Item 10.3: Commercial Markets Update

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Reliability and Markets Committee Meeting

ERCOT Public
October 9, 2024

Overview

- **Purpose**
  - Provide a review of market outcomes in Summer 2024 and compare with previous years
  - Highlight emerging stakeholder discussions regarding Congestion Revenue Rights (CRR) Auction performance risks
- **Voting Items / Requests**

  No action is requested of the Reliability & Markets Committee or for the ERCOT Board; for discussion only

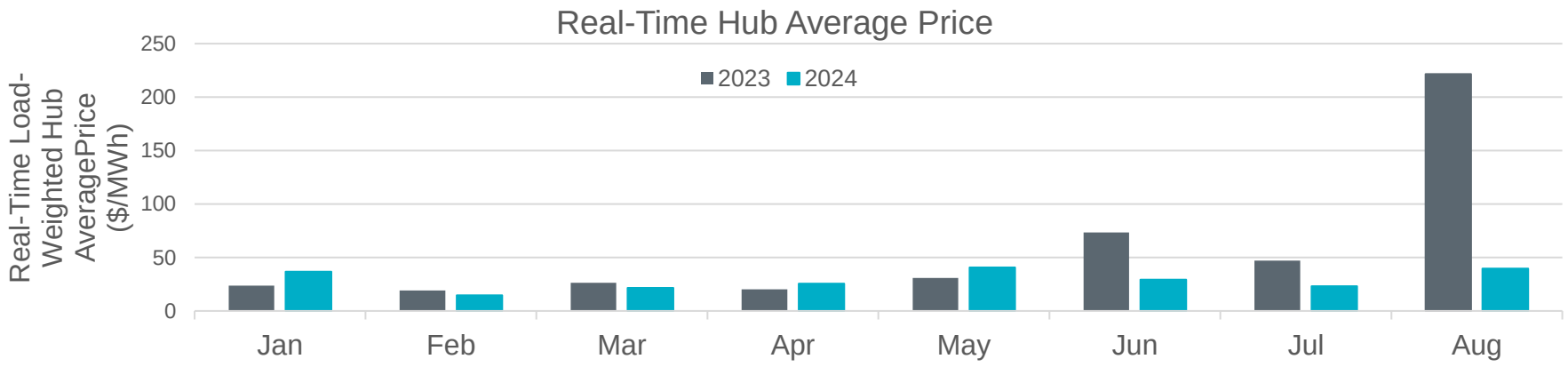
- **Key Takeaway(s)**
  - Both Energy and Ancillary Service costs were lower in Summer 2024 than in the previous two summers
  - Increases in solar and Energy Storage Resource (ESR) capacity led to higher reserves
  - ERCOT is working closely with stakeholders on mitigating the risk of long-running CRR Auctions

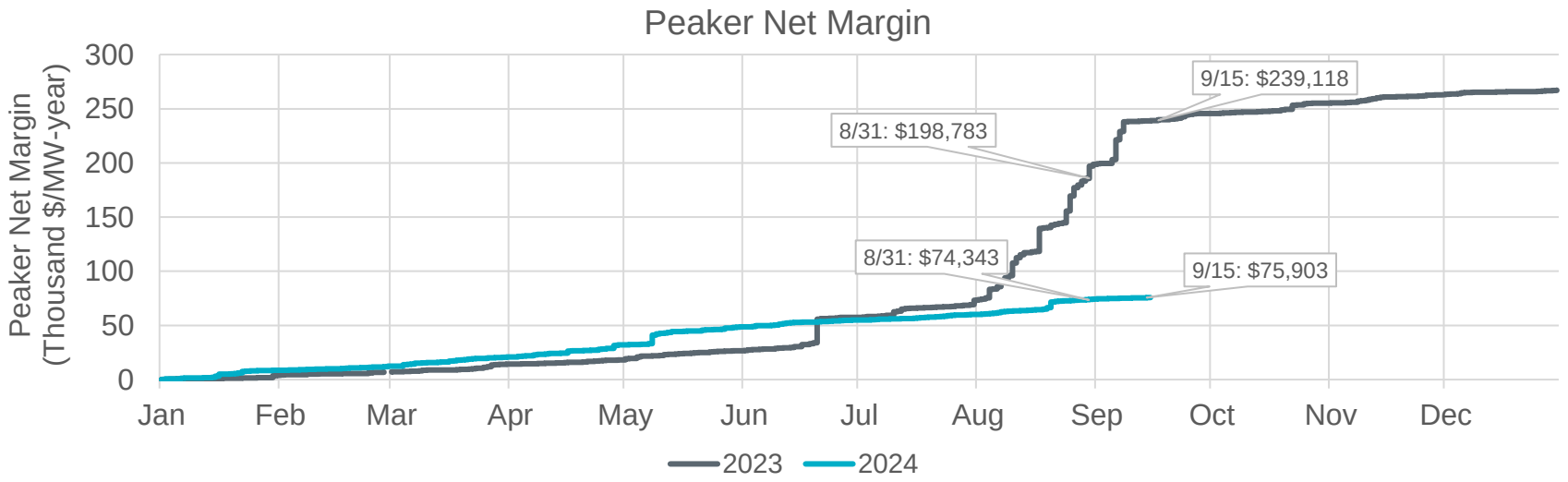
Summer 2024 Market Outcomes Review

Key Observations for Summer 2024

- A new all-time peak demand record of 85,559 MW was set between 5 PM and 6 PM on August 20th. The previous record was 85,464 MW set between 5 PM and 6 PM on August 10th, 2023.
- Real-Time Hub Average Prices in summer 2024 were lower than the previous two summers. The August 2024 Real-Time Hub Average Price ($39.70/MWh) was 82% lower than August 2023 Real-Time Hub Average Price ($221.59/MWh), and 46% lower than August 2022 ($93.18/MWh).
  - Similar significant decreases were observed for Ancillary Services.
- The capacity offered into the market from Energy Storage Resources (ESRs) increased substantially.
- ESRs made a notable proportional contribution to system-wide Ancillary Services in the Day-Ahead Market (DAM).

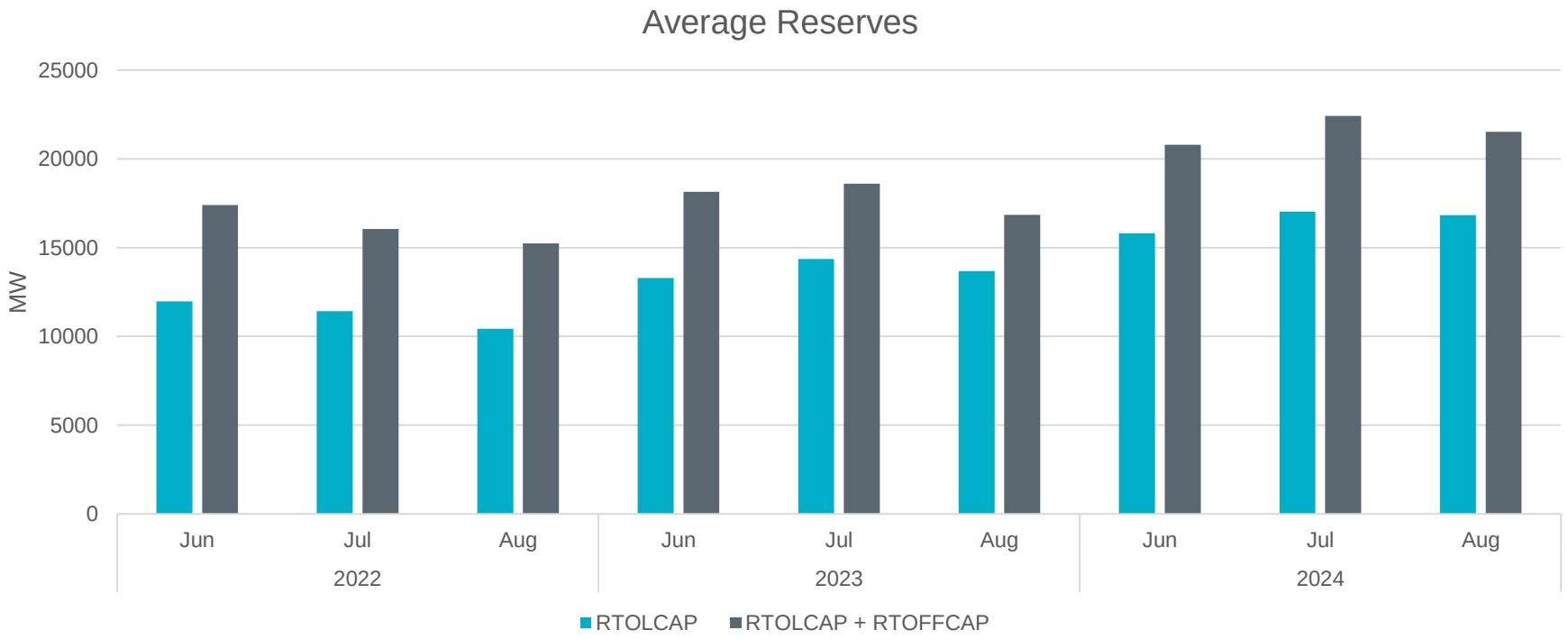
Real-Time Hub Price and Peaker Net Margin





