



Item 10.3: Commercial Markets Update

Kenan Ögelman

Vice President, Commercial Operations

Reliability and Markets Committee Meeting

ERCOT Public

February 26, 2024

Overview

- **Purpose**

- Update the Committee on Aggregate Distributed Energy Resource (ADER) Pilot
- Review recent winter storm outcomes.

- **Voting Items / Requests**

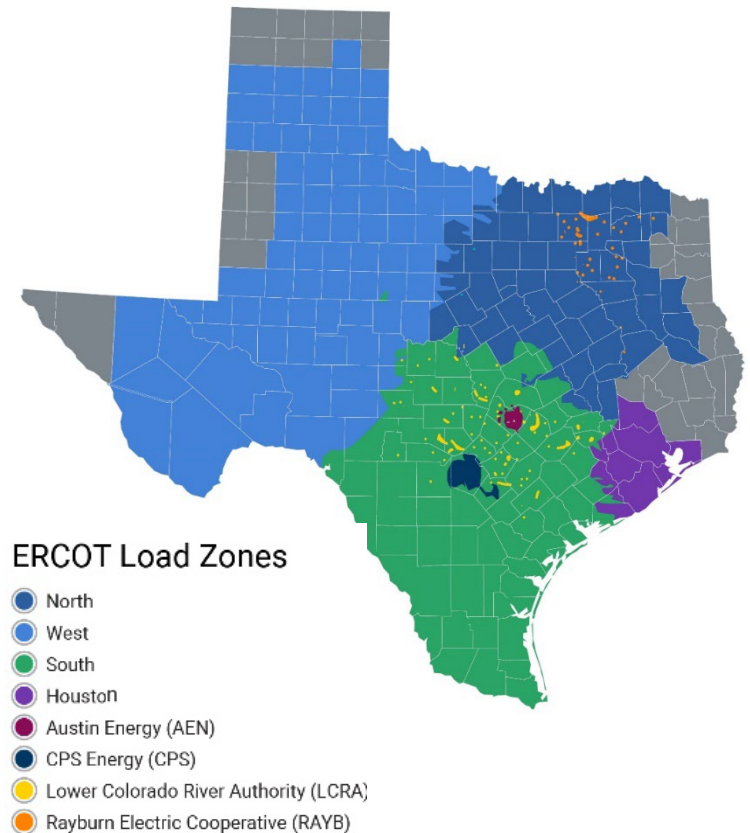
No action is requested of the Reliability and Markets (R&M) Committee or Board; for discussion only. ADER vote is a separate action item.

- **Key Takeaways**

- Currently nine ADERs are fully qualified. Two ADERs are fully participating in Non-Spinning Reserve Service (Non-Spin). Phase II is under discussion.
- Market performed as expected during the January winter storm.

Aggregate Distribution Energy Resources (ADERs)

- ADERs are a virtual aggregation of small consumer-owned energy devices.
- In June 2022, the PUCT directed ERCOT to begin developing a pilot project to test how ADERs will participate in ERCOT's wholesale market.
- ERCOT has accepted aggregation forms from 9 ADERs:
 - 6 ADERs in the Houston Zone (7 MW)
 - 2 ADERs in the South Zone (1.4 MW)
 - 1 ADER in the North Zone (4.3 MW)
 - ERCOT-Wide Energy: **9.4 MW**
 - ERCOT-Wide Non-Spin: **3.1 MW**
- As of 09/11/2023, they have carried Non-spinning Reserve Service responsibility.
- Other ADERs have applied but are in various stages of registration/qualification and cannot fully participate yet.
- Discussions on what a second phase of the Pilot might look like have started.

