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Item 11: Commercial Markets Update

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Vice President, Commercial Operations

Board of Directors Meeting

April 20-21, 2026

Purpose

Provide an update on key market design and credit initiatives and identify noteworthy market and credit outcomes since the last meeting.

For information only

No action is requested; for discussion only.

Key Takeaways

- Real-Time Co-optimization plus Batteries (RTC+B) is showing benefits since implementation.
- ERCOT will continue work with stakeholders on the remaining RTC items.
- Winter Storm Fern saw an increase in collateral requirements. One trade-only Counter-Party defaulted for failing to post the required collateral, but no losses were incurred.

Initial Market Observations Post-RTC

- Initial market observations show some likely shifts in behavior and results, specifically regarding Ancillary Services:
  - AS Awards are frequently reshuffled economically across resources between day-ahead and real-time, reflecting the most valuable use of each MW of available capacity.
  - New Real-Time Ancillary Service prices reflect both reliability needs as well as the operational requirements of each service.
  - The supply mix in each of the Ancillary Services has changed, with Energy Storage Resources increasing their share of ECRS and decreasing their share of Non-Spin.
  - Market Participants have made use of new Day-Ahead Ancillary Service-Only Offers.
- Except during Winter Storm Fern, Reliability Unit Commitment (RUC) activity continues to decline, with no RUC commitments in February 2026.
- Overall, the market meets reliability needs and has reduced the frequency of both active and binding transmission constraints.

Key Takeaway:

Since implementation, RTC+B has been successful in achieving its intended outcomes.

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Inventory of Remaining RTC+B Items

Item	Description
1	ASDC review:
1a	General performance of curves and impacts on prices
1b	Evaluating the impacts of the ASDC floors
2	Evaluating the impacts of the Ancillary Service proxy offer floor values, including how frequently the proxy block comes into play
3	Analyzing the RUC Ancillary Service deployment factors
4	Analyzing the Real-Time Ancillary Service duration parameters
5	Impacts of capping System Lambda and evaluating alternatives to what is including in NPRR1290
6	Discussion regarding the $2,000/MWh offer caps for Real-Time, either exclusively for ESRs or more generally
7	Evaluating if there are any concerns with Ancillary Service deliverability
8	Investigate the impact of not having an indifference payment for the post-RTC, pre-1214 RDPA process
9	Evaluating the transmission constraint shadow price caps and how they interact with the ASDCs and PBPP
10	Updates to the Off-Line Non-Spin Deployment and Recall procedure
11	Discussions with stakeholders to identify potential gaps in reporting post-RTC+B implementation, specifically related to Real-Time Ancillary Service (e.g., aggregate awards or additional elements for extracts)

Key Takeaways:

- ERCOT will work with stakeholders on the inventory of remaining RTC+B items, covering a broad range of topics including ASDC curve performance, Ancillary Service parameters, offer caps, reporting gaps, and related operational procedures.
- TAC has assigned these issues to the relevant Subcommittees and Working Groups.
- At the March TAC meeting, the RTC+B Task Force (RTCBTF) was sunset, having fulfilled its mandate to see RTC+B through implementation and to create a workplan for any remaining discussion topics.

Generation Firming Program

NPRR1328 Establishment of Generation Firming Program

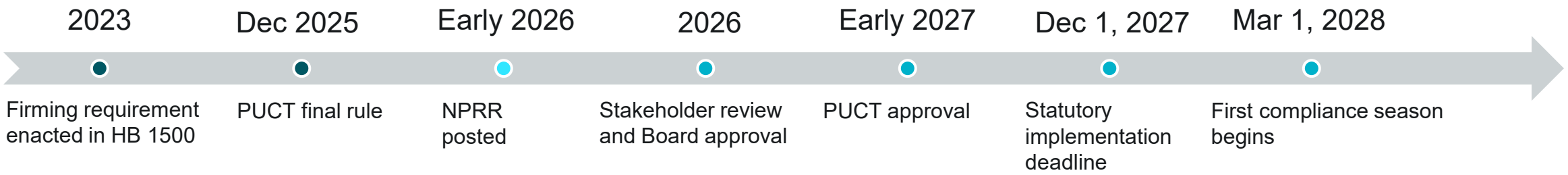
Establishes a program that requires new Generation Resources to operate or be available at or above their historical seasonal capability, either through their own performance or by securing trades, during hours when the Physical Responsive Capability (PRC) falls below 3,000 MW in a baseline period defined by ERCOT.

Institutes penalties for generators that fail to comply and incentives for those that exceed the requirement, funded from the penalty pool. Provides exemptions for planned generation outages, transmission outages, Day-Ahead Market awards and reliability services (Black Start and FFSS).

- **Posted: April 2, 2026**
- **Next Steps: To be introduced at the April 15 PRS meeting**

Applies to: New generators with original Standard Generation Interconnection Agreement (SGIA) signed on/after January 1, 2027 and in operation for 1 year before a compliance season. Excludes Energy Storage Resources (ESRs).

Any dispatchable generator, ESR or Load Resource may provide firming service.



Key Takeaway: On track for stakeholder review and Board approval in 2026 to allow time for system implementation, given the December 1, 2027 statutory deadline. This will satisfy a related ERCOT OKR.

Market credit conditions are stable, and credit processes worked as expected throughout Winter Storm Fern

- ERCOT successfully implemented NPRR1277 on March 2, 2026. This NPRR corrects instances of over collateralization and unreasonably high volatility relative to underlying Counter-Party exposures under certain circumstances.
- Stress testing framework: ERCOT staff is working on engaging an independent consultant to review the staff prepared outline of the stress testing framework and provide feedback.

Notable Winter Storm Fern Credit Items

- Total Potential Exposure (TPE) reached a high of $4.2 billion in January during winter storm Fern.
- Real-Time forward adjustment factor (RFAF) peaked at 8.5x as futures prices rose in anticipation of the storm. The RFAF is a risk-adjustment tool that ensures our collateral levels stay aligned with current market expectations by factoring in forward electricity prices.
- One trade-only Counter-Party defaulted heading into Winter Storm Fern by failing to meet collateral requirements. No losses were incurred.

Key takeaways:

- NPRR1277, Revisions to EAL formula, was successfully implemented on March 2, 2026.
- ERCOT staff is working to further develop a credit stress testing methodology.
- There were no defaults resulting in losses to the market.

