

Item 9.3: Commercial Markets Update

Keith Collins

Vice President, Commercial Operations

Reliability & Markets Committee Meeting

ERCOT Public

February 3, 2025



Overview

- **Purpose**

Review key developments and notable outcomes in the ERCOT Market for 2024. Additionally, share an update on next steps for the Aggregate Distributed Energy Resource (ADER) Pilot.

- **Voting Items / Requests**

No action is requested of the ERCOT Board; for discussion

- **Key Takeaway(s)**

- Both Energy and Ancillary Service costs were lower in 2024 than in 2023, resulting in lower peaker net margins.
- Increased Solar and Energy Storage Resources contributed to lower prices, most notably in the summer months.
- Phase 3 of the ADER Pilot will include expanded limits and participation options. Request to initiate Phase 3 will be sought at the April Board meeting.

2024 Market Year-in-Review



Key Observations for 2024

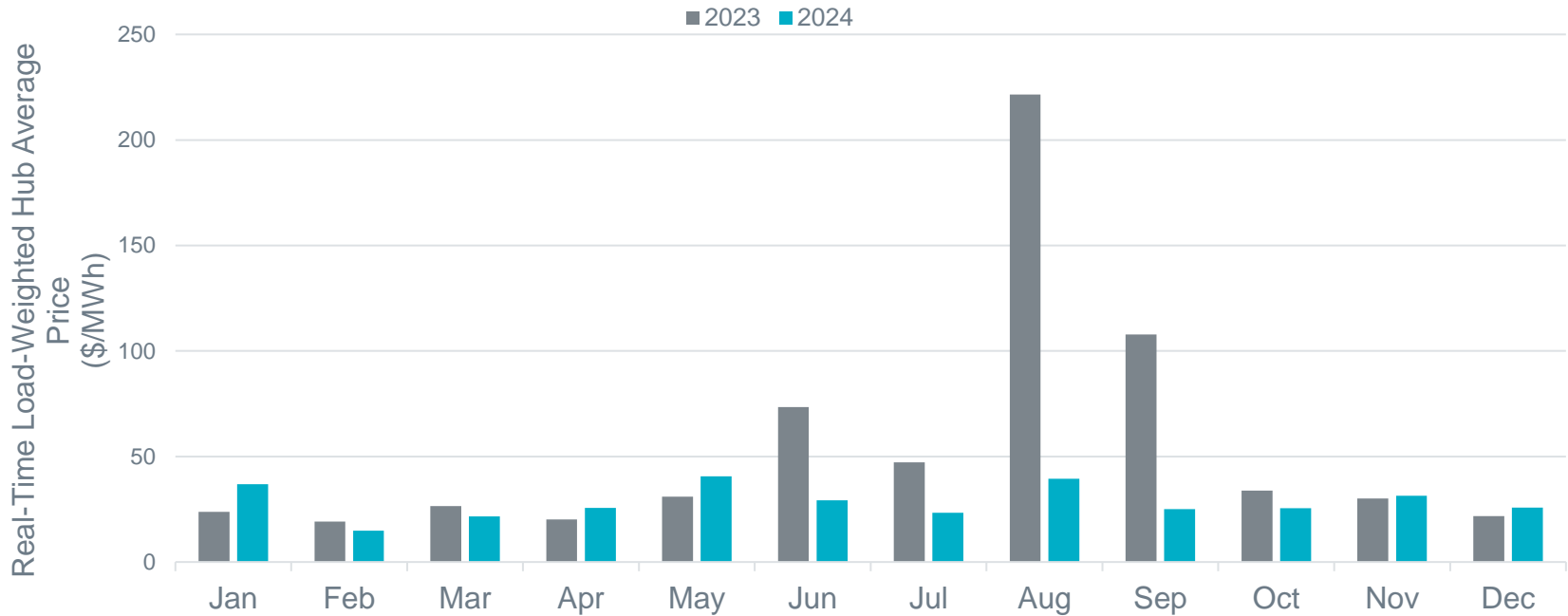
- Real-Time Hub Average Prices in 2024 were lower than 2023.
 - The 2024 Real-Time Hub Average Price (\$28.84/MWh) was 54% lower than the 2023 Real-Time Hub Average Price (\$62.79/MWh). Monthly differences between 2023 and 2024 were most notable in the summer months.
 - Similar price decreases were observed for Ancillary Services.
 - Increasing On-Line supply (particularly from Solar and Energy Storage Resources), milder conditions overall (compared to 2023), and lower natural gas prices were all contributing factors.
- Total RUC effective Resource-hours* were slightly lower in 2024 than 2023.
 - There were 1,890 total Reliability Unit Commitment (RUC) effective Resource-hours in 2024. This was a reduction from the 2,501 effective Resource-hours of 2023 and a substantial reduction from the 7,922 effective Resource-hours of 2022.
 - RUC activity trended higher in the latter half of the year.
 - There was an increase in RUC instructions to manage congestion, rather than for capacity, in 2024 compared to 2023

* *“Effective Resource-hours” excludes any period during a RUC-instructed hour when the committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.*

Year-over-Year Energy Price Comparison

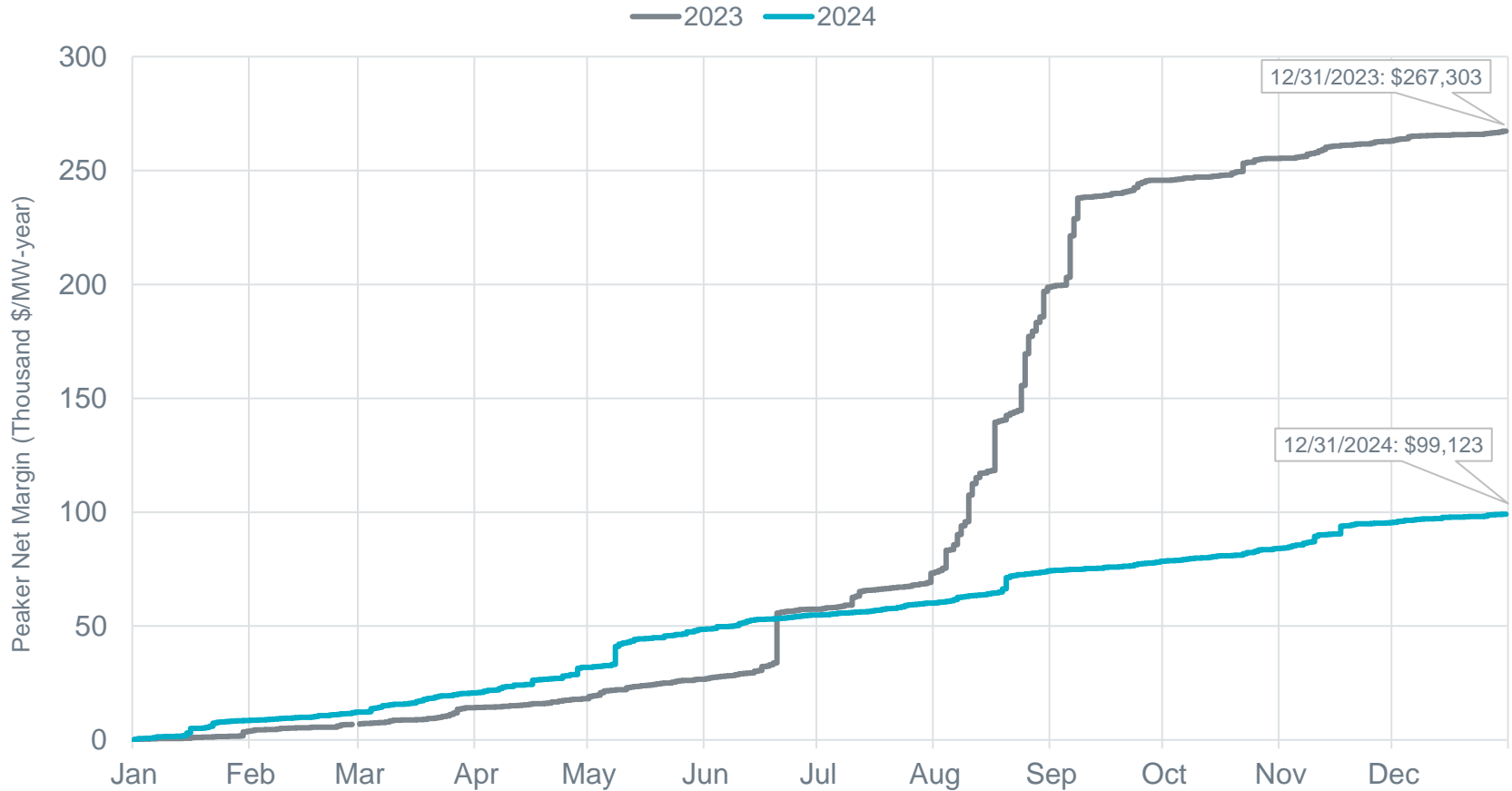
	2023	2024
Real-Time Load-Weighted Hub Average Price (\$/MWh)	62.79	28.84

Real-Time Hub Average Price by Month



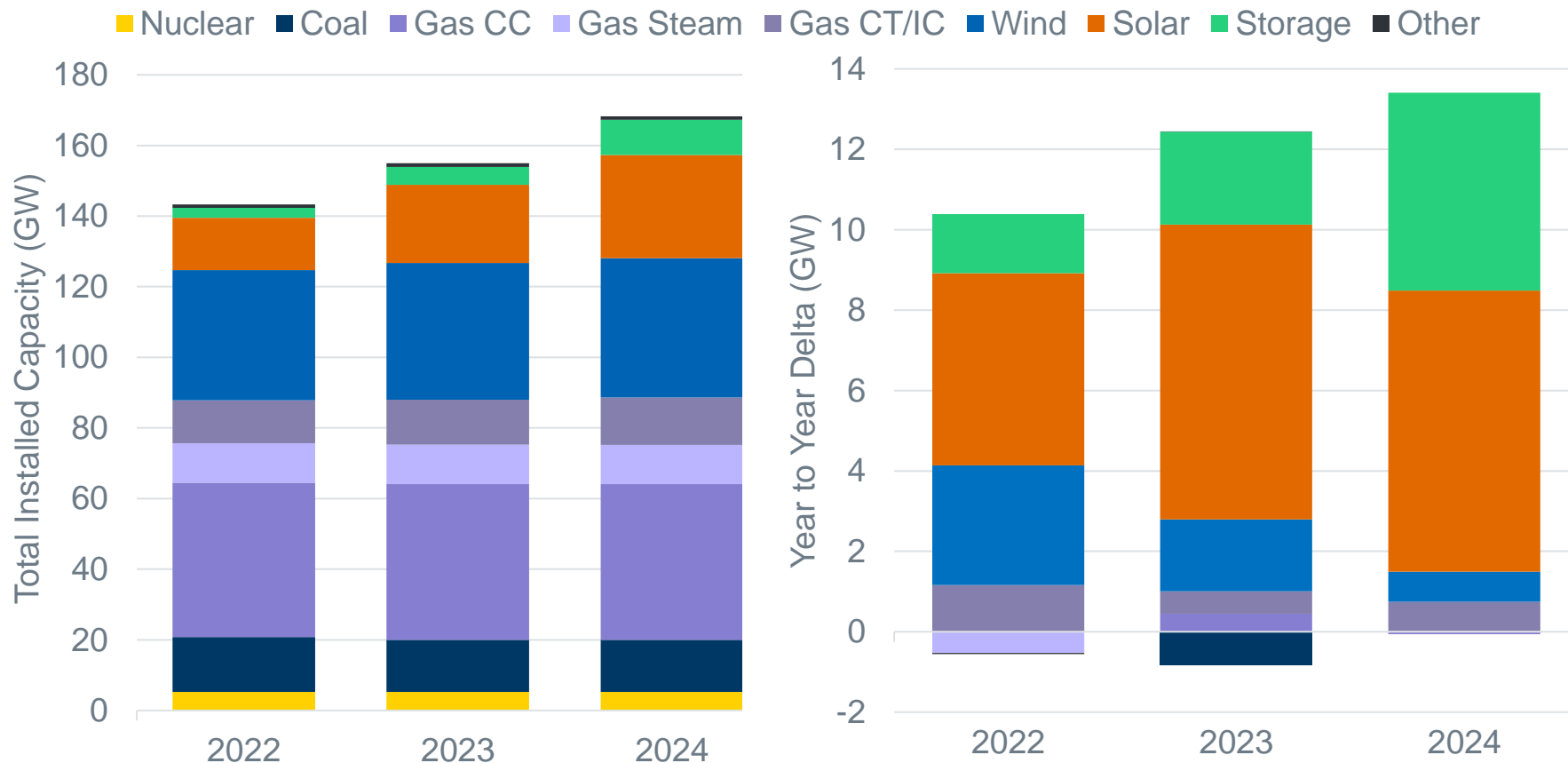
Key Takeaway: Real-Time Prices were lower in 2024 than 2023 mainly due to higher supply and lower temperatures during the summer months.