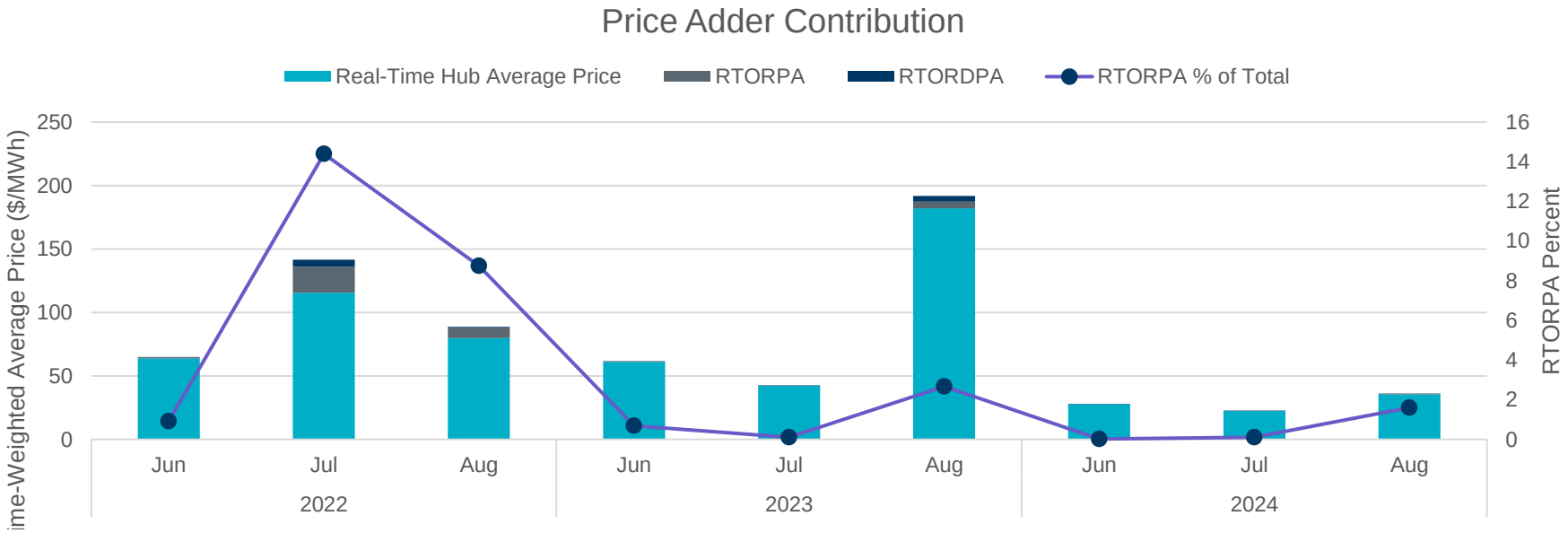
Key Takeaway: Real-Time Prices were lower in summer 2024 than 2023 due to higher supply and lower temperatures. Lower prices also mean that Peaker Net Margin is lower in 2024 relative to 2023.

Operating Reserve Demand Curve (ORDC) Capacity Consists of Online and Offline Reserves



Key Takeaway: Online and offline reserves were greater in summer 2024 than in 2023, due to factors related both to supply and demand.

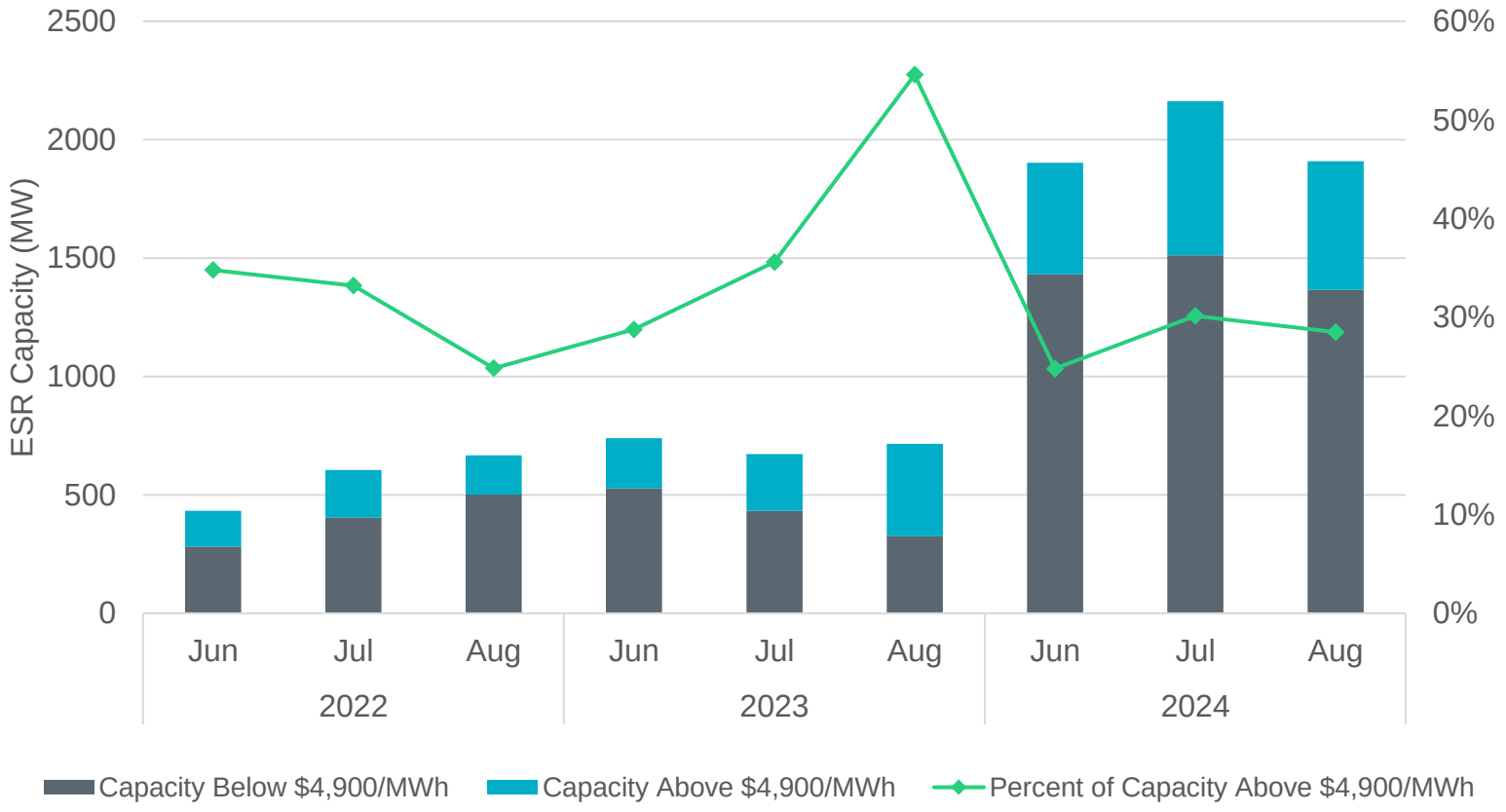
Operating Reserve Demand Curve (ORDC) Contribution to Real-Time Prices



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

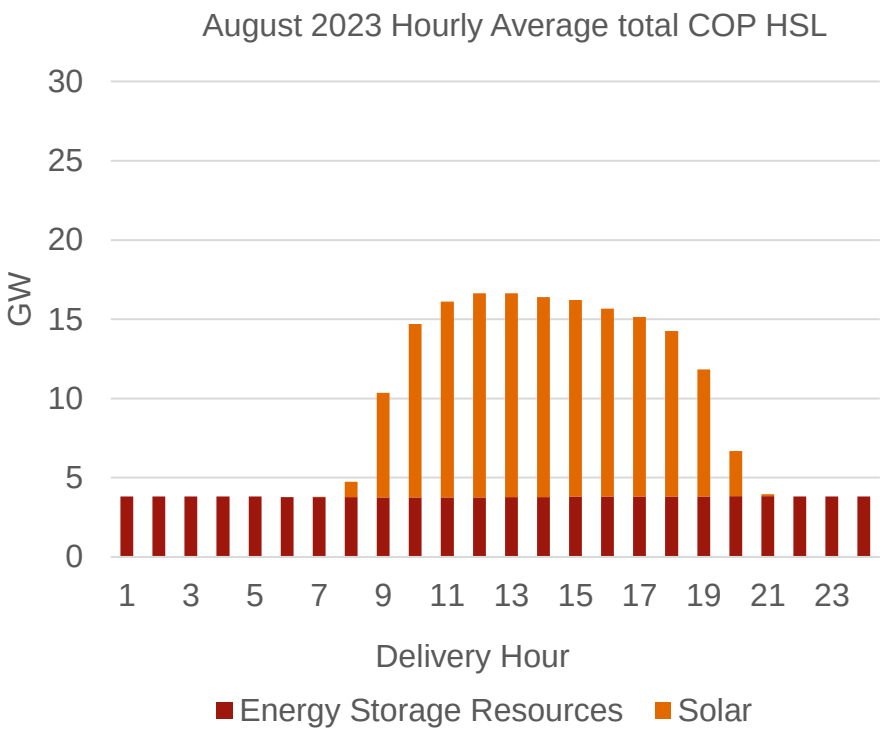
Key Takeaway: With more available capacity and lower RUC activity, price adders had a lower contribution to the market price in summer 2024 relative to previous two summers.

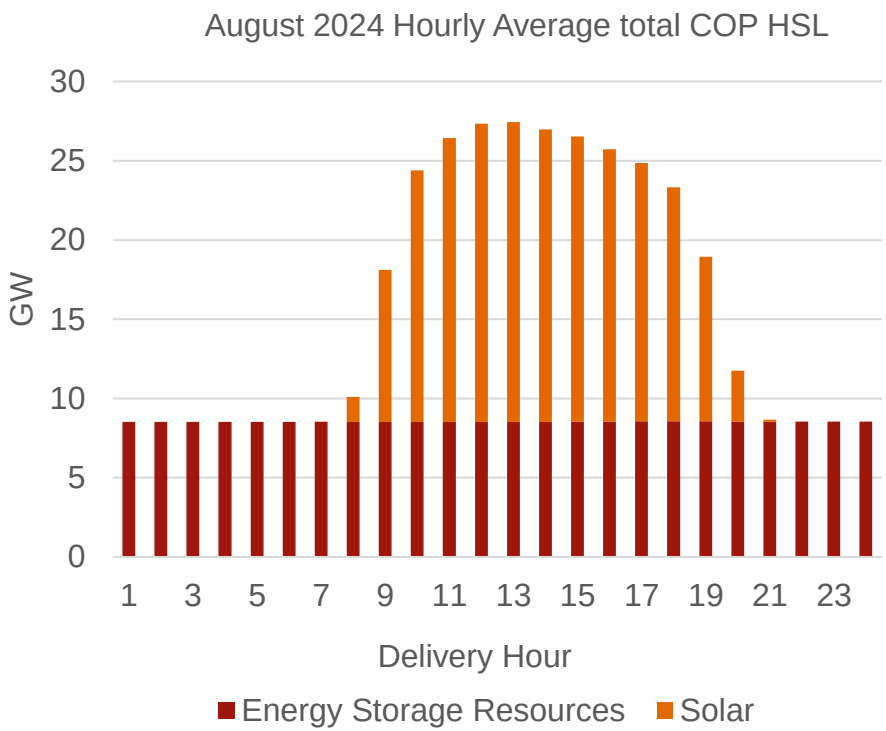
ESR Capacity Offered in Real-Time Market



Key Takeaway: ESR capacity offered into the market increased substantially and a lower proportion was offered near the maximum offer price cap.