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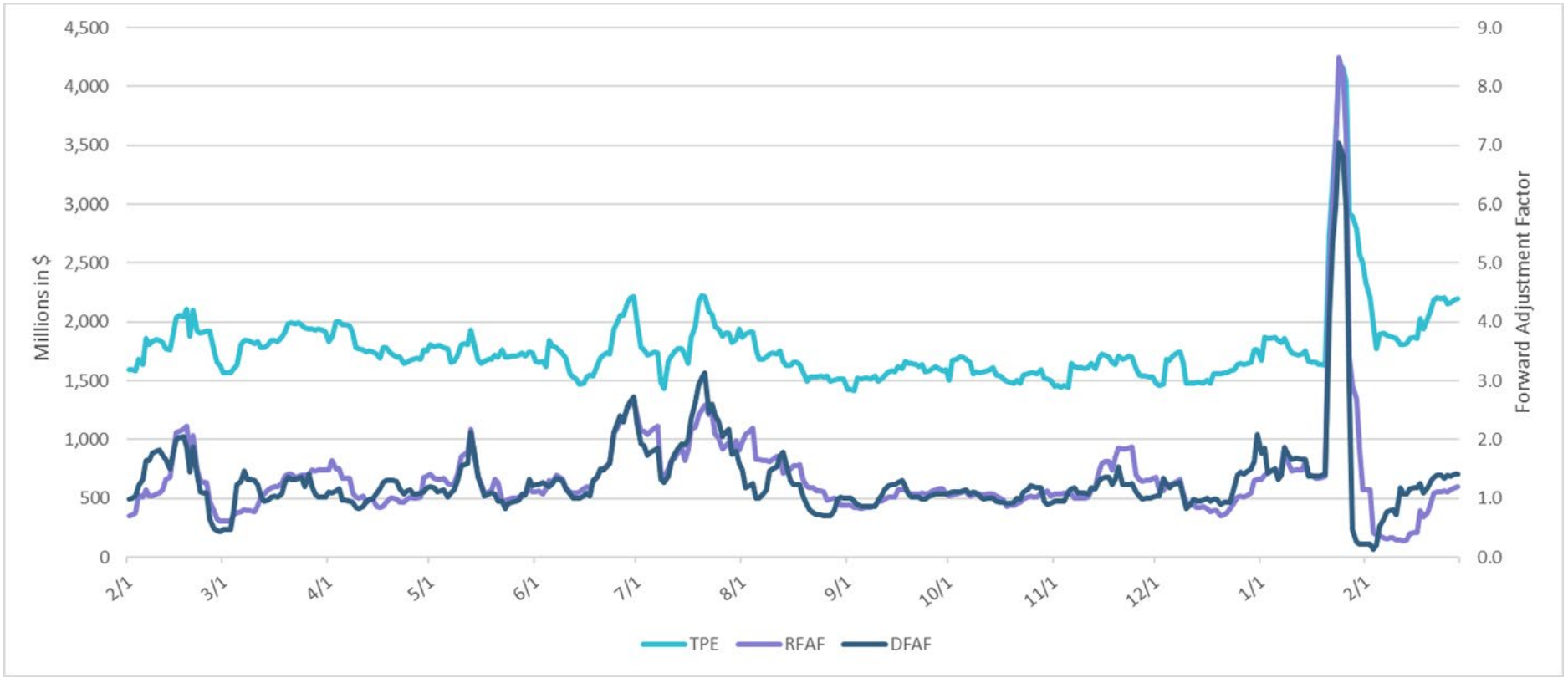
Total Potential Exposure (TPE) and Forward Adjustment Factors increased through the period of Winter Storm Fern



Key Takeaway(s): TPE peaked at $4.2 billion during Winter Storm Fern as forward adjustment factors topped at 8.5x for real-time and 7.0x for day-ahead. TPE immediately dropped past the storm as real-time prices were lower than expected and compared to day-ahead prices.

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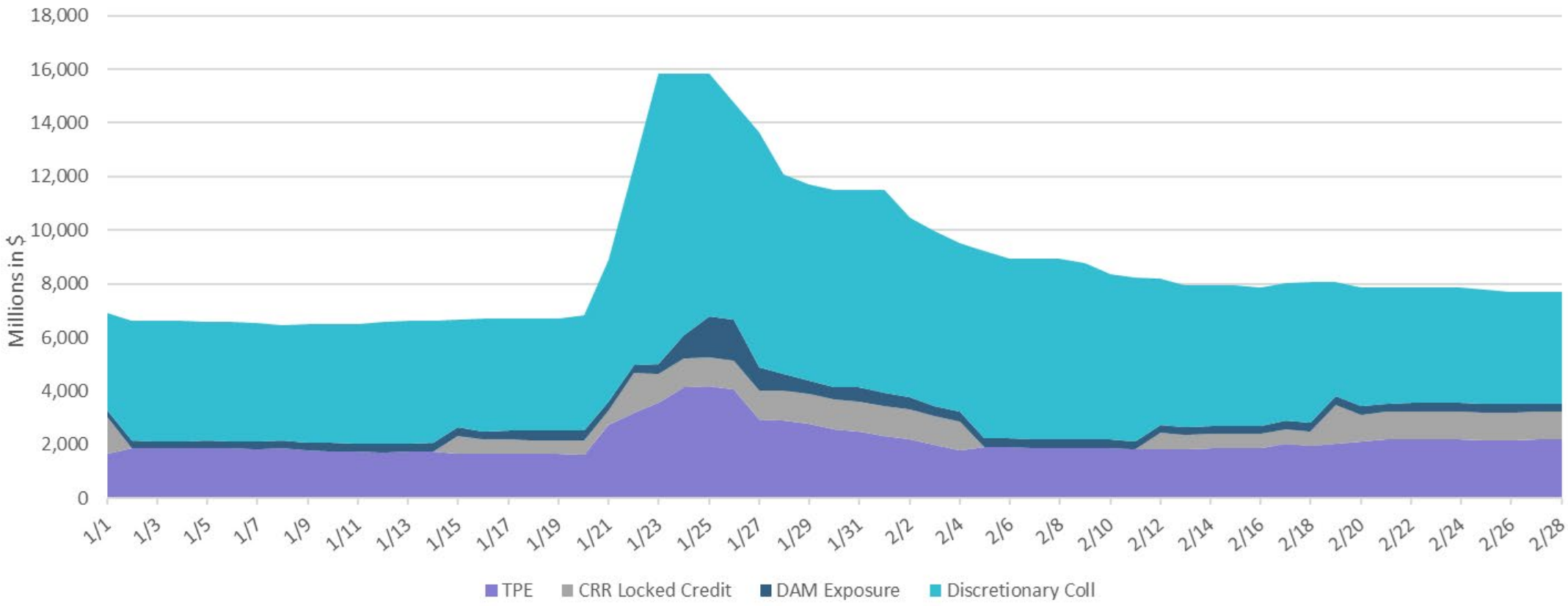
Discretionary collateral peaked ahead of Winter Storm Fern



Key Takeaway(s): Total discretionary collateral reached a high of $10.8 billion heading into Winter Storm Fern as most Counter-Parties shored up their credit limits for the weekend Day-Ahead market. Discretionary collateral is *excess* collateral *voluntarily* posted by market participants in addition to required amounts to cover their TPE and bid exposures in DAM and CRR auctions.

Appendix

RTC+B observations, and other notable market outcomes

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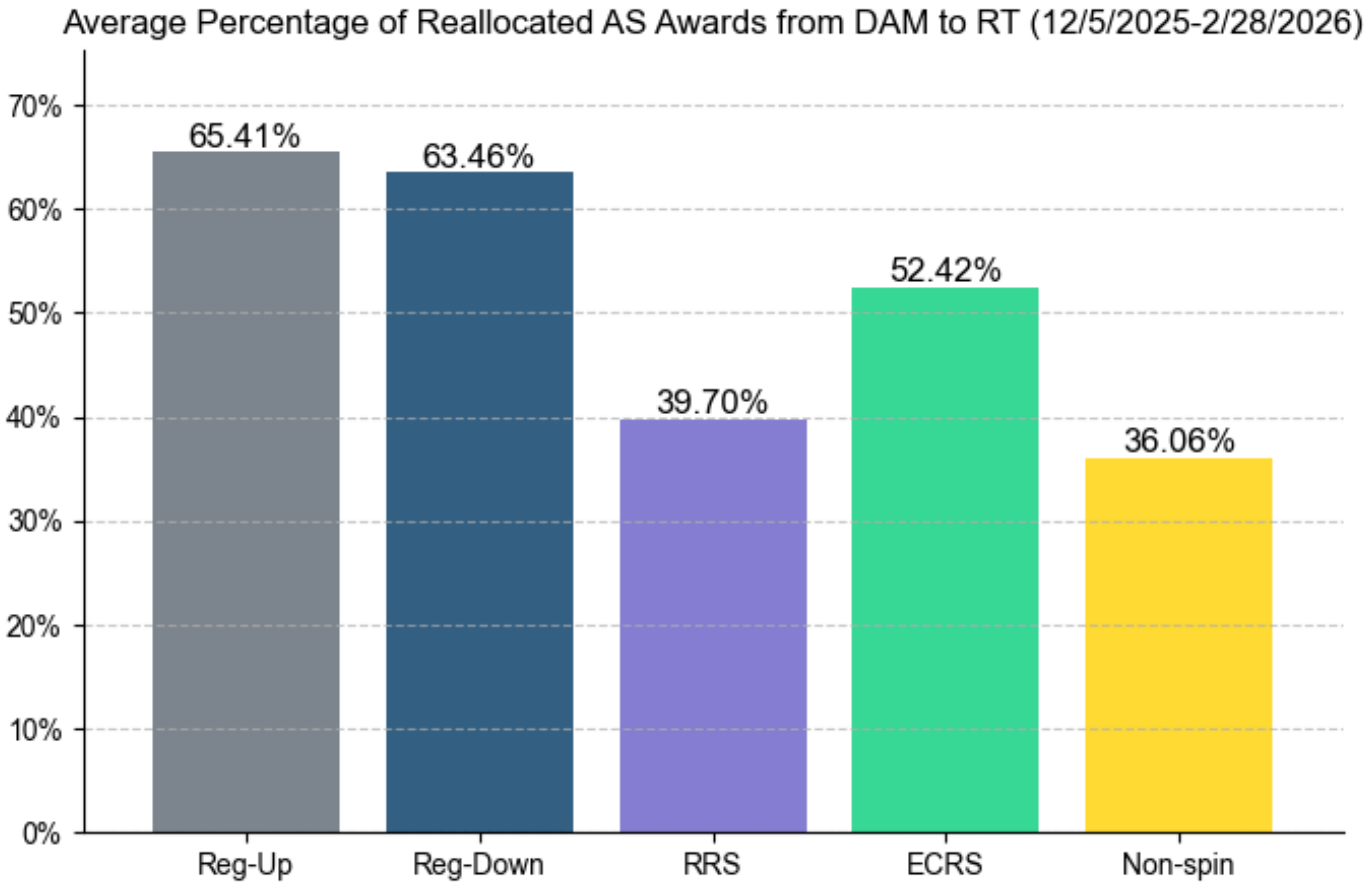
Day-Ahead Market AS awards frequently changed in Real-Time Market



