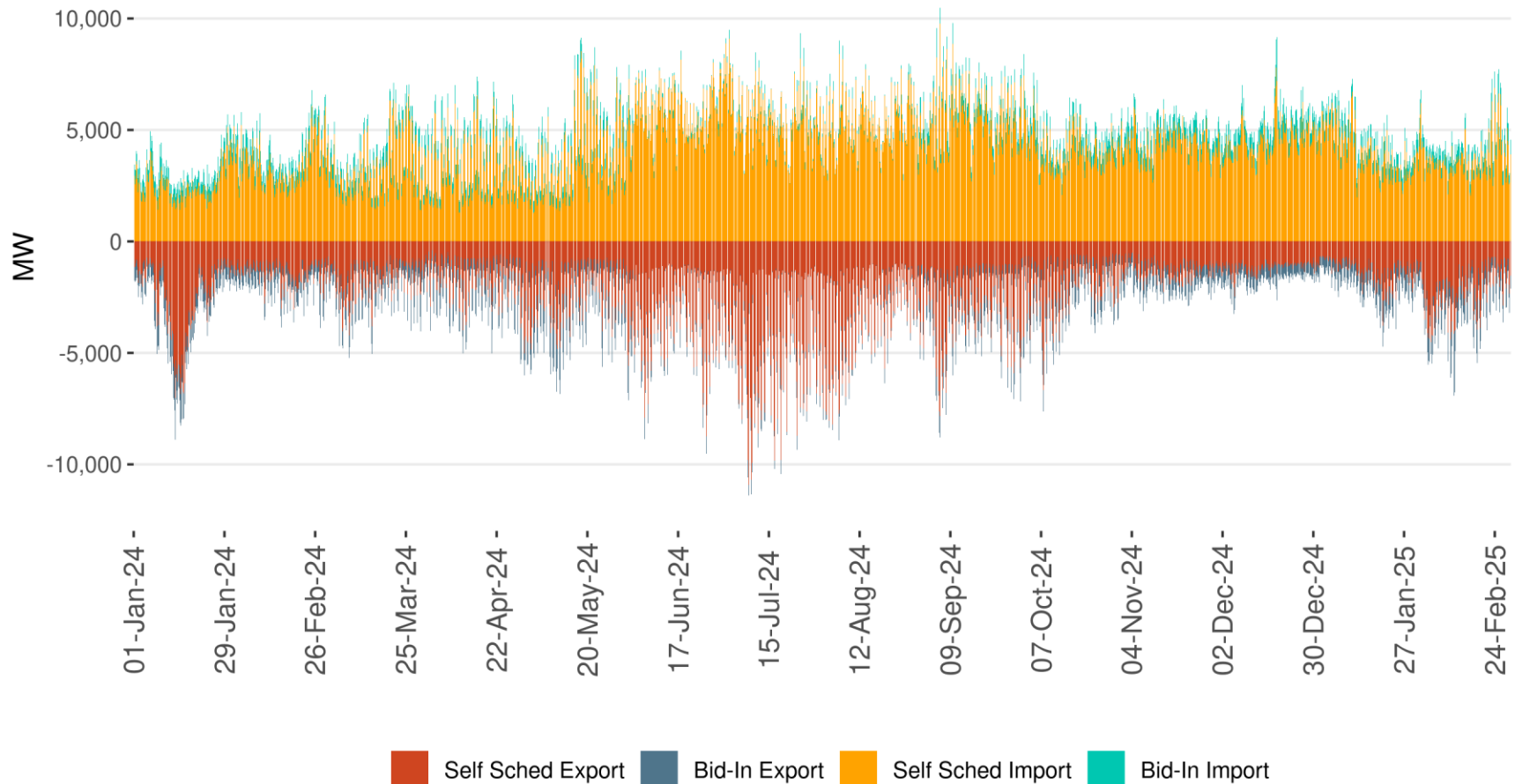
Solar production higher in 2025 than previous years



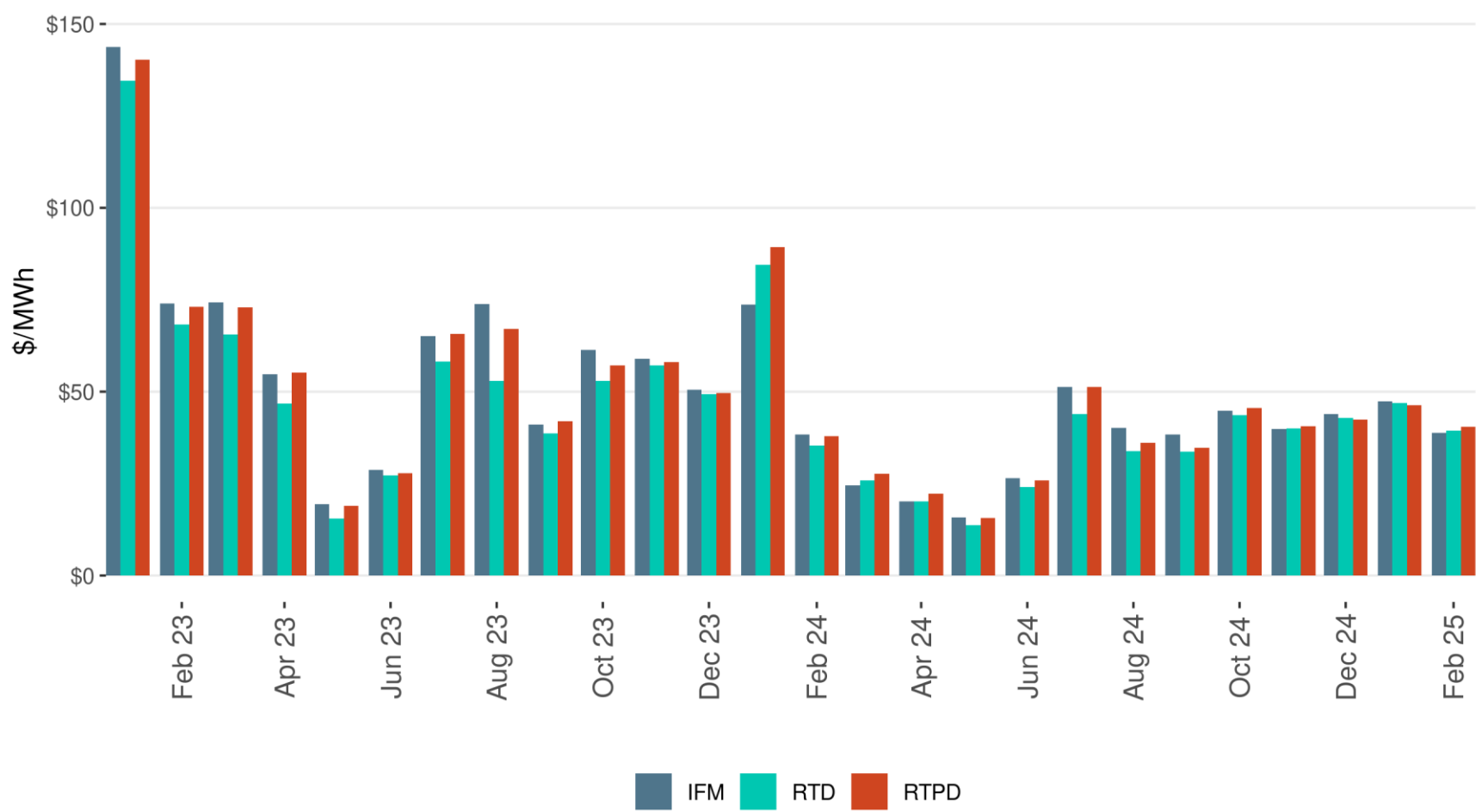
ISO total monthly VERS schedules and forecasts compared to actuals



Self scheduled exports rose since last December

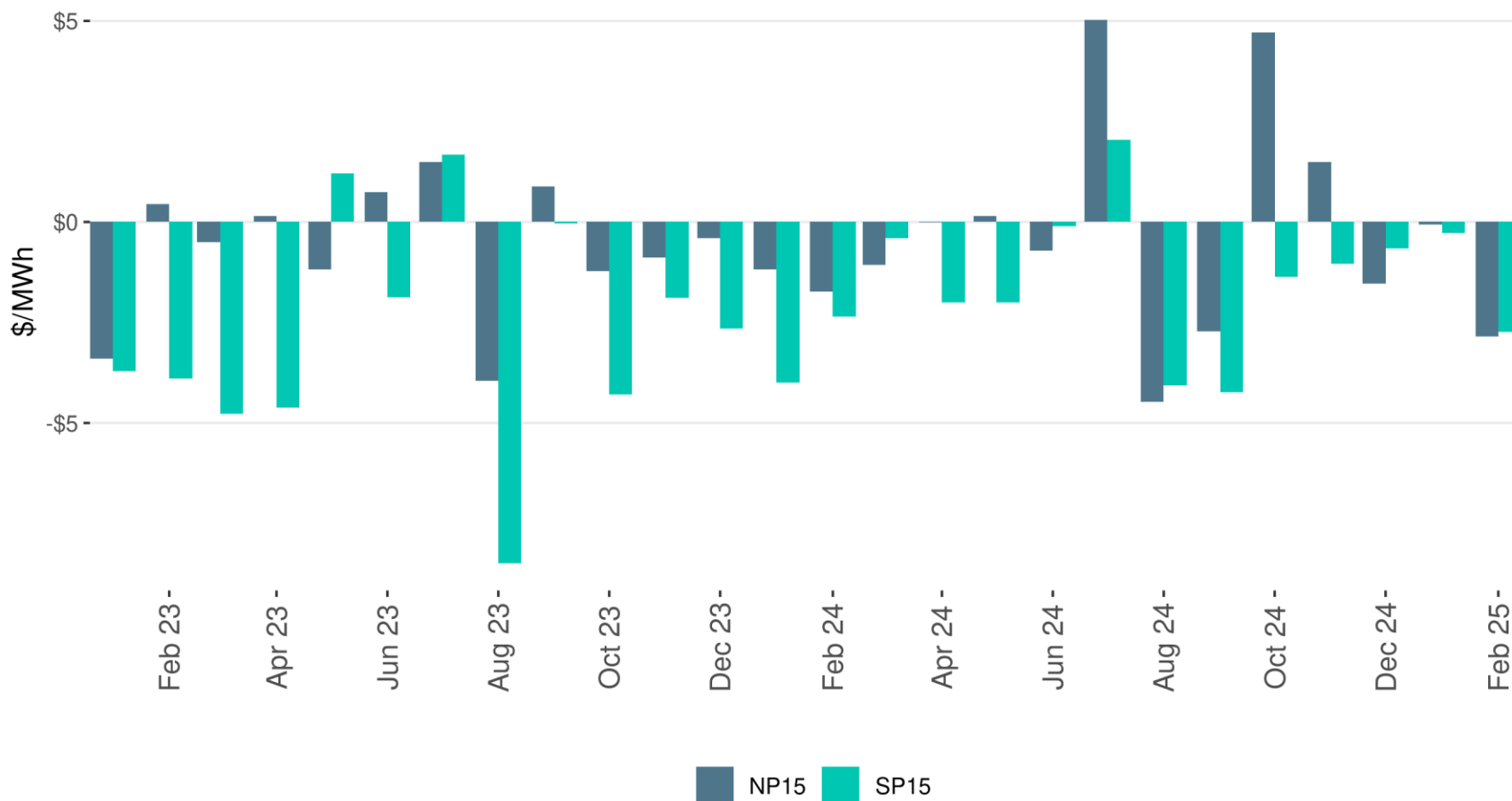


Prices stayed stable since summer conditions

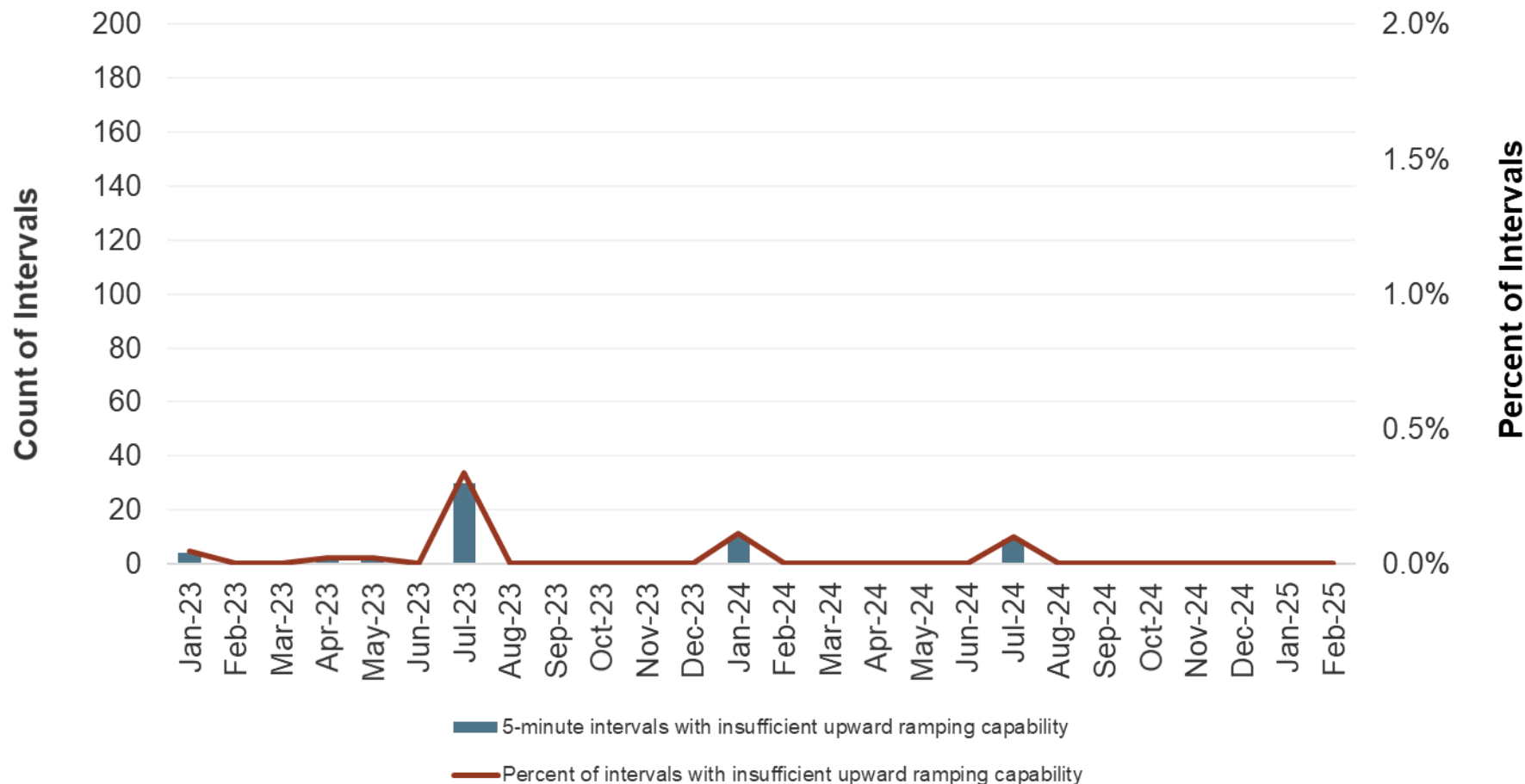


Note: Metric Based on System Marginal Energy Component (SMEC)

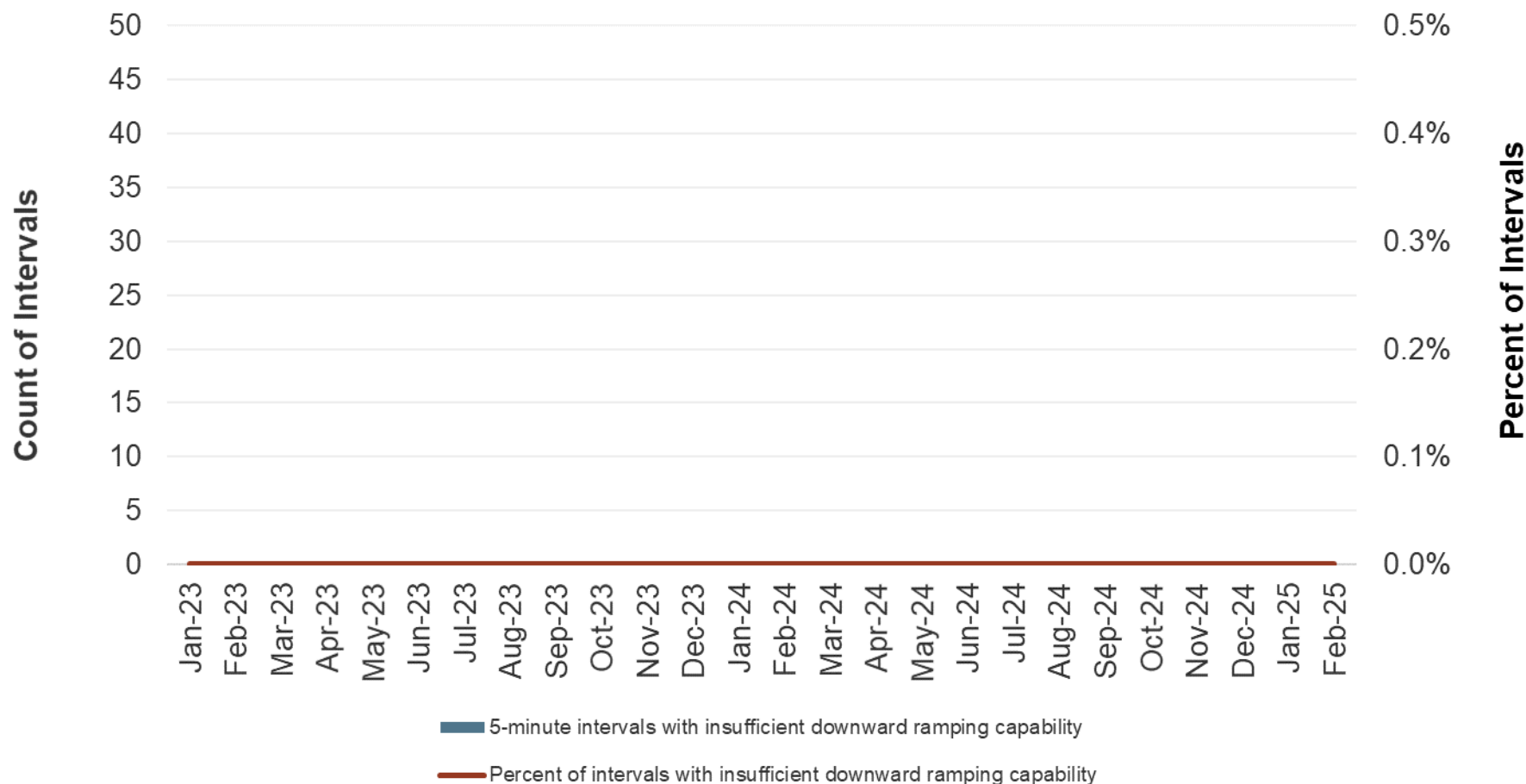
Real-time prices lower than day-ahead prices for both NP15 and SP15 since last December



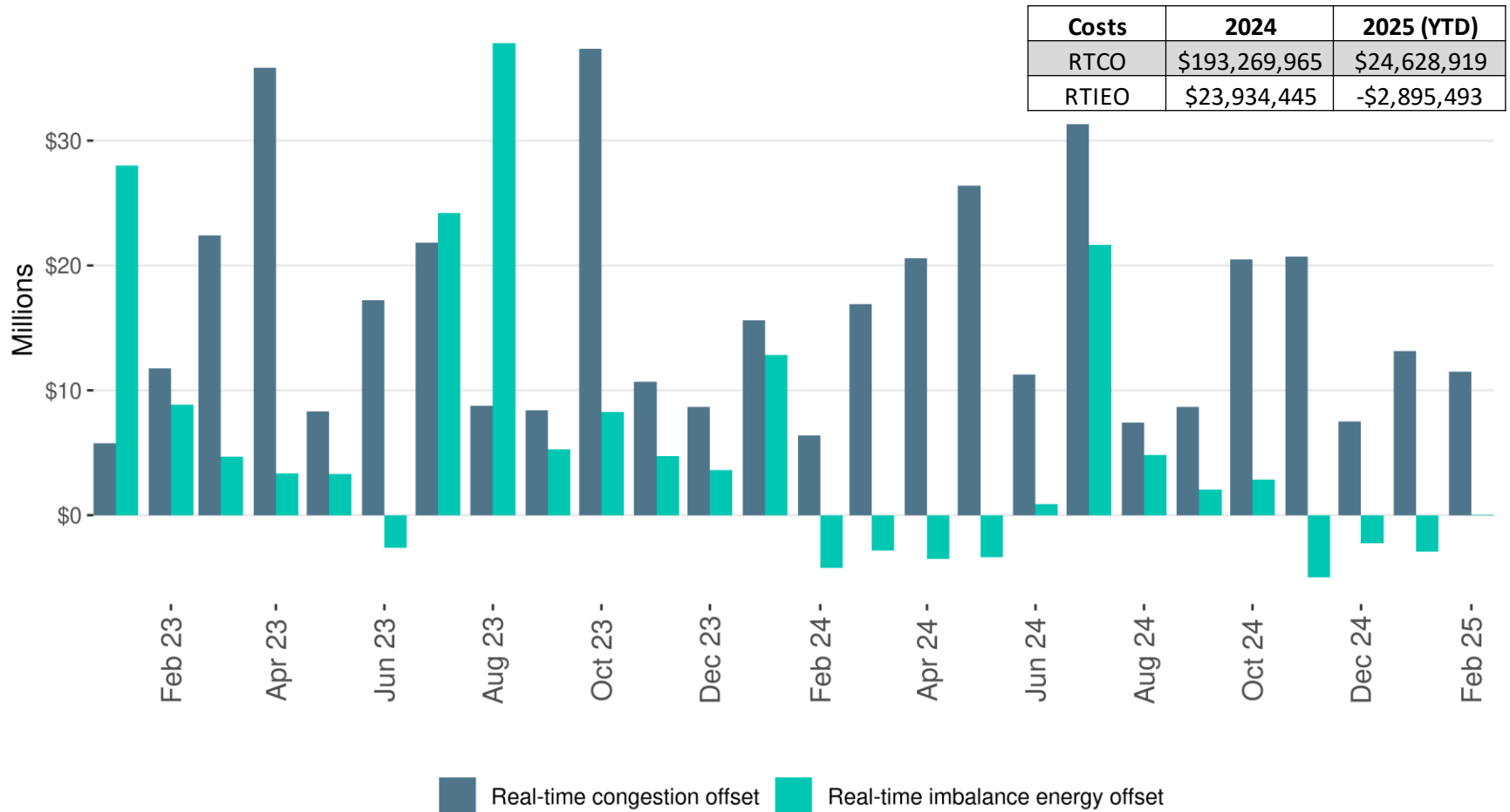
Insufficient upward ramping capacity in ISO real-time stayed at low levels