Peaker Net Margin



Key Takeaway: Total Peaker Net Margin is lower in 2024 relative to 2023, in large part due to significant accumulations from June to September 2023.

Generation Capacity



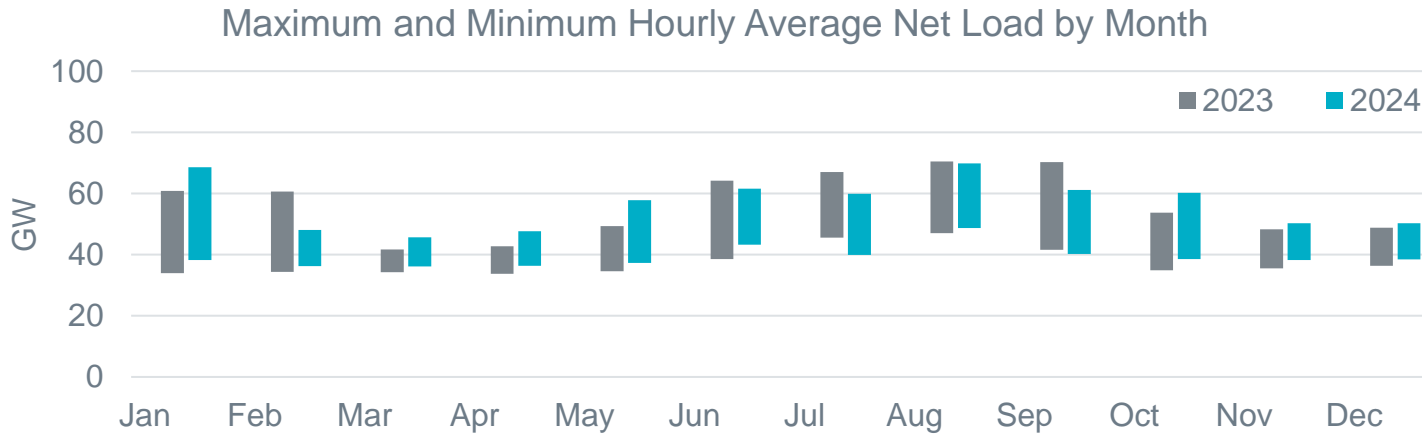
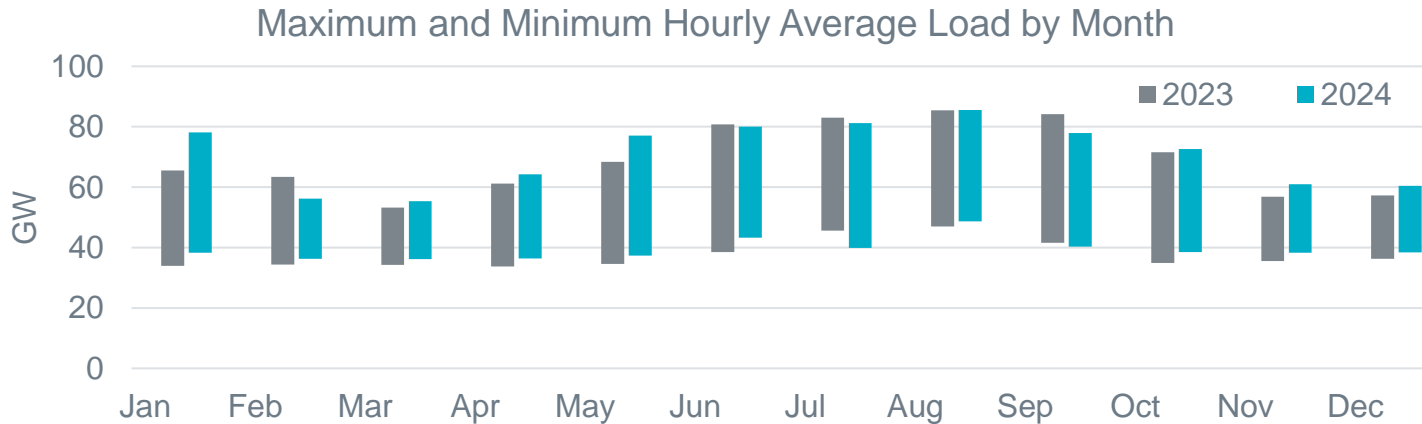
Key Takeaway: Total generation installation capacity increased by over 13 GW in 2024. Most of the new capacity additions are from Solar and Energy Storage Resources.

Notes: Capacity totals are based on Installed Capacity Ratings for generating units. "Other" is made up of Biomass, Hydro, Storage, and Diesel. Planned projects are added to installed capacity after approval for synchronization to ERCOT Grid. Totals include Private-Use Networks (PUNs), Distribution Generation Resources (DGRs), Settlement-Only Distribution Generators (SODGs), Unavailable Switchable Capacity, Extended Outage Units, and Mothballed Units.

Disclaimer: The data above is intended to capture annual resource mix trends on an installed capacity basis and are not intended to represent the capacity expected to be available for upcoming seasonal peak conditions.



Monthly Load Comparisons

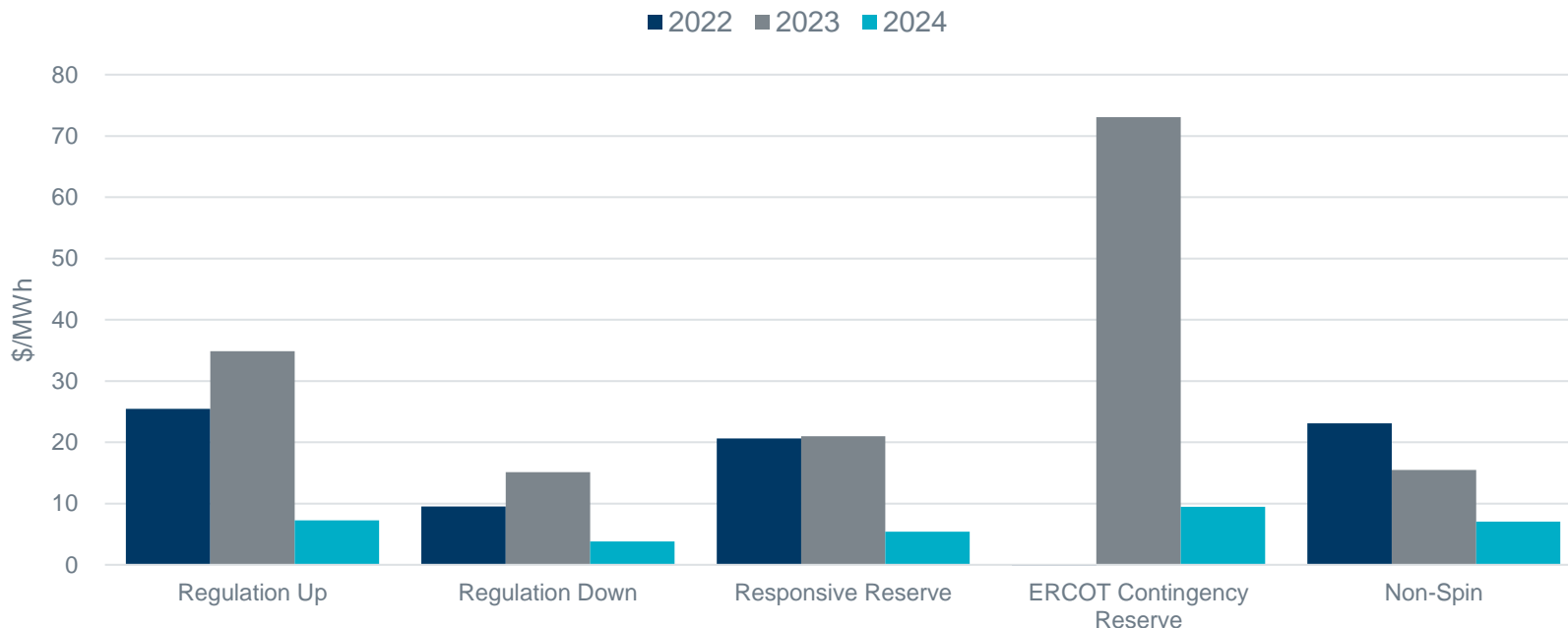


Key Takeaway: Peak load and peak net load in 2024 is generally close to or lower than 2023 during summer months, and higher during other months.

Ancillary Services Prices in DAM

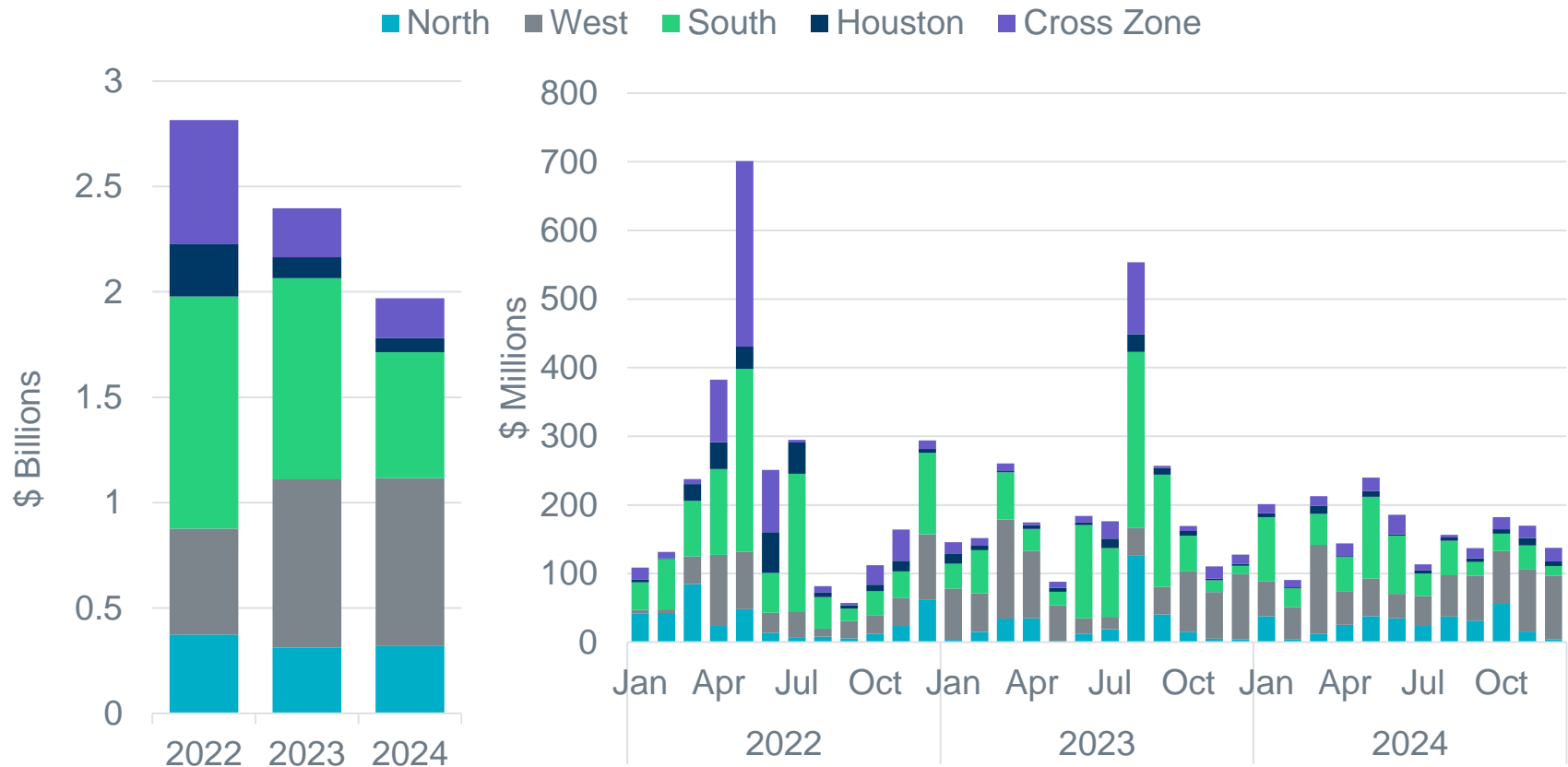
- Ancillary Service prices in 2024 were substantially lower than the previous two years.