* DAM AS only awards and DAM self arranged AS are excluded from this analysis.

Day-Ahead Market awards frequently changed to different resources in the Real-Time Market, especially for Regulation Up (Reg-Up) and Regulation Down (Reg-Down) services. Similar outcomes, though less frequent, were seen in Responsive Reserve Service (RRS), ERCOT Contingency Reserve Service (ECRS) and Non-Spinning Reserves (Non-Spin).

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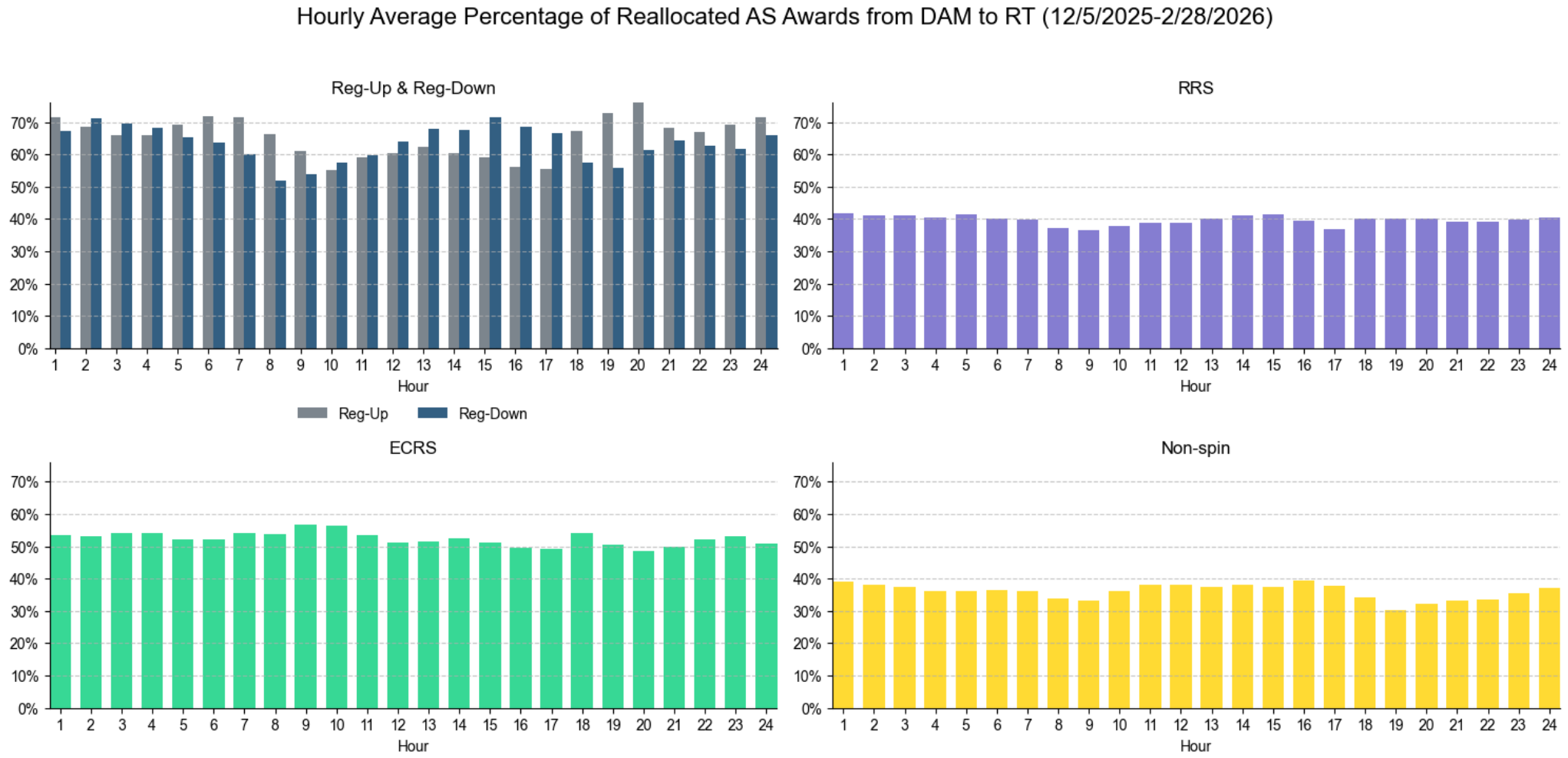
Redispatch between DAM and RTM varies slightly across different hours