Solar and Energy Storage Resources Capacity

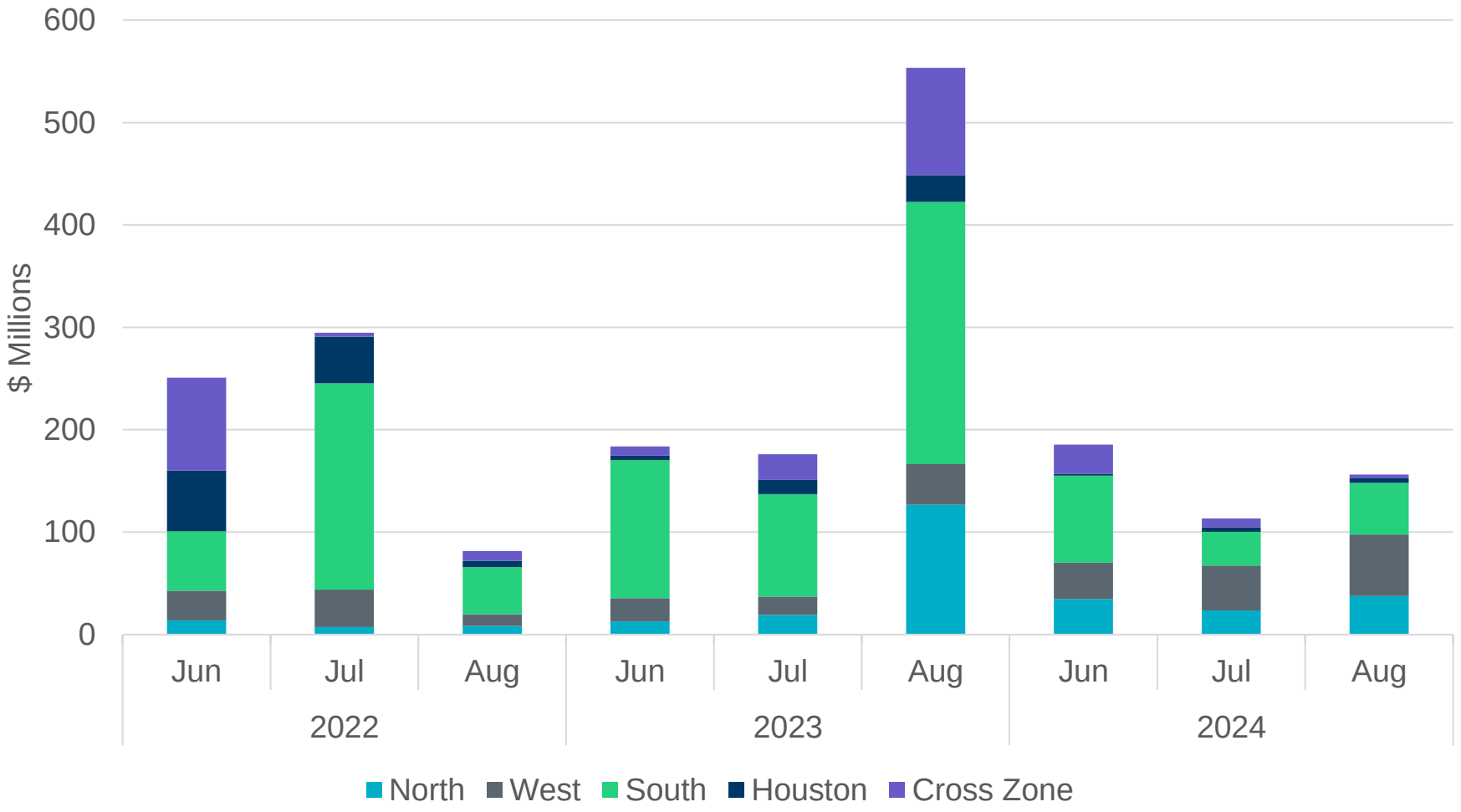




The graphs are based on the latest Current Operating Plan (COP) snapshot data prior to real-time.

Key Takeaway: More solar and ESR capacity was in the system in Summer 2024 compared to 2023.

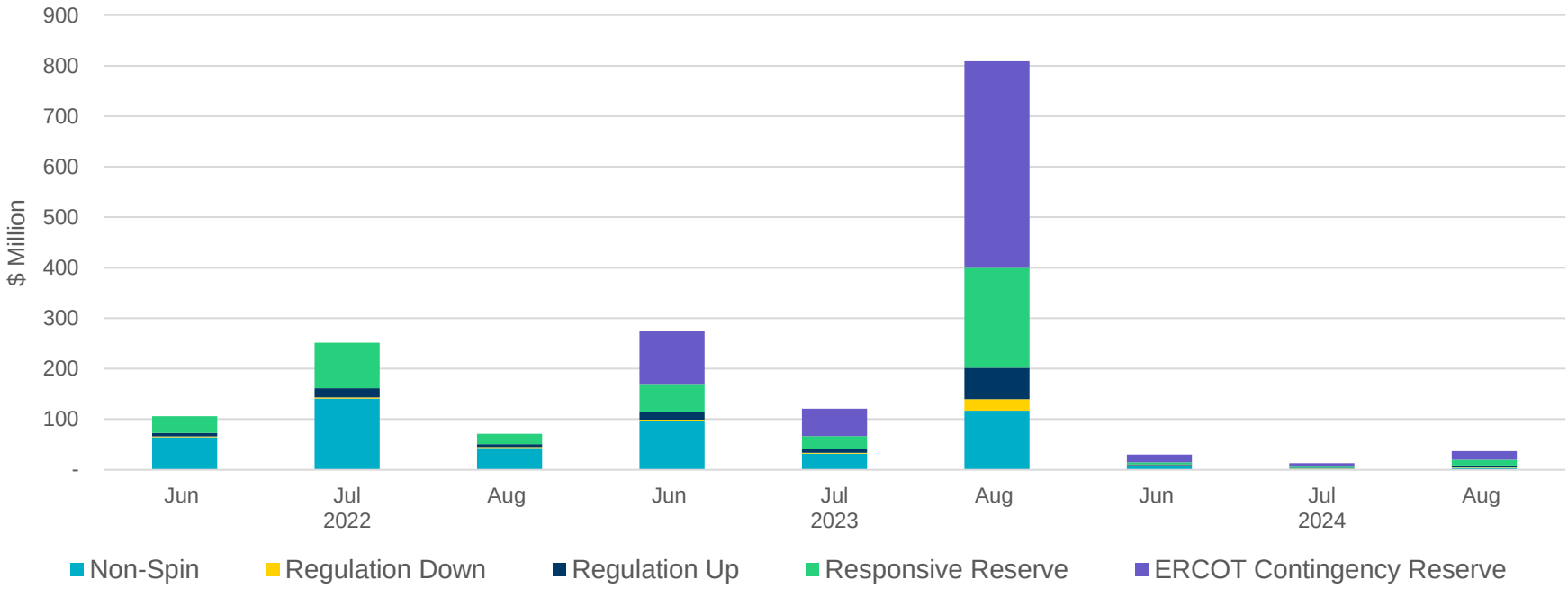
Real-Time Congestion Rent by Zone



Key Takeaway: Real-Time Congestion Rent in summer 2024 was lower than previous two summers.

Cost of Ancillary Services

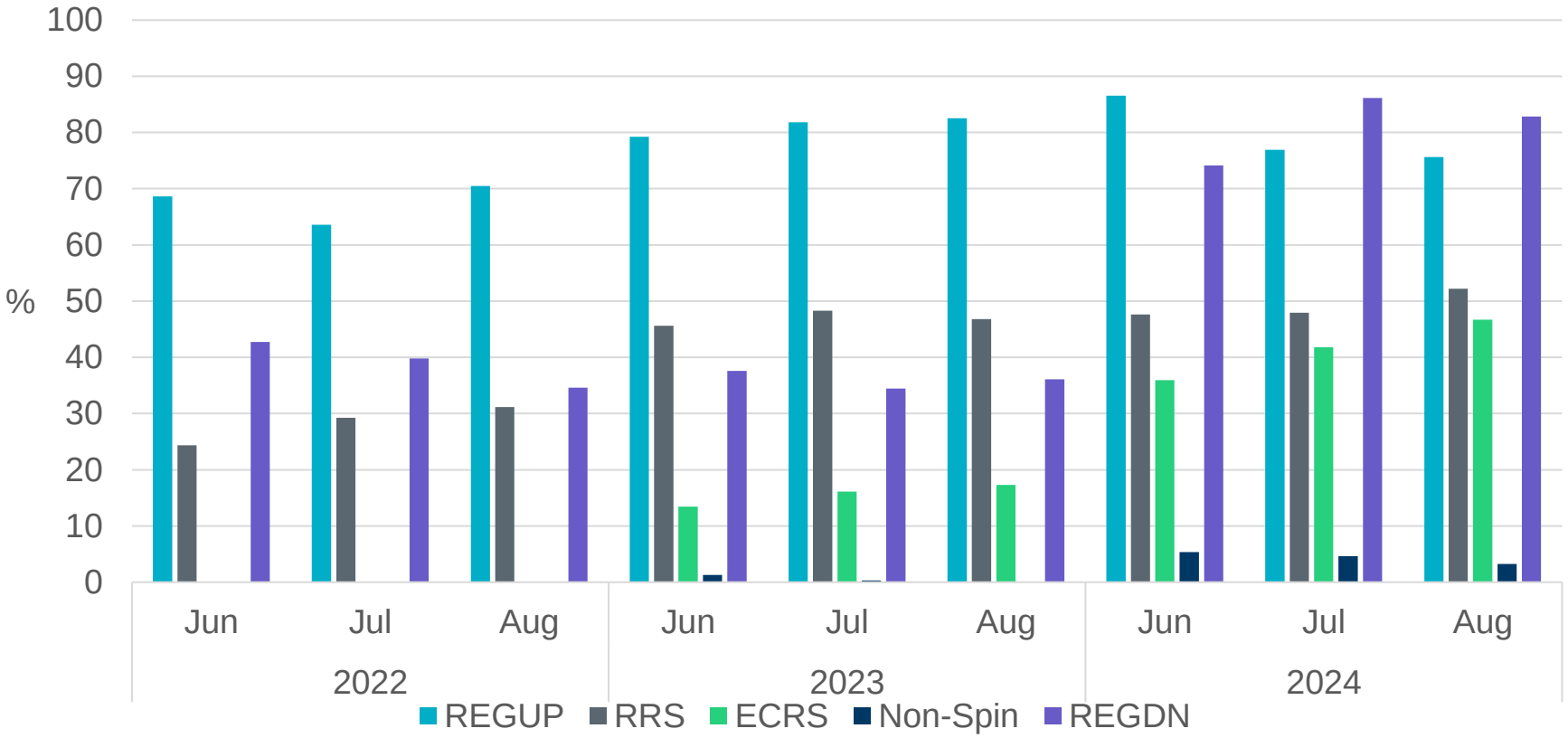
- Cost of Ancillary Services in summer 2024 were substantially lower than for the previous two summers.
  - Total cost of Ancillary Services in 2024 ($36 Million) were 95% lower than the those in August 2023 ($809 Million).
  - Lower total cost of Ancillary Services is in line with the lower total energy cost in 2024.