DAM MW-Weighted Average Ancillary Services Prices



Key Takeaway: Generally higher available capacity and increased ESR participation meant that prices for all Ancillary Services were lower in 2024 than in the previous two years. This is in line with the observed trend in energy prices in 2024 relative to 2023.

Real-Time Congestion Rent by Zone

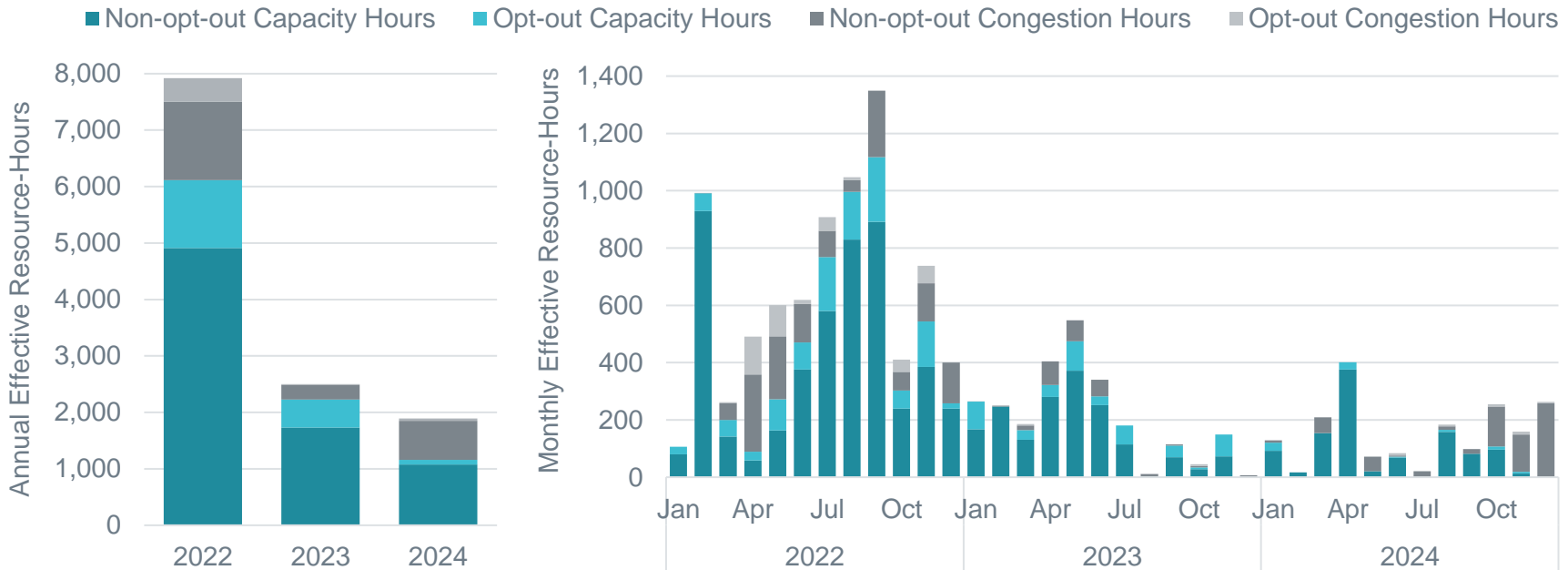


Key Takeaway: Real-Time congestion rent in 2024 was lower than in the previous two years. The main reduction was in the South Zone.



Resources Committed Through RUC

- There were 1,890 total Reliability Unit Commitment (RUC) effective Resource-hours* in 2024. This was a reduction from the 2,501 effective Resource-hours of 2023 and a substantial reduction from the 7,922 effective Resource-hours of 2022.
- 67 unique Resources were committed from January to December 2024 which is less than the 73 unique Resources during 2023 and the 95 unique Resources during 2022.



*“Effective Resource-hours” excludes any period during a RUC-instructed hour when the committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.

Key Takeaway: RUC levels were lower in 2024 than previous two years. However, we saw an increase in RUC to manage congestion in 2024 when compared to 2023.



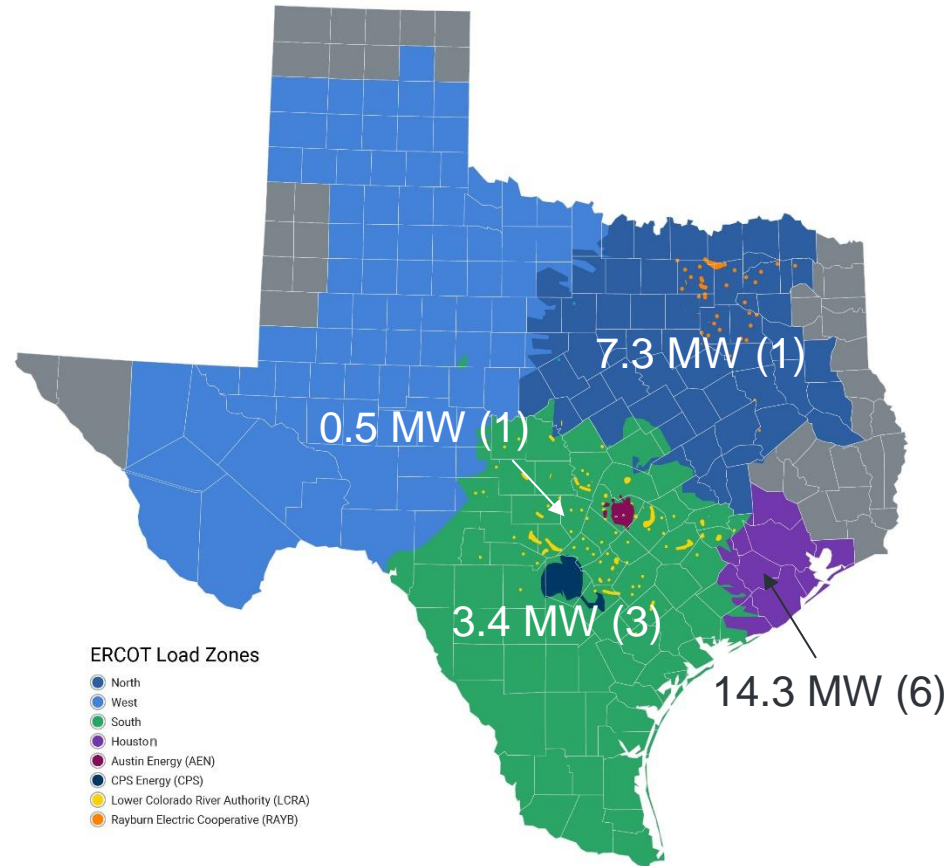
Aggregated Distributed Energy Resource (ADER) Pilot Update

Aggregated Distributed Energy Resource (ADER) Pilot Phase 3

- ERCOT has been working with the ADER Task Force membership to develop a 'Phase 3' for the ADER Pilot.
- Proposed changes for Phase 3 include:
 - Inclusion of a Non-Controllable Load (NCLR) participation framework to accommodate aggregated Resources capable of providing Ancillary Services without the requirement to follow SCED basepoints
 - Increases to participation limits
 - Form submission and telemetry validation process clarifications and updates
- ERCOT expects to file a Report on Phase 2 of the Pilot and bring a proposed Phase 3 Governing Document for approval at the April Board of Directors meetings.

Pilot Project status as of January 1, 2025

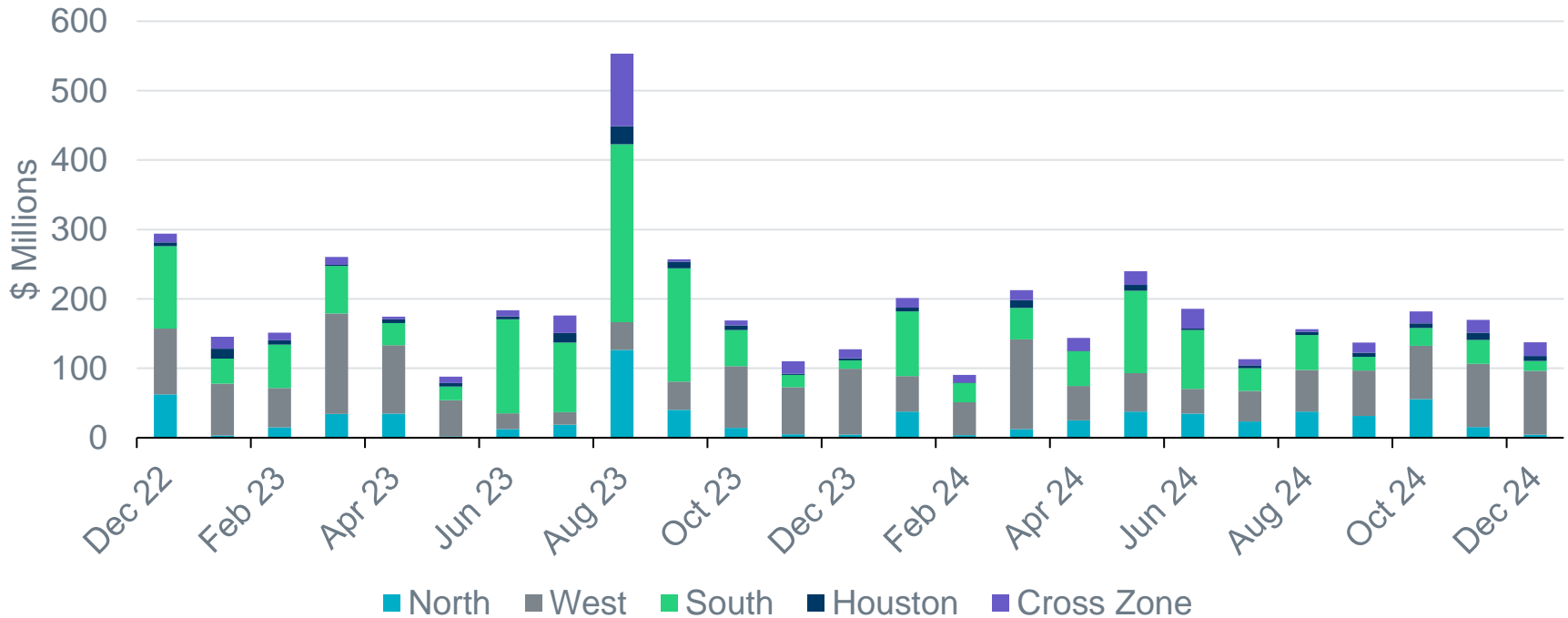
- There are currently 3 ADERs that have been qualified to participate in the wholesale electric market.
 - 25.5 MW capability for energy
 - 11 MW capability for Non-Spinning Reserve Service (Non-Spin)
 - 8.7 MW capability for ERCOT Contingency Reserve Service (ECRS)
- ERCOT has accepted 8 additional Details of the Aggregation (DOTA) forms. These potential ADERs are in various stages of registration and qualification and cannot fully participate at this time.