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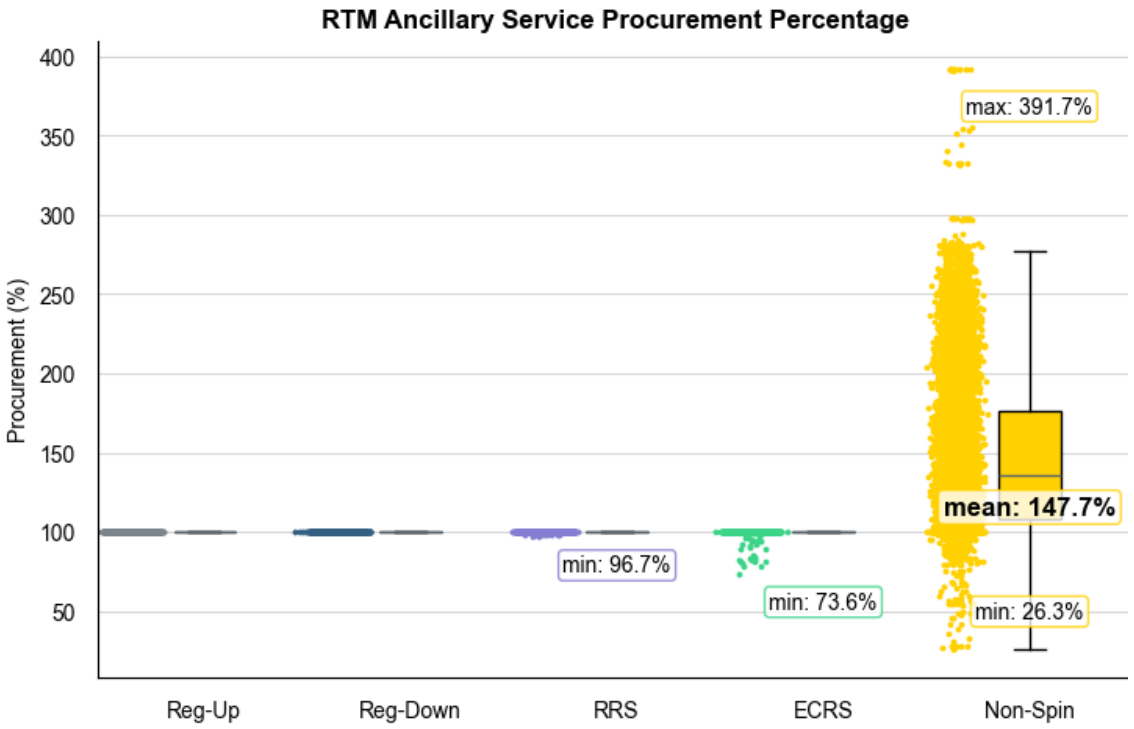
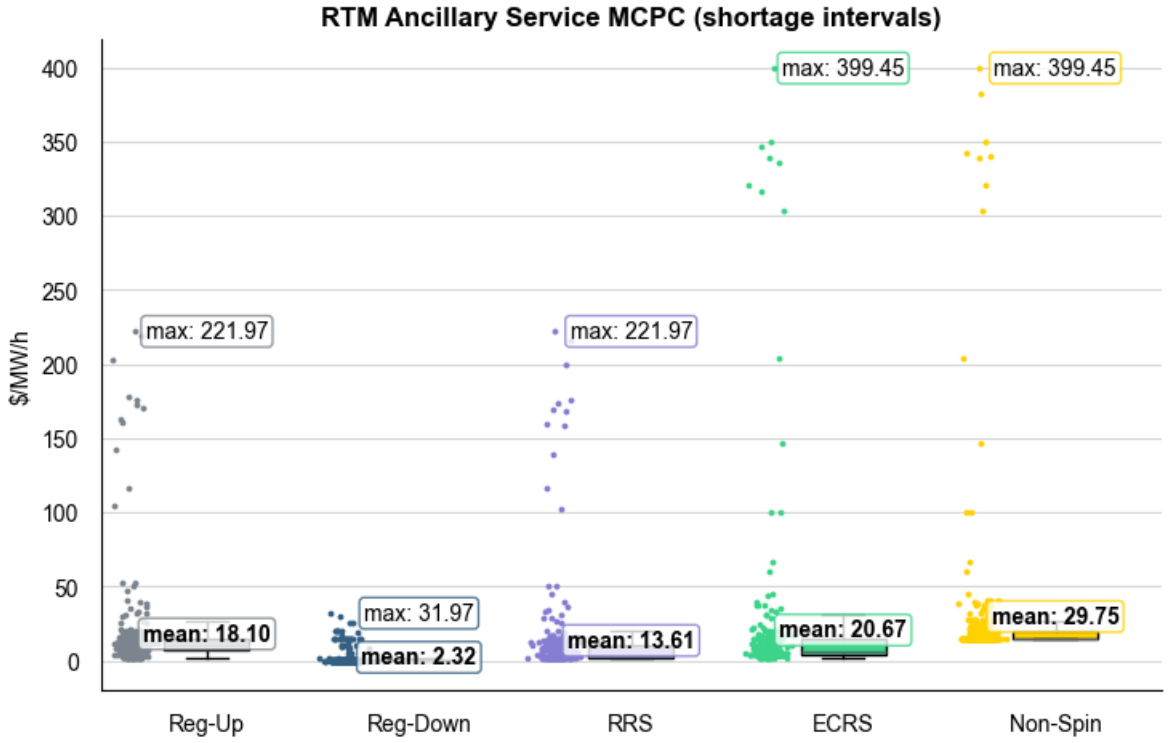
Real-Time Ancillary Service Prices economically reflect reliability needs





Note: A shortage price is defined as the MCPC when the quantity procured of any AS product is less than the AS plan.

When the grid needed energy more urgently than reserves, Real-Time Co-optimization prioritized energy. During these scarcity periods, Market Clearing Prices for Capacity (MCPCs) increased to reflect tight supply. Real-Time Co-optimization can also procure additional Non-Spin, over and above the plan requirement, when it is economic to do so.

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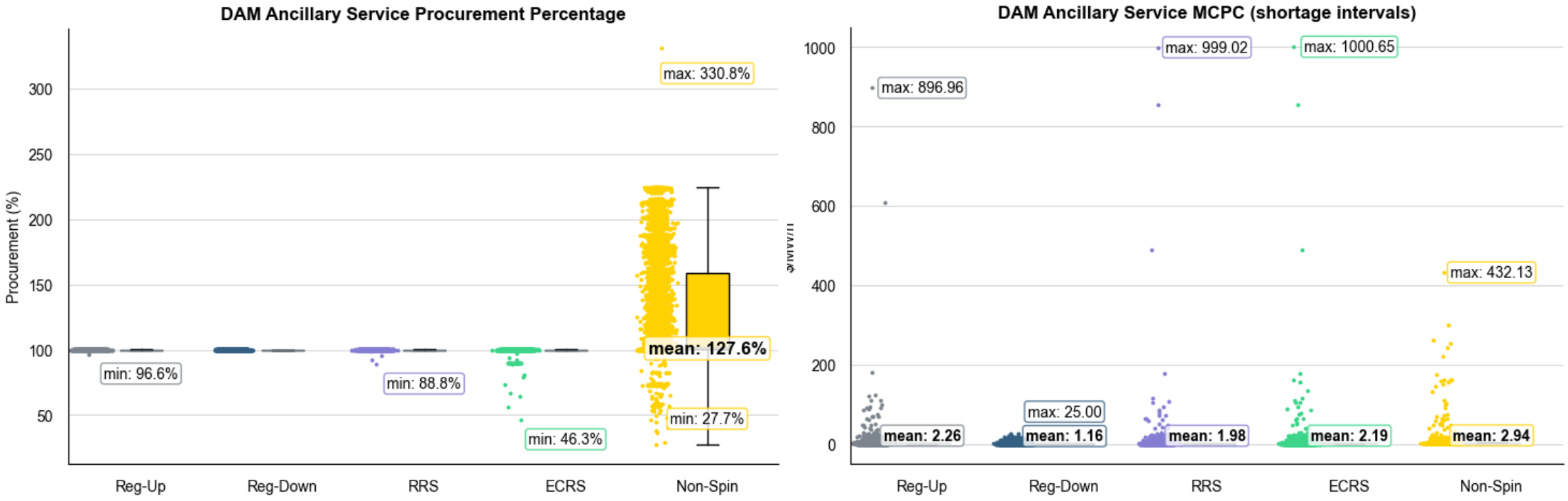
Shortages in the Day-Ahead Market were resolved through redispatch of AS awards in real-time



Shortage interval = AS Procurement < AS Plan for any AS

In the Day-Ahead Market, there were instances of Ancillary Service shortages, as well. Day-ahead shortages in Reg-Up and RRS were mitigated in real-time due to changing system conditions and the ability of Real-Time Co-optimization to economically redispatch Ancillary Services.