Values represent the payments to QSEs for AS procured in DAM and do not account for self-arrangement or bilateral trades.

Key Takeaway: Generally higher available capacity and resulting lower prices mean that the cost of Ancillary Services were lower in Summer 2024 than previous two summers.

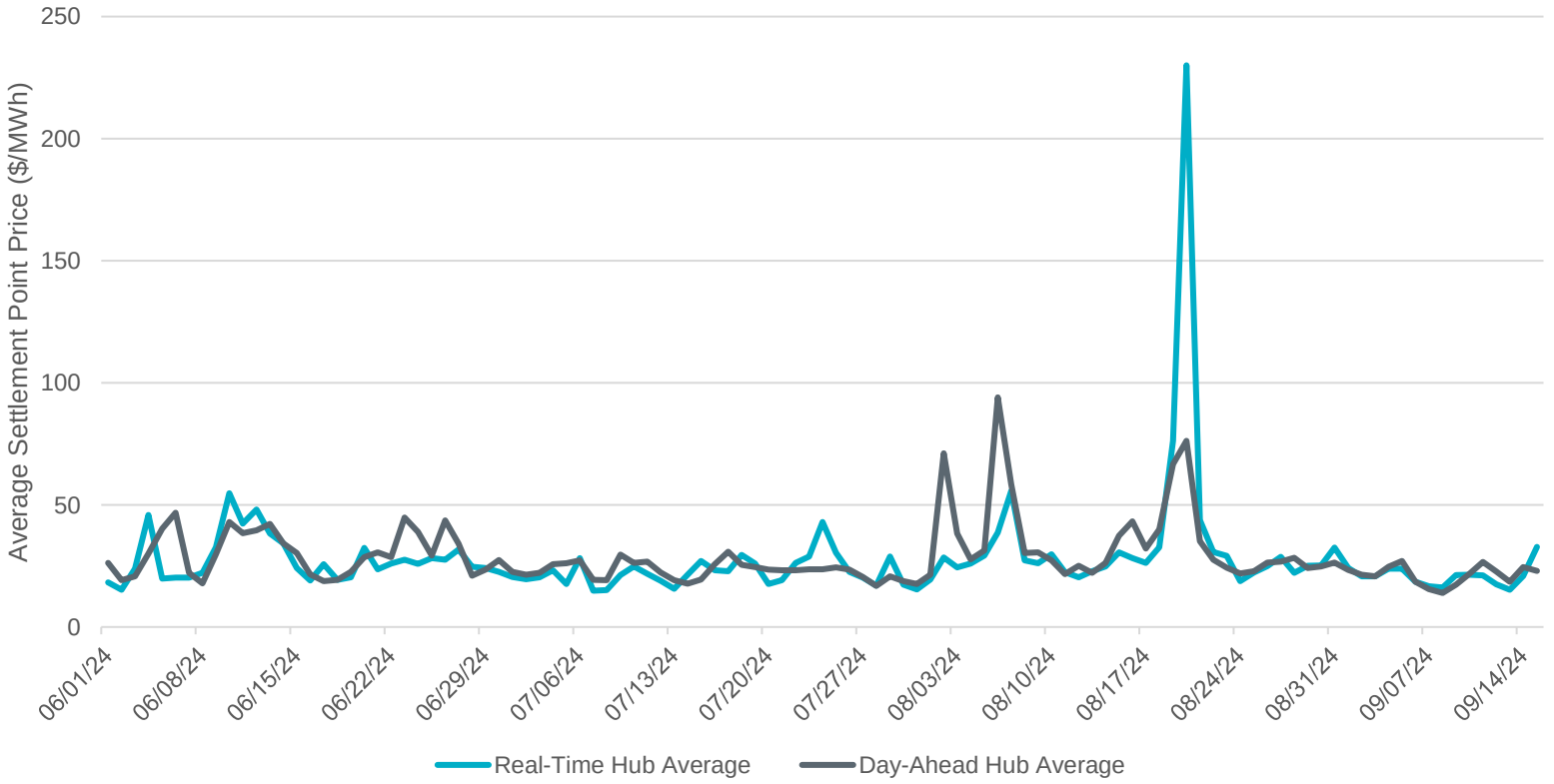
ESR Percent of Total System-Wide Ancillary Service Procurement in the DAM



Key Takeaway: The percentage of total system-wide Ancillary Services procured from ESRs in the Day-Ahead Market (DAM) was notable, particularly in ECRS and Regulation Down.

Comparison of Day-Ahead and Real-Time prices

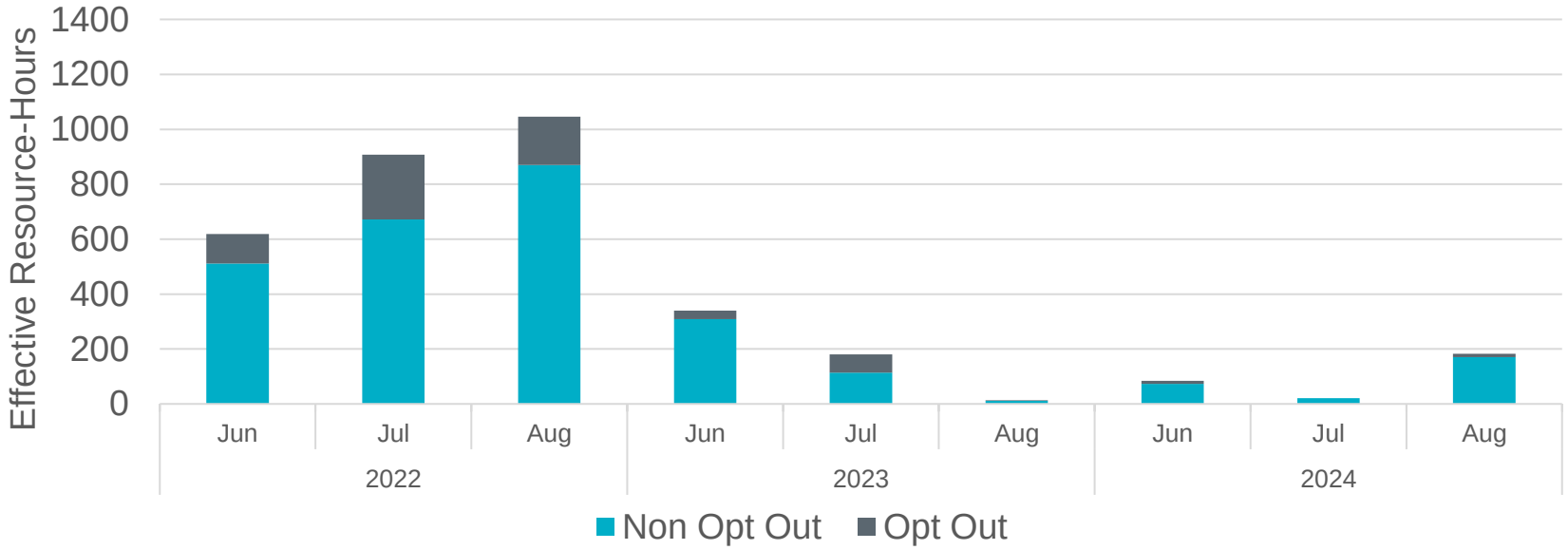
- Price convergence between the DAM and Real-Time Market (RTM) remained typical during summer 2024, though there were several days where the two markets diverged. On some occasions, DAM cleared higher, while on others, RTM prices were higher.



Key Takeaway: DAM and RTM prices were generally aligned during summer 2024.

Resources Committed Through RUC

- There were 300 total Reliability Unit Commitment (RUC) effective Resource-hours in summer 2024. This was a reduction from the 533 effective Resource-hours in the summer of 2023 and a substantial reduction from the 2,573 effective Resource-hours in the summer of 2022.
- 56 unique Resources were committed from June to August 2024 which is more than the 36 unique Resources during summer 2023 and the 42 unique Resources during summer 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 summer 2024 than previous two summers, but there was greater diversity in the fleet of Resources that were committed.

CRR Auction Performance

CRR Performance Risk

- ERCOT is working closely with stakeholders on mitigating the risk of long-running CRR Auctions, specifically the multi-month auction sequences 2-3 years out.
  - Risk continues to increase due to robust market participation which has grown from 89 CRR Account Holders to 245 in past eight years.