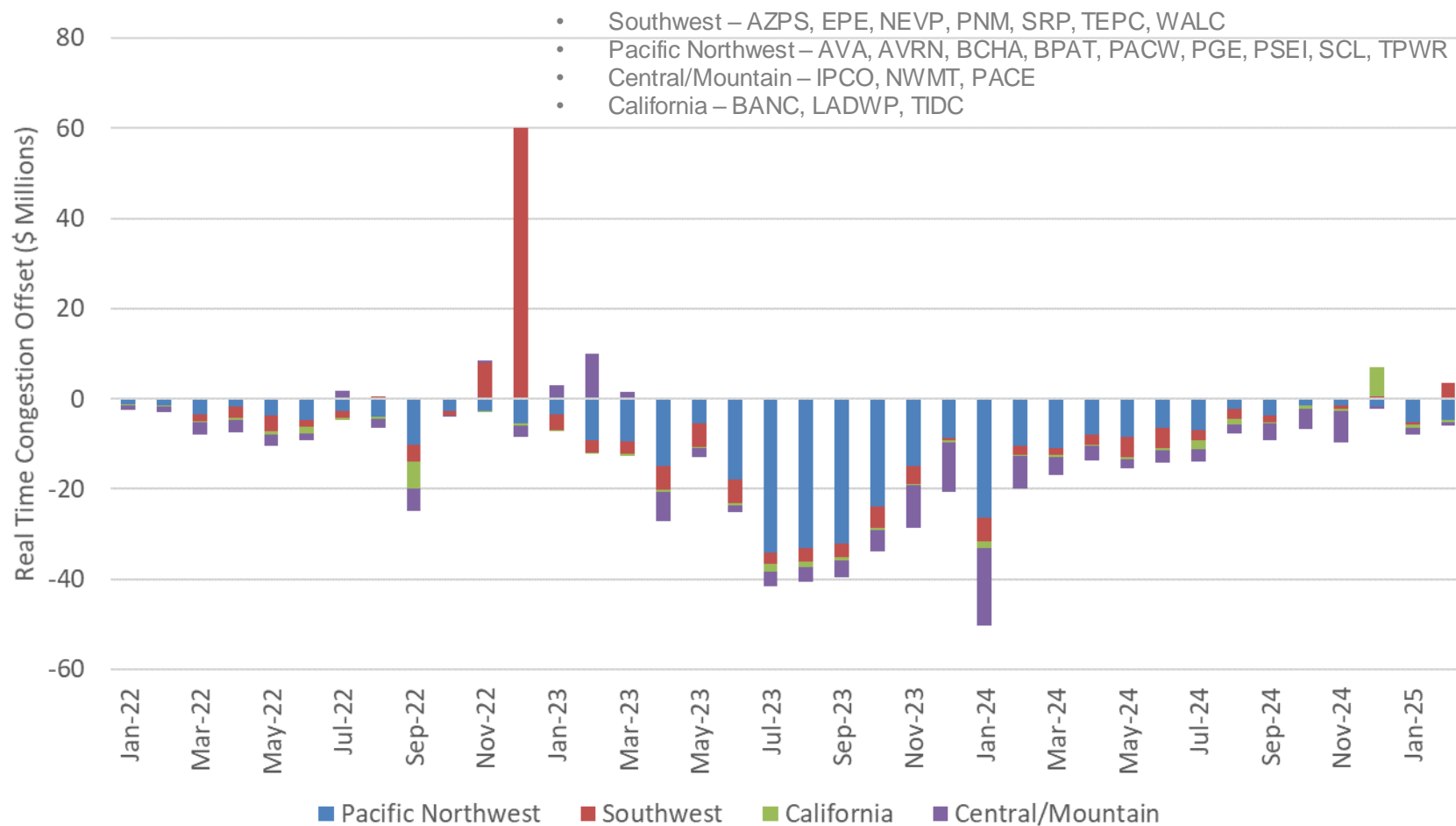
Insufficient downward ramping capacity in real-time remained low



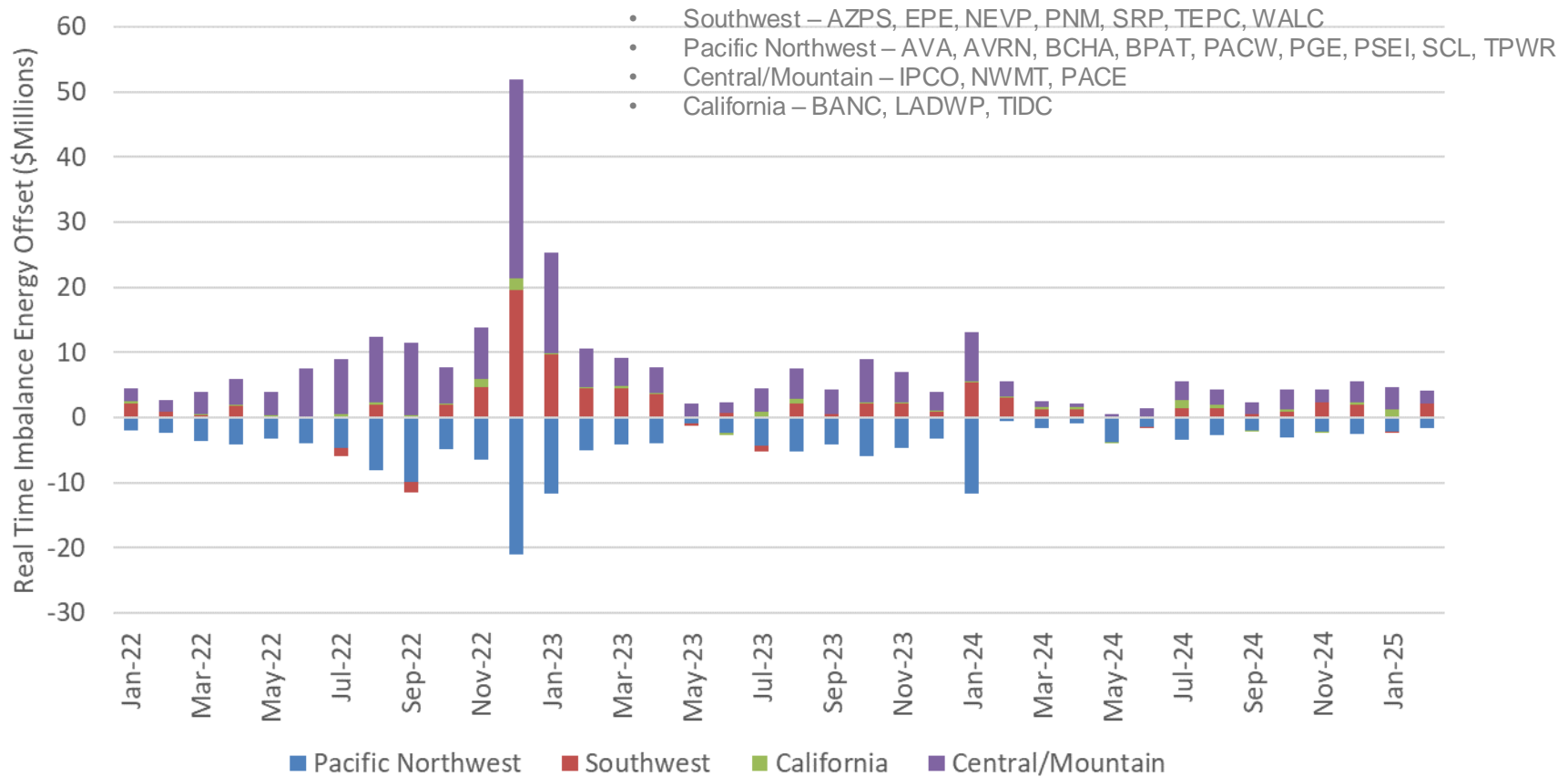
ISO area real-time congestion offset cost fell since last November



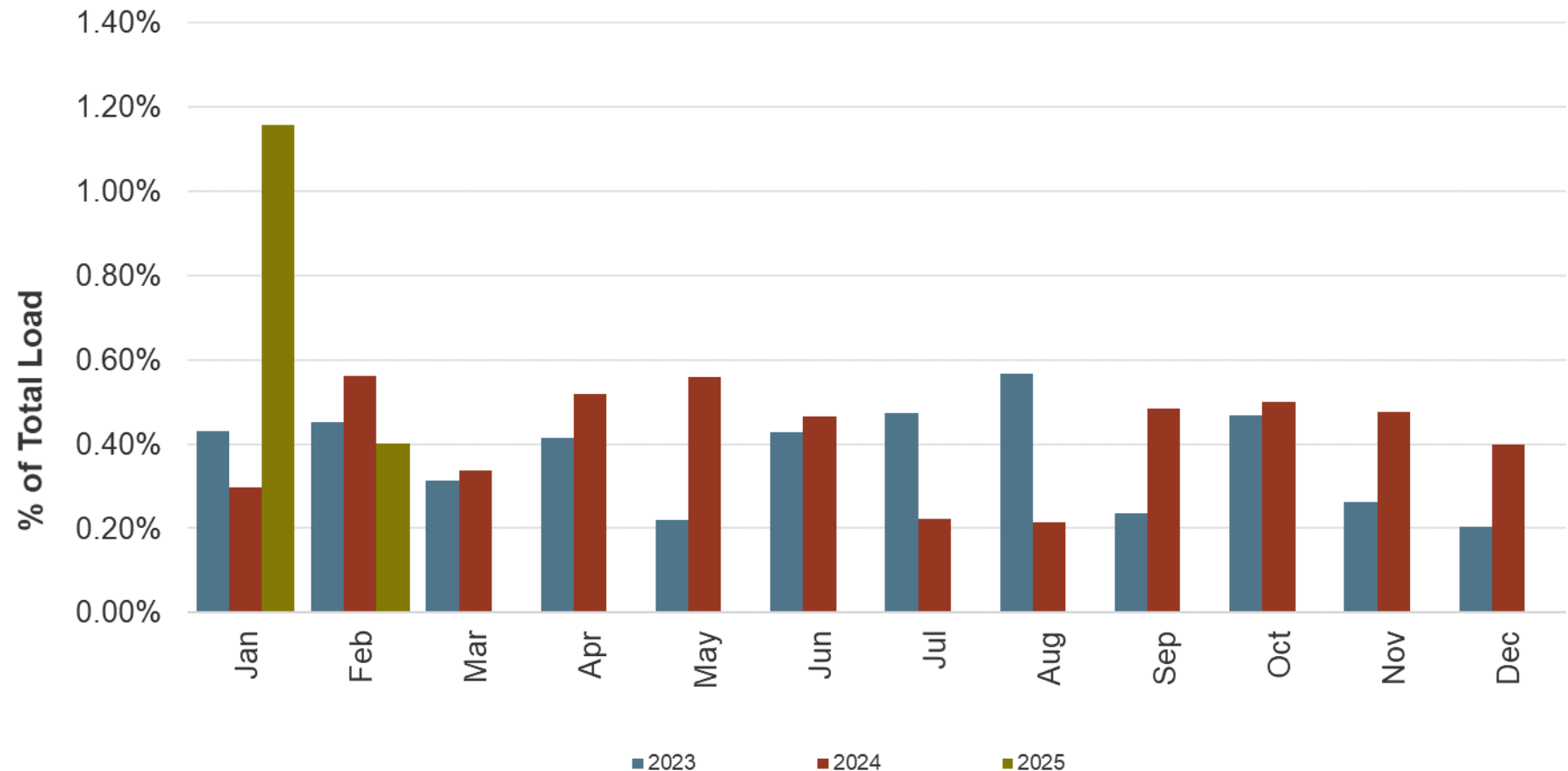
Pacific Northwest is allocated approximately 71 percent of total net Real time congestion offset for all WEIM entities



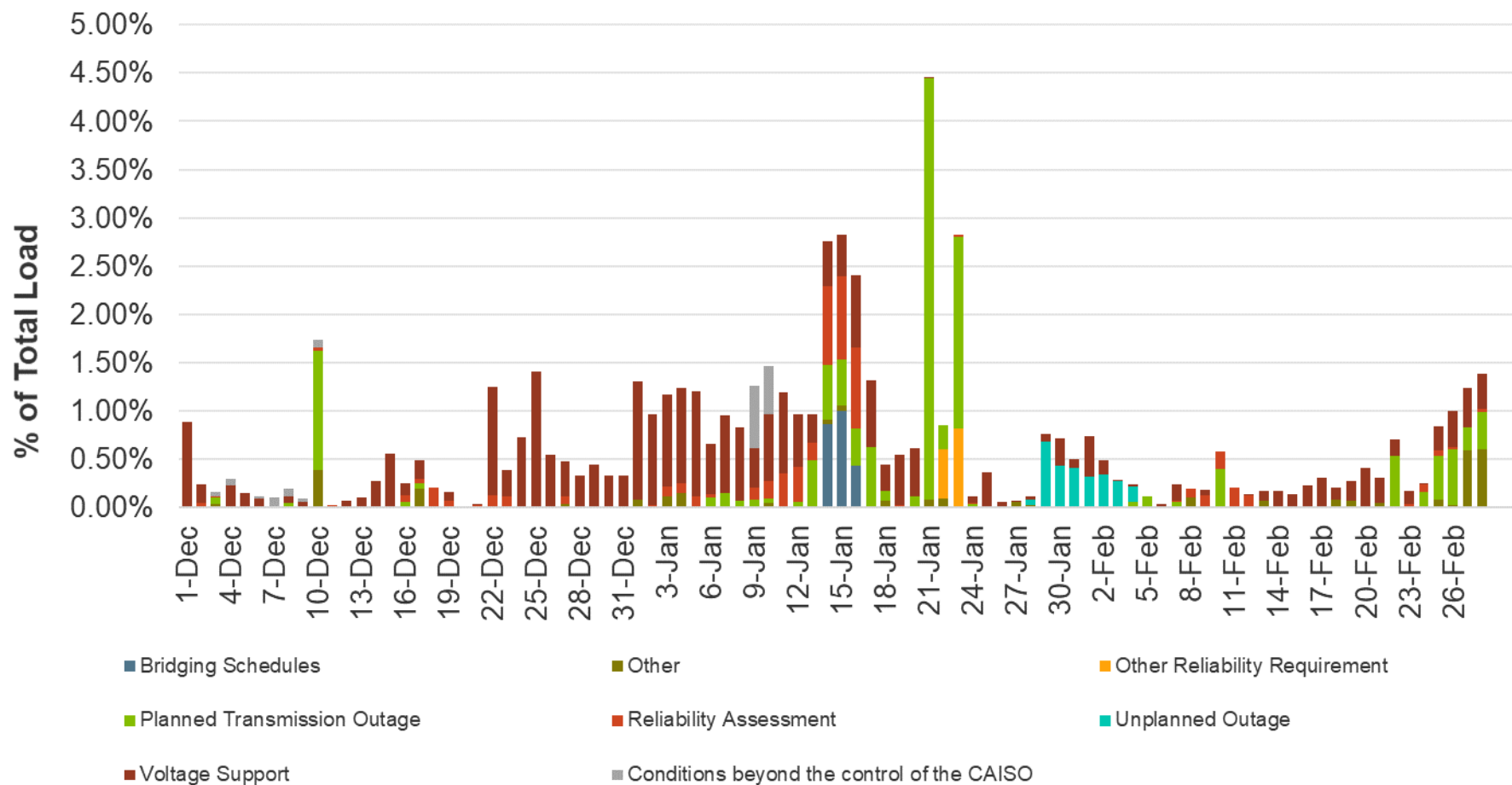
Real time imbalance energy offset has been low since January 2024



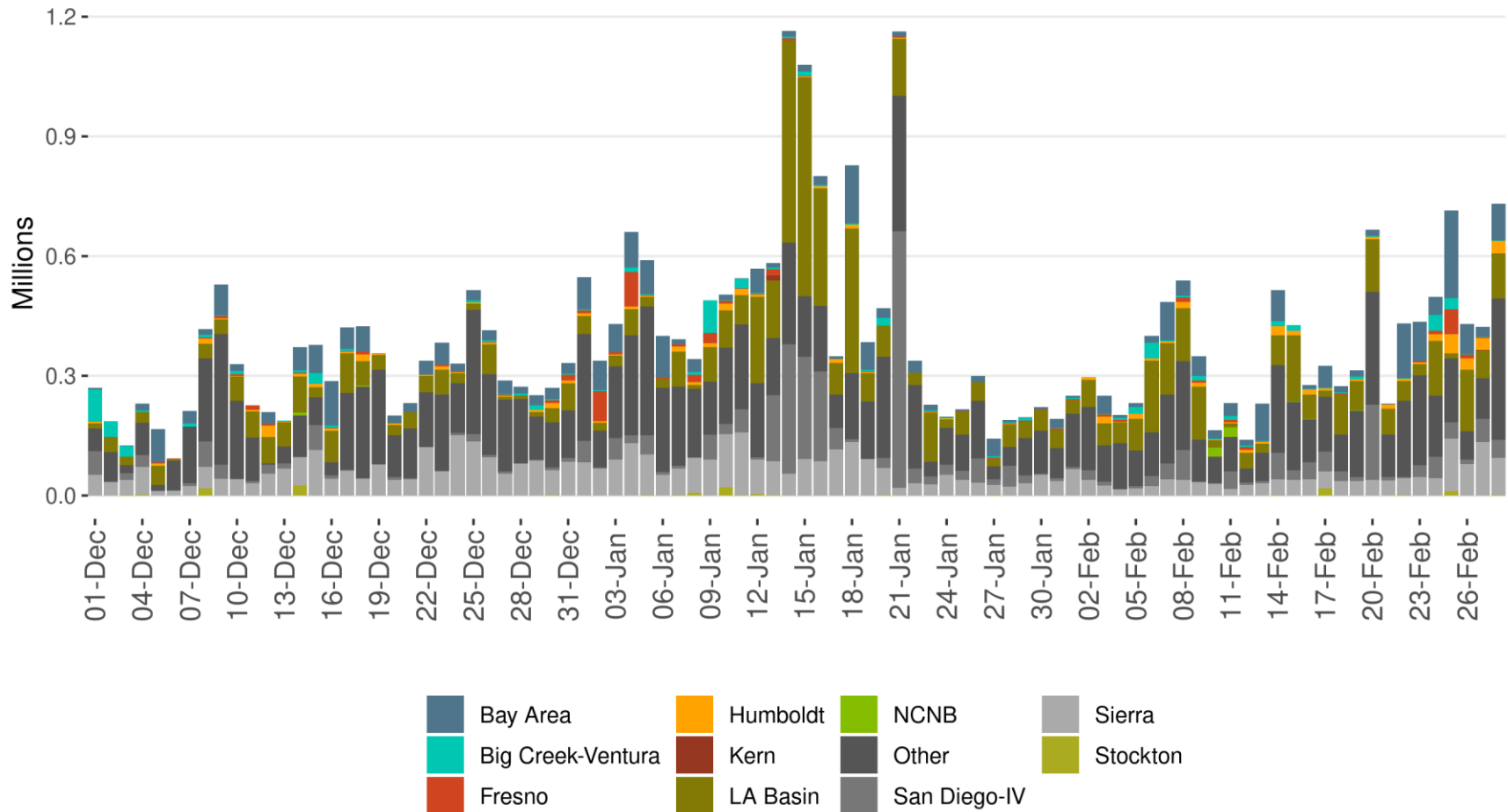
Exceptional dispatch volume in the ISO area increased in January



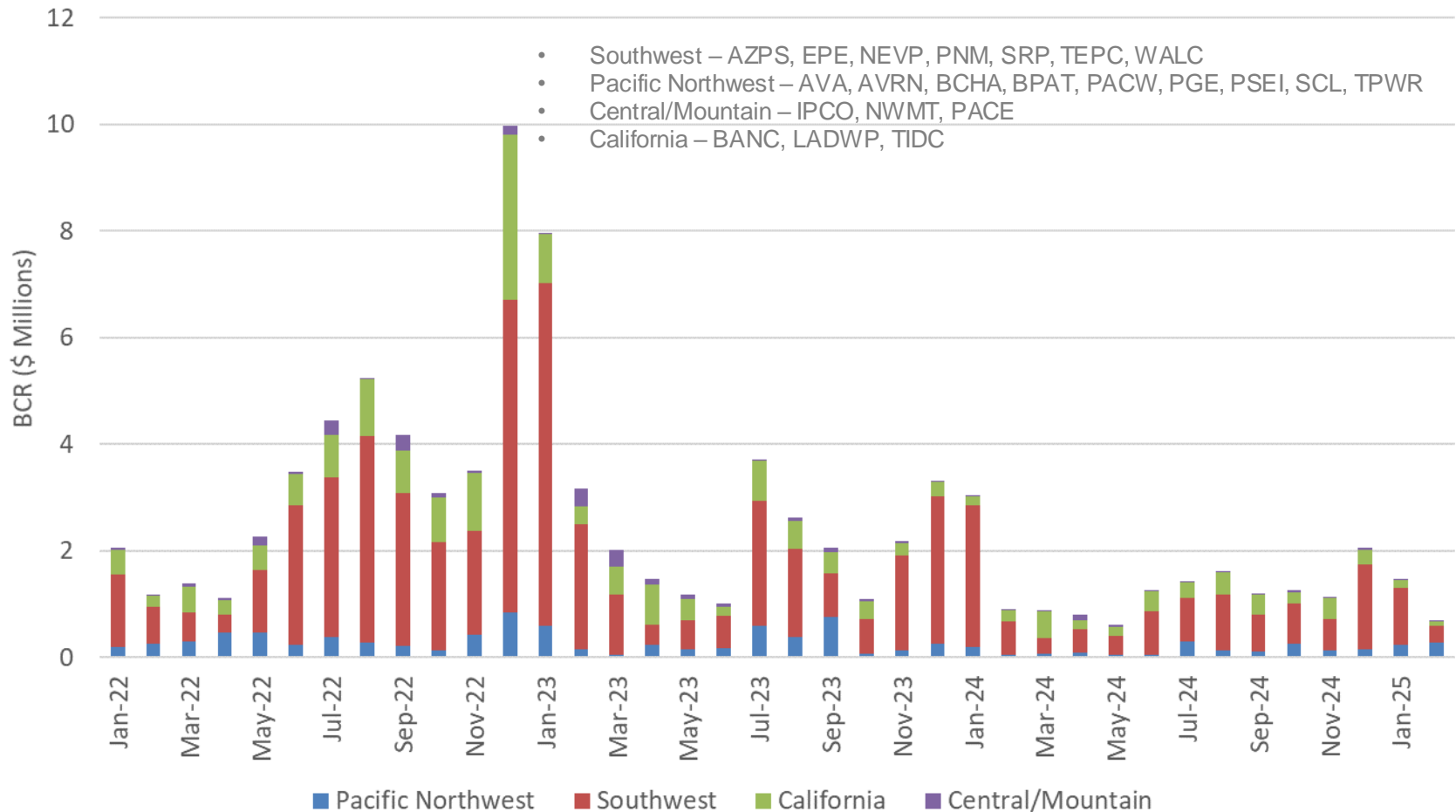
Exceptional dispatches volume driven by a variety of reasons