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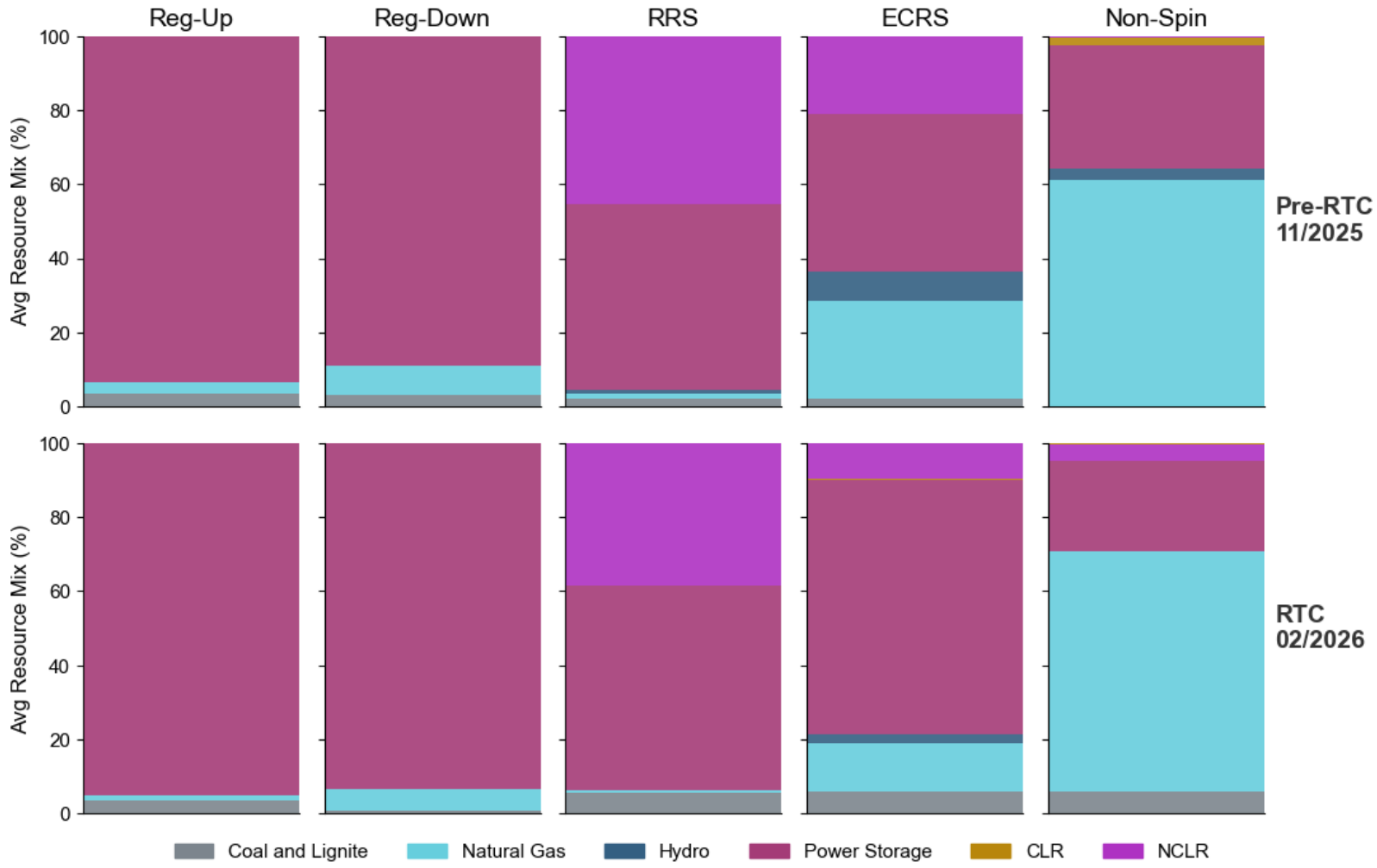
The supply mix in each Ancillary Service has evolved since the introduction of Real-Time Co-optimization



Since RTC+B implementation, Energy Storage Resources (ESRs) have captured a larger share of ECRS, displacing Non-controllable Load Resources (NCLR), Hydro, and Natural Gas.

In contrast, the ESR share in Non-Spin has slightly declined in favor of longer duration resources such as Coal, Natural Gas, and NCLRs.

Note: CLR and NCLR refer to Controllable Load Resources and Non-controllable Load Resources, respectively.

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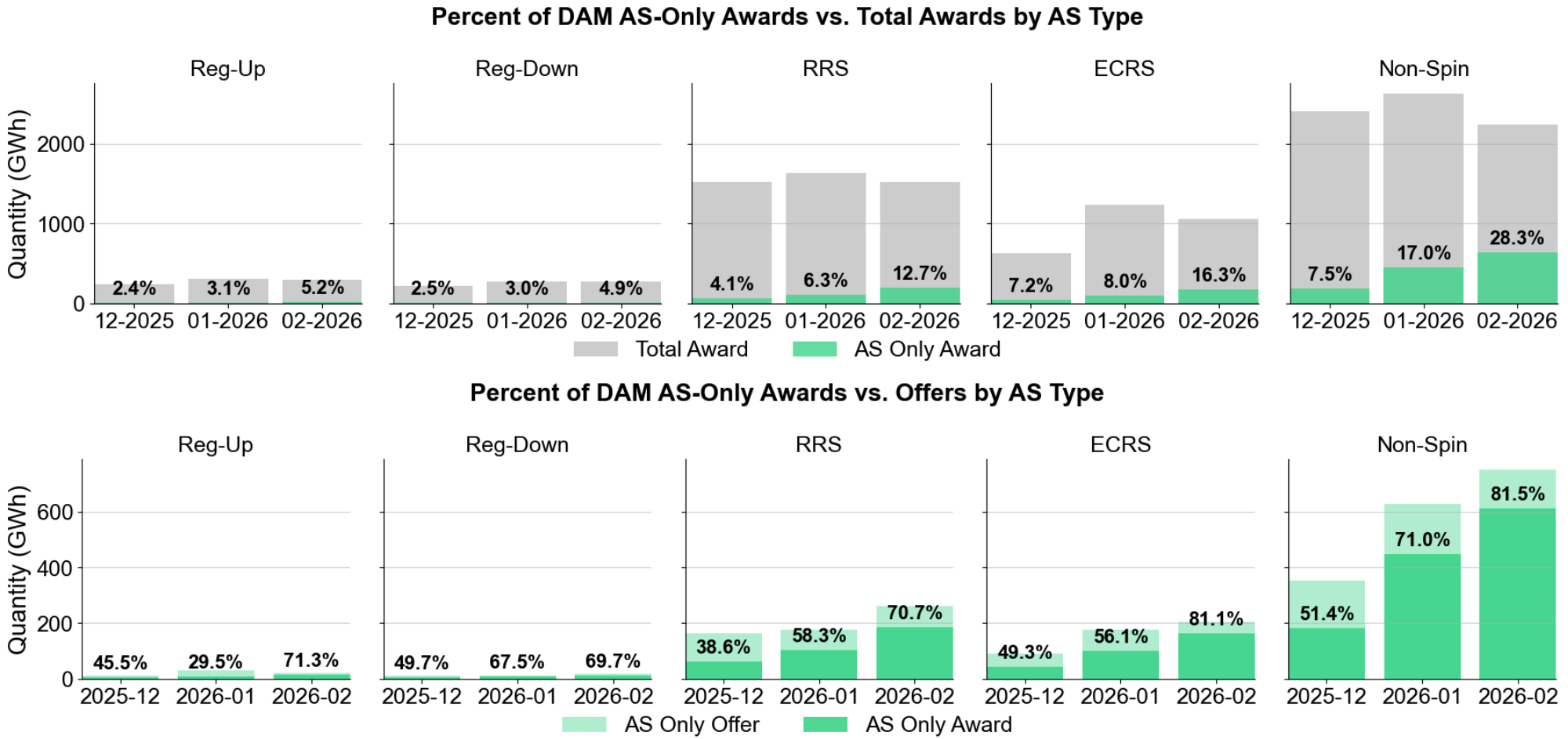
Market Participants are making use of Ancillary Service-Only Offers in the DAM and they are being awarded economically



While still early, some Qualified Scheduling Entities have started to use the new Ancillary Service-Only Offers in the DAM, particularly for Responsive Reserve Service (RRS), ERCOT Contingency Reserve Service (ECRS) and Non-Spinning Reserve Service (Non-Spin).