- Currently there is a single transaction limit of 400,000 bids in each auction:
  - Monthly CRR Auction (prompt month) on a 90% network model capacity
  - Six long-term sequence auctions (current future auctions)
    - First half of 2025 (70% model) Second half of 2025 (55% model)
    - First half of 2026 (40% model) Second half of 2026 (30% model)
    - First half of 2027 (20% model) Second half of 2027 (10% model)

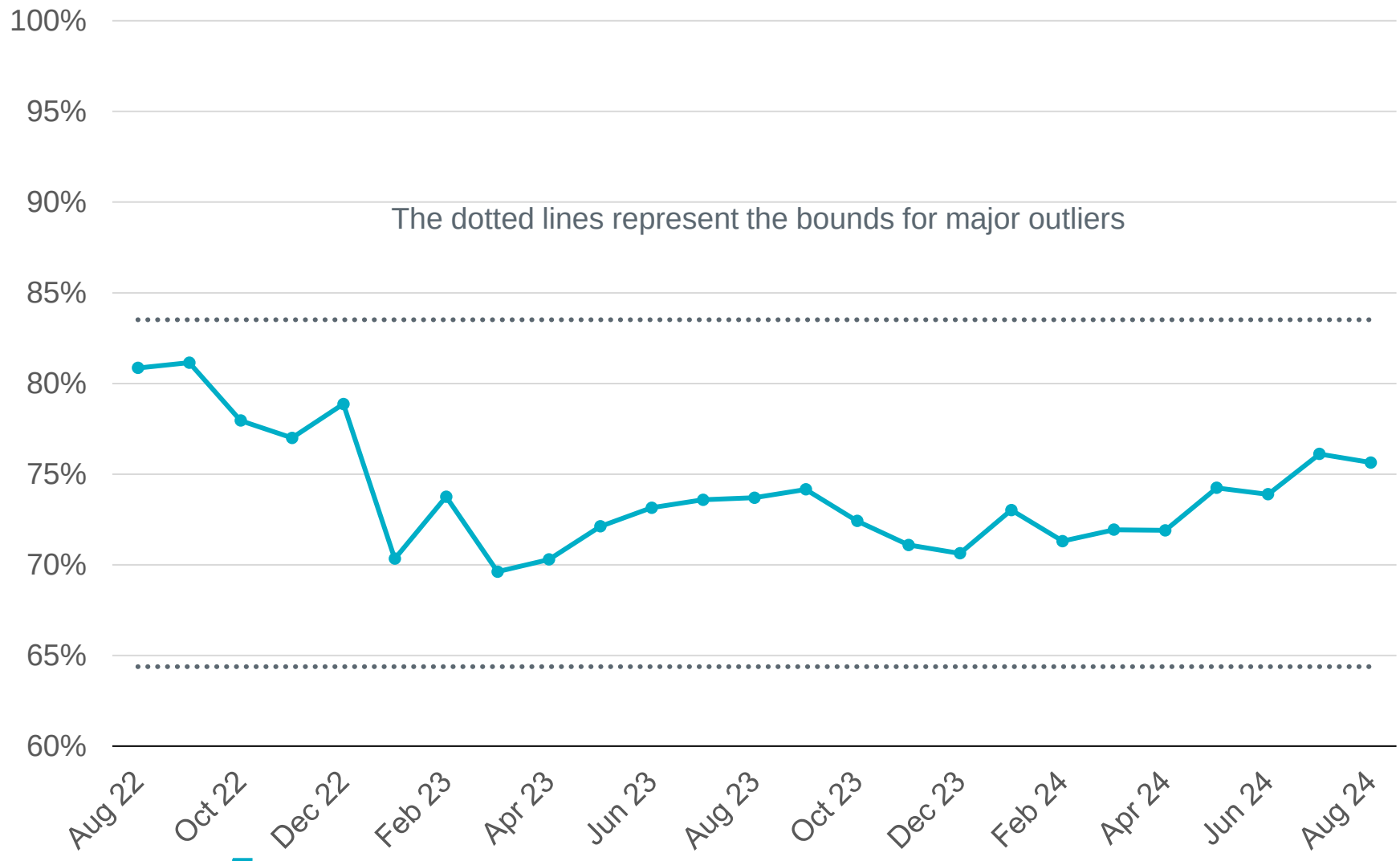
- However, this single transaction limit is becoming fully-subscribed for the three smallest models and creates extremely long-run execution time
  - Target run time is <100 hours, but experienced 180, 222, and 363 hours this year.
  - This issue was discussed at April 2024 Board T&S and ERCOT has worked with vendor to maximize performance with software patches and 28-concurrent CPUs.

- While ERCOT made it though this last round of long-term auctions, ERCOT is working on mitigating the performance by transitioning from single transaction limit to different limits for the distinct auctions (i.e. guard rails) with protocol changes.

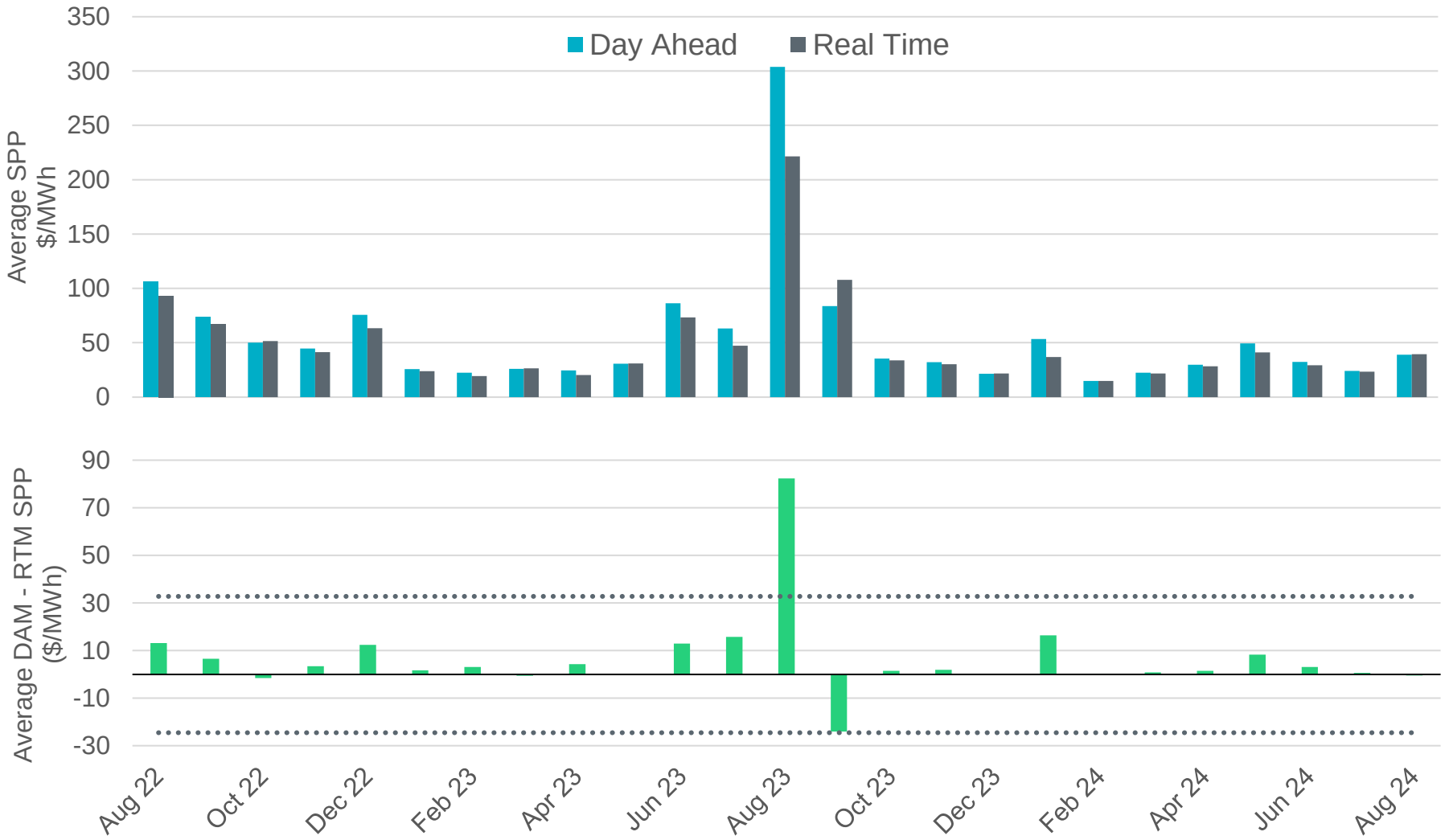
- ERCOT is also collaborating with the market on changes to use market tools to mitigate over-participation, such as increasing minimum bid price above $0.01