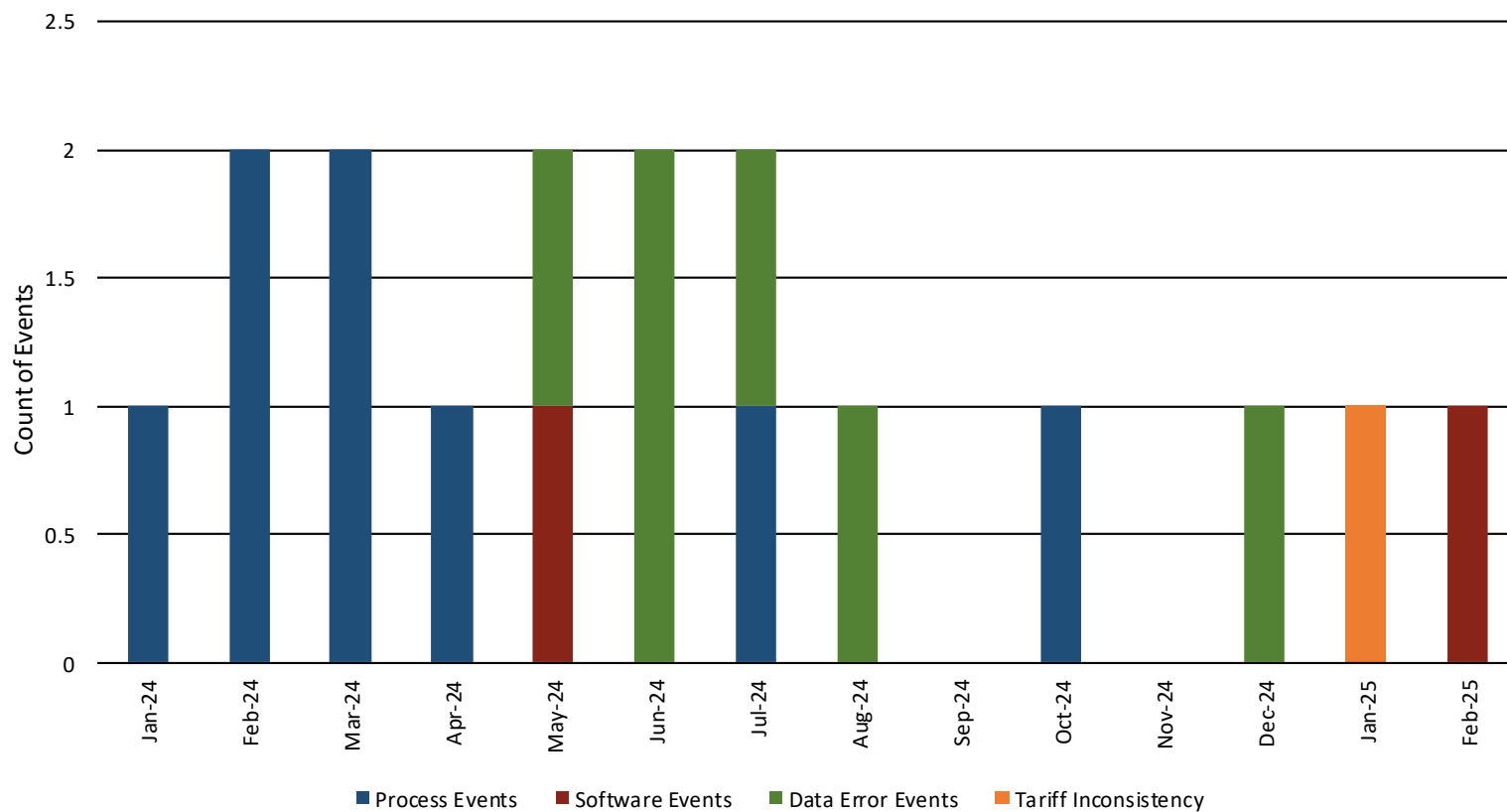
Bid cost recovery (BCR) by Local Capacity Requirement area



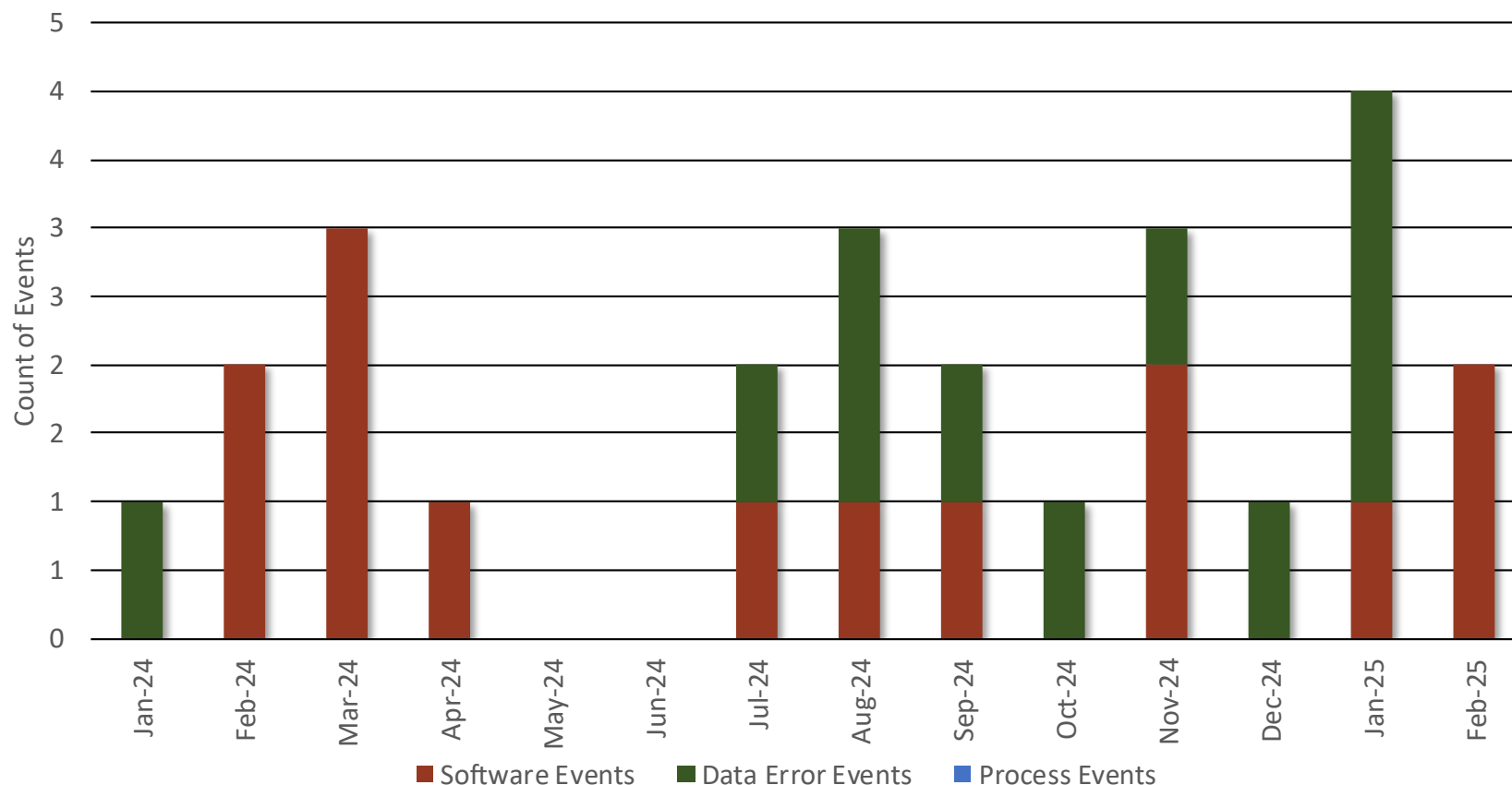
Southwest WEIM entities has accrued about 65 percent of total Bid Cost Recovery to all WEIM entities



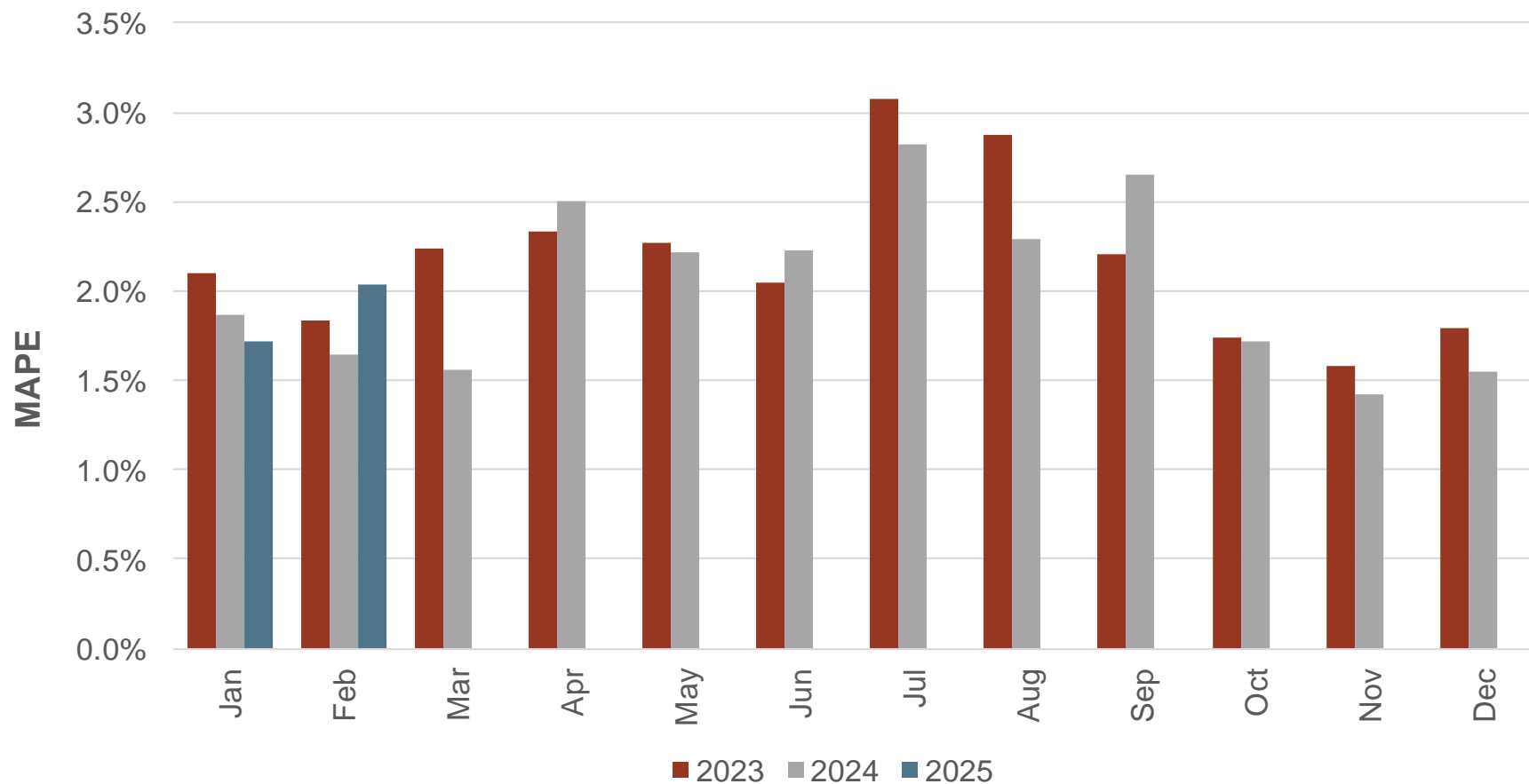
CAISO price correction events remain low



EIM-related price corrections increased in January and February

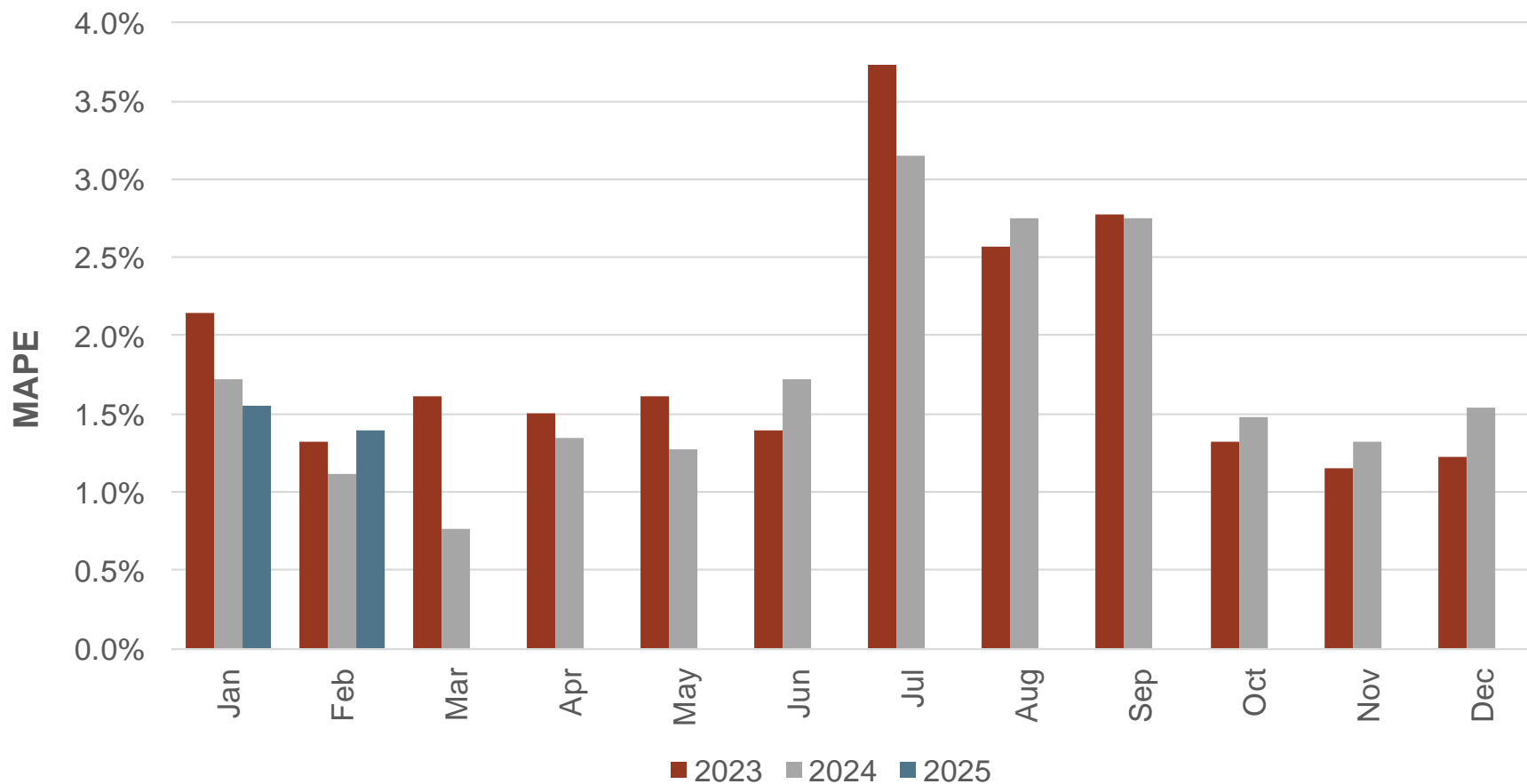


Day-ahead load forecast



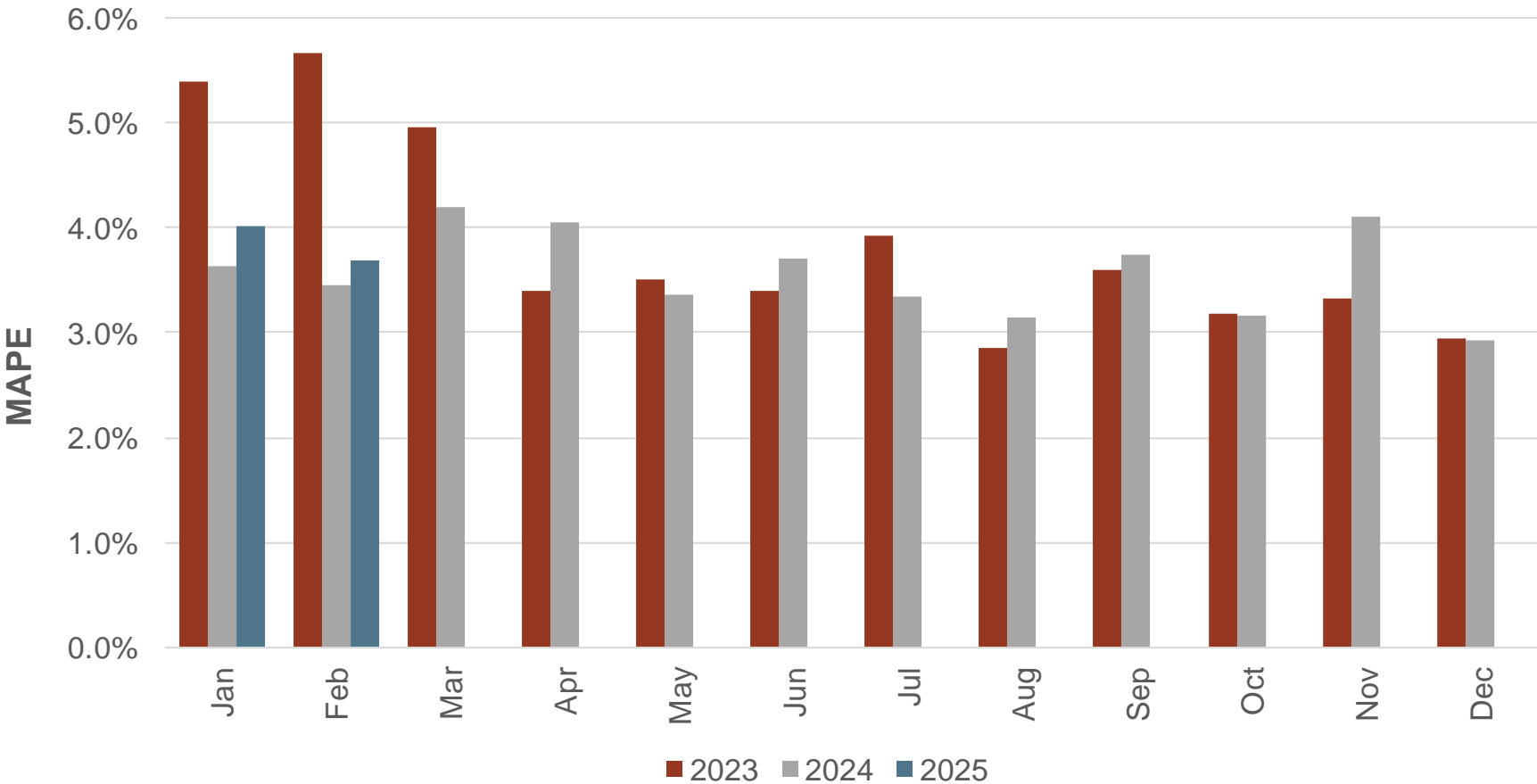
*MAPE = $\text{abs}(\text{Forecast} - \text{Actual}) / \text{Actual}$

Day-ahead peak forecast



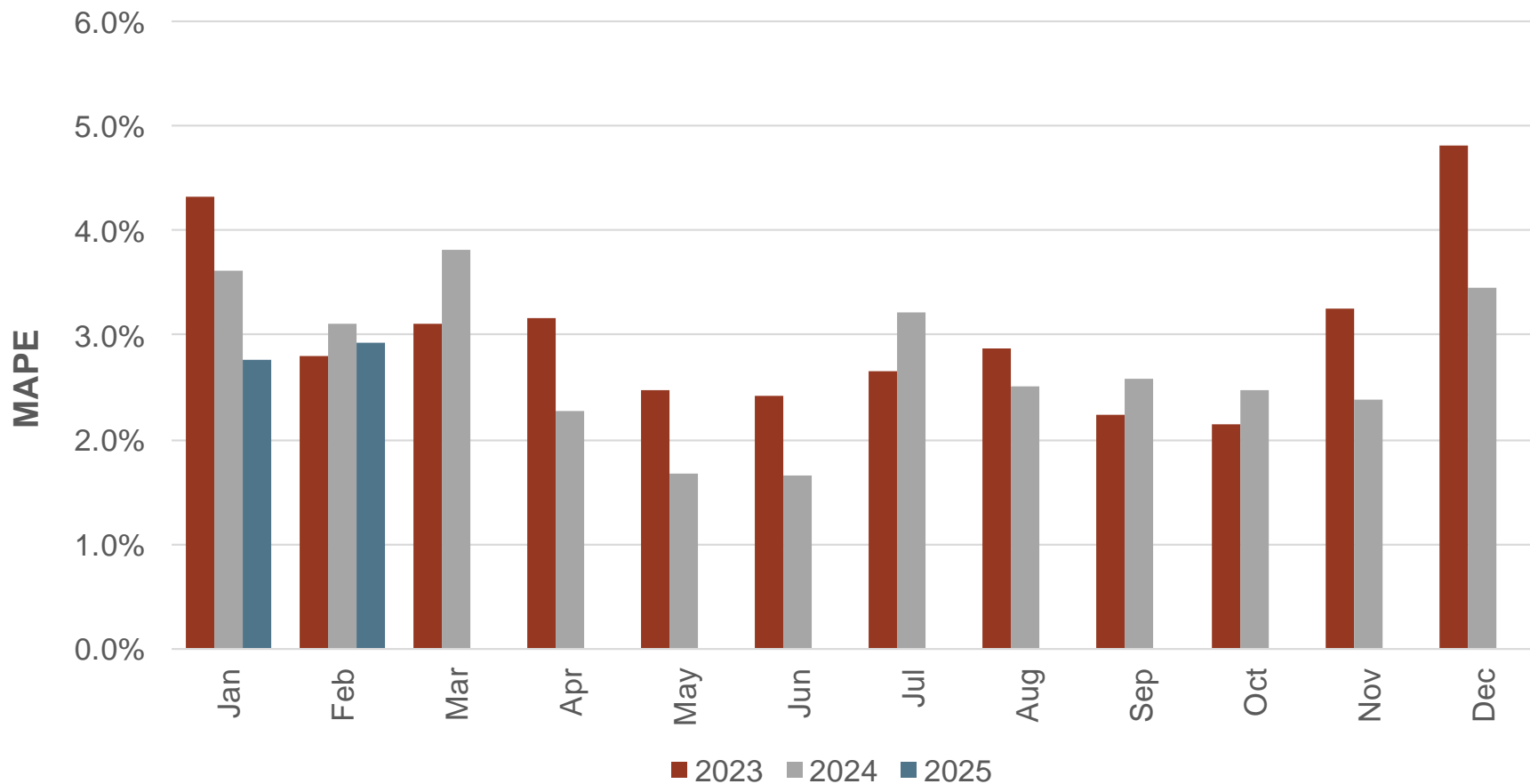
*MAPE = $\text{abs}(\text{Forecast} - \text{Actual}) / \text{Actual}$