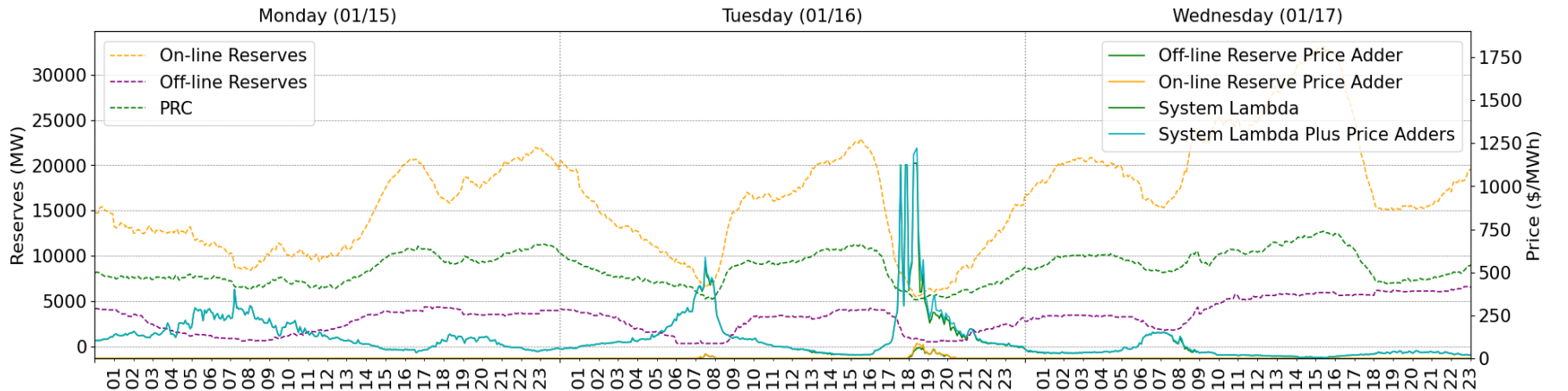
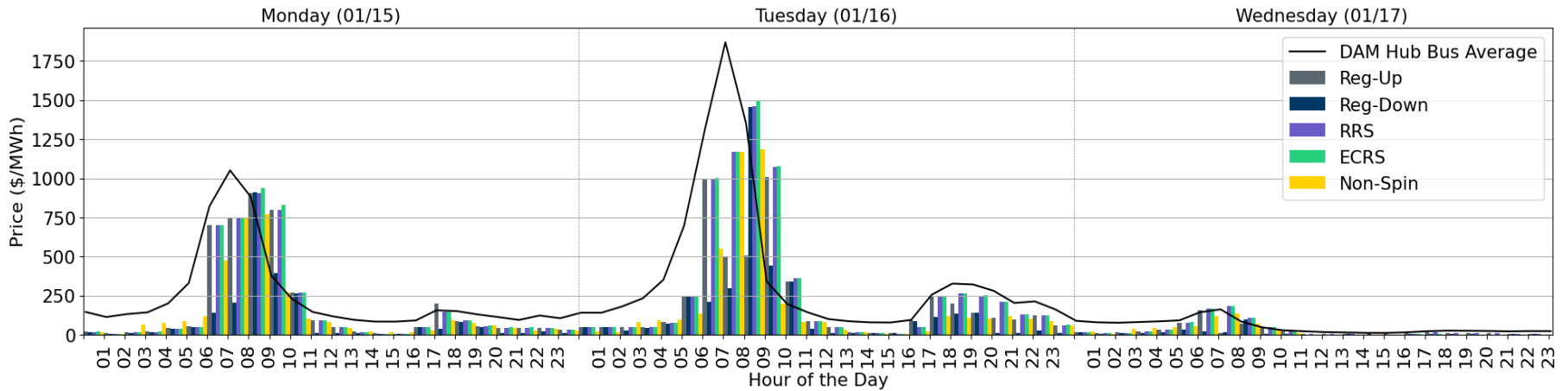