Appendix

Percentage of Real-Time Load Transacted in the Day-Ahead Market

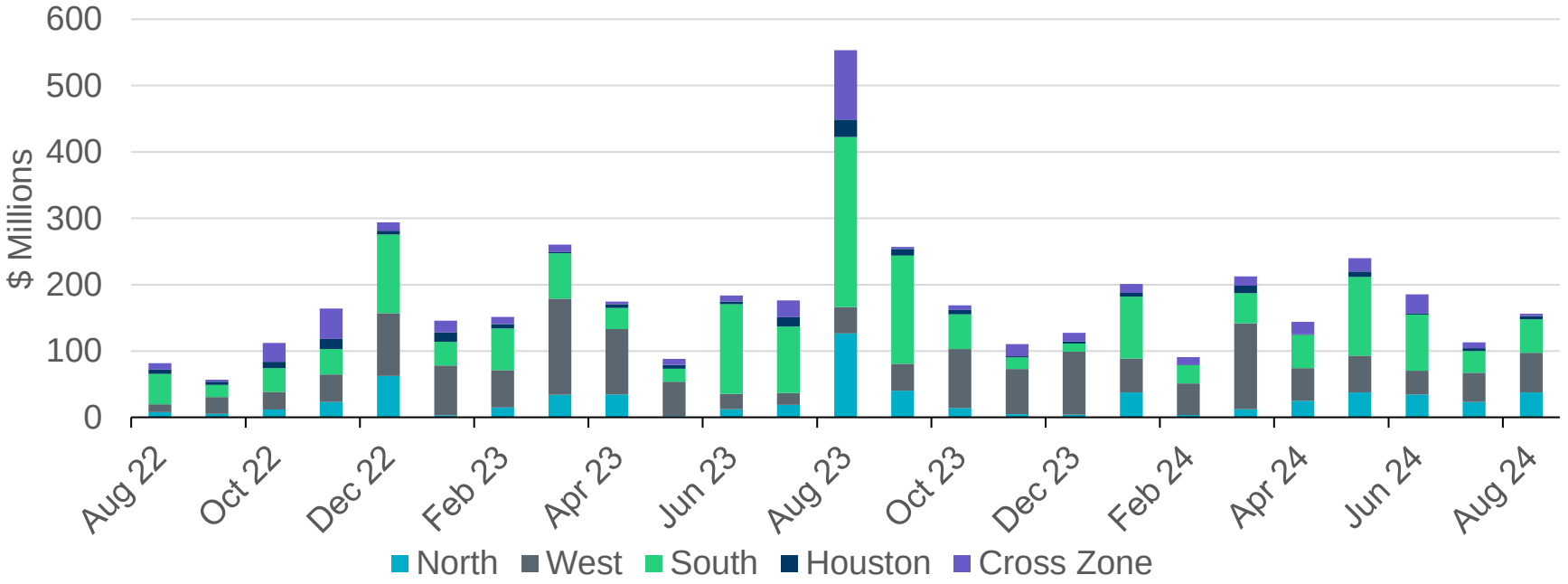


Day-Ahead and Real-Time Market Price Differences



*Averages are weighted by Real-Time Market Load

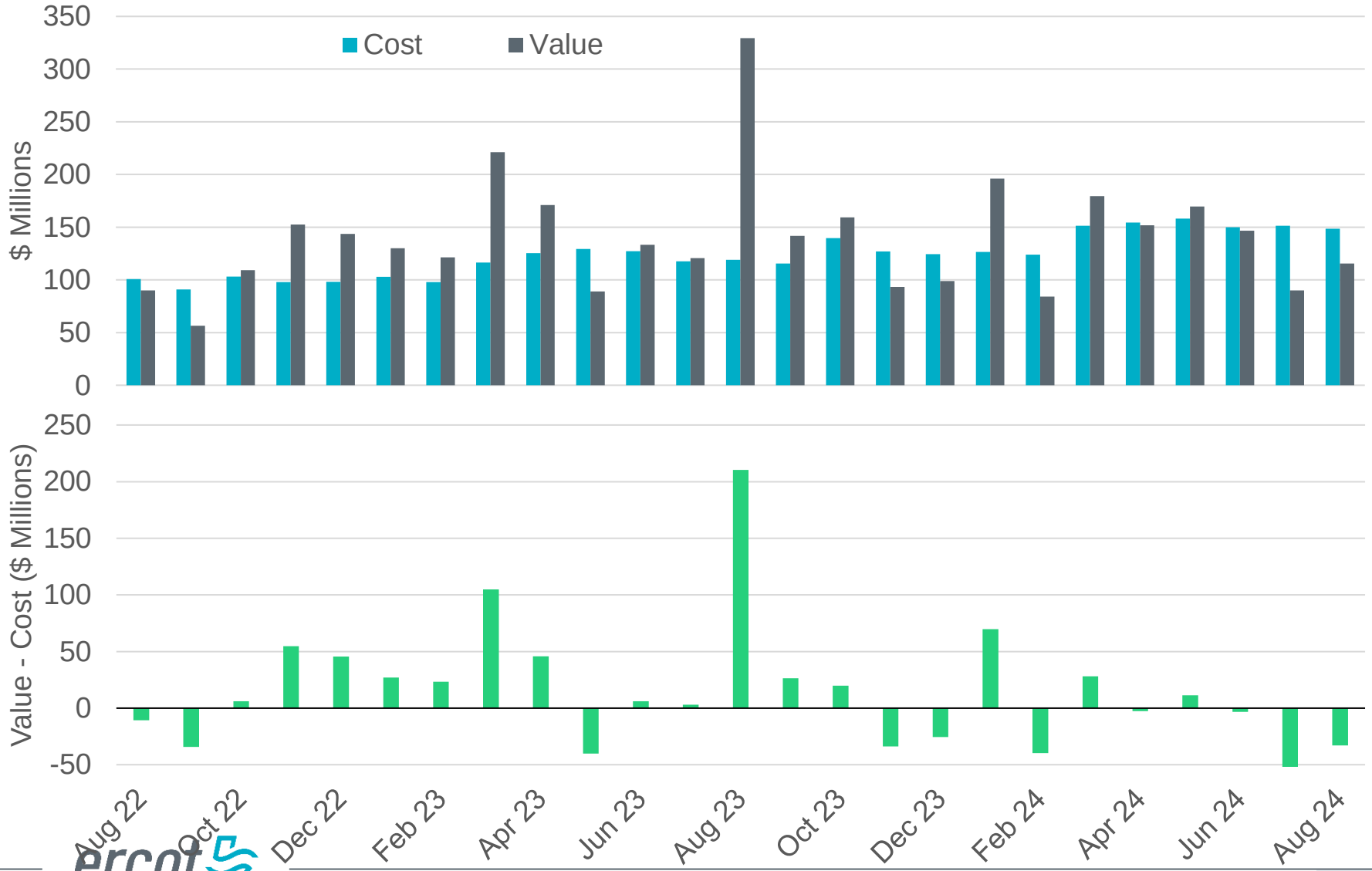
Real-Time Congestion Rent by Zone



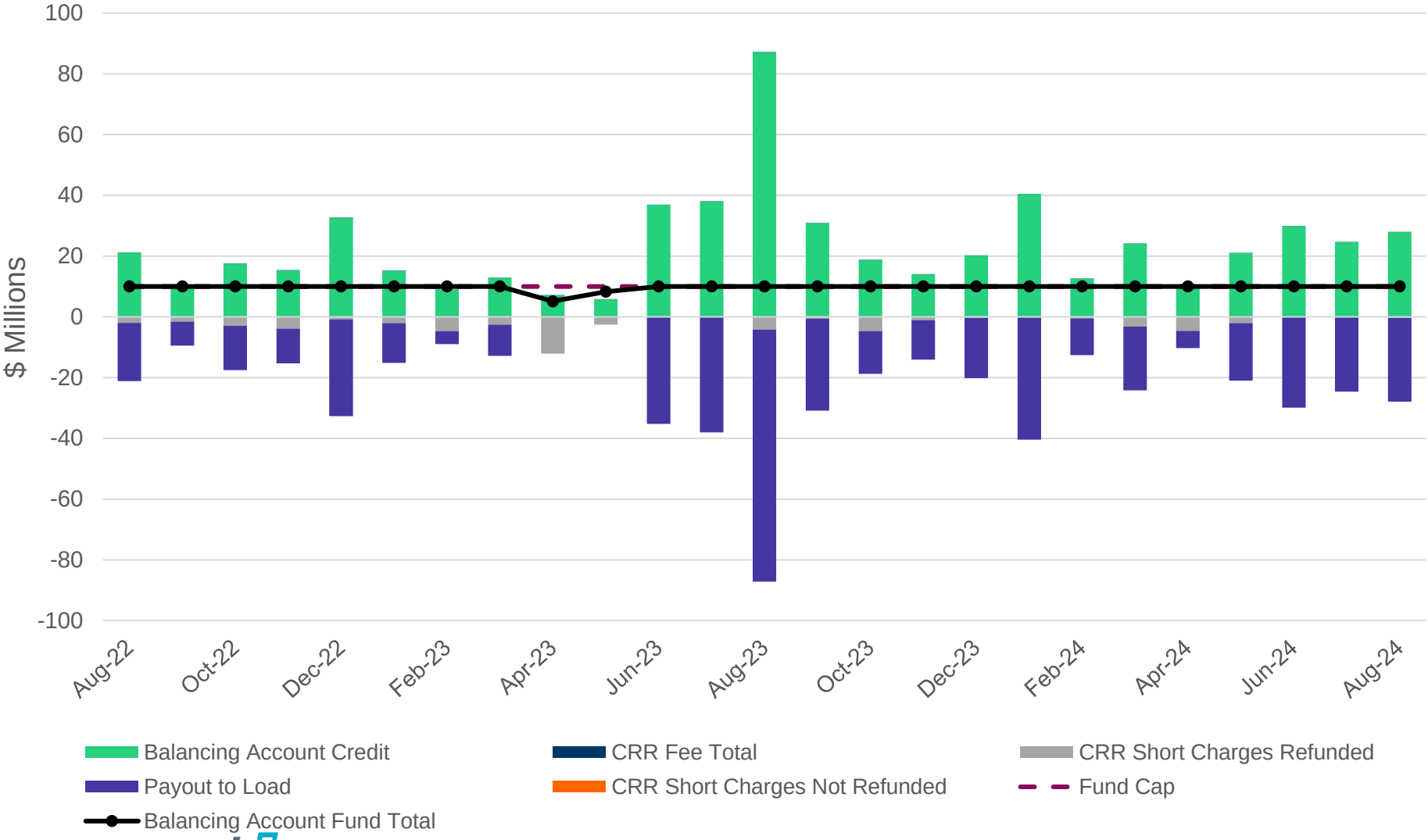
- Congestion Rent is determined using the shadow prices and MW flows for individual constraints in SCED as well as the duration of congested SCED intervals.
- In August, total Real-Time congestion rent increased compared to July, with the highest congestion rent observed in the West and South Zones.
  - South Zone congestion rent was primarily driven by the loss of the Austrop to Daffin Gin 138kv line from AEN Dunlap to Decker Power Plant.
  - West Zone congestion rent was primarily driven by the loss of the 345 kV contingency from Consavvy Switch to Morgan Creek, overloading the 138 kV transmission line from Morgan Creek to Navigation.

Note: The “Cross Zone” category consists of cases in which the substations on either end of the constraint are in different zones.