Day-ahead wind forecast



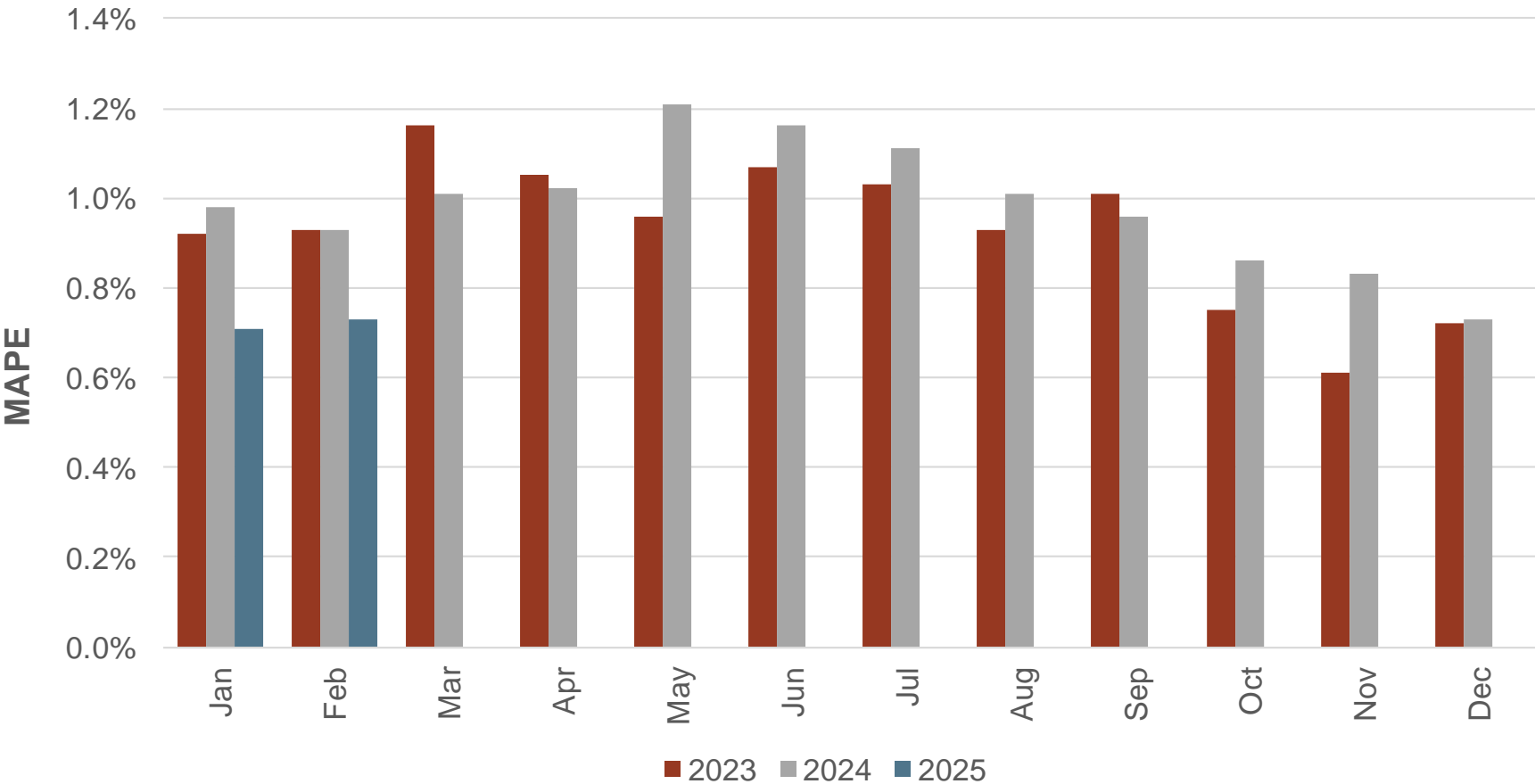
*MAPE = abs(Forecast – Actual)/Actual

Day-ahead solar forecast



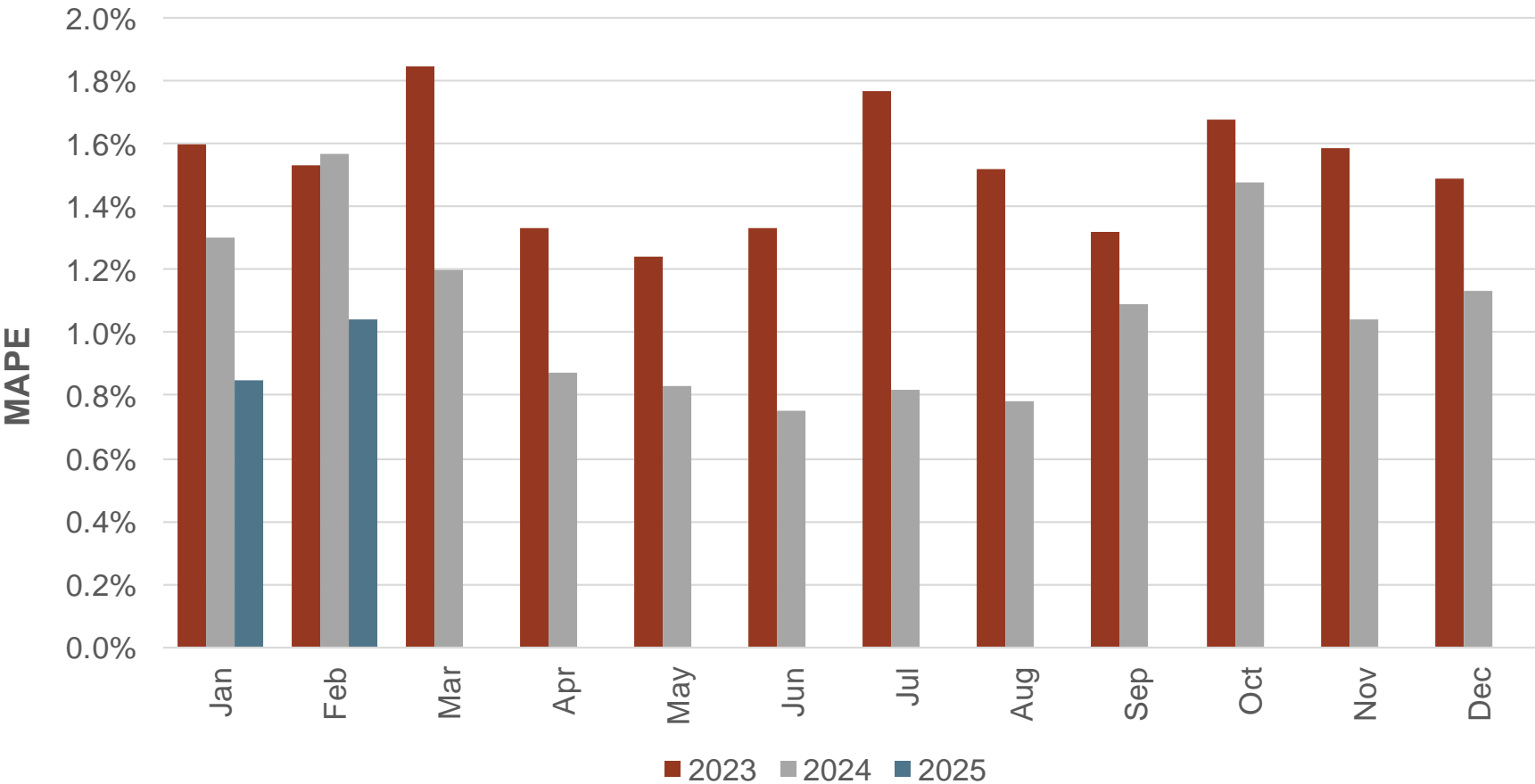
*MAPE = $\text{abs}(\text{Forecast} - \text{Actual}) / \text{Actual}$
**MAPE only calculated for intervals where Forecast > 0

Real-time wind forecast



*MAPE = abs(Forecast – Actual)/Actual

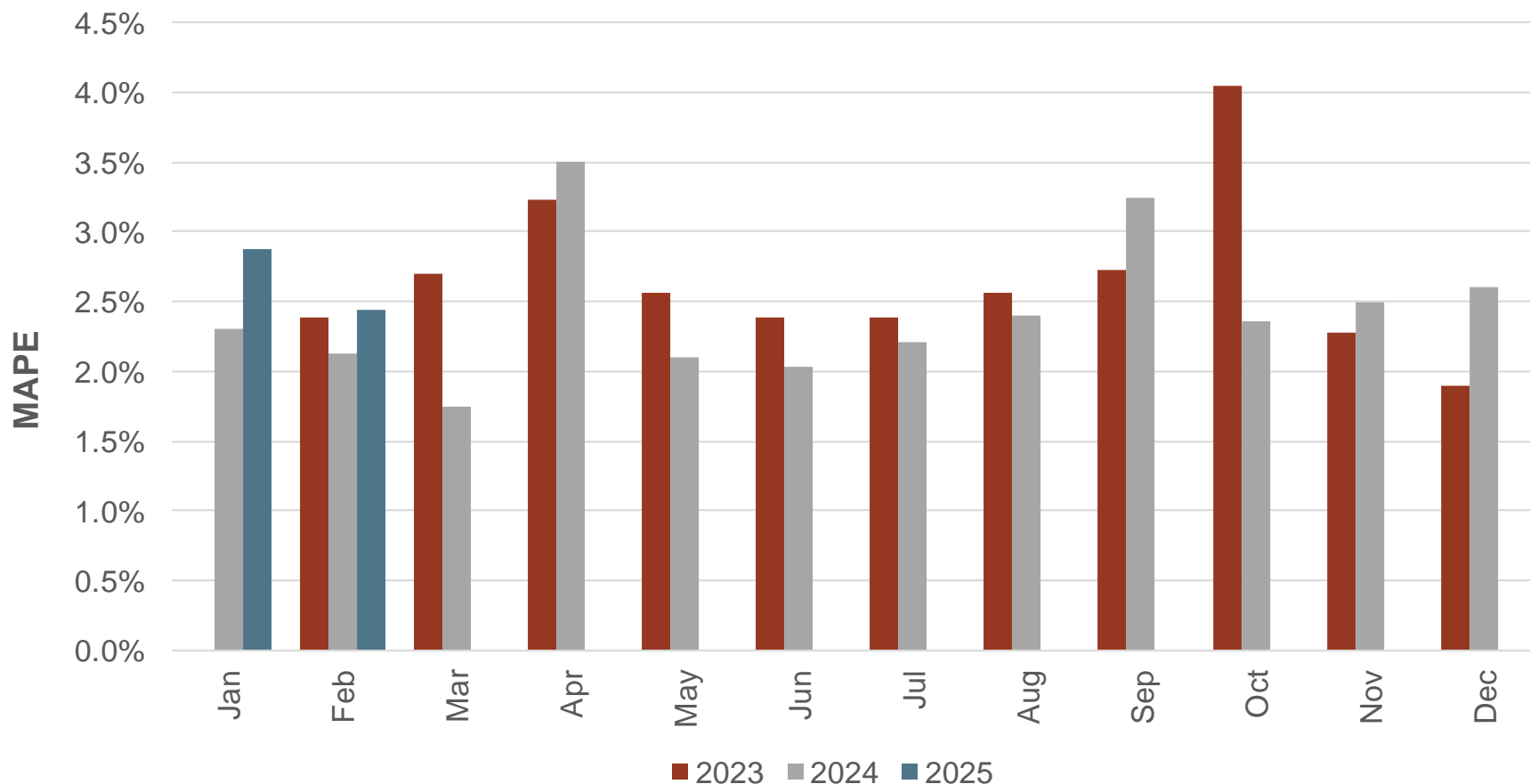
Real-time solar forecast



*MAPE = $\text{abs}(\text{Forecast} - \text{Actual}) / \text{Actual}$
**MAPE only calculated for intervals where Forecast > 0

Real Time Solar Hybrid Performance

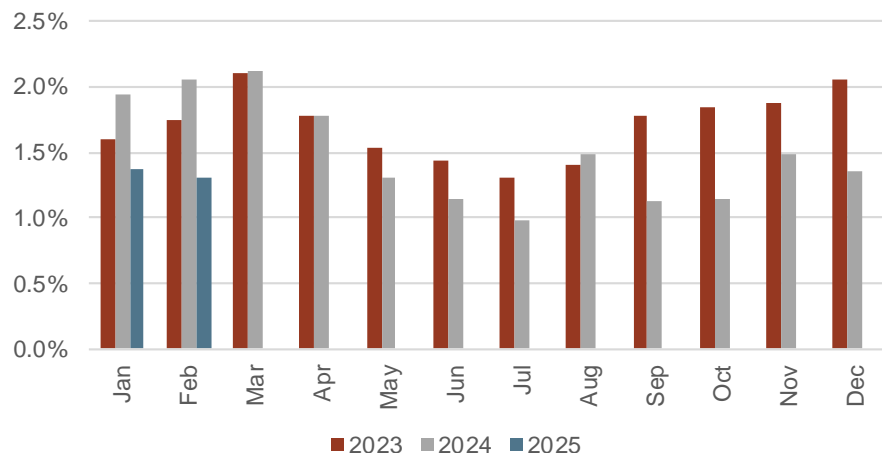
*Comparison of DOT to MW Production



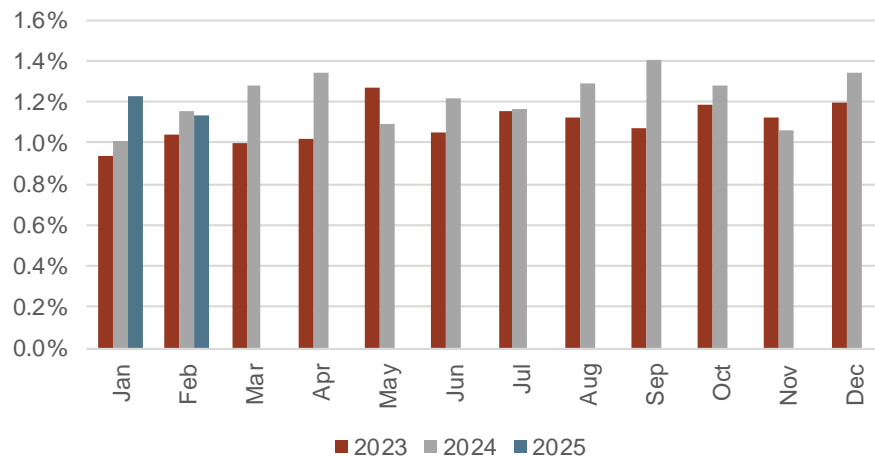
*MAPE = $\text{abs}(\text{DOT} - \text{Actual}) / \text{Capacity}$