MWs for energy and count of ADERs by Load Zone for all 11 ADER

Appendix Material

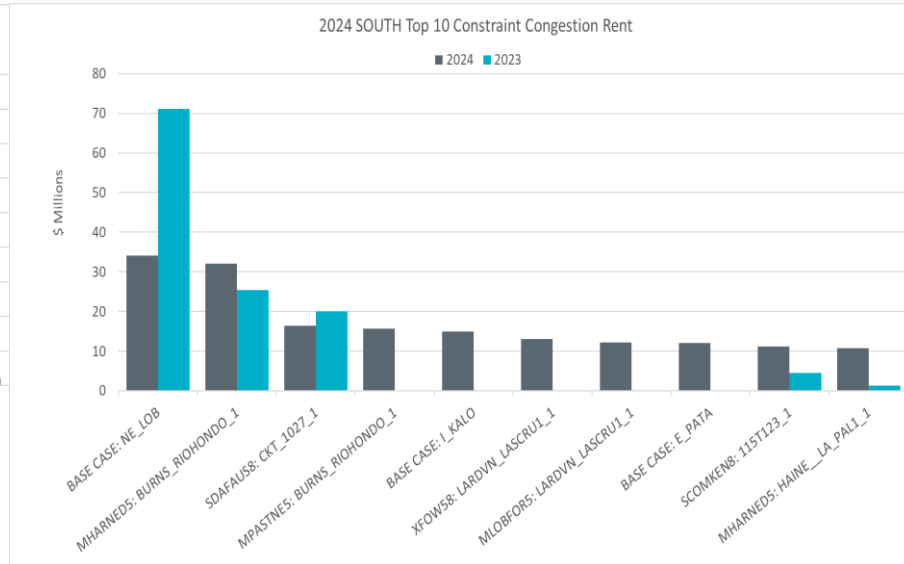
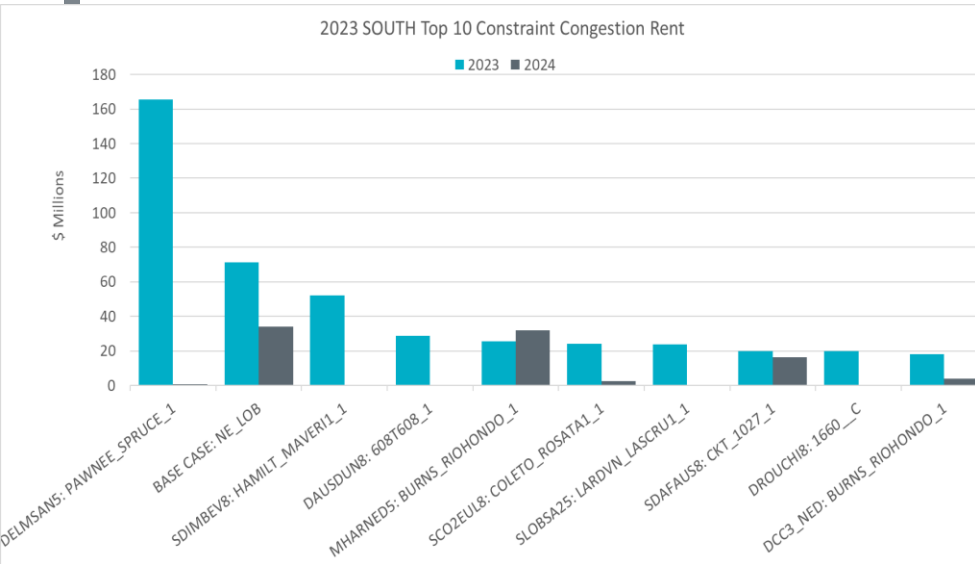
Real-Time Congestion Rent by Zone



- Congestion rent is determined using the shadow prices and MW flows for individual constraints in SCED as well as the length in time of SCED intervals.
- Total Real-Time congestion rent decreased in December compared to November, with the highest congestion rent in the West and Cross Zones.
 - Congestion rent in the West Zone was primarily driven by the loss of the 345kV double circuit Consavvy Switch to Morgan Creek SES and Consavvy Switch to Longshore Switch overloading the 138kV line from Polecat Creek Switch to Wrage Ranch Pod.
 - Congestion rent in the Cross Zone was primarily driven by the West Texas Export Interface Base Case power flow violation due to high wind generation.



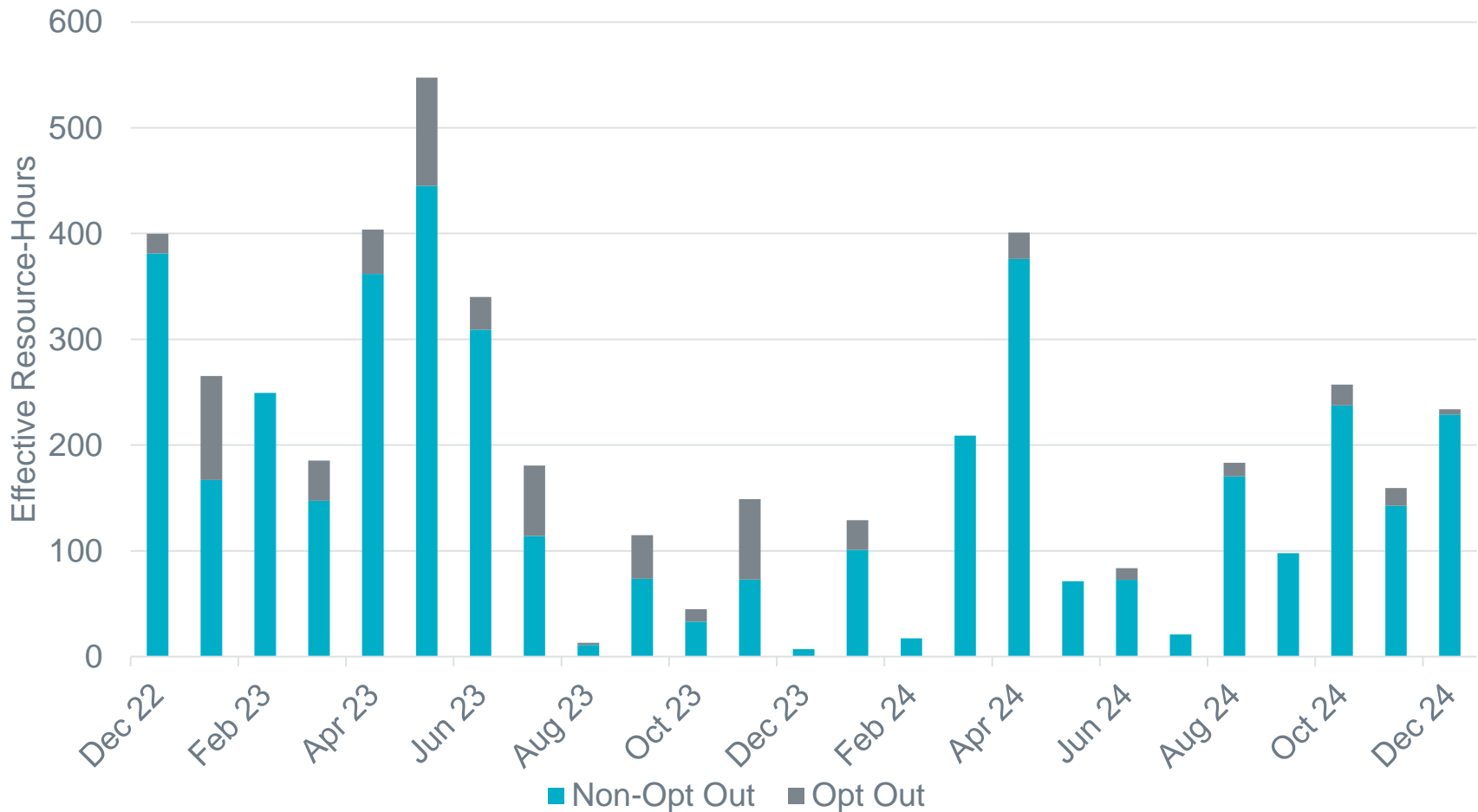
Real-Time Congestion Rent - South Zone



Key Takeaway: The reduction in congestion rent in South Zone were mainly from several key constraints that were more violated/binding in 2023 than 2024:

- Pawnee_Spruce_1 was not violated since the implementation of South Texas export GTC and more mild conditions in 2024.
- HAMILT_MAVERI1_1 constraints was in the irresolvable constraint list in 2023 due to radial load. It was no longer violated in 2024 due to a new line addition from Brackett to Escondid in December 2023.

Elevated RUC Activity Continues, to Manage Congestion



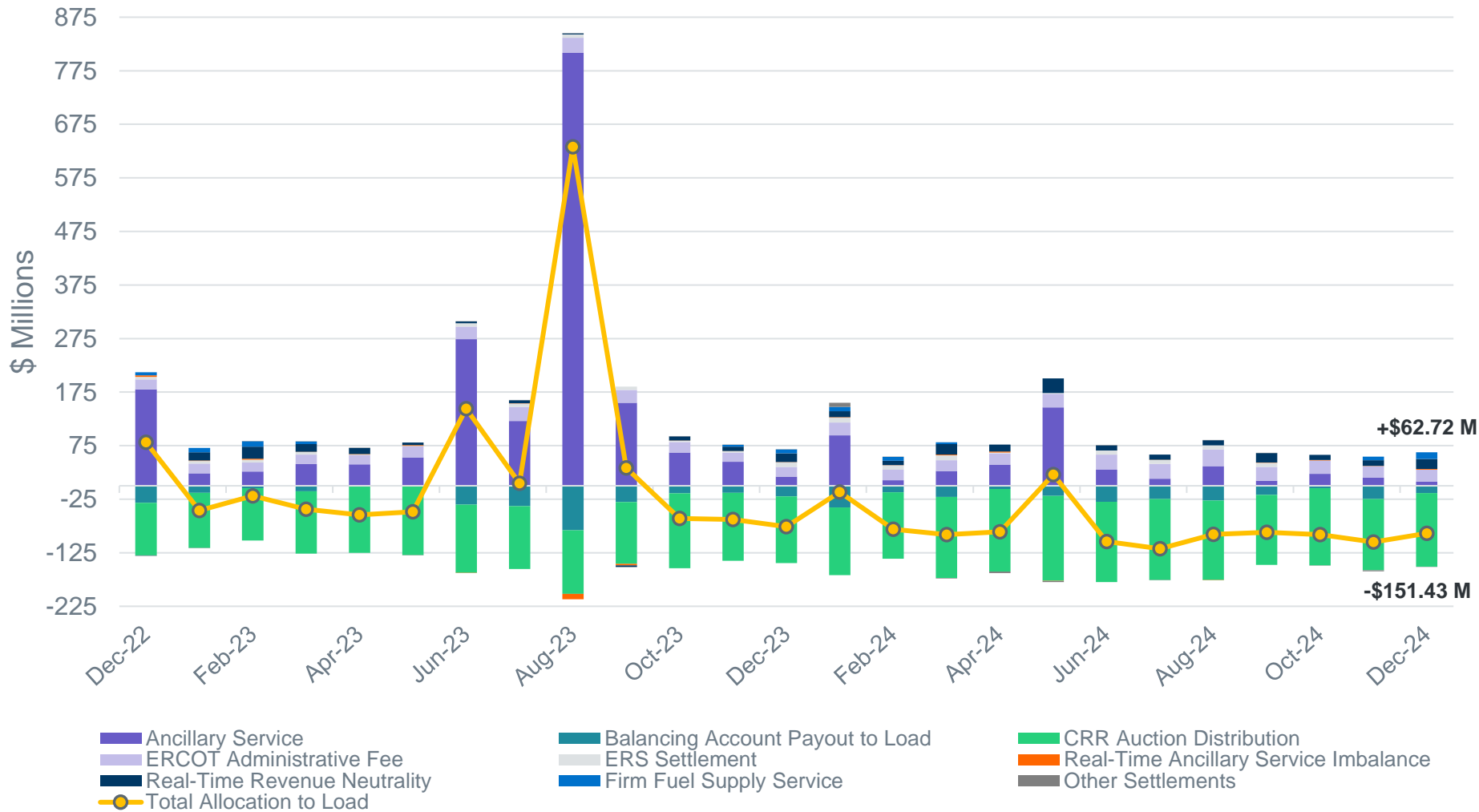
“Effective Resource-Hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.