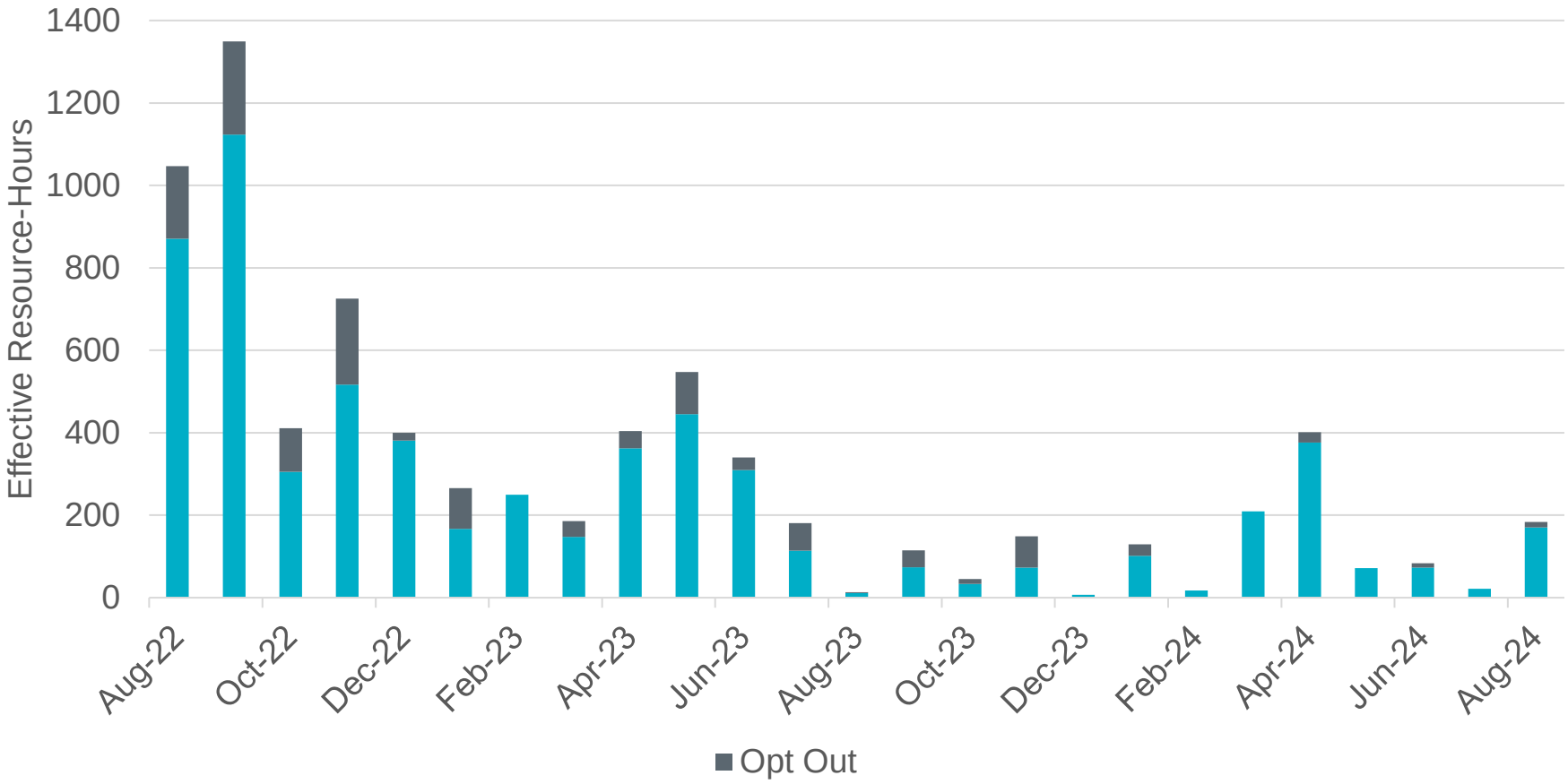
Congestion Revenue Right (CRR) Value and Cost Differences



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



Reliability Unit Commitment: Sixteen Resources were Committed in August for Capacity and Congestion



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

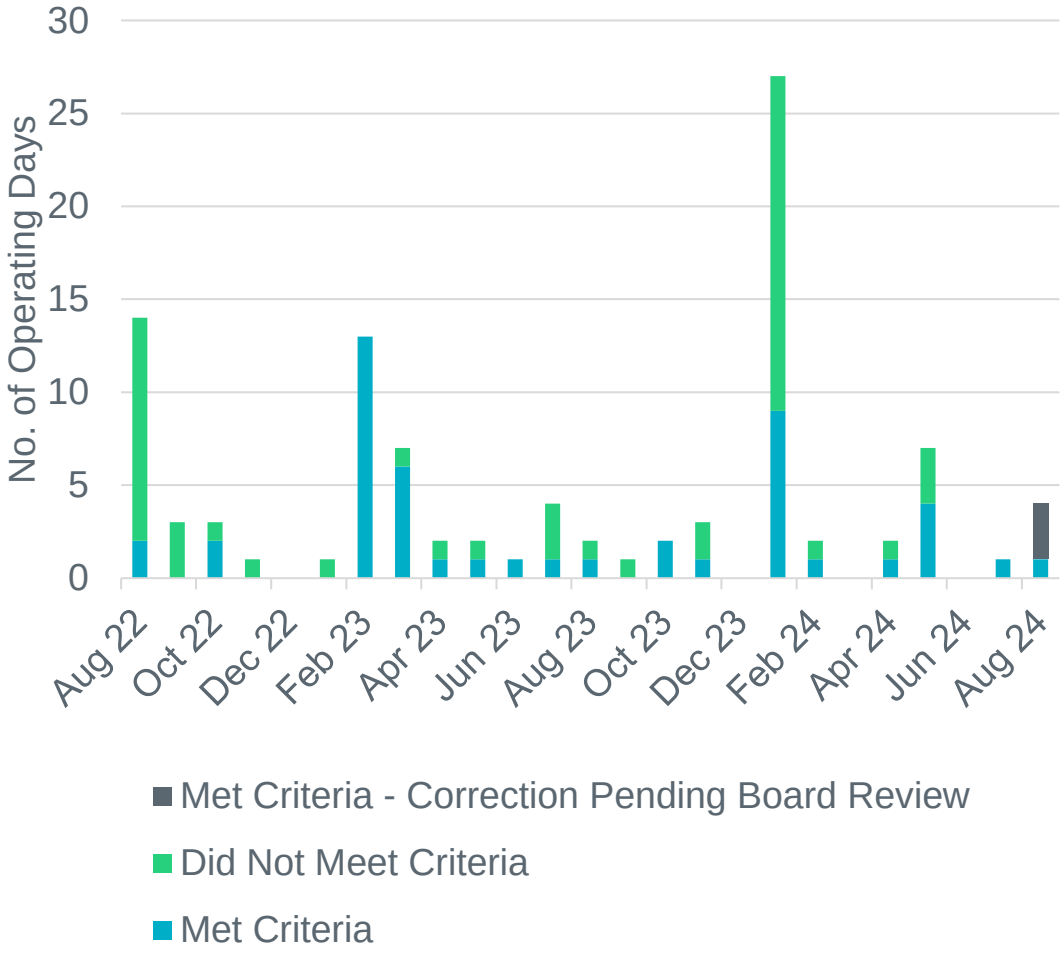
Reliability Unit Commitment: Sixteen Resources were Committed in August for Capacity and Congestion

Resource #	Effective Resource-hours	Non Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	6.0	0.0	6.0
2	37.0	31.0	6.0
3	10.0	10.0	0.0
4	8.0	8.0	0.0
5	23.9	22.9	1.0
6	8.0	8.0	0.0
7	15.9	15.9	0.0
8	7.0	7.0	0.0
9	13.9	13.9	0.0
10	18.6	18.6	0.0
11	10.9	10.9	0.0
12	3.9	3.9	0.0
13	3.0	3.0	0.0
14	5.0	5.0	0.0
15	5.0	5.0	0.0
16	6.9	6.9	0.0
SUM	**183.1**	**170.1**	**13.0**

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 would not have met the criteria for “significance” under NPRR1024, but were corrected because NPRR1024 was not yet in place; and
- Days that were not corrected because they did not meet the criteria for “significance” under NPRR1024.



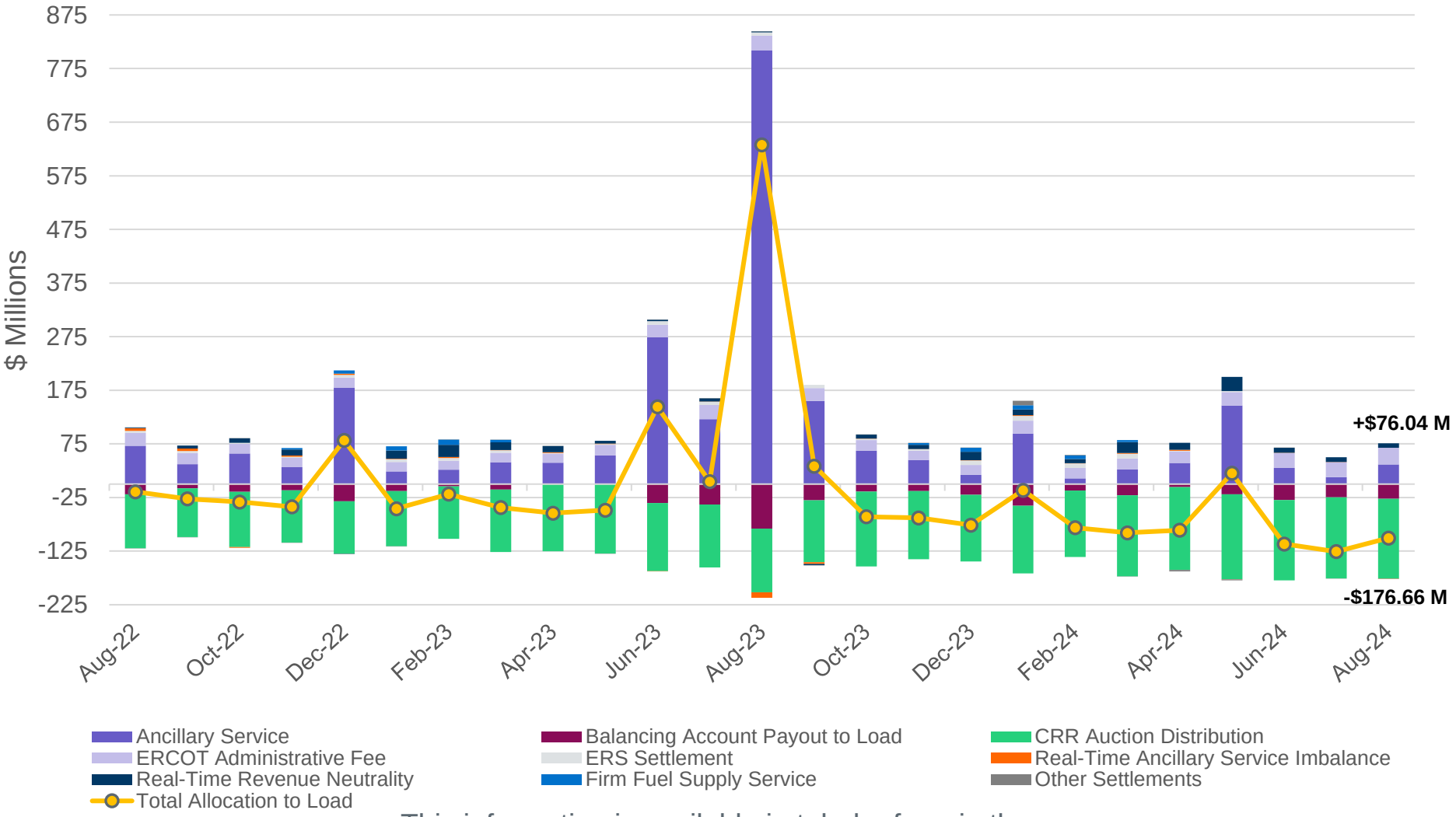
Details for Price Corrections Review

- On August 9 - 10, 2024, ERCOT had incorrectly updated the effective dates for a Resource's registration status, resulting in the Resource not being considered for Security-Constrained Economic Dispatch (See Market Notice M-A082024-01). Impact analysis showed that both Operating Days (ODs) met criteria for seeking review by the ERCOT Board of Directors (Board). Further details of the analysis will be given in an upcoming Market Notice.