EIM T-60 forecast

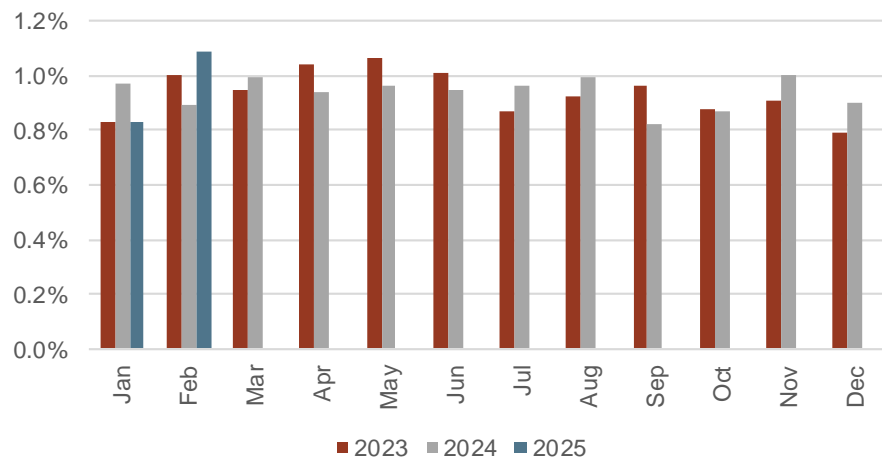
AZPS T-60 Forecast



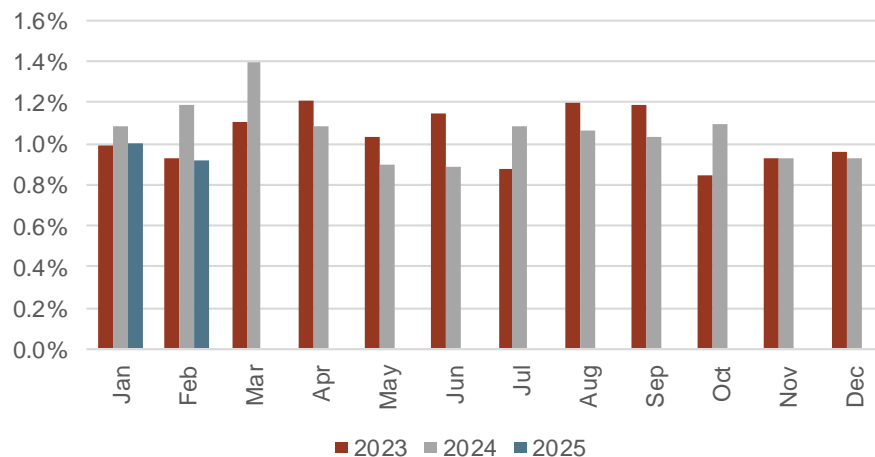
IPCO T-60 Forecast



PGE T-60 Forecast

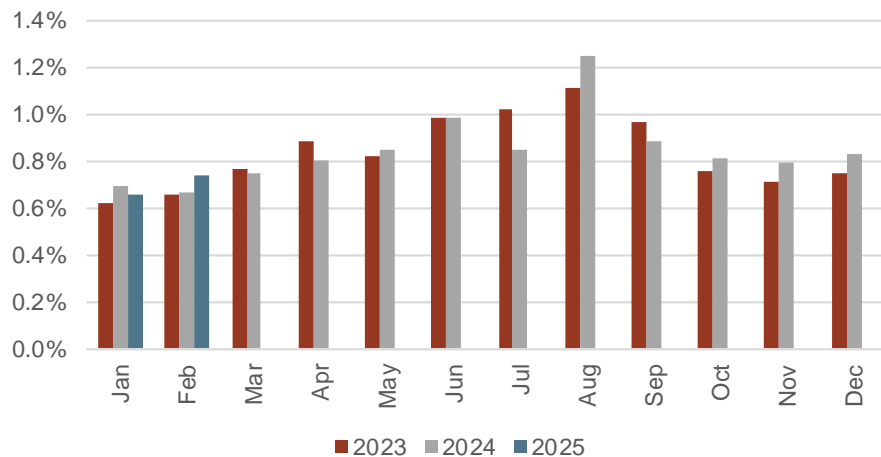


NVE T-60 Forecast

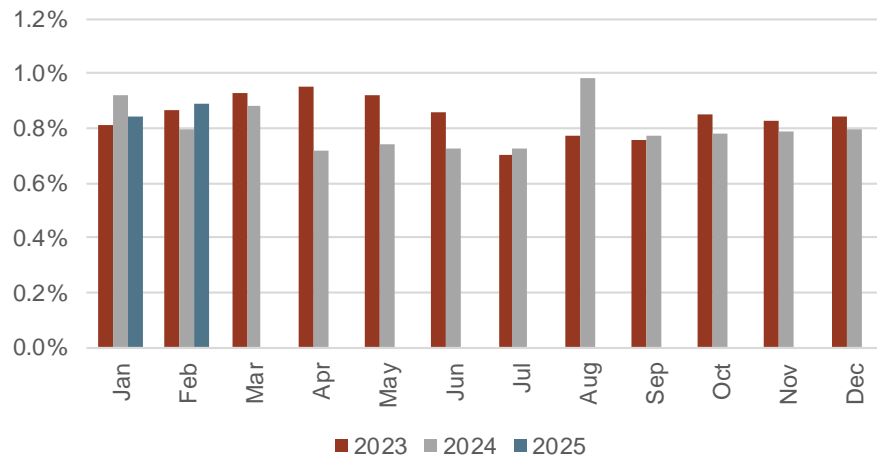


EIM T-60 forecast

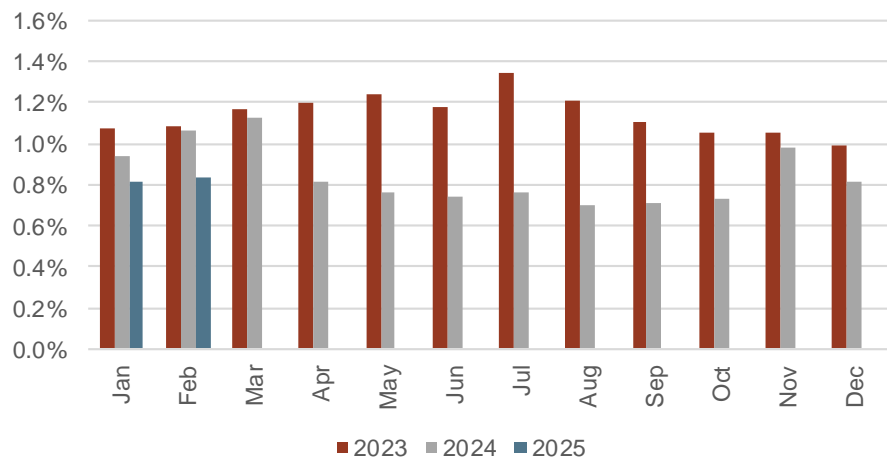
PACE T-60 Forecast



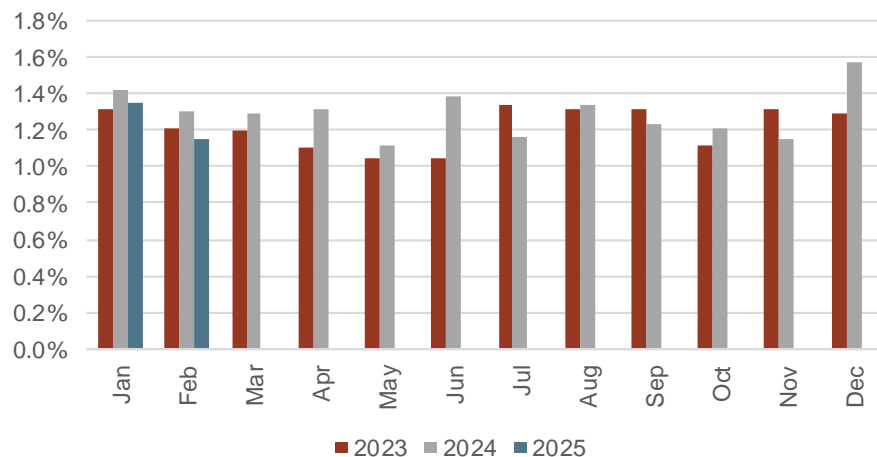
PACW T-60 Forecast



PSE T-60 Forecast

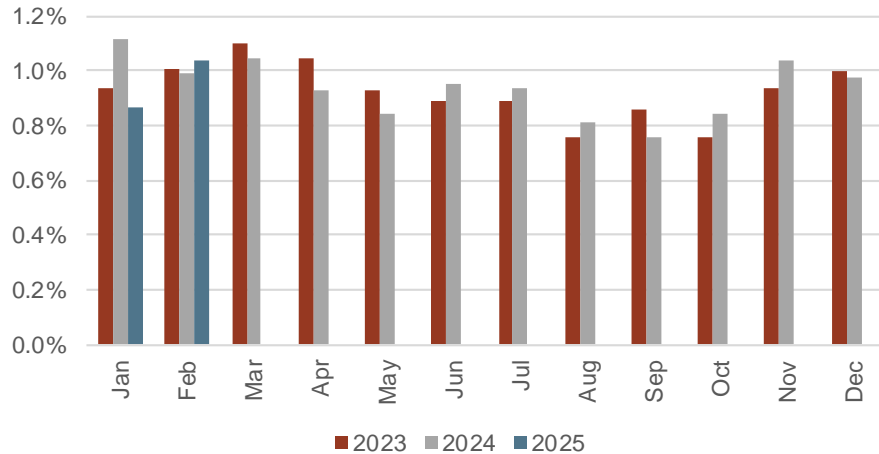


SRP T-60 Forecast

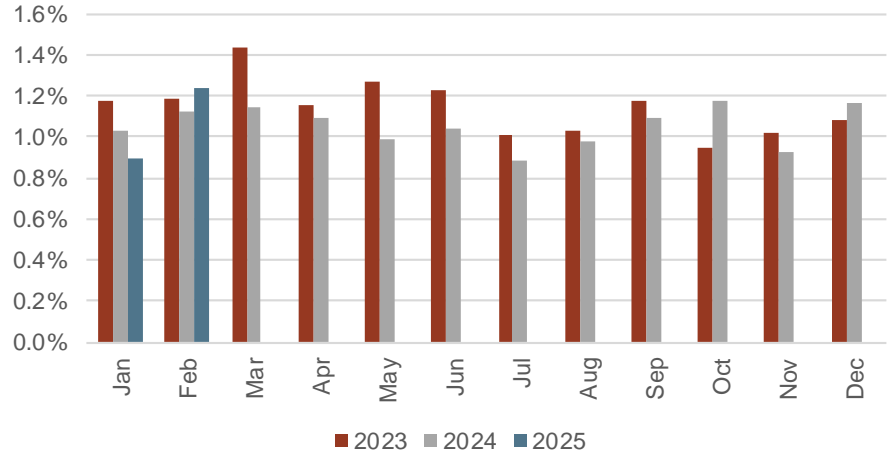


EIM T-60 forecast

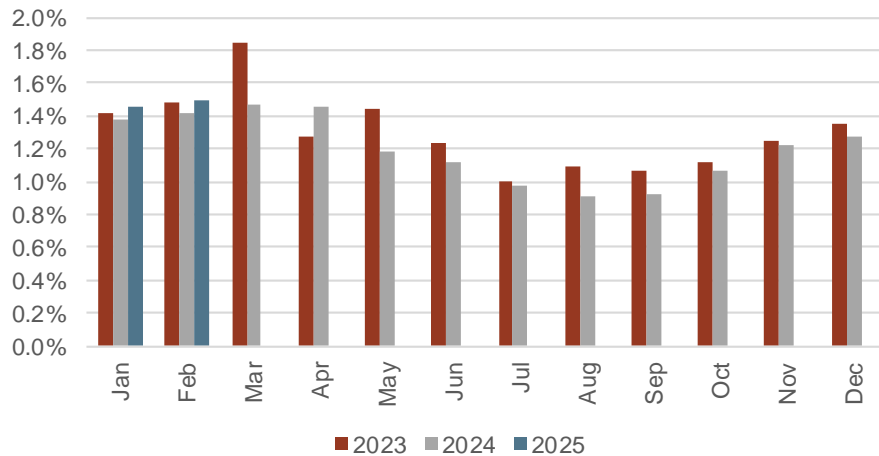
SCL T-60 Forecast



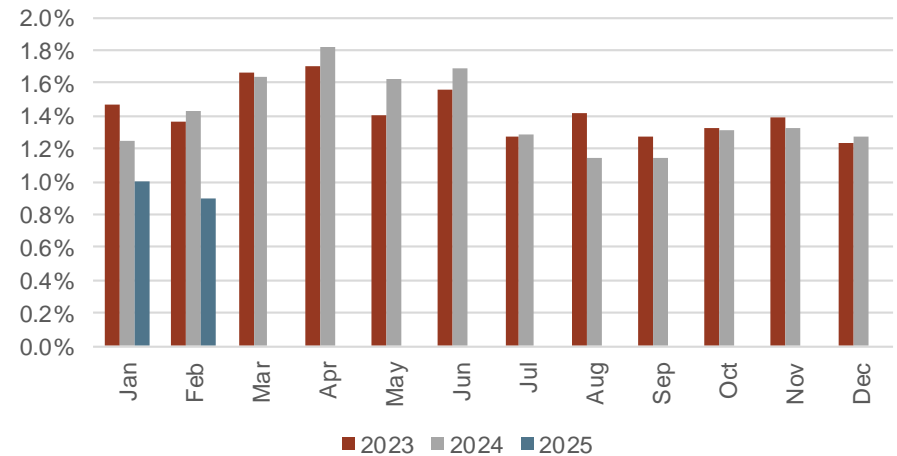
LADWP T-60 Forecast



TIDC T-60 Forecast

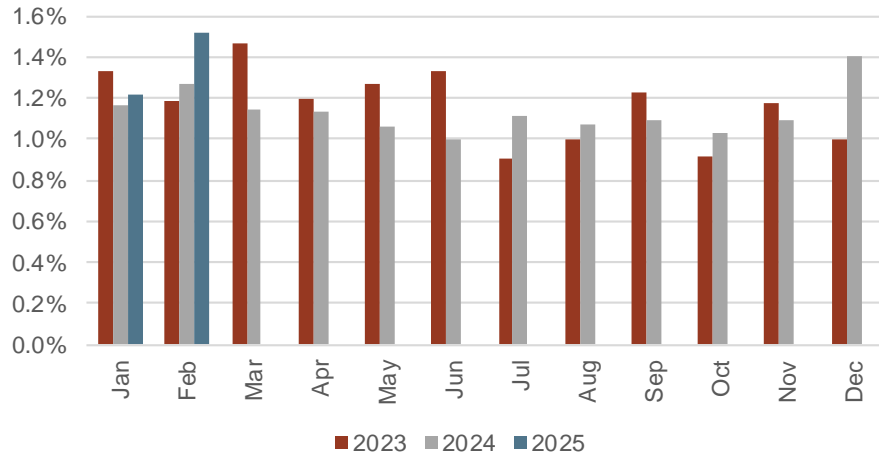


PNM T-60 Forecast

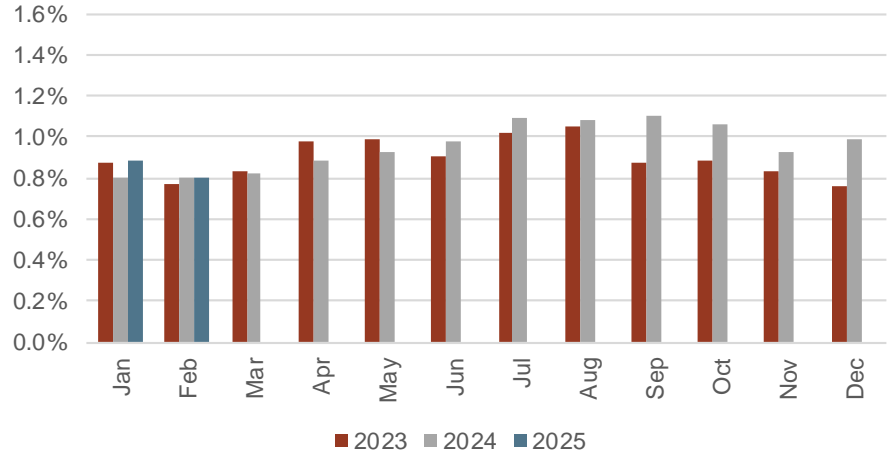


EIM T-60 forecast

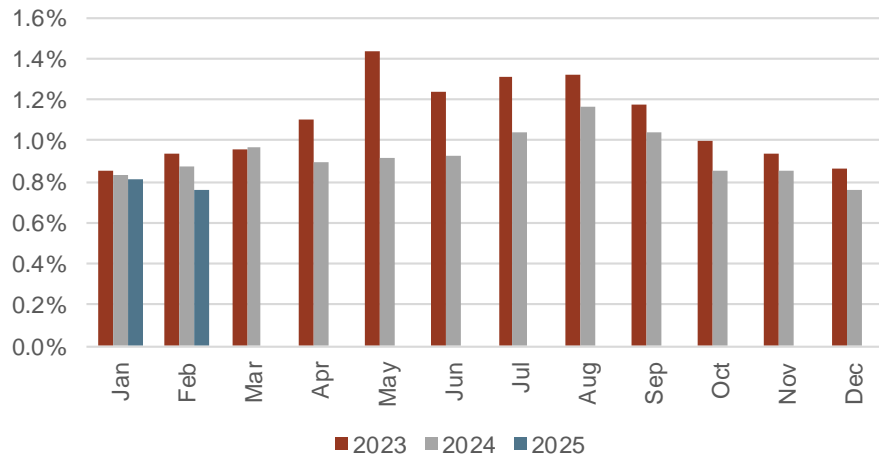
BANC T-60 Forecast



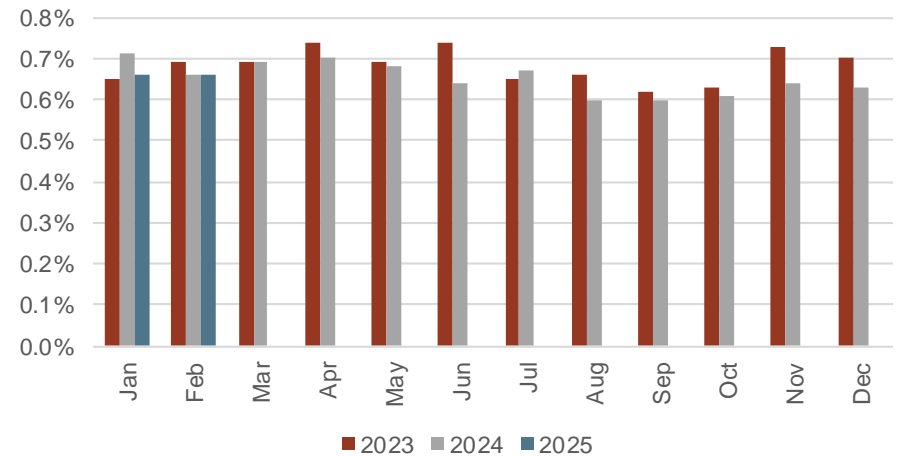
NWMT T-60 Forecast



AVA T-60 Forecast

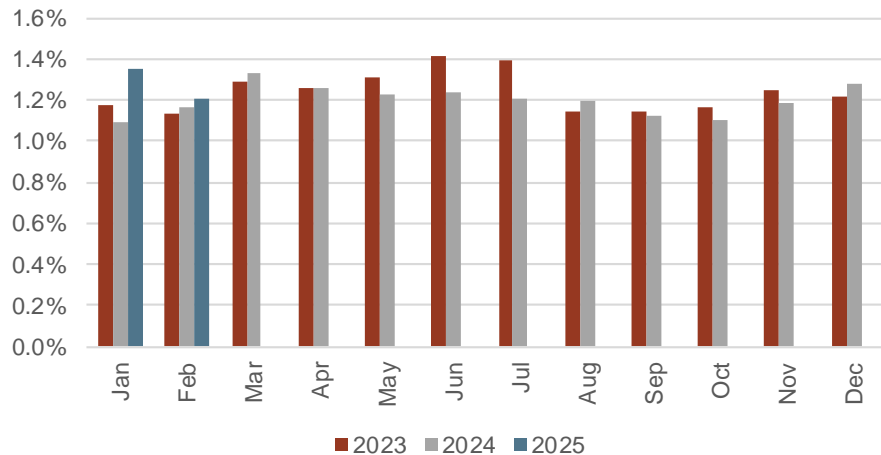


BPA T-60 Forecast

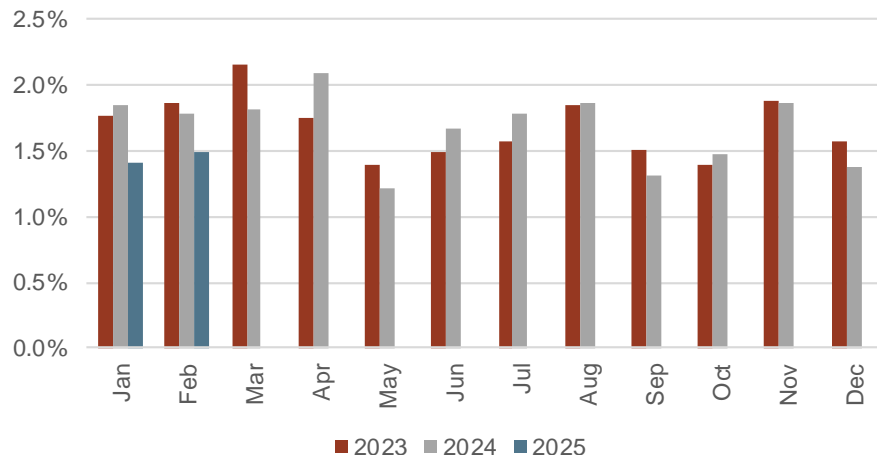


EIM T-60 forecast

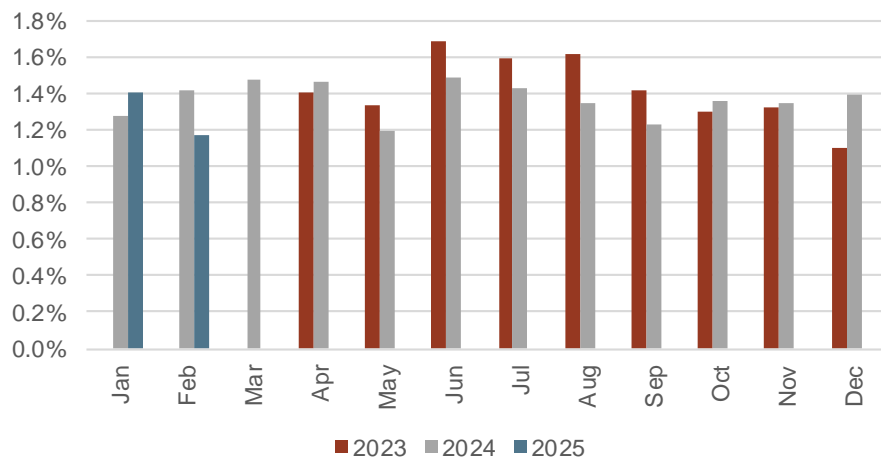
TPWR T-60 Forecast



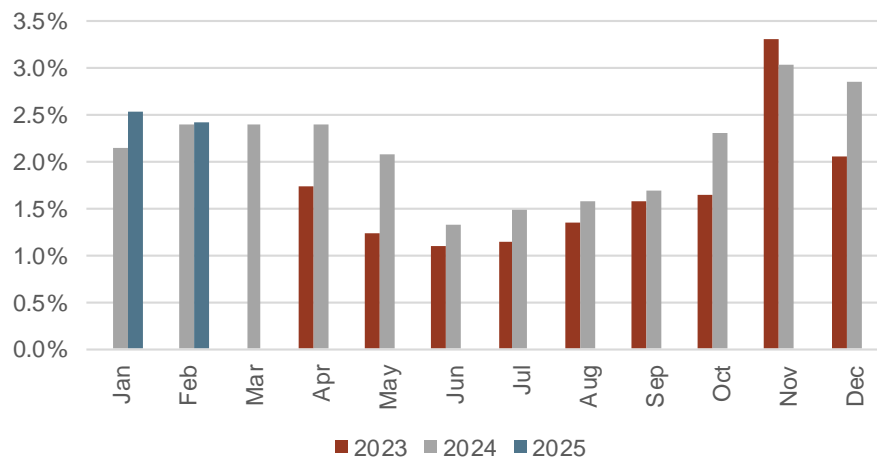
TEP T-60 Forecast



EPE T-60 Forecast



WALC T-60 Forecast



Release Plan Update

Trang Vo
Release Manager,
Project Management

Release Plan Summary

Independent 2025 Releases

- ✓ FERC Order 2023 Generator Interconnection Life Cycle Release 2.2 – March
- CPM Enhancements Track 1* – April
- Highest Emergency Rating – April
- Congestion Revenue Rights System Upgrade – April
- FERC Order 2023 Generator Interconnection Life Cycle Release 2.3 – May
- Hybrid Resources Phase 2C: RIMS* – May
- FERC 881 – Managing Transmission Line Ratings Track 2 – Operational/EMS Model Data & Applications* – July
- FERC Order 2023 Generator Interconnection Life Cycle Release 2.4 – Q4
- Unwarranted Storage Bid Cost Recovery

Fall 2025 Release

- Subscriber Participating Transmission Owner Model* - October
- Transmission Exchange Agreement – October

Spring 2026 Release

- Day-Ahead Market Enhancements Activation* – May
- Extended Day-Ahead Market Activation* – May
- EDAM ISO BAA Participation Rules* – May
- EDAM Onboarding – May
- WEIM Onboarding – May

Future Release

- WEIM FAB Enhancements
- Enable Non-Generating Resources to Participate in Inter-SC Trade
- Transmission Service & Market Scheduling Priorities Track 4
- Settlement Upgrade Project – Next RUG/SUG quarterly update April 2025

**Policy*

BRS Stakeholder Comments & Reviews

- Stakeholders can now submit comments on Business Requirements Specifications

- BRS Comments status:

Closed	Open	Upcoming
<ul style="list-style-type: none">CPM Enhancements Track 1EDAM ISO BAA PR v1.4 – thru 03/07/25EDAM ISO BAA PR v1.3 – thru 01/24/25DAME v1.4 – thru 01/24/25WEIM Enhancements v1.1 – thru 01/16/25EDAM ISO BAA PR v1.2 – thru 10/09/24TSMSP2 v1.1 – thru 10/16/24EDAM v1.3 thru 10/31/24DAME v1.3 thru 09/30/24Subscriber PTO thru 08/15/24FERC Order 2222 thru 08/09/24EDAM ISO BAA Participation Rules v1.0-1.1 thru 08/02/24	<ul style="list-style-type: none">USBCR – thru 03/19/25EDAM v1.4 – thru 04/11/25	

- Access from Release Planning at <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx> or access from [Policy](#) page

- ISO will schedule BRS reviews as appropriate

- Learn how to use the commenting tool:

- [View presentation](#)
 - [View video](#)



Independent 2025 Releases

2025 – FERC 2023 Generator Interconnection Life Cycle

Project Information	Details/Date
High Level Business Problem or Need	Effective with Cluster 15, the resource interconnection process will transition to maintain compliance with FERC Order 2023 using a new platform GRIP. This mandate will streamline the intake of generator interconnection requests, study processes, contracting and management of the queue.
High Level Project Scope	<p>Align the following Cluster 15 resource Interconnection processes to meet compliance of FERC Order 2023 tariff provisions:</p> <ul style="list-style-type: none"> - Transition from GIDAP to new Resource Interconnection Standard (RIS) procedures - Initiate Cluster Request Window for Interconnection Request (IR) submission, Customer Engagement Window, Cluster Study process including scoping and results meeting, Reassessment process, Contracting and Queue Management - Increase transparency of information to customers and public <p>Cluster 14 and prior will initially remain in RIMS but will migrate to GRIP next year</p>
Releases	<p>Release 1 was to open the Cluster Request Window for IR submission on October 1 and close it on December 1 (Completed on 10/01/24).</p> <p>Release 1.5 for GRIP (Grid Resource Interconnection Portal) application included additional items (Completed on 11/14/24).</p> <p>Release 2 was primarily focused on meeting requirements necessary to support the Customer Engagement Window that begins on January 1, 2025 (completed on 12/20/24).</p> <p>Release 2.1 on 01/23/2025 primarily focused on meeting requirements necessary to validate applications in the Customer Engagement Window.</p> <p>Further releases will add the Engagement Window, in Q1 2025, Cluster Study Process module and Generation Interconnection Agreement module in Q3 2025 and Infrastructure Coordination module in Q4, 2025. The existing RIMS Application & Study data will be migrated to the GRIP platform in late 2025.</p> <p>Release 2.2 on 03/18/25: Focused on DocuSign and Project Ledger. The study agreements will be populated with the necessary data, approved, and executed (DocuSign integration) during the Customer Engagement Window</p> <p>Release 3 target mid-May 2025</p> <p>Release 4 target Q4 2025</p>

2025 – CPM Enhancements Track 1

Project Information	Details/Date
High Level Business Problem or Need	<p>The ISO uses its capacity procurement mechanism (CPM) to address resource adequacy (RA) deficiencies and potential reliability concerns. The ISO can use its CPM authority to address specific circumstances defined by the following six CPM designation types:</p> <ol style="list-style-type: none"> 1. Insufficient local capacity area resources in an annual or monthly RA plan 2. A collective deficiency in local capacity area resources 3. Insufficient RA resources in a load-serving entity's annual or monthly RA plan 4. A CPM significant event 5. A reliability or operational need for an exceptional dispatch CPM 6. A cumulative deficiency in the total flexible RA capacity included in the annual or monthly flexible RA capacity plans, or in a flexible capacity category in the monthly flexible RA capacity plans <p>When the ISO makes CPM designations, it relies on capacity willingly offered to the ISO by resource owners. To attract such capacity, the ISO conducts annual, monthly and intra-monthly competitive solicitation processes, into which resource owners may offer their capacity to the ISO at prices up to a soft offer cap, currently set at \$7.34/kw -month.</p> <p>Resource owners may also cost justify offers above the soft offer cap. The CPM Enhancements stakeholder initiative is comprised of at least two tracks. Track 1 addresses five operational and process enhancement issues, and the ISO is planning to take Track 1 for approval at the December 2022 Board of Governors meeting. Track 2 re-examined the CPM soft offer cap which is now \$7.34/kw month.</p>
High Level Project Scope	<p>Proposal 4.1: Reducing the volume (MW) of significant event CPM designations when the designated capacity has already been committed.</p> <ul style="list-style-type: none"> - System changes, Leverage existing functionality, BPM changes <p>Proposal 4.2: Reducing the term of significant event CPM designations when the designated capacity has already been committed or is unavailable to the ISO</p> <ul style="list-style-type: none"> - Leverage existing functionality, BPM changes <p>Proposal 4.3: CPM reporting</p> <ul style="list-style-type: none"> - Leverage existing functionality, BPM changes <p>Proposal 4.4: CPM market notices</p> <ul style="list-style-type: none"> - Business process, BPM changes <p>Proposal 4.5: CPM notifications to scheduling coordinators</p> <ul style="list-style-type: none"> - System changes, BPM changes
BPM Changes	Reliability Requirements, Settlements & Billing
Impacted Systems	CIRA, OASIS (existing), www.caiso.com (business process)

Milestone Type	Milestone Name	Dates	Status
BRS	BRS	Feb 26, 2025	✓
Tech Spec	Tech Spec	N/A	
Market Simulation	Market Simulation	N/A	
BPM	Reliability Requirements: PRR 1616	Jan 31, 2025	✓
Production	Production	Apr 1, 2025	

2025 – Highest Emergency Rating

Project Information		Details/Date		
High Level Business Problem or Need		The project aims to primarily improve market robustness, performance, and the technology foundation for system grid reliability by updating functionality and interfaces to reduce workarounds, automating manual processes and addressing minor defects or functionality enhancements identified in by the business units.		
High Level Project Scope		<p>This enhancement focuses specifically on internal ISO users and RC Customers having the capability to adjust the HER and ER duration in OMS.</p> <p>Step 1 – HER data cleanup</p> <ul style="list-style-type: none">• Load HER in EMMS in one of the existing slots• Transfer HER to RTCA during the network model build process <p>Step 2 – Use RTCA to update HER</p> <ul style="list-style-type: none">• For interim changes to HER in between models, change the data directly in RTCA• Make the ER and HER duration and value fields editable• Include validation to make sure HER is not less than the emergency rating <p>Step 3 – WebOMS changes</p> <ul style="list-style-type: none">• Work with OATI to include a new field for HER• HER can be updated in WebOMS in between model promotions• Updates to HER will be sent to downstream systems		
BPM Changes		Not Impacted		
Tariff Changes		Not Impacted		
Impacted Systems		webOMS, HANA, Market		
Milestone Type		Milestone Name	Dates	Status
Board		Board	NA	
BRS		BRS	Feb 15, 2024	✓
		BRS 1.1	Apr 10, 2024	✓
Tech Spec		Present OMS in TUG	Feb 27, 2024	✓
		OMS	Aug 19, 2024	✓
Training		Training	Oct 28, 2024	✓
Market Simulation		HER OMS UI/API available	Nov 12, 2024	✓
		Market Simulation	Feb 24 – Apr 03, 2025	
Production		Production	Apr 10, 2025	

2025 - Congestion Revenue Rights (CRR) Upgrade

Project Information	Details/Date
High Level Project Scope	<p>The Congestion Revenue Rights (CRR) system was implemented by CAISO in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation. The current CRR system is at its end of life, does not have the flexibility to accommodate future policy changes and requires the ISO to calculate data and run processes manually outside the current system to produce a successful CRR Auction.</p> <p>The CAISO has decided on a significant upgrade of the existing CRR system and adopt the latest technology stack aligned with CAISO's technology standards, consolidate all CRR related functions, minimize human errors, reduce processing time, eliminate manual workarounds, and positions the system to accommodate policy changes down the road.</p> <p>Congestion Revenue Rights (CRR) system replacement project scope is the roll-out of a:</p> <ul style="list-style-type: none"> • Brand new user-interface (UI) system with an updated new look -and-feel, to replace the existing legacy system implemented during the MRTU 2008 go-live and brought up to current ISO technology standards • Set of application-programming interfaces (APIs) to enable integration between ISO and market participant systems <p>Overall, to support the following in one consolidated CRR external-facing system:</p> <ul style="list-style-type: none"> • Annual/Monthly Auction and Allocation market participant bid submission and results retrieval • Load data submission by CRR LSEs, CEC • Load migration data submission by CRR UDCs • Secured "Congestion Revenue Rights Full Network Model" information access • Private and public access of CRR market input and output information
BPM Changes	<p>Congestion Revenue Rights</p> <ul style="list-style-type: none"> • Enhancements made to the new CRR product. • Automatic publishing of CRR market results. • Automatic CRR notification. • New CRR schedule calendar. • New CRR FNM access. • New CRR data submission and download interface UI/API. • New CRR market results interface. • Load Migration
Tariff Change	No
Impacted Systems	CRR, AIM, CMRI, OASIS, CTS, Market Clearing, EMMS, IFM/RTN, MQS, Master File, MPP, Settlements, WebOMS, ETCC.