Fourteen Resources were Committed in December for Congestion

Resource #	Effective Resource-hours	Non-Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	6.0	6.0	0.0
2	8.0	8.0	0.0
3	123.0	123.0	0.0
4	11.9	11.9	0.0
5	19.8	19.8	0.0
6	6.0	6.0	0.0
7	8.0	8.0	0.0
8	14.0	14.0	0.0
9	9.0	8.0	1.0
10	13.0	9.0	4.0
11	4.0	4.0	0.0
12	3.1	3.1	0.0
13	4.0	4.0	0.0
14	4.0	4.0	0.0
Total	233.8	228.8	5.0

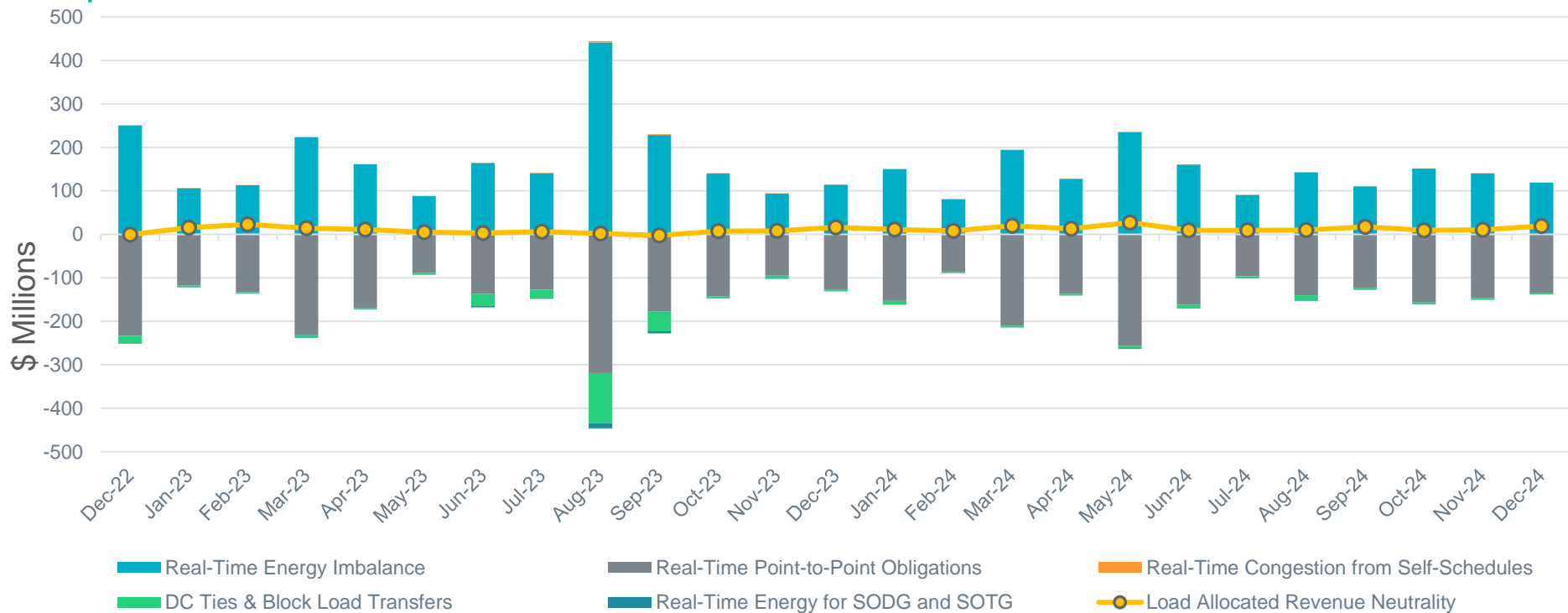
Net Allocation to Load in December 2024 was (\$88.71) Million



This information is available in tabular form in the Settlement Stability Report presented quarterly to the [Wholesale Market Subcommittee](#)



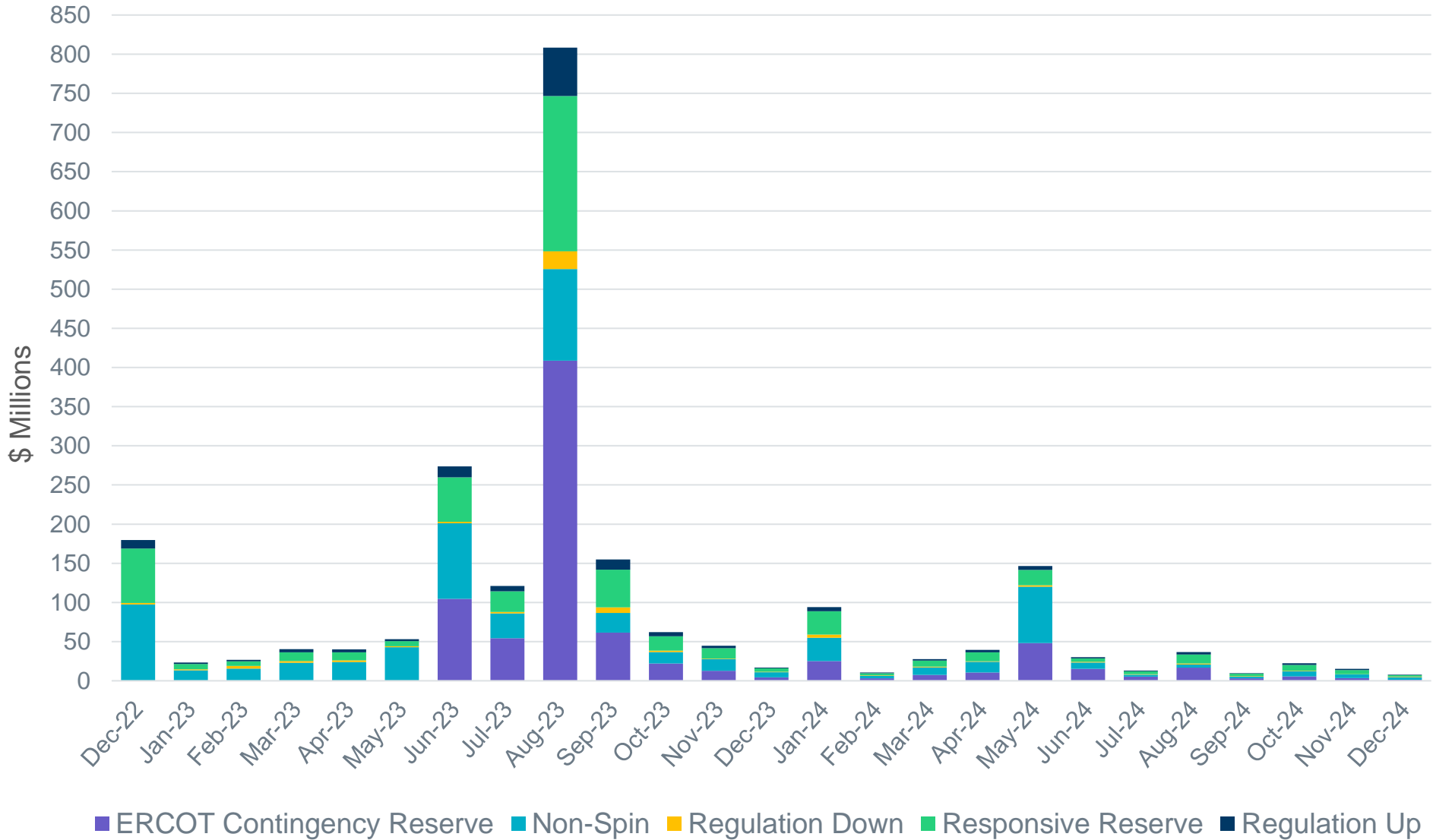
Real-Time Revenue Neutrality Allocated to Load was \$18.93 M for December 2024



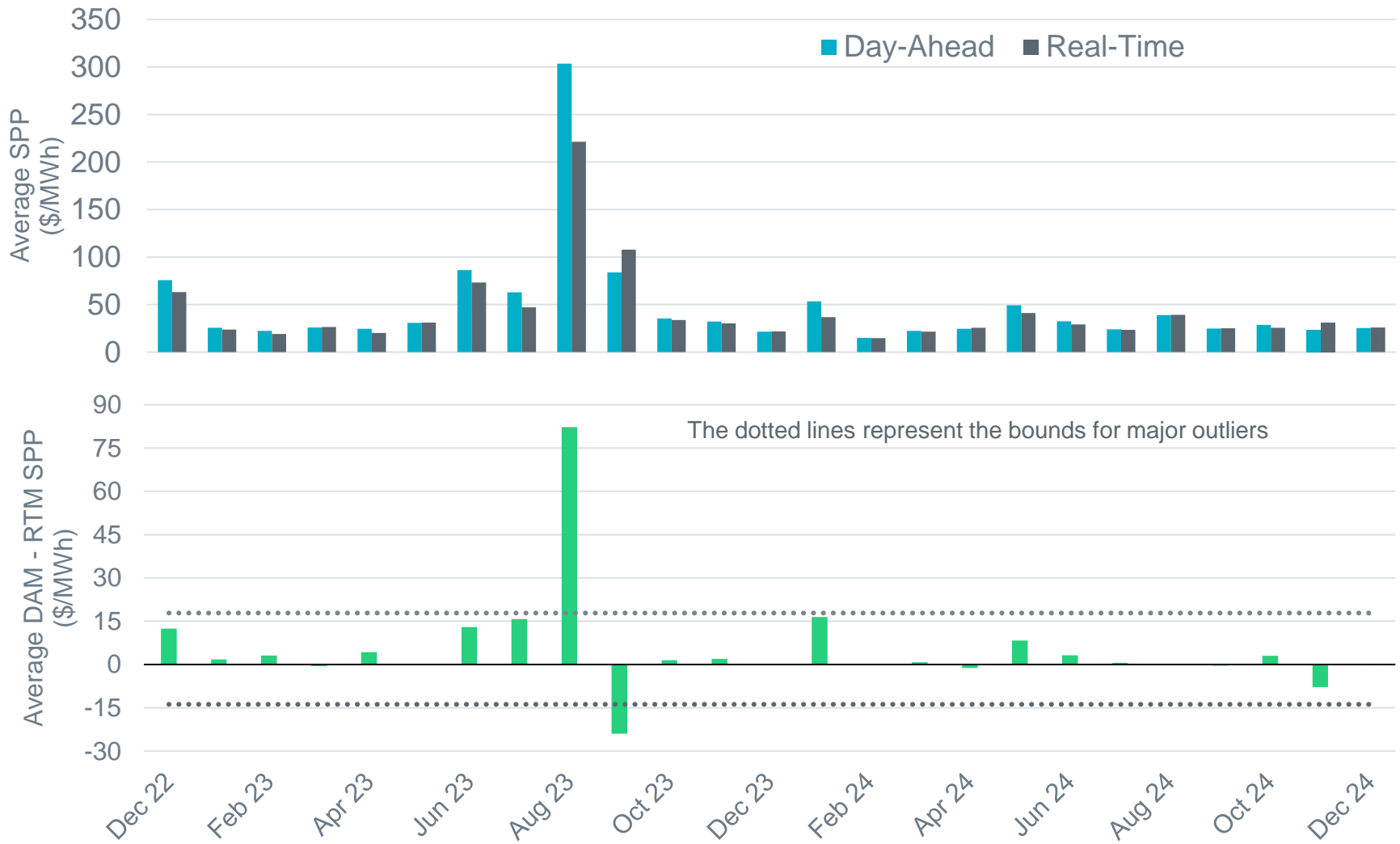
December 2024 (\$M)	
Real-Time Energy Imbalance	\$118.91
Real-Time Point-to-Point Obligation	(\$135.62)
Real-Time Congestion from Self-Schedules	(\$0.28)
DC Tie & Block Load Transfer	(\$1.64)
Real-Time Energy for SODG and SOTG	(\$0.29)
Load Allocated Revenue Neutrality	\$18.93