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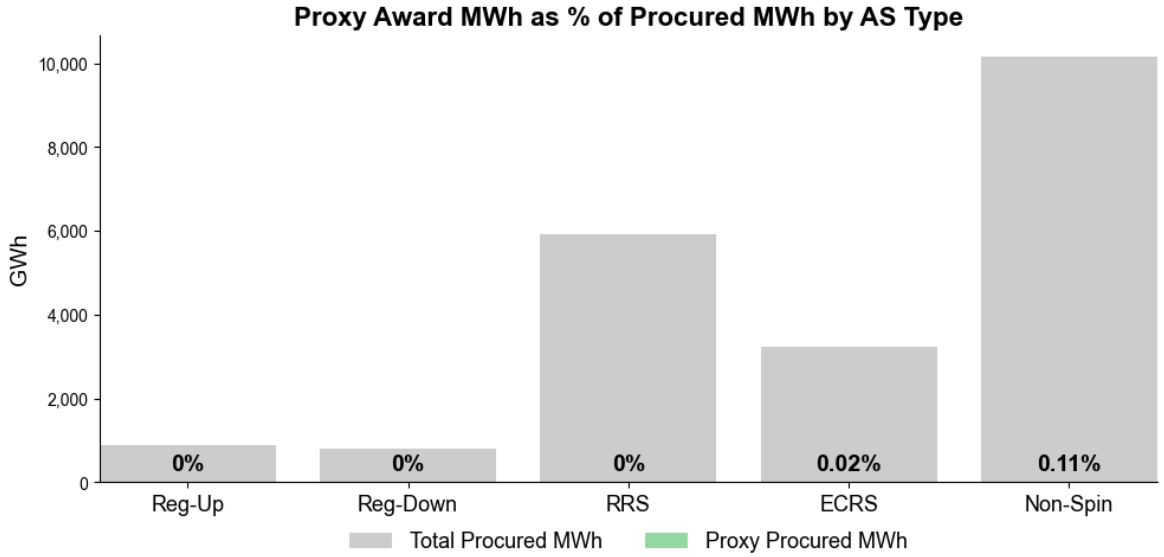
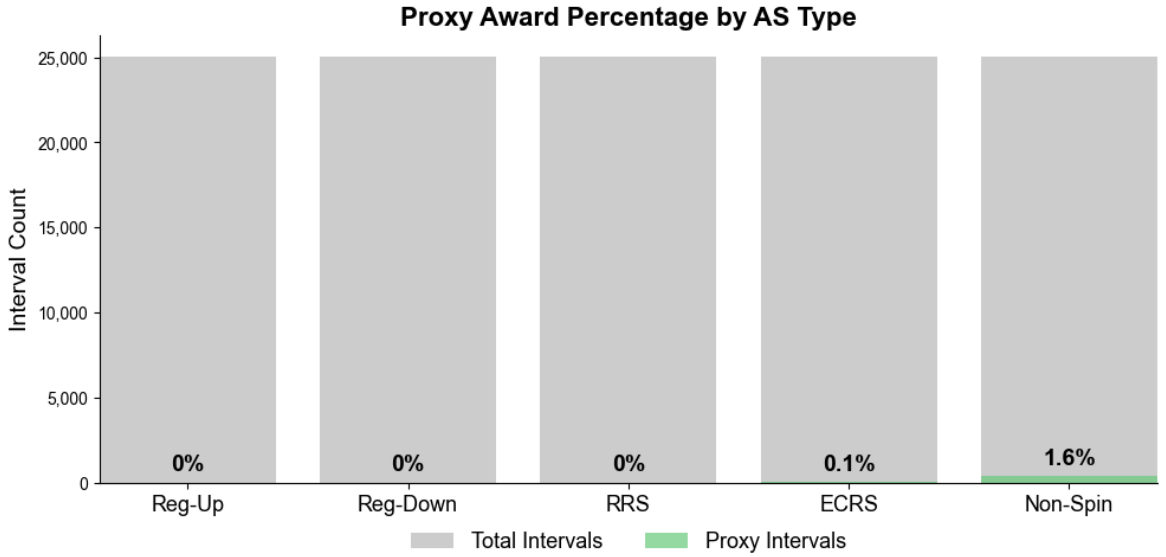
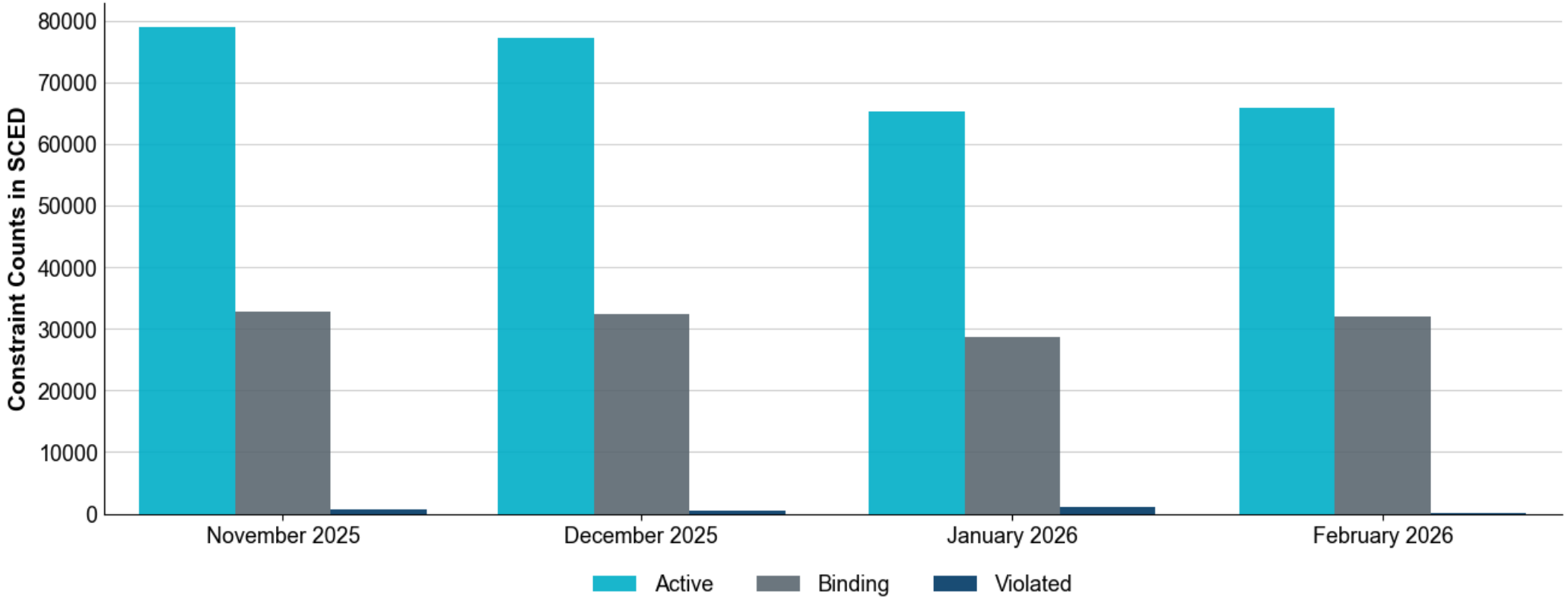
In real-time, Ancillary Service awards to proxy offers have been rare and minimal





Since RTC+B implementation, only a very small fraction of proxy Ancillary Service offers have been awarded, occurring rarely in ECRS and Non-Spin, and in minimal amounts. Proxy offers were just under $15/MW/h for both ECRS and Non-Spin.

The number of active transmission constraints considered in the RTM declined, as did the number of binding constraints



A key benefit of Real-Time Co-optimization is greater flexibility to redispatch Energy and Ancillary Services to resolve transmission constraints. Both December and January showed a decline in the frequency of both active and binding transmission constraints in real-time, when compared to November.