2025 - Congestion Revenue Rights (CRR) Upgrade

System	High Level Changes
CRR	Significant system upgrade including: <ul style="list-style-type: none"> • Enhancements made to the new CRR application. • Automatic publishing of CRR market results. • Automatic CRR notification. • New CRR schedule calendar. • New CRR FNM access. • New CRR data submission and download interface UI/API. • Other TBDs identified through BRS development.
AIM	<ul style="list-style-type: none"> • New users and roles to support new CRR functionality
OASIS	<ul style="list-style-type: none"> • Publish CRR Calendar, and all available CRR market names, and credit margin information, 3 year historical expected value.. • Allow authorized users to publish CRR inventory payloads • Broadcast the following: set aside values, the results of all CRR markets, retired node/anode mapping, binding constraints, initial and updated CRR source and sink list for each CRR market,
CTS	<ul style="list-style-type: none"> • Broadcast
EMMS	<ul style="list-style-type: none"> • CRR will consume data from EMMS
IFM/RTN	<ul style="list-style-type: none"> • CRR will consume data from IFM/RTN
MQS	<ul style="list-style-type: none"> • MQS will consume and process SCID in a new format • MQS will consume ownership payload in bulk
Master File	<ul style="list-style-type: none"> • Master File will be modified as needed to support the new CRR functionality
MPP	<ul style="list-style-type: none"> • CRR will provide pre-configured external reports
Settlement	<ul style="list-style-type: none"> • Settlements will be modified as needed to support the new CRR functionality
WebOMS	<ul style="list-style-type: none"> • CRR will consume data from WebOMS
ETCC	<ul style="list-style-type: none"> • CRR will consume data from ETCC

2025 - Congestion Revenue Rights (CRR) Upgrade

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	NA	
External BRS	Publish External BRS BRS Revision v1.7	Nov 16, 2022 Oct 28, 2024	✓ ✓
Tech Spec	Publish Technical Specification	Feb 24, 2023	✓
Training	Training	Nov 06 – Nov 08, 2024	✓
Customer Partnership Group	Last CPG Next CPG	Feb 27, 2025 Mar 20, 2025 15:00 PT	✓
Market Simulation	Market Simulation Activities: <ul style="list-style-type: none"> • Structured Market Sim: • Week 1 (Note: OASIS is only during structured) • Week 2 • Week 3 • Unstructured Market Sim: • Week 4 • Week 5 	02/18/25 to 02/20/25 02/25/25 to 02/27/25 03/04/25 to 03/06/25 03/18/25 to 03/20/25 03/25/25 to 03/27/25	✓ ✓ ✓
BPM	Congestion Revenue Rights – PRR 1619	Feb 28, 2025	✓
Production	Hard Cutover	Apr 28 – Apr 30, 2025	

2025 – Hybrid Resources 2C RIMS

Project Information	Details/Date
High Level Business Problem or Need	<p>The ISO launched this stakeholder initiative to identify new or enhanced market rules and business processes needed to accommodate hybrid resources, resources that consist of two sets of market rule changes that will facilitate mixed-fuel type (hybrid and co-located resources) project participation in the ISO markets.</p> <p>Prior to this initiative, Phase 1 identified a first set of modifications generally concerned with setting up and operating co-located resources.</p> <p>Building on phase 1, Phase 2 focuses on modifications that will explore how hybrid generation resources can be registered and configured to operate within the ISO market. The initiative will further develop solutions allowing developers to maximize the benefits of their resource's configuration. Additionally, hybrid resource configurations also raise new operational and forecasting challenges that the ISO plans to address during this initiative.</p>
High Level Project Scope	<p>With this initiative, there's an opportunity to increase storage and the number of hybrid resources that can connect to the ISO grid. Currently the interconnection queue includes more than 24,000 MW of mixed fuel projects and nearly 20,000 MW of storage which represents roughly half of all generation in the current interconnection queue.</p>
BPM Changes	Settlements & Billing
Impacted Systems	<p>Summer 2023: Settlements</p> <p>Fall 2023: Metered Quantities for Hybrids</p> <p>Independent 2025: RIMS</p> <p>Completed: Today's Outlook, ISO Today Mobile Application, Reports</p>
Requirements	http://www.caiso.com/Documents/BusinessRequirementsSpecifications-HybridResourcesPhase2.pdf

2025 – Hybrid Resources 2C RIMS

Milestone Type	Milestone Name	Dates	Status
External BRS	Publish External BRS	Jan 31, 2023	✓
	Revision – Add 4 Market Simulation Business Requirements	Jan 04, 2024	✓
Settlements Config Guides	NA for RIMS	NA	
Tech Spec	Create and Publish ISO Interface Spec (Tech Specs)	NA	
Training	Training Webinar	Mar 05, 2025	✓
Market Simulation	Market Simulation	Apr 2025	
Production Activation	Hybrid Resources 2C – RIMS	May 2025	

Hybrid Resources Phase 2C – RIMS Project

Current Process: Excel Site Sheet

On the [New Resource Implementation \(NRI\) page](#), users download and fill out an excel format, [Wind](#) and/or [Solar](#) Site Information Sheet.

New Process: Shapefile Submission

A Shapefile is a Geographic Information System (GIS) file with the ability to plot points within it; an easy way to get a layout for the site. There are several software options to choose from.

Early User Action

Determine the appropriate Shapefile software compatible with your organization's system. Once a software is determined, start using the ISO's CSV templates for the requirements of Solar/Wind projects, to practice creating Shapefiles (*ahead of Market Sim*).

Solar Templates (.CSV)	Wind Templates (.CSV)
Project Coordinates (<i>latitude, longitude</i>)	Project Coordinates (<i>latitude, longitude</i>)
Met Station Coordinates (<i>ID, latitude, longitude</i>)	Met Station Coordinates (<i>ID, latitude, longitude</i>)
	Turbine Info (<i>turbine ID, latitude, longitude, elevation, hub height</i>)

Hybrid Resources Phase 2C – RIMS Project

Resources

- This [readiness note](#) provides an example using the Quantum Geographic Information System (QGIS). *Please note, that while the ISO uses this software as an example, this is not the only option.*
- The CSV templates are located on the [Release Planning page](#) under this project's heading.

Hybrid resources phase 2-C RIMS

- [Business Requirements Specification - Hybrid Resources Phase 2-C RIMS](#)  01/04/20
- [Readiness Notes - Sample Shapefile Submission Walkthrough](#)  02/14/2025, 8:38 AM
- [<ProjectID>TurbineInfo.csv](#) 02/13/2025, 11:52 AM
Turbine Info Template is for only Wind components.
- [<ProjectID>ProjectCoordinates.csv](#) 02/13/2025, 11:52 AM
Project Coordinates Template is for both Solar and/or Wind components.
- [<ProjectID>MetStationCoordinates.csv](#) 02/13/2025, 11:52 AM
Met Station Coordinates Template is for both Solar and/or Wind components.

Key Dates

- **Market Simulation:** April 2025
- **External Training:** May 2025

2025 – FERC 881 – Managing Transmission Line Ratings

Project Information	Details/Date		
High Level Project Scope	This initiative will address the California ISO's compliance with FERC Order No. 881 in establishing new transmission line rating requirements		
	<p>Order No. 881 establishes new transmission line rating requirements for public utility transmission providers</p> <ul style="list-style-type: none"> Establish and use ambient-adjusted ratings and seasonal ratings for all transmission lines unless excepted <ul style="list-style-type: none"> Use AARs for near-term transmission service requests Use seasonal rating for long-term transmission service requests RTOs/ISOs must implement systems and procedures to allow transmission owners to electronically update transmission line ratings at least hourly Use uniquely determined emergency ratings for contingency analysis in the operations horizon and in post-contingency simulations of constraints Implement transparency reform 		
Milestone Type	Milestone Name	Dates	Status
Tariff	FERC Acceptance ER22-2362	Apr 20, 2023	✓
	FERC Acceptance Tariff Revisions	Dec 13, 2023	✓
	Filed Motion for Extension of Time	Jan 27, 2025	✓
	Draft Tariff Filing	Feb 06, 2025	✓
	Requested FERC Acceptance of Extension of Time & Tariff Revisions	Apr 15, 2025	
BRS	Publish BRS – Track 1 (Updates & Added FAC-011)	Jun 11, 2024	✓
	Publish BRS – Track 2	Nov 22, 2024	✓
	Publish BRS – Track 2 (Updates)	Mid-Mar 2025	
Market Simulation	Market Simulation webLineR	Jan – Jun 2025	
Production	Track 1 Real-Time Reliability Applications	Apr 1, 2024/Dec 10, 2024	✓
	Track 2 Operational/EMS Model Data & Applications	Jun 2025	
	Track 3 Market Application and Look Ahead Applications	Jan – Jul 2026 Phased Implementation	

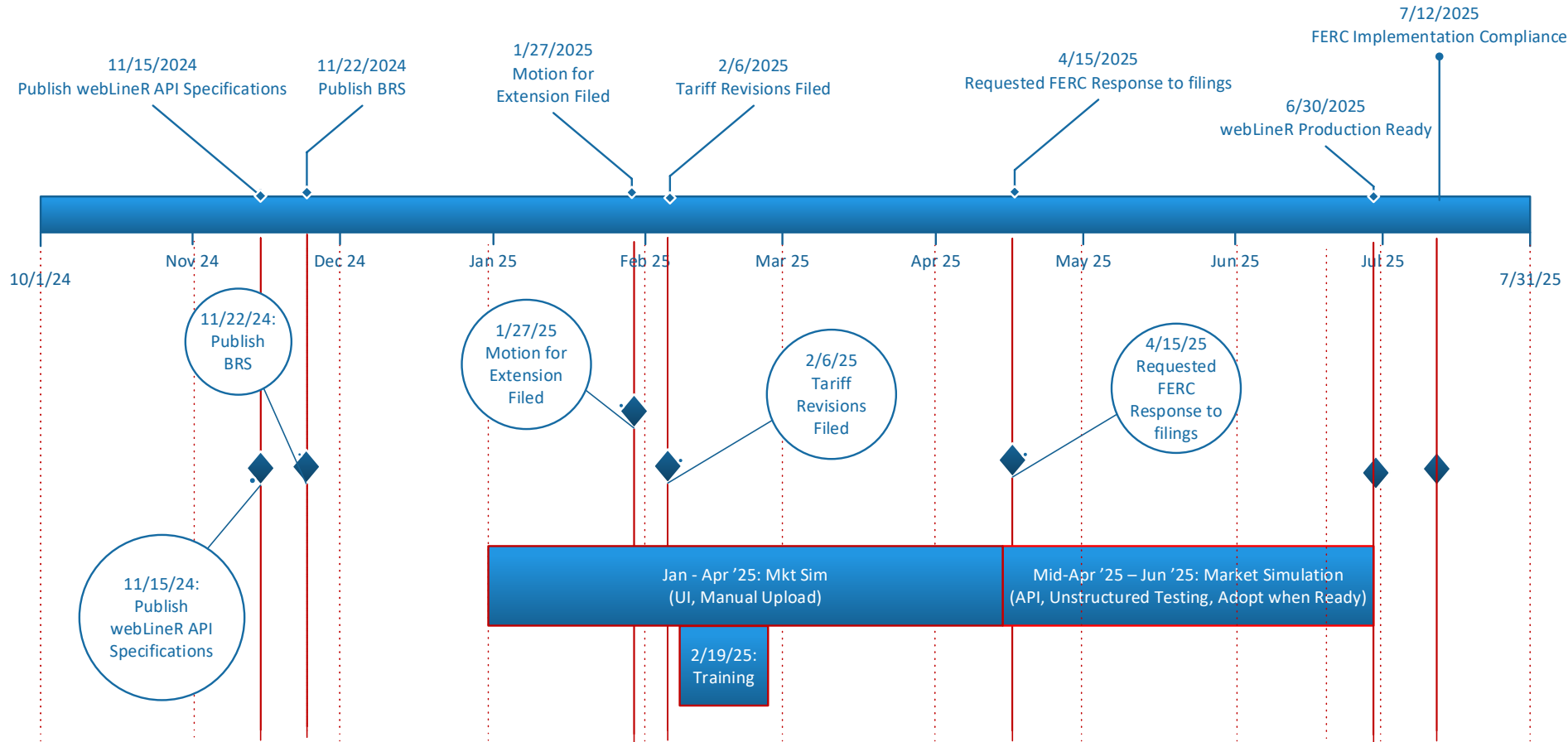
CAISO/RCWEST FERC 881 Implementation:

- Track 1 and Track 2 are in flight to be completed by June 2025.
 - **Track 1 – Real Time Reliability Applications**
 - Target Capability ready by end of December 2024.
 - Final changes will remain inactive until webLineR is ready for production
 - **Track 2 – Operational/EMS Model Data and Applications**
 - webLineR product will be utilized for receiving Look ahead ratings.
 - Target Capability to be ready June 2025
 - External user training completed on Feb 19, 2025
 - Phased Market Simulation planned for Jan –Jun 2025
 - Jan 2025: Limited Market Simulation will consist of:
 - » Connectivity
 - » User Access / Provisioning
 - » User Interface (UI)
 - » Manual data upload
 - » B2B API mock service available
 - Apr 2025: Full Market Simulation
 - » B2B API submissions and validation
 - » Unstructured Scenarios
 - **Track 3 – Market Application and Look Ahead Applications**
 - Proposing a delayed phased in implementation.
 - CAISO/RCWEST filed with FERC motion for extension of time Jan 27, 2025.

webLineR Milestone Timeline

3/17/2025

FERC 881 webLineR



CAISO RCWEST Compliance Phased In Implementation

December 2024

CAISO/RCWEST EMS/EMNA/HANA applications can receive real time AAR ratings through ICCP. Only reliability apps and no markets usage. TOP can send AAR ratings

June 2025

New webLineR tool will be ready to receive 240 hrs of AAR.

TR and webLineR will be ready to receive 4 seasonal ratings

TOP can send Seasonal and AAR ratings .

Monitor and evaluate ratings

January 2026

FERC 881 code changes for real time markets into production.

Enable usage of AAR in EIM market for WEIM entities.

Entities can choose to enable usage of AAR in real time markets

April 2026

FERC 881 code changes for Day ahead markets into production.

Entities that participate in both markets can choose to enable usage of AAR.

Enable Usage of AAR in DACA/LACA / LTCA and IOOC. Look ahead reliability applications.

July 2026

Complete remaining compliance work. Nomograms and usage of AAR in RAS.

Usage of AAR in ETCC/Webwheel and TTC calculations and post hourly ATC. Seasonal COI and other Path Limits calculations.

CAISO RCWEST Phased In Implementation

- FERC 881 code for real time and day ahead markets will be included in EDAM code delivery and market simulation activities.
- Enable usage of AAR in real time markets for WEIM entities in January 2026.
- Enable usage of AAR in day ahead markets in April 2026.
- Enable usage of AAR in look ahead reliability applications in April 2026.
- Enable usage of AAR in ETCC/Web wheel for hourly TTC calculations by July 2026.

Implementation Forums

Forum	Summary	Schedule	Presentations & Recordings
Release User Group (RUG)	Discuss project milestones and deliverables	Tuesday every other week 10-11 AM PT	https://www.caiso.com/meetings-events/topics/release-users-group-rug
Technical User Group (TUG)	Discuss technical design, implementation, and evolution	Tuesday every other week 10-11 AM PT	* https://developer.caiso.com/Pages/Meetings/technical-user-group.aspx
Market Simulation Forum	Covers active and upcoming customer testing activities	Typically Thursday weekly – refer to Calendar 2-3 PM PT	https://www.caiso.com/meetings-events/topics/market-simulation-meeting

These are available on the CAISO Calendar: <https://www.caiso.com/meetings-events/calendar>

*Developer site requires active user account – please submit registration request at <https://developer.caiso.com>

Implementation – webLineR Interfaces & References

Interface/Reference	Status	Summary	URLs
FERC881 Business Requirements Specification	Available	<ul style="list-style-type: none"> - FERC 881 implementation requirements - Includes webLineR access/role information - Includes Market Simulation Guidance for customer testing in “MAP Stage” environment once that activity starts 	http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx > FERC order 881 > BRS Track 2
Access & Identity Management (AIM)	Available	<ul style="list-style-type: none"> - Use to Provision User/Certificate Access webLineR – work with your organization’s User Access Administrator 	https://aim.caiso.com/
webLineR API Documentation / Specifications	Available	<ul style="list-style-type: none"> - yaml files - OpenAPI specifications 	* https://developer.caiso.com/pages/application.aspx?app=WEBLINER
API Tutorials – REST API services	Available	<ul style="list-style-type: none"> - Instructions for configuration of and use of a mock API service via cURL command, Python and Postman (a free tool for API testing) 	* https://developer.caiso.com/pages/tutorials.aspx
webLineR API Mock Services	Available	<ul style="list-style-type: none"> - Standalone services to test API connectivity and interaction - Not integrated with webLineR system - Preview of webLineR APIs 	https://mapstage-apimock.caiso.com/mocks?appname=webliner
webLineR User Interface	Available	<ul style="list-style-type: none"> - In non-Production, “MAP Stage” environment - This is the connected with the native MAP Stage webLineR system - Requires CAISO certificate and access – work with your UAA 	https://mapstage-webliner.caiso.com
webLineR API	Apr 2025	<ul style="list-style-type: none"> - Will be in non-Production, “MAP Stage” environment - Requires CAISO certificate and access – work with your UAA - Will be integrated with native MAP Stage webLineR system 	Will be provided closer to start of API connectivity tests April 2025

*Developer site requires active user account – please submit registration request at <https://developer.caiso.com>

Implementation – webLineR Access Matrix

Belongs to	Org Type	Read Only	Define Data	Read/Write	Define Data
CAISO BAA and EDAM/WEIM Market Participants and Non-Market Participants		Yes	CAISO only Equipment and Rating Data	No	N/A
RC WEST	RC Note: EIM and EDAM Entities included	Yes	All Equipment and Rating Data	No	N/A
RC WEST	TOP Note: EIM and EDAM Entities included	Yes	All Equipment and Rating Data	Yes	Read to all and Write to their own equipment only
RC WEST	BAA Note: EIM and EDAM Entities included	Yes	All Equipment and Rating Data	No	N/A
Not RC WEST (Not WEIM Market)	TOP	No Note: Cannot access webLineR data directly but can get information if needed through their Reliability Coordinator.	N/A	No	N/A
Not RC WEST (Not WEIM Market)	BAA	No Note: Cannot access webLineR data directly but can get information if needed through their Reliability Coordinator.	N/A	No	N/A
Not RC WEST (Not WEIM Market)	RC	Yes	All Equipment and Rating Data	Yes	Read to all and Write to their own TOP equipment only
Not RC WEST (WEIM Market)	TOP-EIM	Yes	All Equipment and Rating Data	Yes	Read to all and Write to their own equipment only
Not RC WEST (WEIM Market)	RC	Yes	All Equipment and Rating Data	No	N/A
Not RC WEST (WEIM Market)	BAA (Like EIM NON RC OMS CONTRACT FOR EIM)	Yes	All Equipment and Rating Data	No	N/A
Not RC WEST (WEIM Market)	EDAM	Yes	All Equipment and Rating Data	No	N/A
Not RC WEST (WEIM Market)	EIM	Yes	All Equipment and Rating Data	No	N/A
Not RC WEST (WEIM Market)	EIM BAA TO	Yes	CAISO PUBLIC All Equipment and Rating Data	No	N/A

2025 – Unwarranted Storage Bid-Cost Recovery

Project Information	Details/Date
High Level Business Problem or Need	<ul style="list-style-type: none"> The CAISO proposes to modify the real-time bid cost recovery calculations for storage resources to consider other cost proxies in addition to the real-time energy bid cost in all real-time intervals, thus mitigating the risk of energy bids unduly inflating bid cost recovery payments. These cost proxies will ensure storage resources remain eligible for bid cost recovery but will reduce the potential for unwarranted bid cost recovery payment. These calculations will apply to all intervals. <ul style="list-style-type: none"> For resources that are "dispatched up", the real-time energy bid cost component in the RT BCR calculation would be replaced by the minimum of the bid and the maximum of (RT DEB, RT LMP, and DA LMP). For resources that are "dispatched down", the real-time energy bid cost component in the RT BCR calculation would be replaced by the maximum of the bid and the minimum of (RT DEB, RT LMP, and DA LMP). In either case, the alternative of using the DA LMP is only applicable to storage resources with a DA Schedule. The phrase "dispatched up" or "dispatched down" is relative to the prior market. <ul style="list-style-type: none"> A resource is dispatched up if the FMM dispatches a storage resource to increase its discharge or decrease its charge relative to its Day-Ahead Energy Schedule (DAES), or if the five-minute RTD market dispatches a storage resource to increase its discharge or decrease its charge relative to its FMM schedule. A resource is dispatched down if the FMM dispatches the resource to decrease its discharge or increase its charge relative to the DAES, or if the five-minute RTD market dispatches a storage resource to decrease its discharge or increase its charge relative to its FMM schedule.
High Level Project Scope	Modify the formula used to calculate RT BCR for Limited energy storage resources (LESRs) to limit the opportunity for adverse financial outcomes and outsized operational costs in the FMM and RTD for intervals with and/or without a DA Schedule Energy (DASE) or Base Schedule Energy (BASE).
BPM Changes	Market Operations: Update for internal system MQS to revise the EEA for final bid prices for LESRs.
Tariff Changes	Yes
Impacted Systems	Internal System: MQS