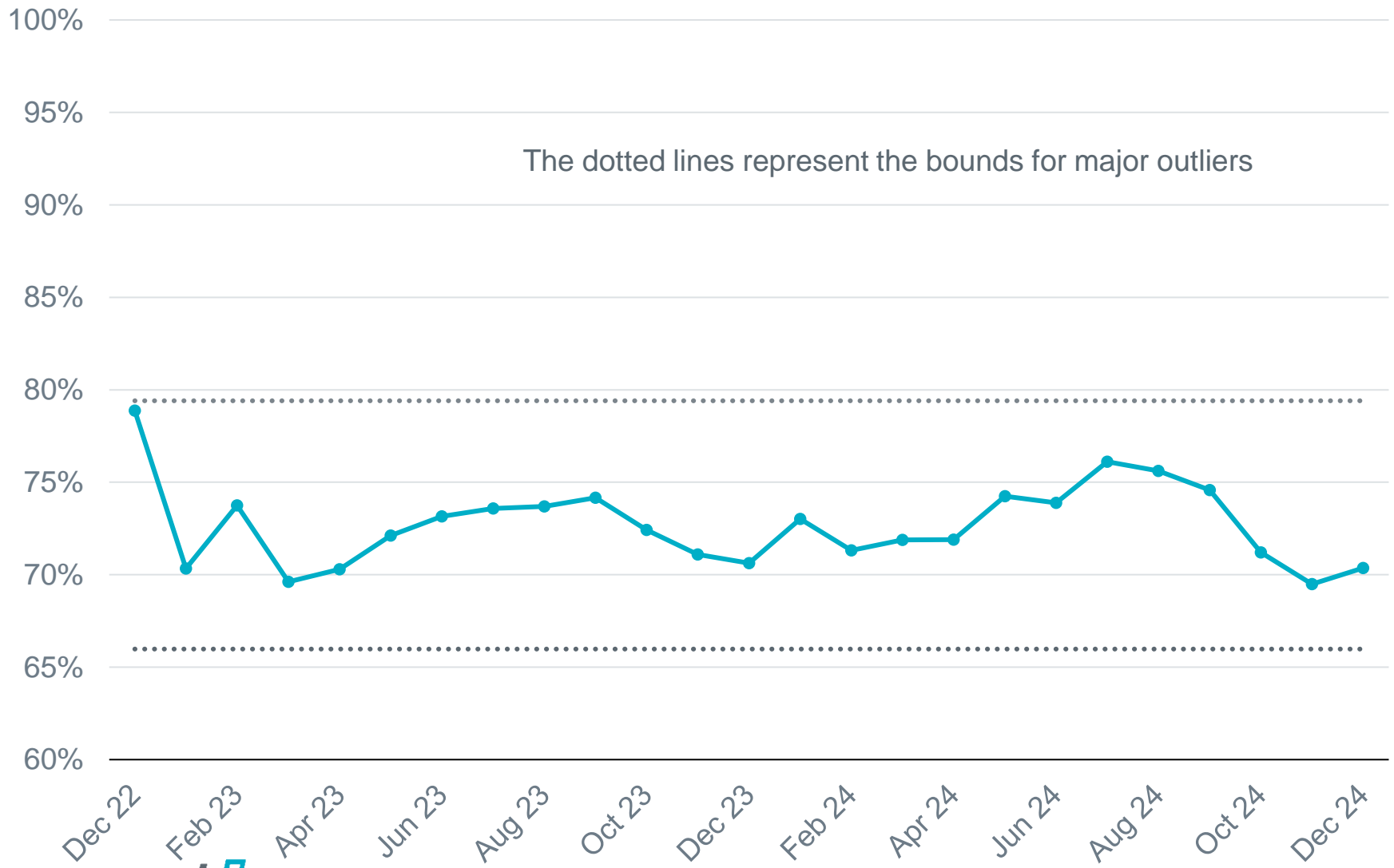
Ancillary Services for December 2024 totaled \$7.89M



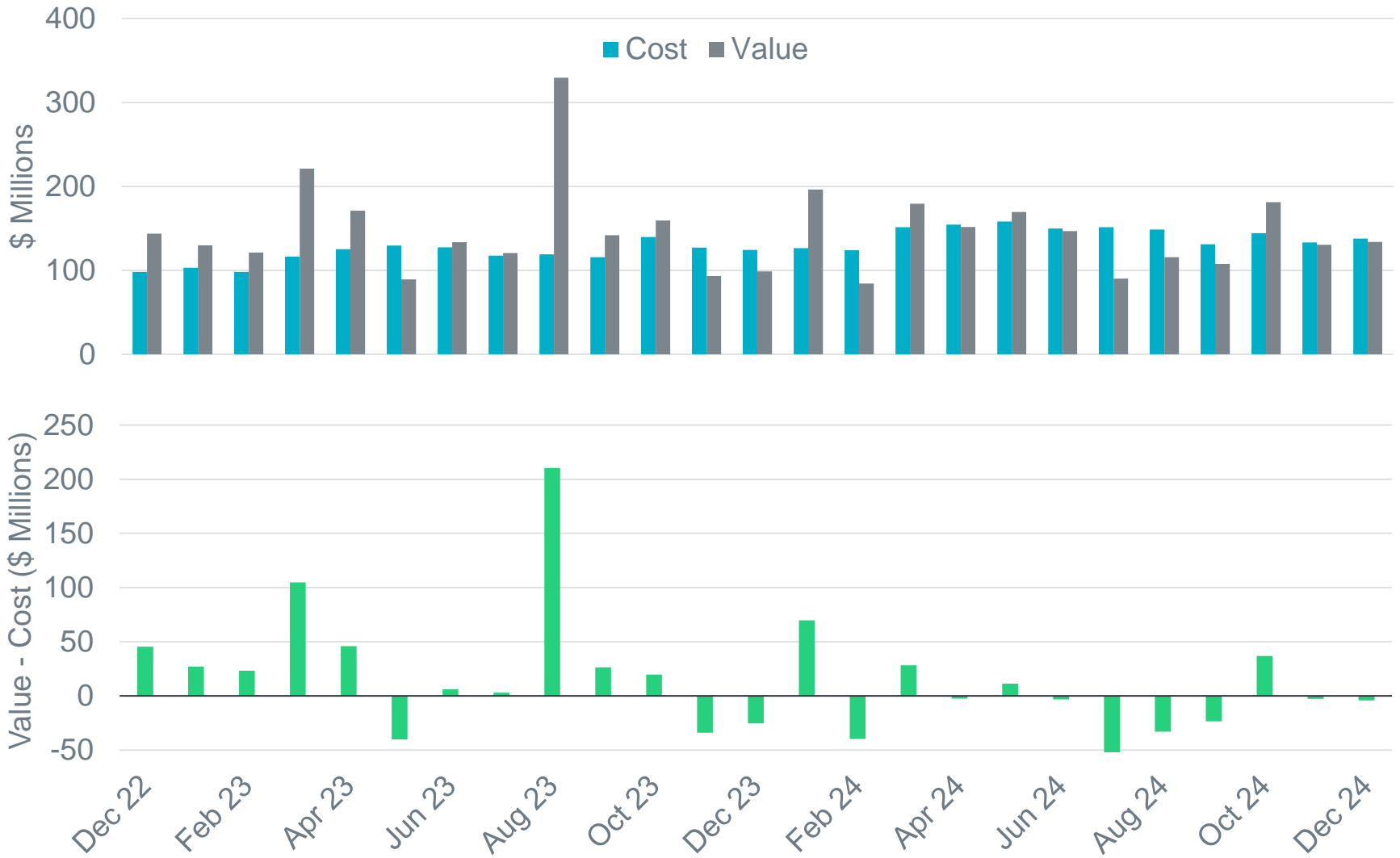
Real-Time prices were aligned with Day-Ahead prices, on average, in December



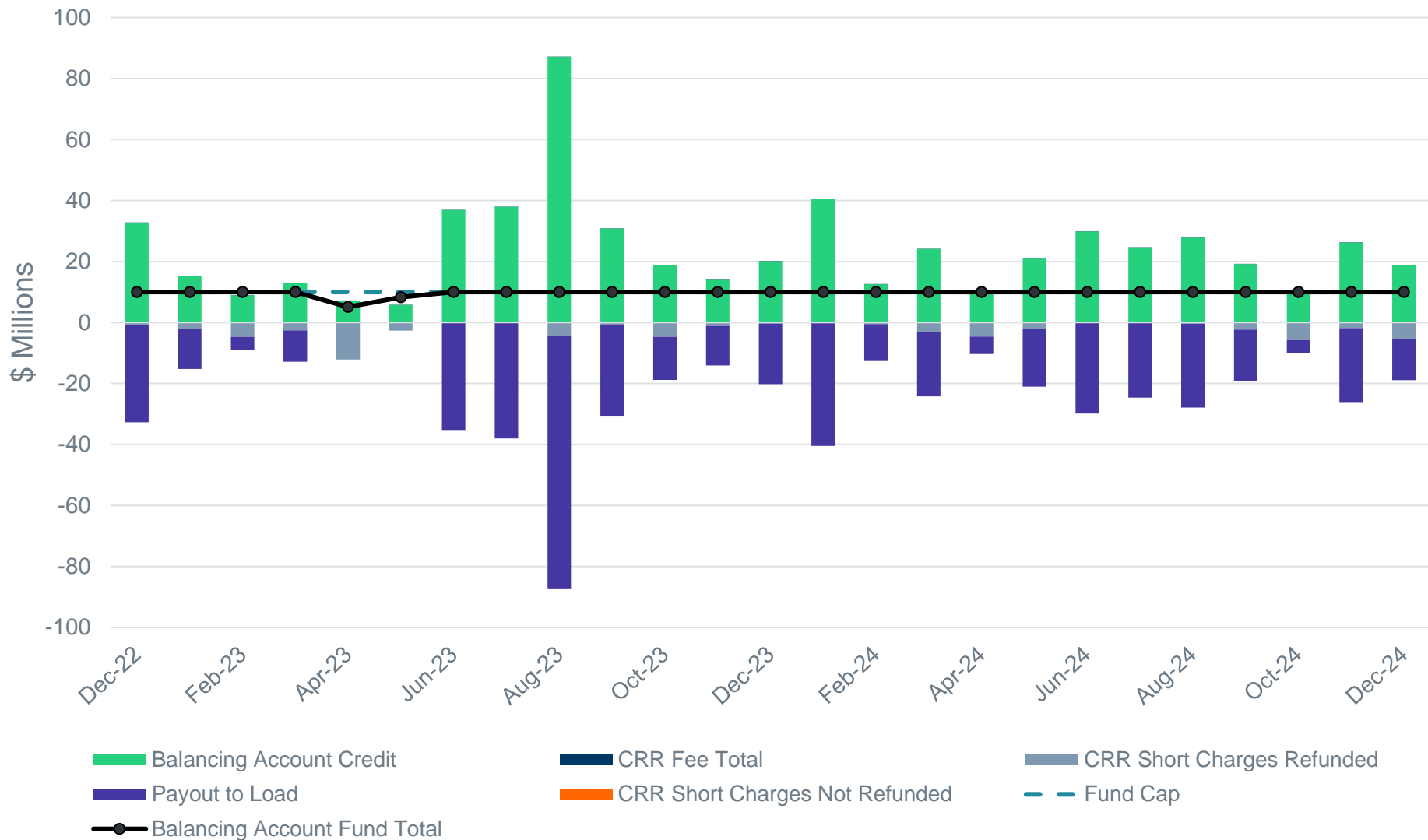
Percentage of Real-Time Load Transacted in the Day-Ahead Market slightly increased in December compared to November