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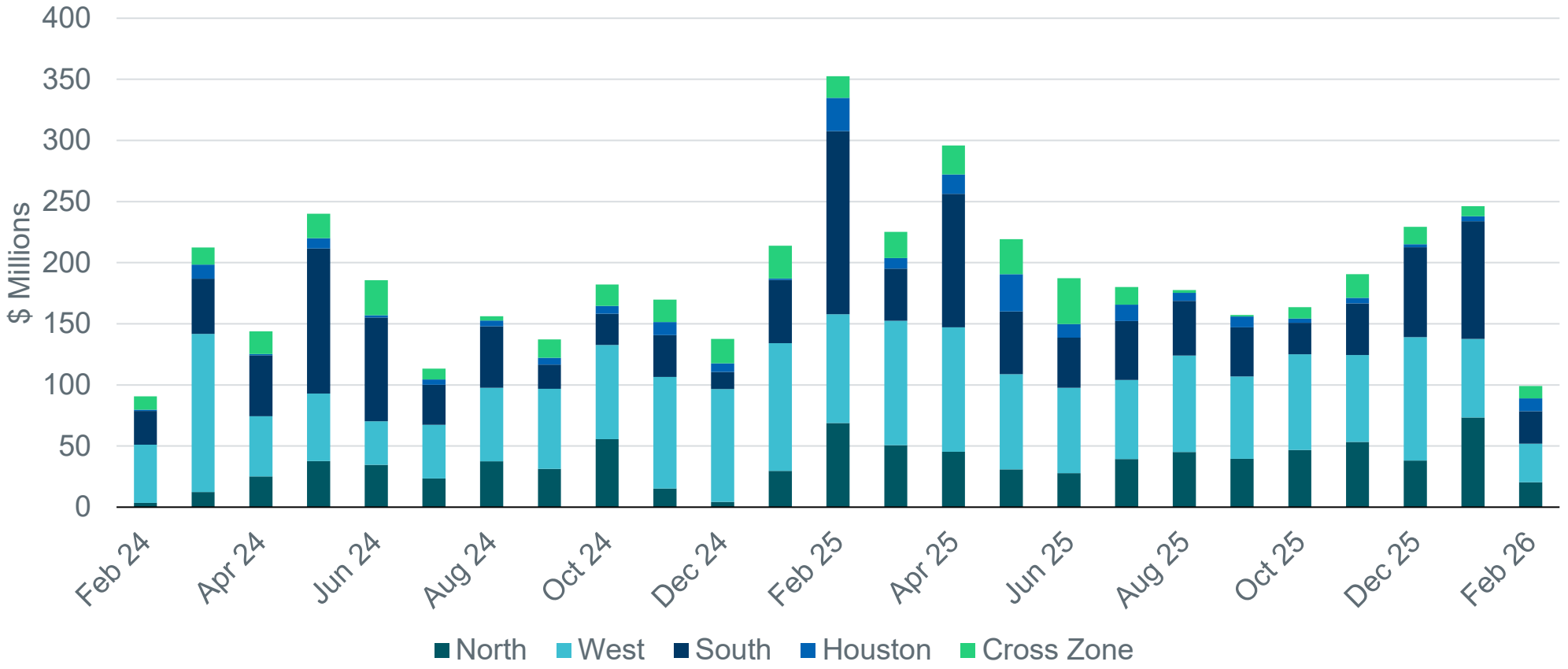
Real-Time congestion rent decreased significantly in February because mild weather lowered demand and sufficient supply reduced overall congestion levels



- Total Real-Time congestion rent decreased significantly in February compared to January of 2026, with the highest congestion rent in the West and South Zones.
  - Congestion rent in the West Zone was driven primarily by the constraint representing the loss of the double circuit 345 kV contingency from Cedar Cayon to Bakersfield overloading the 138 kV transmission line from Hargrove to Twin Buttes.
  - Congestion rent in the South Zone was driven primarily by the constraint representing the loss of Fowlerton to Lobo and Avanzada 345 kV double circuit overloading the line from North Laredo to Lobo.

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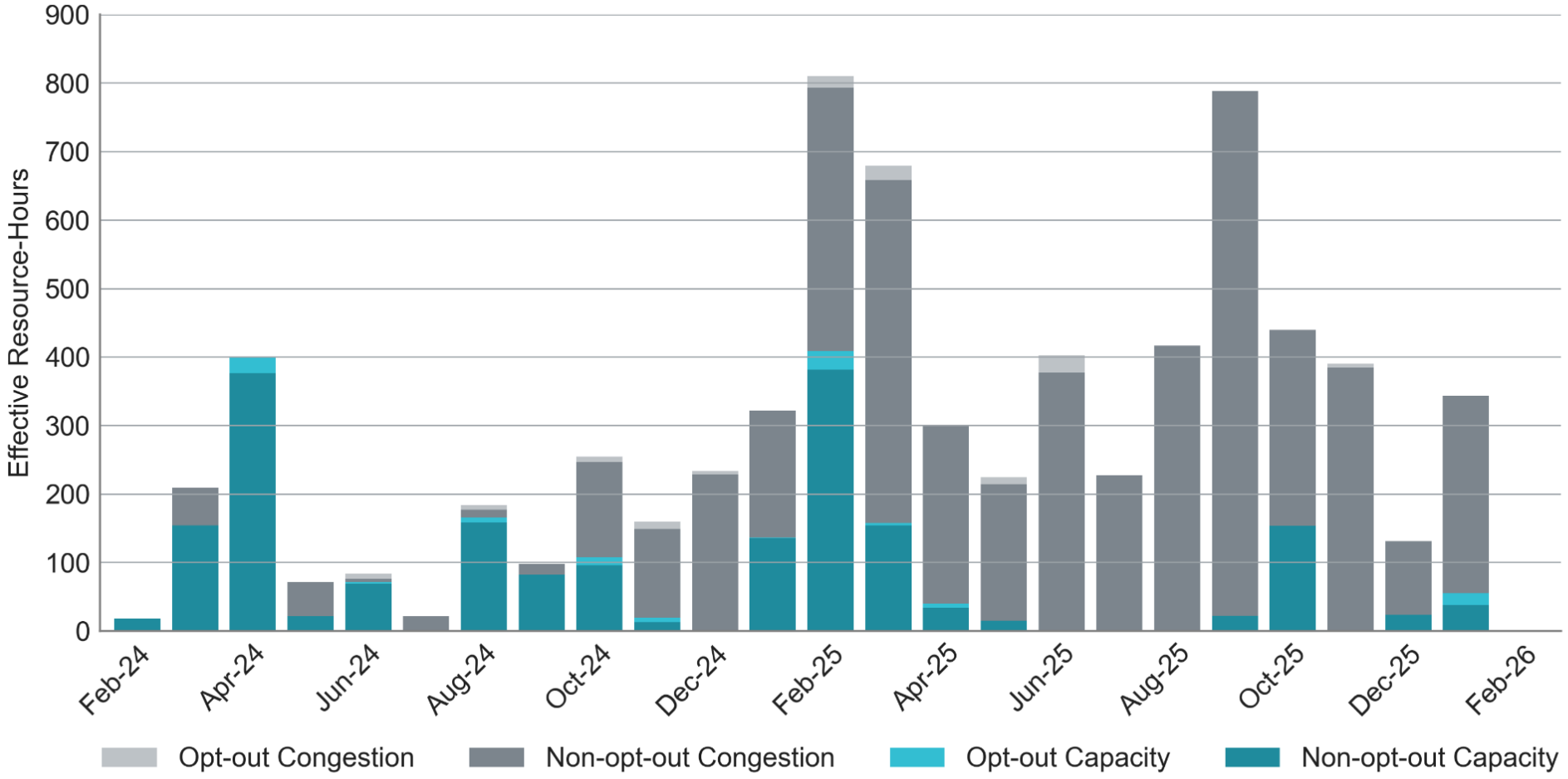
For the first time in more than two years, there were no Reliability Unit Commitments (RUCs) in February



Notes:
1) “Effective Resource-Hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.