Milestone Type	Milestone Name	Dates	Status
BRS	BRS	Mar 07, 2025	
Tech Spec	NA	NA	NA
Tariff	File ER25-576 FERC acceptance	Nov 26, 2024 Feb 20, 2025	✓ ✓
BPM	Market Operations PRR		
Market Simulation	Market Simulation	TBD	
Production	Production	TBD Retroactive to Dec 01, 2024	

Fall 2025 Release

Fall 2025 - Subscriber Participating Transmission Ownership Model

Project Information	Details/Date
High Level Business Problem or Need	<p>The Subscriber Participating Transmission Owner (Subscriber PTO) model is a new transmission development option available for transmission projects with generation development opportunities outside the CAISO balancing area to bring generation to meet California's policy initiatives. The model specifically supports CPUC generation portfolios required by the memorandum of understanding with the California State agencies and the CAISO. Accordingly, the Subscriber PTO model allows for additional transmission to be developed to connect the CAISO BAA with out-of-state generation that currently lack the necessary transmission to provide electricity to the CAISO BAA. The Subscriber PTO model thereby provides an option for projects not chosen in the transmission planning process to solicit Subscribers who then pay for the project (generation and transmission) and join the CAISO balancing area.</p> <p>The new Subscriber PTO Model enables a subscriber PTO to develop its project without recovering the costs for its project through a transmission revenue requirement. At the same time, those who have paid for the project, <i>i.e.</i>, the subscribers, are exempt from congestion and other related costs on the subscriber PTO line because the subscribers will receive similar treatment and priority to existing contract rights holders (ETCs). Additionally, the Subscriber PTO model provides a mechanism for subscribers that financed the project and associated network upgrades the ability to receive reimbursement for those costs from non-subscribers that use the Subscriber PTO transmission facilities.</p>
High Level Project Scope	<ul style="list-style-type: none"> • Develop Subscriber PTO Model: account for a new PTO model that does not increase the Transmission Revenue Requirement (TRR) of the Transmission Access Charge / Wheeling Access Charge (TAC/WAC)) and provides those who funded the project ("subscribers") with Existing Transmission Contract (ETC) designation to account for their rights on the CAISO controlled grid • Revise the TAC allocation process to fund the non-Subscriber usage payment amount ahead of allocation to the non-load serving PTOs • Charge non-subscribers for use of the Subscriber PTO line the applicable non-subscriber usage rate (\$/MWh) • Create a mechanism that allows for the payment to the Subscriber PTO for non-subscriber usage of the Subscriber PTO transmission facility: <ul style="list-style-type: none"> ○ Compare the Non-Subscriber Usage rate(s) (\$/MWh rate approved by FERC) to the TAC rate and pay the Subscriber PTO the lower of the two values ○ Create a flag to denote when the Non-Subscriber Usage Rate is higher than the TAC rate and publish results in the ISO bill determinant file <ul style="list-style-type: none"> ▪ Indicate monthly gross exports and imports for Non-Subscriber usage of the Subscriber PTO transmission line ○ Indicate the TAC rate and the Non-Subscriber Usage Rate(s) as part of the Settlements TAC reports • Develop methodology to address economic BAA to BAA transfers at new scheduling points created by Subscriber PTO transmission lines

Fall 2025 - Subscriber Participating Transmission Ownership Model

System	High Level Changes
BPM Changes	<ul style="list-style-type: none"> • Definitions and Acronyms • Generator Interconnection and Deliverability Allocation Procedures • Market Instruments • Market Operations • Reliability Requirements • Settlements & Billing • Transmission Planning Process
Tariff Changes	<ul style="list-style-type: none"> • Section 4: Roles and Responsibilities • Section 16: Existing Contracts • Section 24: Comprehensive Transmission Planning Process • Section 25: Interconnection of Generating Units and Facilities • Section 26: Transmission Rates and Charges • Appendix A: Master Definition Supplement • Appendix F: Rate Schedules • Appendix DD: Generator Interconnection Deliverability Allocation Procedures
Impacted Systems	
MF	<ul style="list-style-type: none"> • Develop Subscriber PTO model: including new participant type, new TAC area, new UDC, new WAC rules, and mapping
CIRA	<ul style="list-style-type: none"> • Identify resources subject to MIC and establish MIC at Sub PTO scheduling points/interties • Define RA obligation
SIBR	<ul style="list-style-type: none"> • Receive ETC designation and support bidding rules for subscriber generating resources (existing functionality)
ITS	<ul style="list-style-type: none"> • Consume new tie points and/or ITCs • Add Subscriber PTO loss resource IDs to loss table
IFM/RTM	<ul style="list-style-type: none"> • Calculate ASRS • Consume all hourly MSSC values
Settlements/ DReAMS	<ul style="list-style-type: none"> • Develop new bill determinants • Calculate financial loss return • Apply existing ETC rules • Update TAC/WAC revenue allocation process to include non-subscriber usage rate • Update configuration guides and bill determinants • Exclude Subscriber PTO UDC areas from UFE

**This effort is separate from the “Subscriber participating transmission owner market scheduling options” policy initiative*

Fall 2025 - Subscriber Participating Transmission Ownership Model

Milestone Type	Milestone Name	Dates <i>*Tentative</i>	Status
Policy	Straw Proposal	Feb 13, 2023	✓
	Draft Final Proposal	Apr 10, 2023	✓
	Revised Draft Final Proposal	May 15, 2023	✓
	Final Proposal	Jun 22, 2023	✓
Tariff	First Draft Tariff Posting	Jun 22, 2023	✓
	Second Draft Tariff Posting	August 08, 2023	✓
Board Approval	Board approval	July 20, 2023	✓
BRS	Publish BRS v1.0	Jul 26, 2024	✓
Settlements Config Guides	Post Draft Configuration Guide	<i>Mar 2025*</i>	
Tech Spec	Publish Technical Specifications	<i>Apr 2025*</i>	
BPMs	Post Draft BPM – Definitions and Acronyms	<i>Apr 2025*</i>	
	Post Draft BPM – Generator Interconnection and Deliverability Allocation Procedures		
	Post Draft BPM – Market Instruments		
	Post Draft BPM – Market Operations		
	Post Draft BPM – Reliability Requirements		
	Post Draft BPM – Settlements and Billing		
	Post Draft BPM – Transmission Planning Process		
Training	Training	<i>Jun – Sep 2025*</i>	
Market Sim	Market Sim Scenarios	<i>Apr 2025*</i>	
	Market Sim Window	<i>Jun - Aug 2025*</i>	
Deployment	Production Deployment	<i>Oct 2025*</i>	
Activation	Production Activation	<i>Oct 2025*</i>	

Fall 2025 – Transmission Exchange Agreement

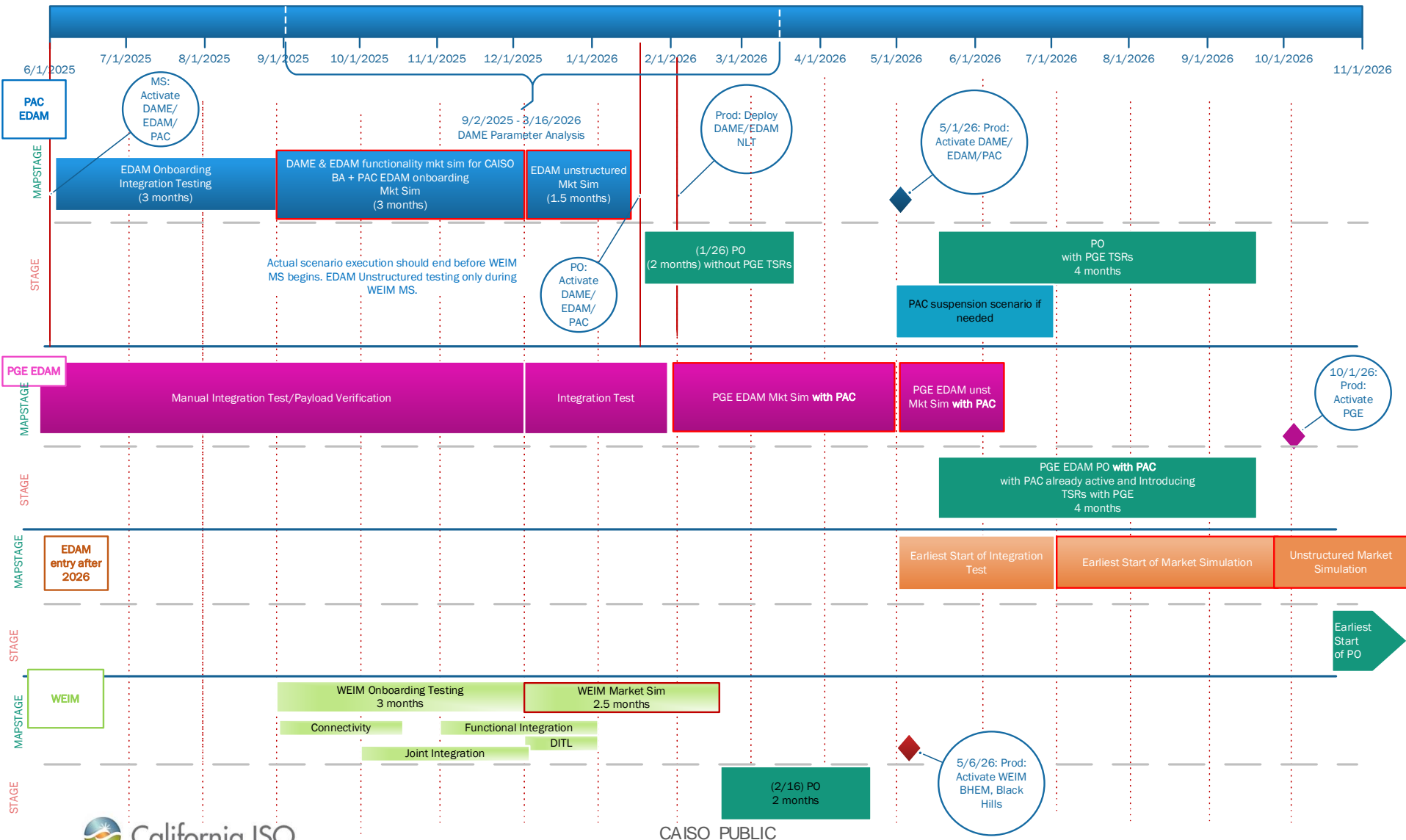
Project Information	Details/Date
High Level Business Problem or Need	<p>The ISO is committed to develop a process or system that allows Western Area Power Administration – Sierra Nevada Region (“WAPA”) to resell some or all of their 400 MW ownership rights on the PAC#1 line to other SCIDs and retain the perfect hedge and scheduling priority to further contract negotiations to extend the term of the Transmission Exchange Agreement.</p> <p>The Transmission Exchange Agreement (“TEA”) with WAPA-SNR, PG&E and ISO is scheduled to expire 9/30/2024. A term of the original agreement executed in 2004, was that the ISO would develop a system that allowed WAPA to sell their unused capacity on their line. This project provides solution to the scheduling issue which needs to be in place by June 2024 to ensure that the ISO has solved the problem and support filing an amendment and extension of the TEA at FERC.</p>
High Level Project Scope	<ul style="list-style-type: none"> • WAPA needs functionality to sell their TOR to other parties on their OASIS. • If the TOR rights are sold then WAPA will notify the CAISO to provide the purchaser the hedging and scheduling priority opportunity provided all ETCs/TORs. • The market and settlement systems need to be able to “move” the Contract Reference Number (“CRN”) from the WAPA CRN to the purchaser SCIDs so that the settlement to the purchaser SCID reverses the costs of the transmission access charge and congestion (aka the perfect hedge) and provides a high scheduling priority in the IFM and RTM. • WAPA will not take on the obligation to settle with their purchaser. • WAPA can sell any increments of MWs up to their 400 MW ownership rights. Therefore, the solution needs to be flexible enough to allow the “existing” TORs to vary the MWs capabilities. [Note: The MW increments to be sold can be no less than 5 MW.] • WAPA’s functionality allows them to schedule between Malin and Round Mountain, Malin and PG&E DLAP, and Malin and Tracy. This would be the source and sink that that functionality needs to provide. • If there are outages on the line, the curtailment should be consistent with current practice.
BPM Changes	Settlements Configuration Guides
Tariff Changes	N/A
Impacted Systems	AIM, MF, CMRI

Fall 2025 – Transmission Exchange Agreement

Milestone Type	Milestone Name	Dates	Status
External BRS	Post External BRS	Sep 03, 2024	✓
BRS	Provide to WAPA	Jan 23, 2024	✓
Settlements Config Guides	Tech Doc	Feb 12, 2024	✓
	1st Draft Config File & Release Component Summary	Mar 04, 2024	✓
Tech Spec	Create ISO Interface Specifications – CMRI	Mar 26, 2024	✓
	UI: The current CMRI CRN report is not being changed. WAPA will be able to see Sub CRNs mapped to its own Parent CRN		
Tariff	NA	NA	
BPMs	Draft BPM changes – Settlements & Billing PRR 1559	Mar 20, 2024	✓
Market Simulation	Market Simulation – WAPA	Jul 2025 (Tentative)	
Production Activation	Transmission Exchange Agreement Renegotiation	Oct 2025 (Tentative)	

Spring 2026 Release

2026 Timeline



Spring 2026 – ISO Led Training Schedule for EDAM and DAME Projects

Date	Activity	Audience
June 2025 (Rescheduled from April by EDAM entity request)	EDAM Onboarding: Train-the-Trainer Sessions <ul style="list-style-type: none"> June 23 – 26, 2025 	EDAM entity designated trainers (closed sessions for onboarding entities only)
August 18, 2025 (tentative date – target is 1-2 weeks before market sim)	DAME Overview: Pre-Market Sim Training	ISO BA customers that participate in Day-Ahead Market
August 19, 2025 (tentative date – target is 1-2 weeks before market sim)	DAME Settlements: Pre-Market Sim Training	ISO BA customers that participate in Day-Ahead Market
August 20, 2025 (tentative date – target is 1-2 weeks before market sim)	EDAM CAISO BAA Participation Rules: Pre-Market Sim Training	ISO BA customers that participate in Day-Ahead Market
[Market Simulation Activity]		
April 2026 (date TBD – target is 1-2 weeks before go-live)	DAME: Pre Go-Live Refresher Training <ul style="list-style-type: none"> Overview session Settlements session 	ISO BA customers that participate in Day-Ahead Market
April 2026 (date TBD – target is 1-2 weeks before go-live)	EDAM CAISO BAA Participation Rules: Pre Go-Live Refresher Training	ISO BA customers that participate in Day-Ahead Market
May 1, 2026: DAME & EDAM Production Activation		

Rev. 2/26/2025

Spring 2026 - DAME/EDAM/EDAM ISO BAA PR – Settlements Tech Doc Update

✓ **We published updates to the DAME/EDAM/EDAM ISO BAA PR Technical Documents on 1/30/25.**

- All tiers (1-3) have been updated with “Posted” date of 01/30/2025.
- Please use link below to our Release Planning site to download latest copy.
 - [Release planning | California ISO](#)
- Please use CIDI for any questions.
- Most previous Tech Docs were updated
- This update includes new Tech Docs which were not part of tiers 1-3
- These **new** Tech Docs will be placed in tier 3
- All **existing** Tech Docs that were updated will be placed back in their original tier
- These updates can easily be identified by looking at “**Posted**” date
- This update includes a Doc format change per CAISO website posting requirement, all posted tech doc files will be in docx format (previously it’s doc format). But vast majority of the updated Tech Doc files include content change as well.
- External notification was sent out after 01/30/25 posting

✓ **Published DAME and EDAM Charge Code Change Summary on 03/03/25**

- We have published all 126 impacted Settlements Charge Code Change Summary for DAME and EDAM in the link below. This is posted under “Fall 2025 Settlements Release – DAME and EDAM tier 3 technical documents”. This sheet includes technical document name, charge code name and charge code description. In order to help with validation, please use column “E” to filter for different tiers and column “F” to filter for new charge codes.
- [DAME and EDAM Charge Code Change Summary](#)
- 1st DAME/EDAM Config Output File is scheduled for **4/29/25**, together with another round of updated Tech Doc posting and Charge Code Matrix.

Spring 2026 – Day Ahead Market Enhancements

Project Information	Details/Date
High Level Business Problem or Need	<p>In recent years, Variable Energy Resource (VER) have gained significant traction in the energy grid, playing a crucial role in achieving renewable energy targets and reducing greenhouse gas emissions. However, their increasing presence has introduced a new challenge energy imbalances between the Day Ahead and Real Time markets.</p> <p>Another reason for the energy imbalance is the day-ahead market operates on hourly time increments, whereas real-time market schedules energy in 15 and 5-minute intervals. This discrepancy in granularity results imbalances since the real-time market schedules fluctuate within the hour while day-ahead market schedules remain fixed for the entire hour.</p> <p>These imbalances necessitates out-of-market interventions by operators, such as forecast biasing and dispatches, to uphold grid reliability. However, this situation presents an opportunity to improve our market software, enabling us to achieve a more efficient and economical solution while addressing the variability and reliability concerns within the market.</p>
High Level Project Scope	<p>Enhance the California ISO's (CAISO's) day-ahead market by:</p> <ul style="list-style-type: none"> • Introducing an imbalance reserve (IRU/IRD) product to provide flexible capacity to account for real-time ramping needs • Enhancing the residual unit commitment process to also ensure there is sufficient downward dispatch capability (RCU/RCD) • Enhancing the day-ahead market to maximize benefits of greater West-wide diversity in the day-ahead optimization for Western Energy Imbalance Market participants
BPM Changes	Settlements and Billing, Market Instruments & Market Operations
Tariff Changes	Sections 27, 31, 34, 39
Impacted Systems	MF, SIBR, DAM, OASIS, CMRI, Settlements & Internal Systems

Spring 2026 – Day Ahead Market Enhancements

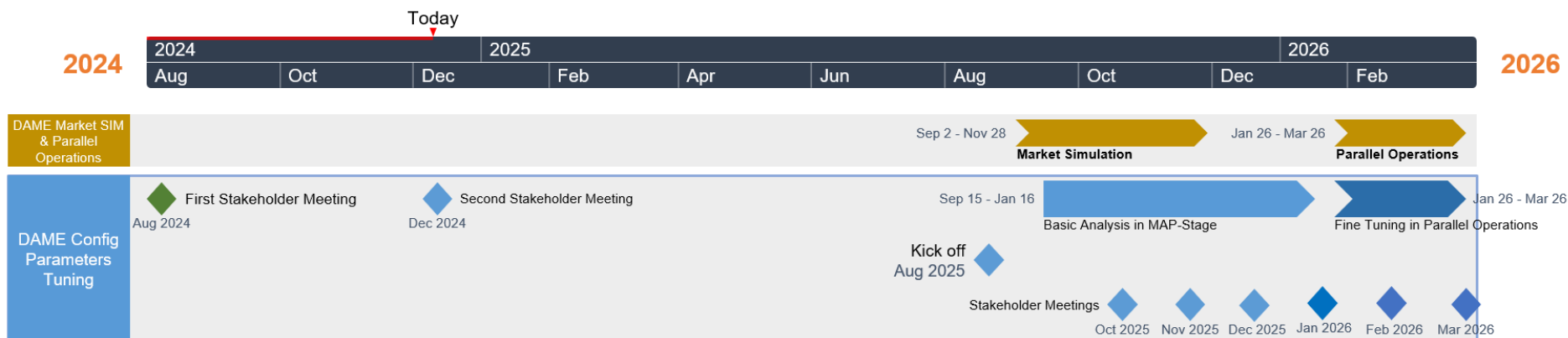
System	High Level Changes
MF	<ul style="list-style-type: none"> Define IRU, IRD, RCU, RCD eligibility for the resource ID in MF.
SIBR	<ul style="list-style-type: none"> IRU,IRD,RCU,RCD bid rules
DAM	<ul style="list-style-type: none"> Calculate IRU/IRD requirements MPM: Market Power Mitigation for IRU/IRD IFM: procure IRU/IRD IRU/IRD deployment scenarios IRU/IRD requirement distribution IRU/IRD in NA-AC power flow Include IRU/IRD in constraints RCU/RCD procurement RUC-MPM pass Impact on RUC performance with additional MPM pass LMP for EN, IRU/IRD, RCU/RCD
OASIS	<ul style="list-style-type: none"> IRU, IRC, RCU,RCD related public reports
CMRI	<ul style="list-style-type: none"> IRU, IRC, RCU,RCD related private reports
Settlements	<ul style="list-style-type: none"> IRU, IRC, RCU,RCD Settlements

Spring 2026 – Day Ahead Market Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board briefing/approval	May 17, 2023	✓
External BRS	Publish External BRS v1.0	Jul 25, 2023	✓
	Publish External BRS v1.1	Dec 22, 2023	✓
	Publish External BRS v1.2	Apr 24, 2024	✓
	Publish External BRS v1.3	Aug 02, 2024	✓
	Publish External BRS v1.4	Dec 23, 2024	✓
Settlements Config Guides	Post Draft Config Guides - First set of charge codes	Jan 16, 2024	✓
	Post Draft Config Guides - Second set of charge codes	Mar 26, 2024	✓
	Post Draft Config Guides - Third set of charge codes & updates to First & Second sets	Aug 26, 2024	✓
	Post Updates to Tech Docs (Tiers 1-3)	Jan 30, 2025	✓
	<i>1st Config Output File w/ Updated Tech Doc posting & Charge Code Matrix</i>	Apr 29, 2025	
Tech Spec	Publish Technical Specifications – OASIS	Nov 09, 2023	✓
	Publish Technical Specifications – MF	Nov 21, 2023	✓
	Publish MF GRDT v19.0 DRAFT		
	Publish Technical Specifications – SIBR	Nov 28, 2023	✓
	SIBR/BSAP/RCBSA P Rules Release Notes	Mar 05, 2024	✓
	SIBR SC User Guide	Mar 05, 2024	✓
	Publish Technical Specifications – CMRI	Dec 15, 2023	✓
	Publish Technical Specifications – CMRI Revision	Mar 10, 2025	✓
Tariff	First Draft Tariff Posting	Jun 02, 2023	✓
	Second Draft Tariff Posting	Jul 11, 2023	✓
	FERC Filing	Aug 22, 2023	✓
	Receive FERC order – Acceptance in part	Dec 20, 2023	✓
	Draft Compliance Filing Posting	Feb 05, 2024	✓
	Compliance Filing	Feb 16, 2024	✓
BPMs	Business Practice Summary (New)	Apr 25, 2024	✓
	Post Draft BPM – Scheduling Coordinator Certification and Termination	Jan 31, 2025	✓
	Post Draft BPM – Market Instruments	Jul 01, 2025	
	Post Draft BPM – Market Operations	Jul 01, 2025	
	Post Draft BPM – Settlements and Billing	Jul 01, 2025	
	Post Draft BPM – Definitions and Acronyms	Jul 01, 2025	
Configurable Parameters	Implementation Working Group Meeting	Aug 07, 2024	✓
	Implementation Working Group Meeting, comments open thru 01/10/26	Dec 11, 2024	✓
	Implementation Working Group Kick-Off	Aug 2025	
External Training	External User Training	Aug 2025	
Market Sim	Fall 2025 Release Market Simulation Plan	Jan 24, 2024	✓
	Market Sim Scenarios	Aug 04, 2023	✓
	Market Sim Window	Sept 02 - Nov 21, 2025	
Production Deployment	Day Ahead Market Enhancements (Inactive)	NLT Feb 01, 2026	
Production Activation	Day Ahead Market Enhancements (Financially Binding)	May 01, 2026	