Congestion Revenue Right (CRR) Value and Cost Were Closely Matched in December



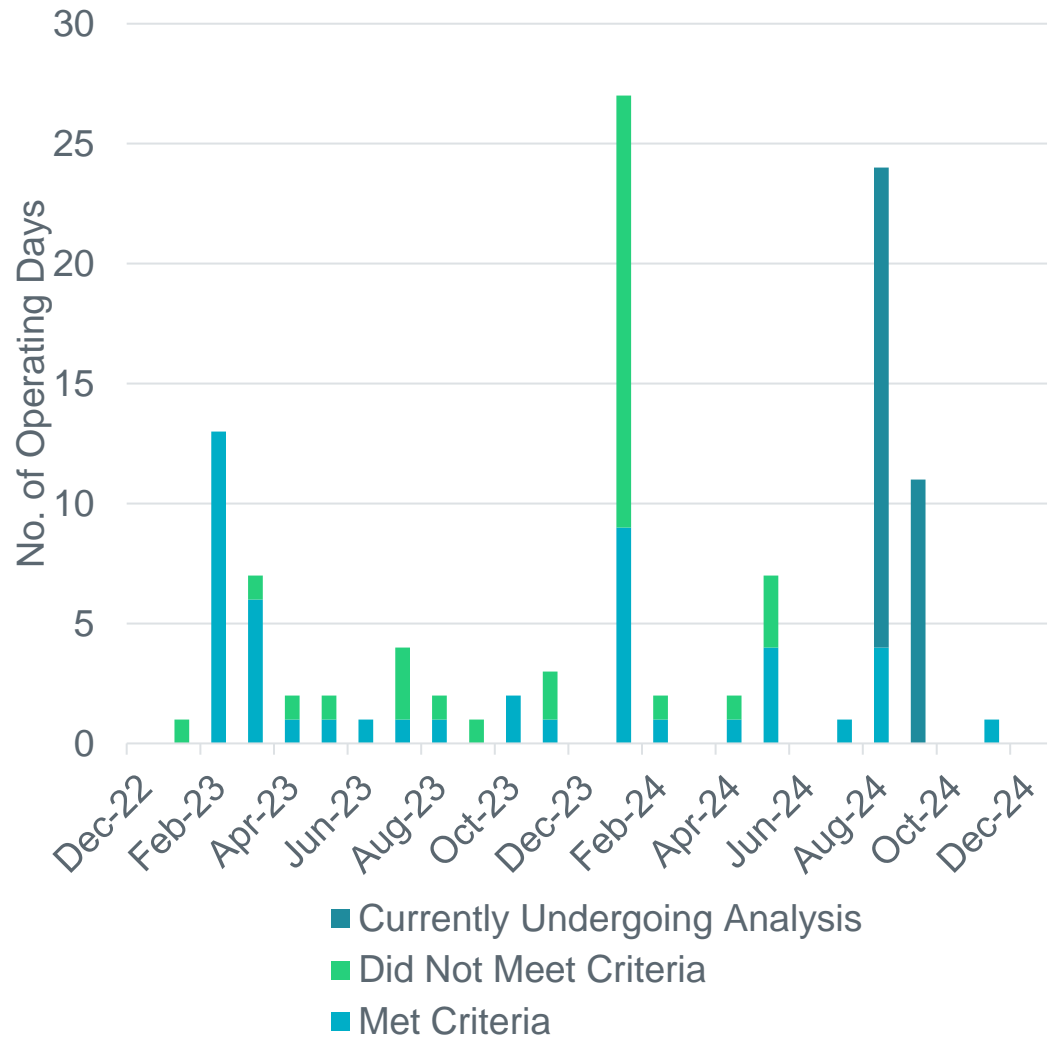
The CRR Balancing Account was fully-funded and excess amounts were allocated to Load



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:

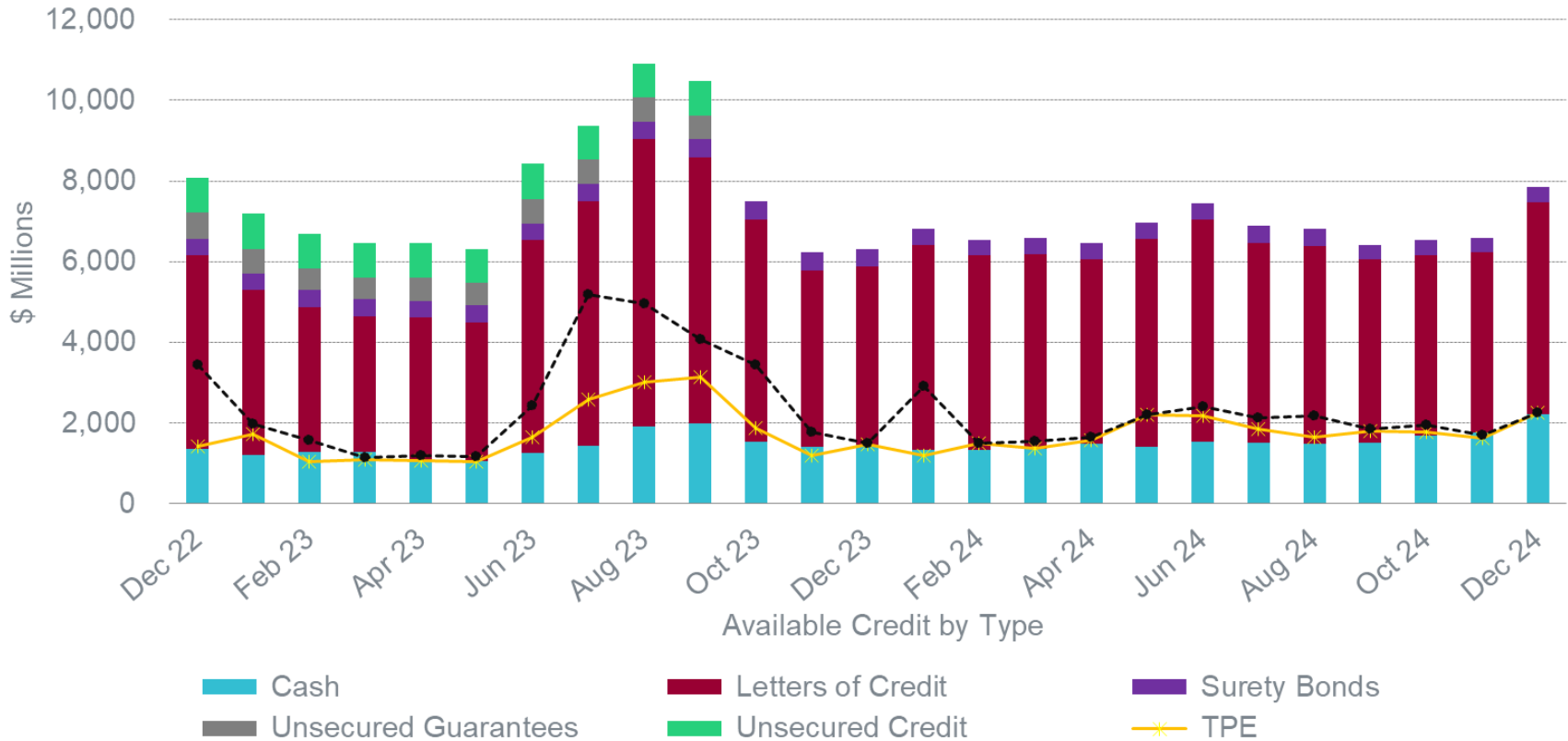
- Days that met the criteria for “significance” under NPRR1024 and were corrected;
- Days that were not corrected because they did not meet the criteria for “significance” under NPRR1024; and
- Days that are currently undergoing analysis to determine if criteria for “significance” under NPRR1024 is met.



Details for Price Corrections Review

There were no price correction events in the month of December 2024.

Available Credit by Type Compared to Total Potential Exposure (TPE)



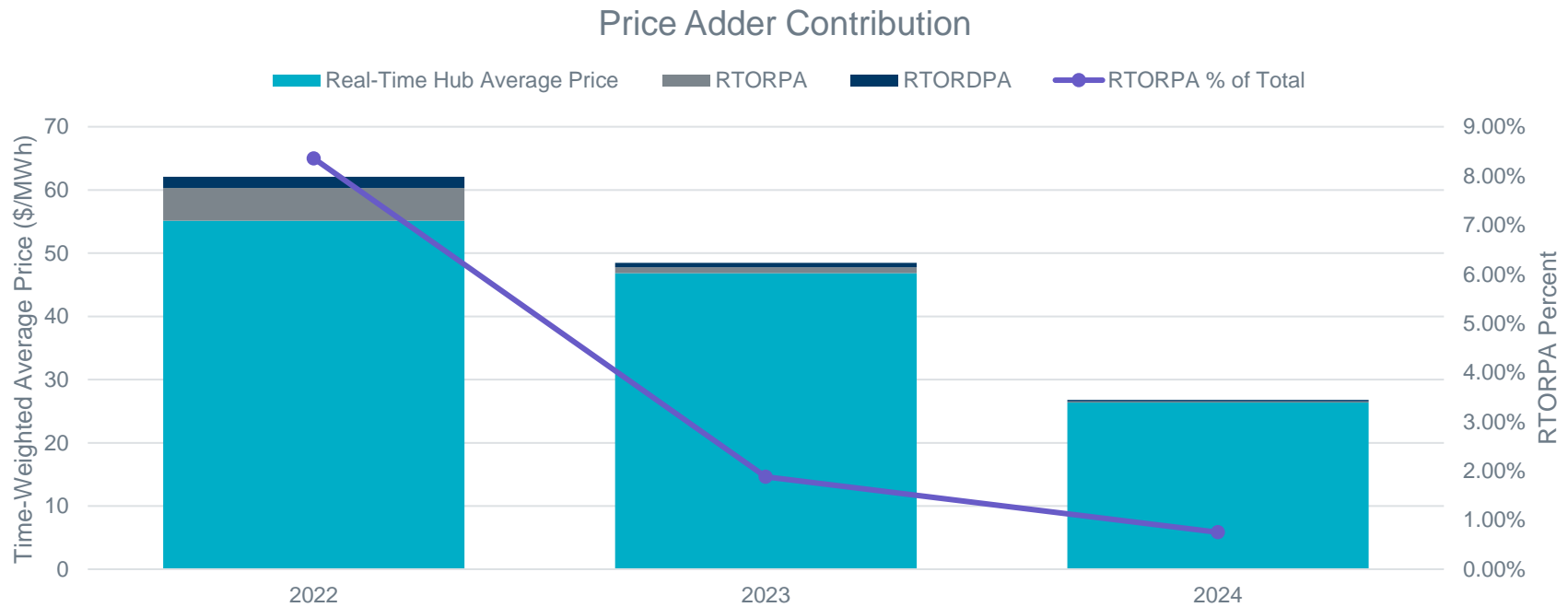
*Numbers are as of month end except for Max TPE



Retail Transaction Volumes – Summary – December 2024

Transaction Type	Year-To-Date		Transactions Received	
	December 2024	December 2023	December 2024	December 2023
Switches	1,203,316	1,154,851	82,578	124,388
Acquisitions	0	0	0	0
Move - Ins	3,127,818	3,070,588	213,001	208,546
Move - Outs	1,437,057	1,403,990	106,972	98,427
Continuous Service Agreements (CSA)	424,793	433,469	22,363	37,755
Mass Transitions	0	0	0	0
Total	6,192,984	6,062,898	424,914	469,116