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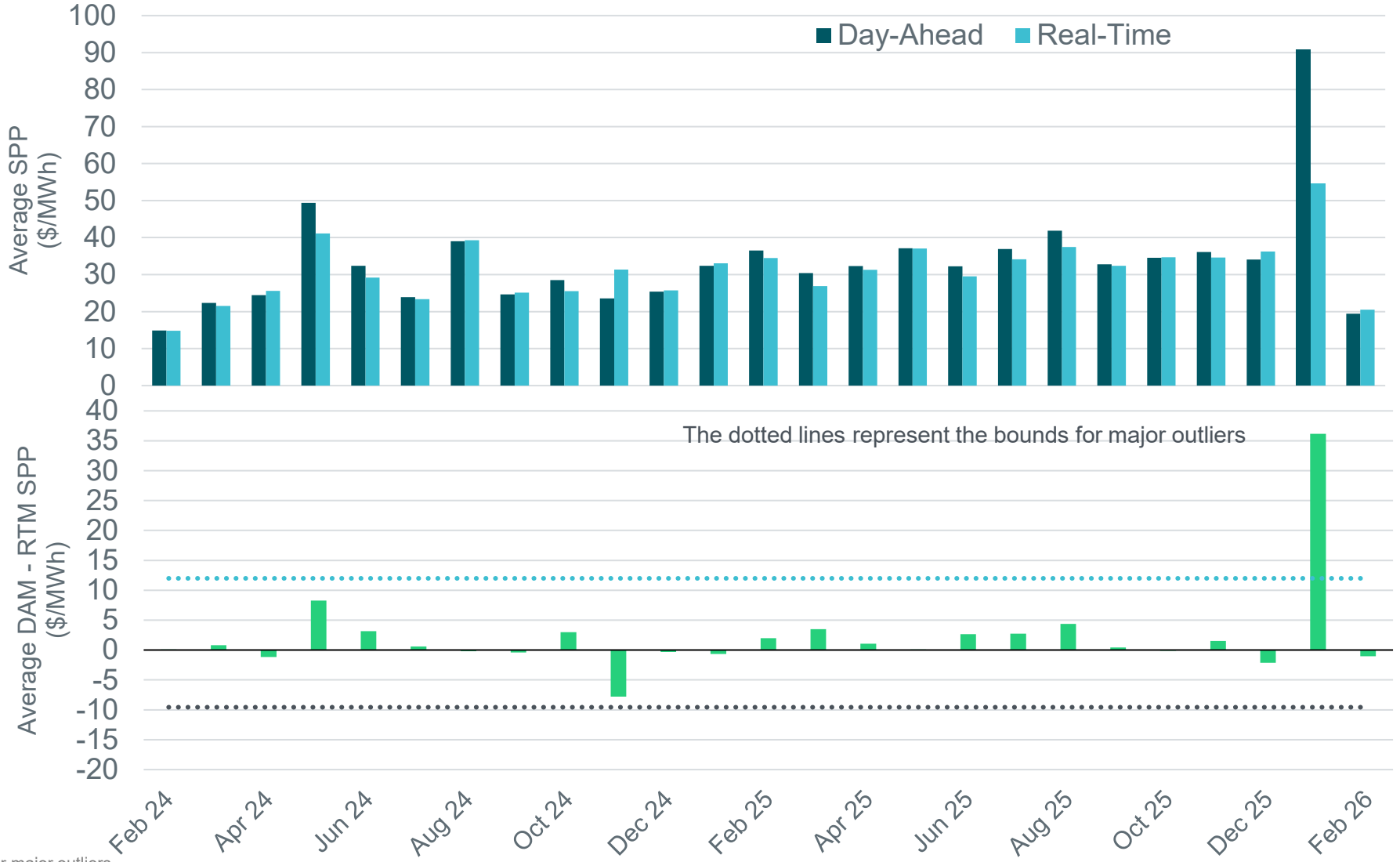
Day-Ahead and Real-Time prices were low in February and closely aligned with one another



Notes:
1) The dotted lines represent the bounds for major outliers.
2) Averages are weighted by Real-Time Market Load.

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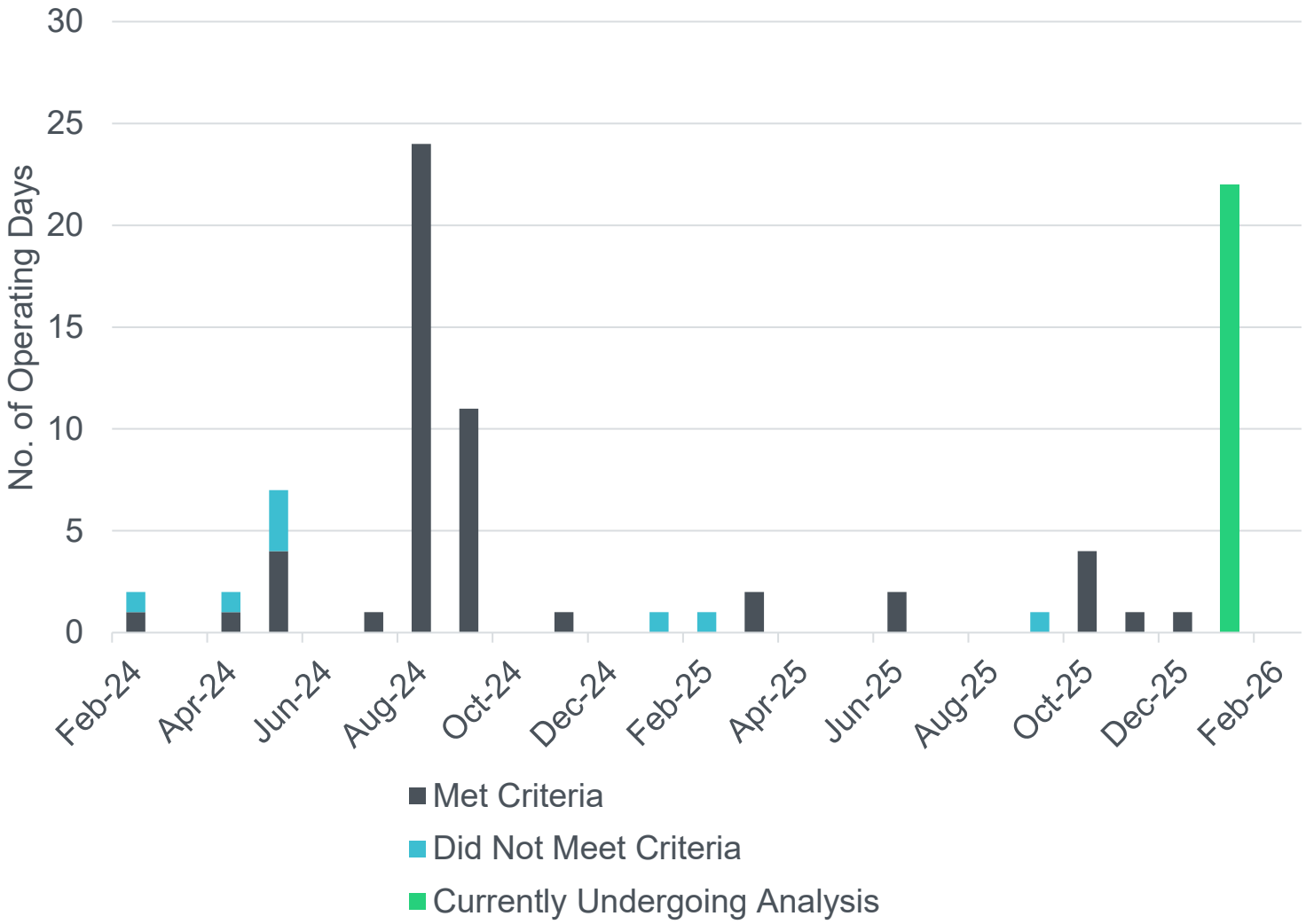
Price Issues and the Impact of Nodal Protocol Revision Request (NPRR) 1024 on Price Corrections

This graph looks at the recent history of price issues in the RTM or DAM and breaks the impacted Operating Days into three categories:

- Days that met the criteria for “significance” under NPRR1024 and were corrected;
- Days that were not corrected because they did not meet the criteria for “significance” under NPRR1024; and
- Days that are currently undergoing analysis to determine if criteria for “significance” under NPRR1024 is met.



Details for Price Corrections Review

Price Correction Events – No Action Taken

Day-Ahead Market

- A software issue caused the Day-Ahead Market to use an outdated network model when calculating Generic Transmission Constraint (GTC) limits for Operating Days February 1-7, 2026. As a result, some transmission limits and prices were inaccurate. Because we could not reconstruct accurate limits, we could not recalculate accurate prices, so we did not pursue a price correction. See Market Notice M-B021326-01 for details.

Real-Time Market

- A data issue caused stale fuel adder values to be used in Mitigated Offer Cap (MOC) calculations for a small number of resources in the Real-Time Market for Operating Days February 1-March 1, 2026. Because we could not reconstruct accurate MOCs, we could not recalculate accurate prices, so we did not pursue a price correction. We will issue a Market Notice with further details soon.