DAME Configurable Parameters Working Group: Timeline

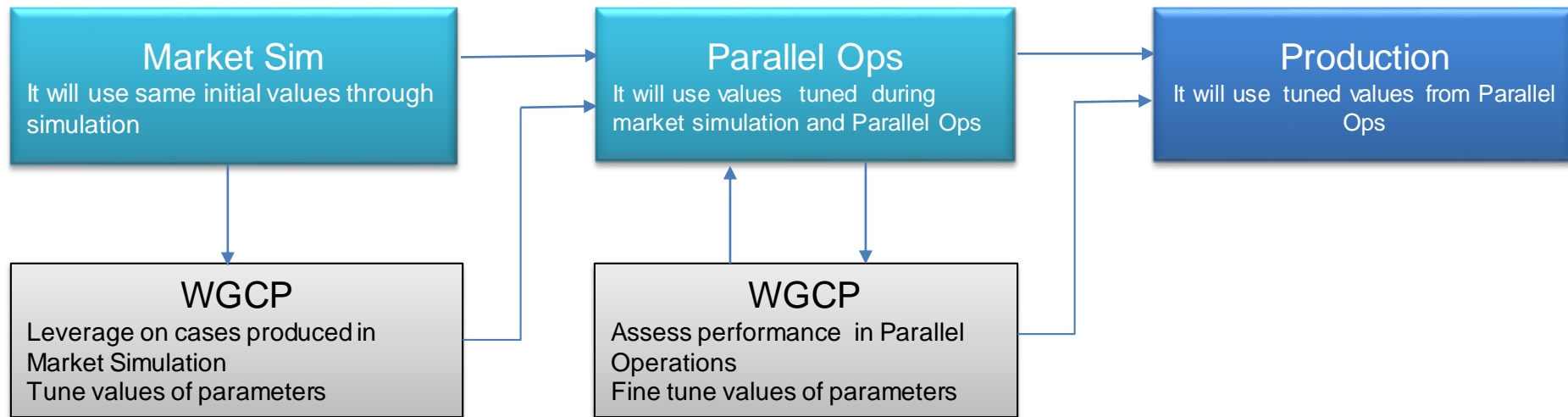
- The CAISO is accommodating requests to extend the timeline of the working group effort and adjusting the timeline to facilitate additional working group sessions
 - ◆ additional working group sessions
 - Start session earlier than originally proposed
 - Kick-off session in August 2025
 - Monthly working sessions starting in October



Proposed time schedule for WGCP based on part of the overall DAME/EDAM schedule

- Overall schedule includes formal stages of
 - Market Simulation
 - Parallel Operations
- Analysis of configurable parameters can start only after market application is functional and readily available
- Although effort for WGCP will happen concurrent to Market Simulation and Parallel Operations, it is an independent effort
- The WGCP will leverage on Market Simulation and Parallel Operations efforts to perform analysis on the parameters

Although the WGCP effort will happen concurrent to Market Simulation and Parallel Operations, it is a separate effort



Useful links for Market Sim and Parallel Operations

<https://www.caiso.com/documents/draftmarketsimulationplan-fall2025release.pdf>

<https://www.caiso.com/documents/marketsimulationstructuredscenarios-dayaheadmarketenhancements.pdf>

<https://www.caiso.com/documents/marketsimulationstructuredscenarios-extendeddayaheadmarket.pdf>

<https://www.caiso.com/documents/draft-parallel-operations-plan-edam-dame-2026.pdf>

Spring 2026 – Extended Day Ahead Market (EDAM) Implementation

Project Information	Details/Date
High Level Business Problem or Need	The purpose of this initiative is to create a comprehensive extended day-ahead market that extends over multiple balancing authority areas (BAAs) participating in the Western Energy Imbalance Market (WEIM). EDAM is a voluntary day-ahead electricity market with the potential to deliver significant economic, environmental, and reliability benefits for participants across the West. EDAM will more efficiently and effectively integrate renewable resources and address the significant operational challenges presented by a rapidly changing resource mix, emerging technologies, and the impacts of climate change. EDAM will enable procurement of robust supply and flexible capacity that will position EDAM participants to effectively address changes in conditions from day-ahead to real-time, improving their response to potential reliability challenges. EDAM builds upon the proven ability of the WEIM to increase regional coordination, support state policy goals, and cost effectively meet demand.
High Level Project Scope	The EDAM design leverages existing features of the ISO day-ahead market that are common in other day-ahead markets across the country. The design also considers enhancements proposed in contemporaneous stakeholder initiatives that will harness flexibility across the larger footprint by incorporating an imbalance reserve product that will enhance price formation. EDAM introduces new products, imbalance reserve and reliability capacity, as well as new penalties, and a Resource Sufficiency Evaluation (RSE) surcharge.
BPM Changes	Definitions and Acronyms Energy Imbalance Market (EIM) Market Instruments Market Operations Settlements and Billing EDAM
Impacted Systems	MF, ALFS, ALFS-SOA, SIBR, RTSI, RTBS, BSAP, DAM (IFM and RUC), DA-RSE (new), RTM (RTPD and RTD), STUC, MPM, ITS, BARC, GHG Pass (new), Settlements, CMRI, OASIS, ADS, WebOMS, Internal ISO Systems

Spring 2026 – Extended Day Ahead Market (EDAM)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board approval	Feb 01, 2023	✓
External BRS	Publish External BRS v1.0	Aug 02, 2023	✓
	Publish External BRS v1.1	Dec 22, 2023	✓
	Publish External BRS v1.2	Apr 25, 2024	✓
	Publish External BRS v1.3	Aug 05, 2024	✓
	Publish External BRS v1.4	Mar 13, 2025	✓
Tariff	Draft Tariff Language	Mar 30, 2023	✓
	Revised Draft Tariff Language	Jun 08, 2023	✓
	Updated Revised Draft Tariff Language	Jul 25, 2023	✓
	FERC Filing	Aug 22, 2023	✓
	Receive FERC order – Acceptance in part	Dec 20, 2023	✓
	Requested effective date for tariff changes for EDAM agreements and onboarding provisions	Dec 21, 2023	✓
	Draft Compliance Filing Posting	Feb 05, 2024	✓
	Compliance Filing; accepted Apr 30, 2024	Feb 16, 2024	✓
	Filing for EDAM access charge	Apr 12, 2024	✓
	Receive FERC order accepting EDAM Access Charge Design (EDAM Tariff fully approved)	Jun 11, 2024	✓
Settlements Config Guides	Post Draft Config Guides - First set of charge codes	Jan 16, 2024	✓
	Post Draft Config Guides - Second set of charge codes	Mar 26, 2024	✓
	Post Draft Config Guides - Third set of charge codes & updates to First & Second sets	Aug 26, 2024	✓
	Post Updates to Tech Docs (Tiers 1-3)	Jan 30, 2025	✓
	<i>1st Config Output File w/ Updated Tech Doc posting & Charge Code Matrix</i>	Apr 29, 2025	
Tech Spec	Publish Technical Specifications – RTSI	Dec 5, 2023	✓
	Publish Technical Specifications – MF	Jan 4, 2024	✓
	Publish Technical Specifications – MF Revision	Mar 10, 2024	✓
	Publish Technical Specifications – SIBR	Mar 21, 2024	✓
	Publish Technical Specifications – OASIS	Apr 12, 2024	✓
	Publish Technical Specifications – CMRI	Apr 12, 2024	✓
	Publish Technical Specifications – PLC	Jul 19, 2024	✓
	Publish Technical Specifications – ALFS	NA	
	Publish Technical Specifications – OMS	NA	
BPMs	Business Practice Summary	Jul 10, 2024	✓
	Post Draft BPM – Energy Imbalance Market (EIM)		
	Post Draft BPM – Market Instruments		
	Post Draft BPM – Market Operations	Jul 01, 2025	
	Post Draft BPM – Settlements and Billing		
	Post Draft BPM – EDAM		
Market Sim	Post Draft BPM – Definitions and Acronyms		
	Fall 2025 Release Market Simulation Plan	Jan 24, 2024	✓
	Market Sim Scenarios	Jan 29, 2024	✓
	Market Sim Scenarios v1.1	Feb 15, 2024	✓
Parallel Operations	EDAM Onboarding Market Sim	Sep 02, 2025 – Jan 16, 2026	
	Draft Parallel Operations Plan	Apr 15, 2024	✓
Production	EDAM Onboarding (Financially Binding) & Activation (PacifiCorp)	May 01, 2026	
	EDAM Onboarding – PGE	Oct 01, 2026	
	EDAM Onboarding – BANC	2027	
	EDAM Onboarding – LADWP	2027	

Spring 2026 – EDAM ISO BAA Participation Rules

Project Information	Details/Date
Policy Scope	<p>The purpose of this initiative was to define the unique aspects of how the ISO Balancing Authority Area (BAA) will participate in the Extended Day-Ahead Market (EDAM). The policy addressed how to settle Transfer Resources and Transfer Revenue, the criteria to set ISO BAA's net EDAM Export Transfer constraint, how to allocate ISO BAA resource sufficiency evaluation (RSE) failure surcharges and revenues, and the process for calculating historical revenue recovery amounts.</p> <p>Previously labeled EDAM ISO BAA participation Rules Track A1, or Track A. Going forward label to be simply <i>EDAM ISO BAA Participation Rules</i></p>
Tariff Changes	<p>FERC Filing ER24-379 – Sections 11, 26, and 27</p> <p>Approved Tariff Changes:</p> <ul style="list-style-type: none"> ➤ To allow for the settlement of all Transfer System Resources in the CAISO BA. ➤ To allow for the settlement of EDAM Transfer revenue allocated to the CAISO BA, inclusive of EDAM Transfer revenue and EIM Transfer revenue ➤ To allow the CAISO BA to enable the Net EDAM Export Transfer Constraint, a voluntary, and optional, mechanism that each EDAM Balancing Authority may enable to preserve sufficient supply to meet its projected needs, while managing reliability based on conditions and circumstances anticipated within its balancing area. ➤ To allow an interim solution for the CAISO to distribute all CAISO BA revenues and surcharges for the EDAM RSE Failure Surcharge. <p>Unapproved Tariff Changes (filed 11/14, pending FERC Order):</p> <ul style="list-style-type: none"> ➤ To set forth the calculations for the EDAM Historical Revenue Recovery amounts for transmission owners in the CAISO BA – referenced as “EDAM Access Charge for CAISO BAA”
High Level Project Scope	Based on current approved Tariff changes
Impacted Systems	Internal ISO Systems, Settlement configuration changes

Spring 2026 – EDAM ISO BAA Participation Rules

Milestone Type	Milestone Name	Dates	Status
Policy	Track A1 Final Proposal	Aug 31, 2023	✓
Board Approval	Board approval	Sep 21, 2023	✓
Tariff	FERC Filing (CAISO BAA Participation in EDAM ER24-379)	Nov 13, 2023	✓
	FERC Order (DAME/EDAM in ER23-2686): <i>didn't accept EDAM Access Charge</i>	Dec 20, 2023	✓
	FERC Order (CAISO BA Participation in EDAM ER24-379): <i>acceptance in part, mooted</i> EDAM Access Charge for CAISO BAA	Mar 7, 2024	✓
	FERC Filing (EDAM Access Charge ER24-1746)	Apr 12, 2024	✓
	FERC Order (EDAM Access Charge ER24-1746): <i>acceptance</i>	Jun 11, 2024	✓
	<u>EDAM Access Charge for CAISO BAA</u>		✓
	Initial Draft Tariff Language	Sep 30, 2024	✓
	Draft Tariff Language Stakeholder Meeting	Oct 7, 2024	✓
	Final Draft Tariff Language: <i>non-substantive, clarifying edits</i>	Nov 7, 2024	✓
	FERC Filing	Nov 14, 2024	✓
	FERC acceptance of ER25-437	Feb 20, 2025	✓
External BRS	Publish External BRS	Jun 18, 2024	✓
	Publish External BRS v1.2: <i>Clarifications, corrections, adding market sim requirements</i>	Sep 17, 2024	✓
	Publish External BRS v1.3: <i>EDAM Access Charge for CAISO BAA rules</i>	Dec 23, 2024	✓
	Publish External BRS v1.4: <i>Addition of calculation example & updates to cross-references to EDAM Implementation</i>	Jan 29, 2025	✓
Settlement Config Guides	Post Draft Config Guides - second set	Mar 26, 2024	✓
	Post Draft Config Guides - third set: <i>includes anticipated EDAM Access Charge for CAISO BAA logic</i>	Aug 23, 2024	✓
	Post Draft Config Guides - <i>updates to EDAM Access Charge for CAISO BAA tariff and BRS</i>	Jan 30, 2025	✓
	<i>1st Config Output File w/ Updated Tech Doc posting & Charge Code Matrix</i>	Apr 29, 2025	
Tech Spec	Part of EDAM framework (if applicable)		
BPMS	Post Draft BPMS: Energy Imbalance Market (EIM), EDAM, Market Instruments, Market Operations, Settlements and Billing, Transmission Planning Process	Jul 01, 2025	
External Training	Pre-Market Sim training	Aug 20, 2025	
	Pre-Go Live training	Apr 22, 2026	
Market Sim	Spring 2026 Release Market Simulation Plan v1.1	Jan 22, 2025	✓
	Market Sim Scenarios	Apr 2025	
	EDAM Market Sim	Sep 01, 2025 – Jan 16, 2026	
Production	EDAM Onboarding (Financially Binding) & Activation	May 01, 2026	

Spring 2026 – WEIM BHE Montana & WEIM Black Hills

Project Info	Details/Date
Application Software Changes	System modifications as needed to accommodate any unique Berkshire Hathaway Energy Montana needs to support their WEIM onboarding.
BPM Changes	WEIM BPM will be updated if needed to reflect changes identified during the onboarding and as required to reflect the unique processes of Berkshire Hathaway Energy Montana.
Market Simulation	December 2025 thru January 2026
Parallel Operations	February 2026 thru March 2026

Milestone Type	Milestone Name	Dates
Market Sim	Market Sim Window	Dec 2025 thru Jan 2026
Parallel Operations	Parallel Operations	Feb 2026 thru Mar 2026
Tariff	File Implementation Agreement FERC acceptance of Implementation Agreement File Readiness Certification	✓ Mar 27, 2024 ✓ May 17, 2024 Mar 2026
Production	Activation	May 2026

Future Releases

2025 – WEIM Fab Enhancements

Business Opportunity/Problem Statement:

What:	<p>WEIM FAB Enhancements consist of three enhancements and one improvement. This project aims to improve RTM robustness, minimize Market Isolations, modernize tools for Support Control Center, provide accurate, accessible, and clear information to ensure customer preparedness and to deepen understanding about the reliability needs of the grid.”</p> <p>WEIM Fab-Enhancements:</p> <ul style="list-style-type: none">✓ 1) Congestion Management Full Transparency – Implemented June 20242) Hourly Base ETSR Schedule Redundancy (project, RTM payload). Note: This item is being pursued as its own stand alone project.✓ 3) External WEIM Commitment Override (BAAOP UI) – Implemented December 20244) Dynamic ETSR Limits – Safety Net✓ 5) System Net ITC Definitions – Implemented November 2024
Who does this opportunity/problem impact:	WEIM entities, WEIM BA Operators (CAISO included), RTMO
BRS	<p>Version 1.1 available for “Dynamic ETSR Limits – Safety Net” and BRS 1.1 comments period was open thru 01/16/25:</p> <p>Modify BRQ 040, add BRQs 041 & 042</p>

2025 – WEIM Fab Enhancements: Dynamic ETSR Limits Safety Net

Project Information	Details
High Level Business Problem or Need	<ul style="list-style-type: none">The Dynamic ETSR Limits Safety Net seeks to resolve a known reliability issue for numerous WEIMs.This enhancement is currently slated for 2025. Timeline updates to be provided in future meetings.
High Level Project Scope	<ul style="list-style-type: none">This enhancement seeks to define and introduce a safety net in the event the Dynamic Limits Interface (DLI) has an issue with send/receive payload or null values in RTM.CAISO is actively scoping this enhancement to ensure WEIM alignment prior to proposing an agreed upon solution. This item shall be more thoroughly disclosed in future WEIM meetings.
BPM Changes	TBD
Tariff Changes	N/A
Impacted Systems	RTM – BAAOP
BRS	<p>Version 1.1 available for “Dynamic ETSR Limits – Safety Net” and BRS 1.1 comments period was open thru 01/16/25:</p> <p>Modify BRQ 040, add BRQs 041 & 042</p>

Enable Non-Generating Resources to Participate in Inter-SC Trade

Information	Details
Source	2024 Annual Policy Initiatives Roadmap Process
Category	Storage
Submission	Enable non-generating resources to participate in inter-SC trade
Summary	Allow non-generating resources to participate in inter-SC trade and offer physical energy product in order to continue effective integration of higher capacities of energy storage and meet RA and GHG compliance goals.
Description	In the current market design, standalone battery storage projects are not available to be selected in the "location" dropdown list for transactive physicals in IST. To continue effective integration of higher capacities of energy storage and meet RA and GHG compliance goals, the ISO should allow NGRs to participate in inter-SC trade and offer physical energy product. Enabling battery storage to participate in physical IST would increase market efficiency and reduce uncertainty in the preschedule window, and would allow battery storage to offer supplemental capacity or replacement energy through IST.
Presentation	May 15, 2024
System Impacts	Scheduling Infrastructure & Business Rules (SIBR)

Milestone Type	Milestone Name	Dates	Status
BPM	Publish PRR: Market Instruments		
SIBR Release Notes	Publish SIBR Release Notes		
SIBR Rules	Publish Inter-SC Trades Rules		
SIBR SC User Guide	Update to allow NGR for Physical Trades		
SIBR Inter-SC Trades (IST) Tutorial	Update to allow NGR for Physical Trades		
Market Simulation	Market Simulation		
Production	Activation		

**This effort is separate from the "Inter-SC Trades in Regional Markets" policy initiative*



California ISO

Settlement Upgrade Project

Jan 21, 2024

Settlement Upgrade Project – Overview

- The current settlement system, implemented in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation, is nearing its end of life. The CAISO is upgrading existing settlement applications to approved architectural and information security standards.
- Benefits for our customers include:
 - Improved business efficiency
 - Better gathering and analysis for data and front-end improvements for customers interacting with CAISO Settlement Systems
 - Increased transparency for some calculations
 - Accommodating data processing increases resulting from new market products and an increase in market participants
 - Ability to perform complex settlement calculations

Settlement Upgrade Project – Targeted Goals

- The ISO will work closely with our market participants to ensure seamless transition from e-terra 2.5 to 3.0 configuration output file.
- The ISO will leverage the Settlement User Group and Technical User Group for participants to ask more technical questions.
- The ISO will provide an environment with production-like data allowing customers to validate changes.
- The system will provide settlement outputs in various file formats, allowing all customers to access and use the data in day-to-day operations.
- The ISO will strive to make formulas and inputs transparent to enable market participants to monitor and/or validate settlement results.
- The ISO will provide market participants with an extended market simulation and timely support to the market participants and their vendors during the testing phase.

Settlement Upgrade Project – Targeted Goals (continued)

- From a vendor perspective:
- ISO will provide third party vendors with support during the transition period.
- ISO will provide an extended market simulation and/or parallel statements and invoices during the transition period so vendors can resolve defects on their systems.
- ISO will provide open communications to resolve settlement differences through a customer forum.

Settlement Upgrade Project – Status

- The ISO continues reviewing the overall schedule for implementation.
- In order to allow customers to have the time to focus on the Settlement Upgrade Project, as well as EDAM and DAME, a new schedule will be developed.
- The implementation will be after EDAM and DAME implementation.
- ISO will provide quarterly updates for the implementation for now and will ultimately increase the frequency of updates and the depth of information provided accordingly as we proceed
- The updates will be provided in the Release User Group and Settlement User Group
- To help ensure alignment of our communications between these two (2) forums, this same update was provided in the next Settlement User Group call
- The next Settlement Upgrade Project update will be in April 2025
- For comments or questions, please submit CIDI cases

Stay Informed

Ways to participate in releases

- **Next Release User Group Forum is April 1, 2025**
- Visit the Release Planning page
 - <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>
- Attend meetings
 - Release Users Group (RUG) bi-weekly meetings
 - Initiative status updates
 - System change updates on releases
 - Market Simulation calls
 - Visit the ISO calendar at www.caiso.com for meeting dates and times and add events to your calendar
 - Typically held on Mondays and Thursdays
 - Market Performance and Planning Forum
 - Quarterly review of market performance topics
 - High level discussion of release planning, implementation and new market enhancements

Contact

- tvo@caiso.com
- release@caiso.com
- CIDI
 - Functional Environment (Area)
 - “Release”

BPM change management: Definitions and Acronyms

BPM Declassified as BPM

- The California ISO announces the declassification of the Definitions and Acronyms Business Practice Manual (BPM) with updated link on how to find ISO definitions and acronyms.

The Definitions and Acronyms BPM previously served as a consolidated reference for all definitions and acronyms in the ISO Tariff and other BPMs.

A link to the ISO glossary is now available in the [BPM Library](#), where you can find the most current definitions and acronyms formerly included in the Definitions and Acronyms BPM. Definitions and acronyms will also remain accessible within the individual BPMs.

For more information about the BPM Change Management process, please visit the [BPM webpage](#) on the ISO website.

- [Glossary | California ISO](#)

Next Forum

Upcoming MPPF meeting

The next MPPF is tentatively scheduled for June 26, 2025.

<https://www.caiso.com/meetings-events/topics/market-performance-and-planning-forum>



2025

Market Performance and Planning Meetings

Note: dates subject to change; for the latest information please visit the Calendar on www.caiso.com

January						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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February						
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May						
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June						
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July						
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August						
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September						
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October						
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November						
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December						
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

 Meeting

 Follow us on Twitter @California_ISO for our latest updates

For reference

Visit user group webpage for more information:

<https://www.caiso.com/meetings-events/topics/market-performance-and-planning-forum>

If you have any questions, please contact

isostakeholderaffairs@caiso.com

ENERGY matters

The California ISO's blog highlights its most recent news releases, and includes information about ISO issues, reports, and initiatives.



Energy Matters blog provides timely insights into ISO grid and market operations as well as other industry-related news.

<https://www.caiso.com/about/news/energy-matters-blog>



Story | Operations

A small distributed energy resources project that could have a big impact

By ISO Staff

03/10/2025



RC WEST

Story | Transmission

Spring is the season of managing planned maintenance for RC West

By Raja Thappetaobula

03/05/2025



Story | Leadership

Another year of new challenges and opportunities at CAISO

By Severin Borenstein

02/27/2025

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Ticker	Chart	News
18:56	B	140
17:03	B	200
14:25	S	6
13:29		100

New Stakeholder Initiative - EDAM Congestion Revenue Allocation

CAISO will host a hybrid stakeholder workshop on the new Extended Day-Ahead Market (EDAM) Congestion Revenue Allocation Initiative, Mar. 24, 2025, from 10:00 am - 5:00 pm. Attendees may choose to participate virtually or in person at the ISO.

[Register here](#)