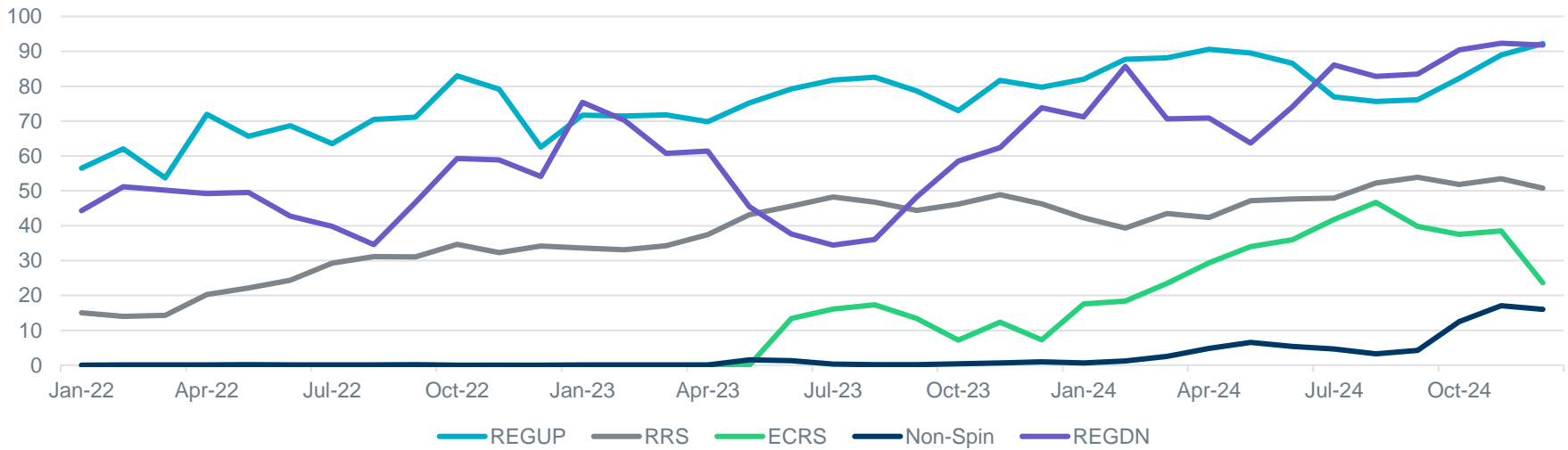
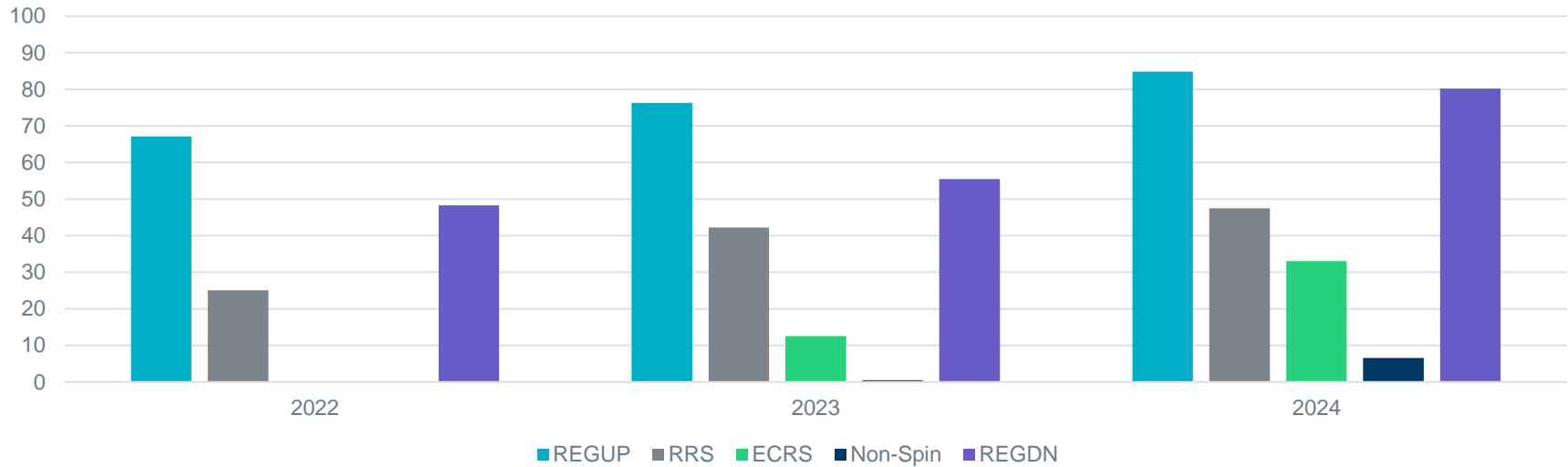
Operating Reserve Demand Curve (ORDC) Contribution to Real-Time Prices



RTORPA is the Real-Time Online Reserve Price Adder
 RTORDPA is the Real-Time Online Reliability Deployment Price Adder

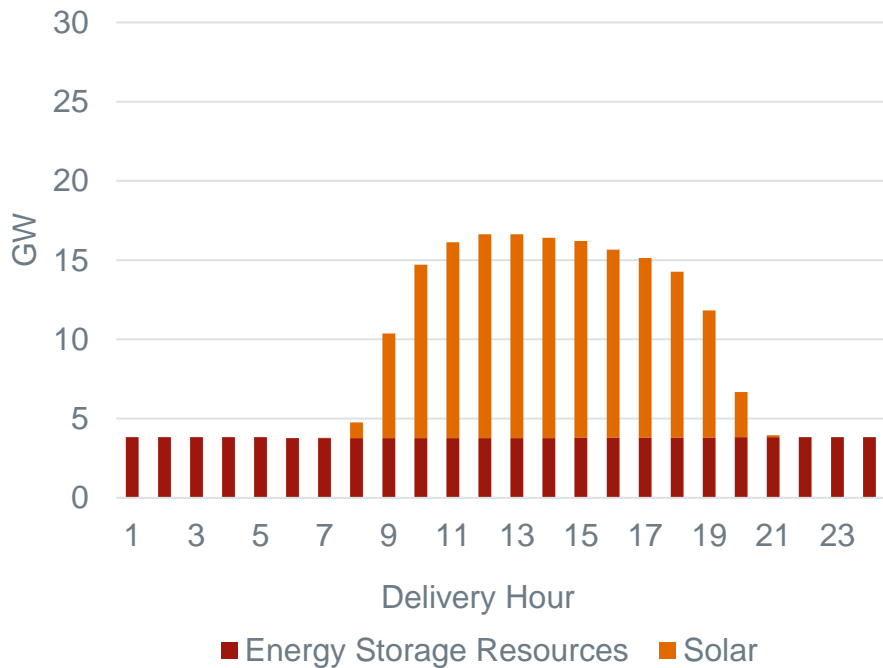
Key Takeaway: With more available capacity and lower RUC activity, price adders (tied to scarcity) had a lower contribution to the market price in 2024 relative to previous two years.

ESR Percent of Total System-Wide Ancillary Service Procurement in Day-Ahead Market

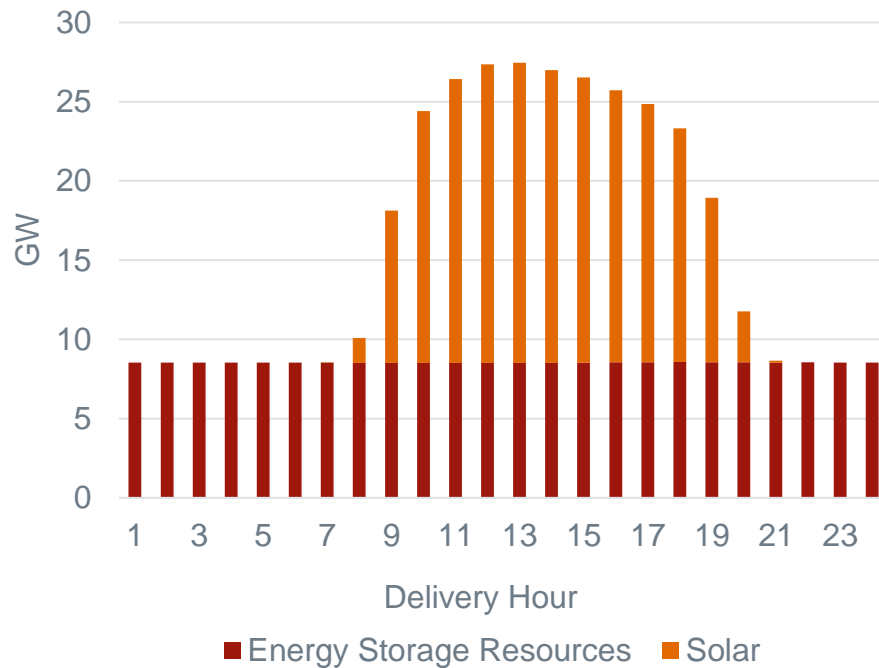


Summer Solar and Energy Storage Resources Capacity

August 2023 Hourly Average Total COP HSL



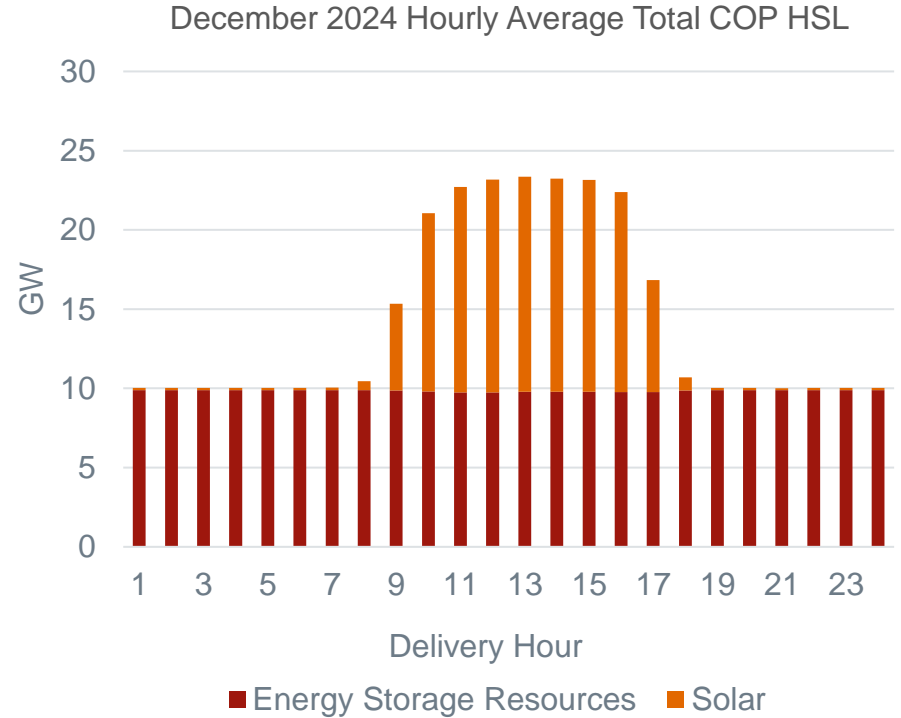
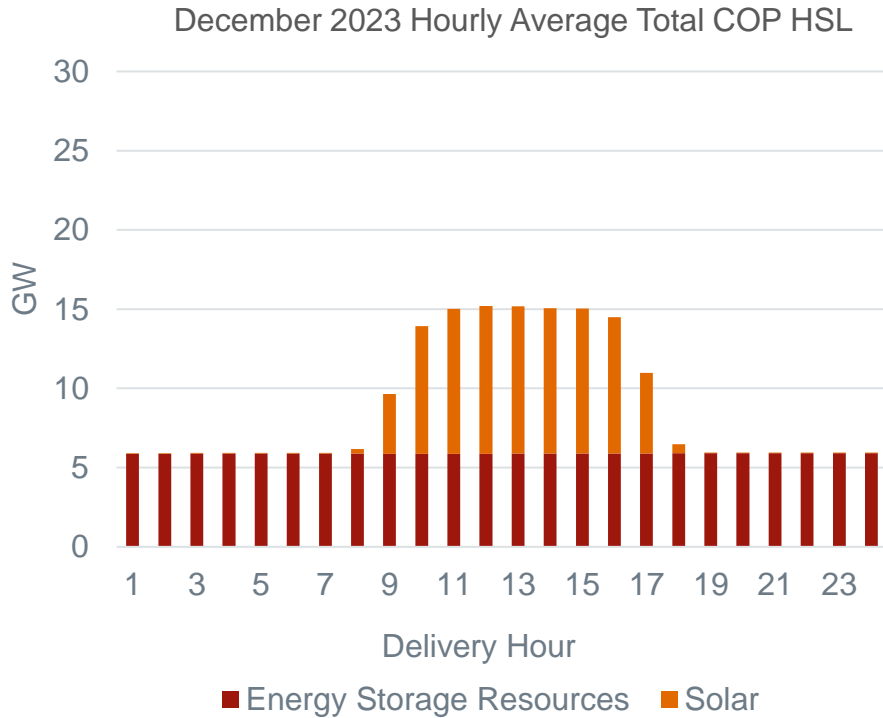
August 2024 Hourly Average Total COP HSL



The graphs are based on the latest Current Operating Plan (COP) snapshot data prior to real-time.

Key Takeaway: More solar and ESR capacity was available in summer 2024 compared to 2023.

Winter Solar and Energy Storage Resources Capacity



The graphs are based on the latest Current Operating Plan (COP) snapshot data prior to real-time.

Key Takeaway: More solar and ESR capacity was available in winter 2024 compared to 2023.