- On August 20, 2024, an attempt by ERCOT to recall 500 MW resulted in all 2000 MW of the currently deployed ECRS to be recalled. This was due to a software defect in the user interface used by the Operator (See Market Notice M-A082824-01). Impact analysis showed that the OD met criteria for seeking review by the ERCOT Board of Directors (Board). Further details of the analysis will be given in an upcoming Market Notice.

- On August 28, 2024, Emergency Basepoints were activated during a planned upgrade to the MMS system. The resulting impact analysis showed that this day met criteria for price correction, with an estimated total dollar impact of $50,914.

Net Allocation to Load in August 2024 was ($100.62) Million

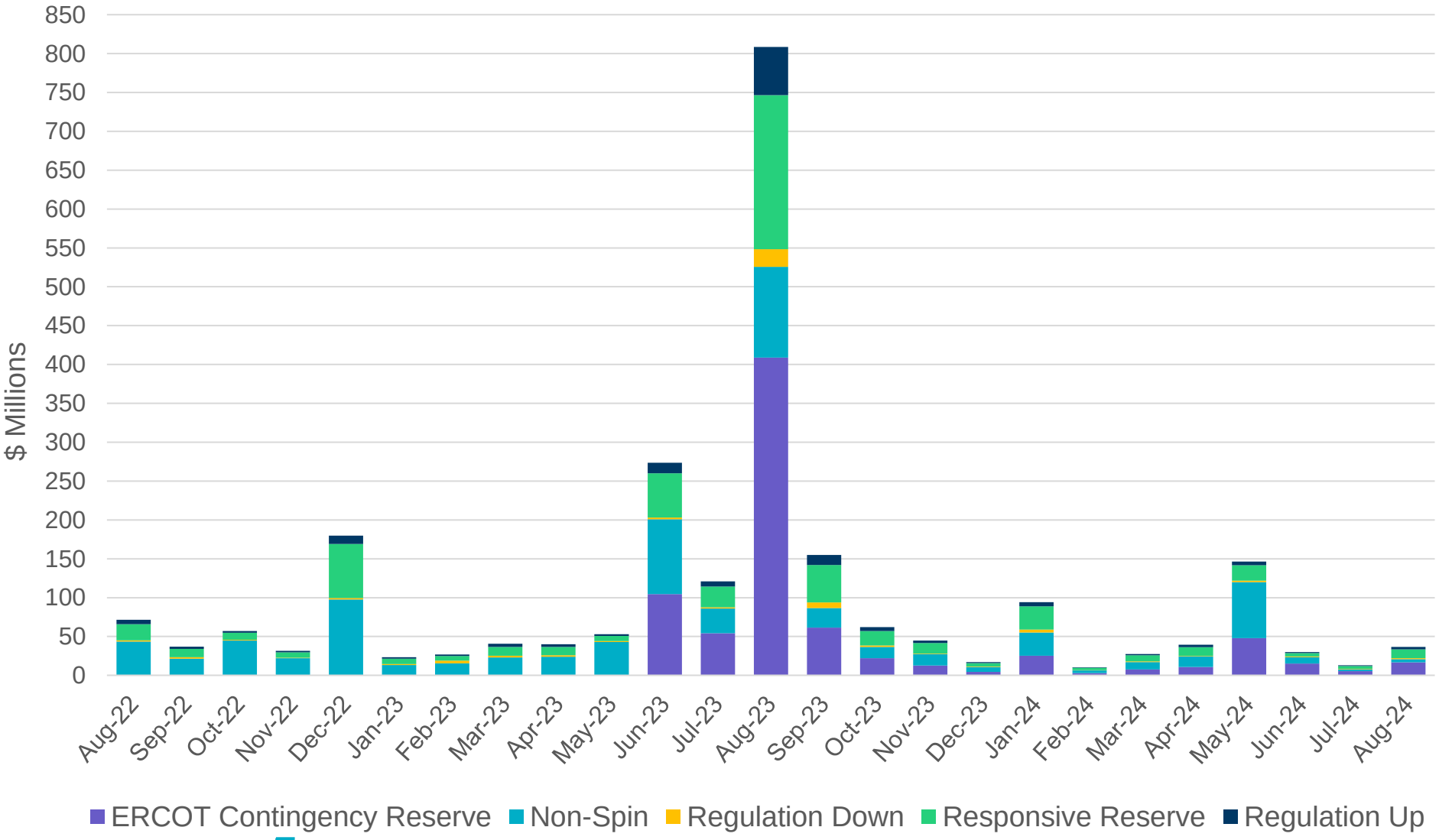


This information is available in tabular form in the Settlement Stability Report presented quarterly to the [Wholesale Market Subcommittee]

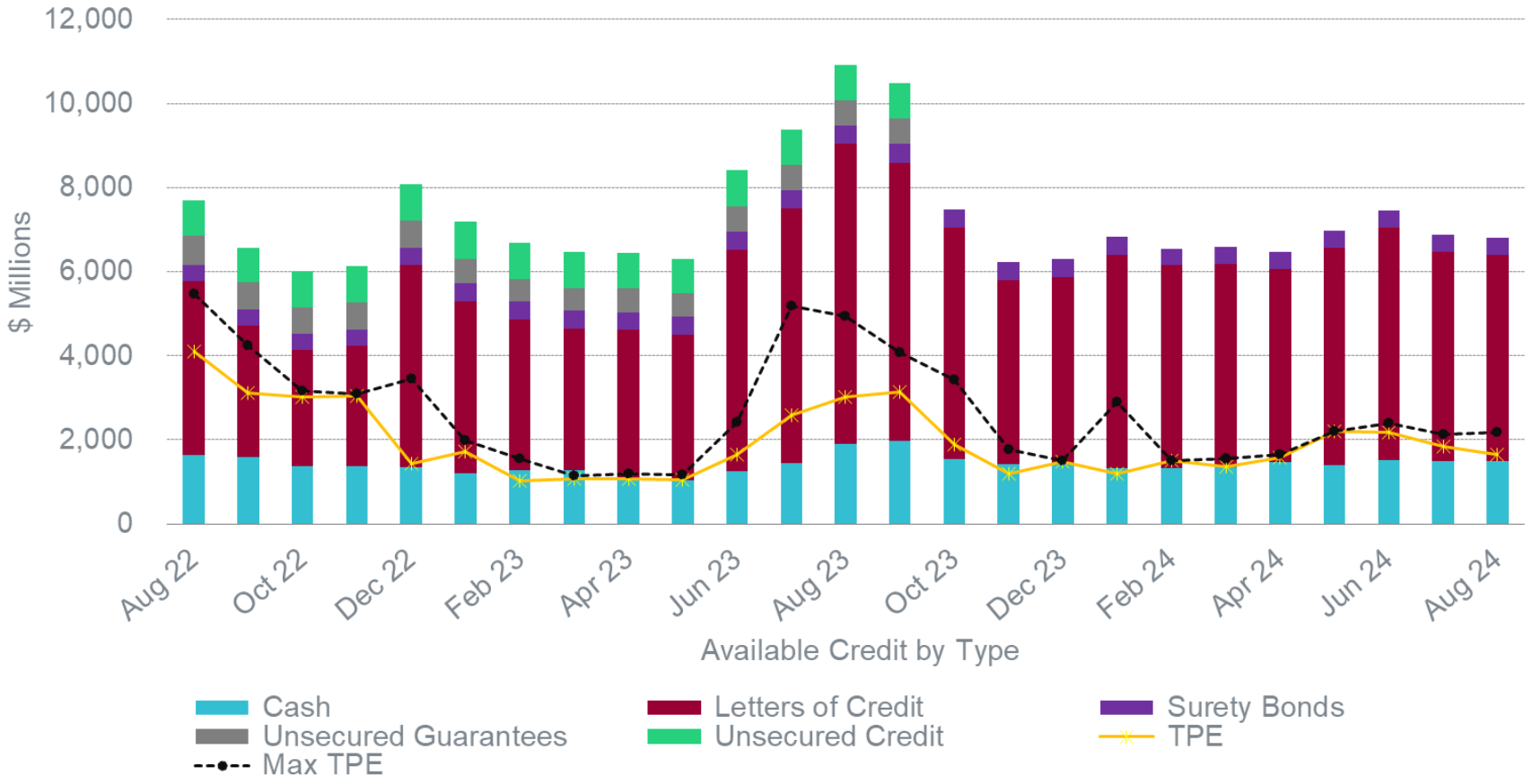
Real-Time Revenue Neutrality Allocated to Load was $8.33M for August 2024

	August 2024 ($M)
Real-Time Energy Imbalance	$144.00
Real-Time Point-to-Point Obligation	($140.08)
Real-Time Congestion from Self-Schedules	$0.41
DC Tie & Block Load Transfer	($11.43)
Real-Time Energy for SODG and SOTG	($1.23)
Load Allocated Revenue Neutrality	**$8.33**

Ancillary Services for August 2024 totaled $36.57M



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



*Numbers are as of month end except for Max TPE

Retail Transaction Volumes – Summary – August 2024

	Year-To-Date		Transactions Received	
Transaction Type	August 2024	August 2023	August 2024	August 2023
Switches	866,555	787,775	104,312	119,121
Acquisitions	0	0	0	0
Move - Ins	2,160,557	2,101,353	282,027	282,005
Move - Outs	962,027	944,837	123,848	127,670
Continuous Service Agreements (CSA)	294,985	311,596	50,506	28,454
Mass Transitions	0	0	0	0
Total	4,284,124	4,145,561	560,693	557,250