Key Observations from January 16 and 17

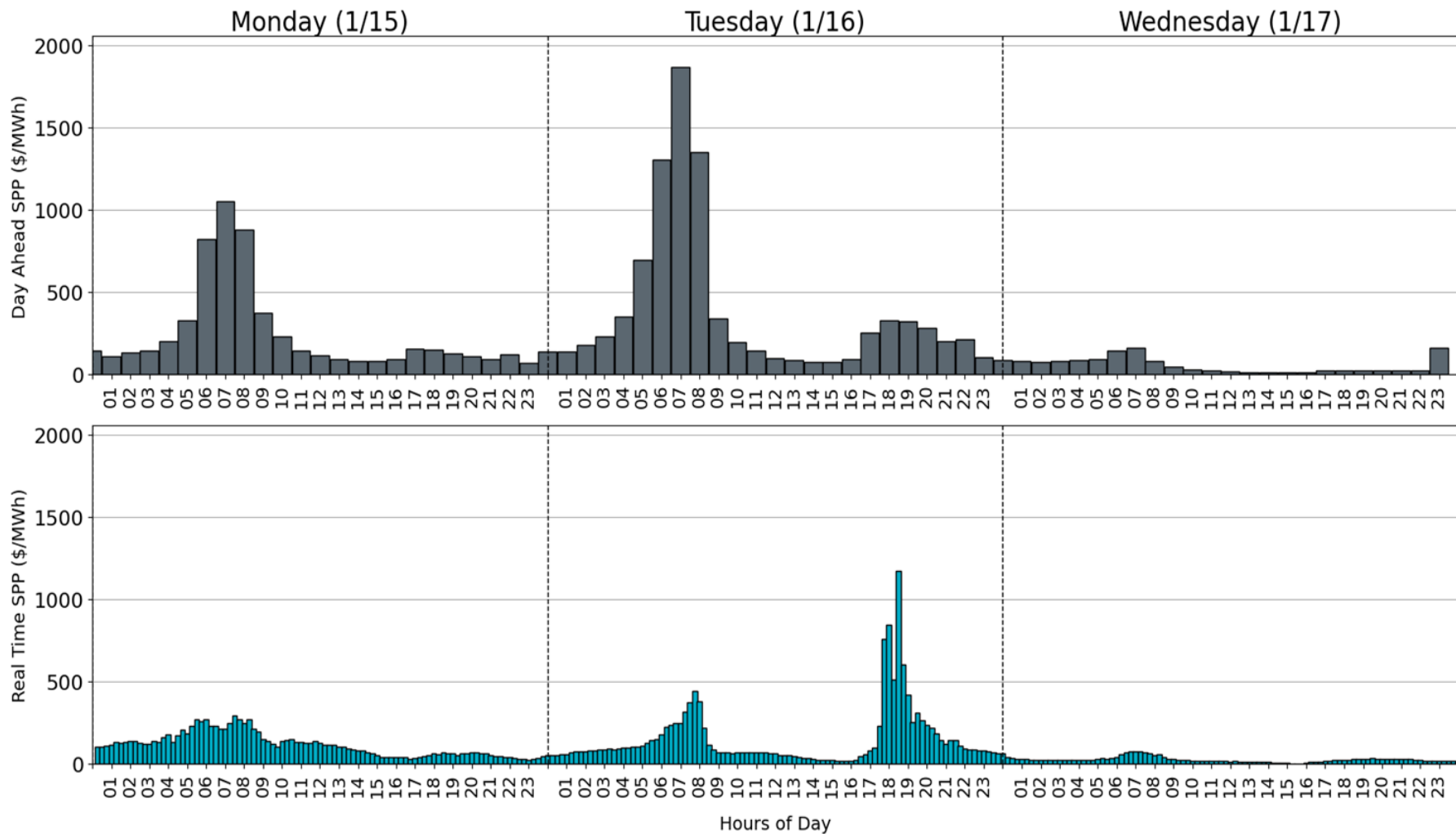
- Overall, market outcomes supported reliability needs.
- Both Day-Ahead Market (DAM) prices and Real-Time Market (RTM) prices were elevated during the morning and evening peak hours. For the DAM, the morning peak prices were particularly pronounced.
 - The highest DAM hourly Hub Average Settlement Point Price (SPP) occurred during the morning peak at Hour Ending (HE) 8 for Operating Day (OD) 1/16 with a price of \$1,869/MWh.
 - The highest Real-Time Hub Average SPP occurred during the evening peak at Interval Ending 18:15 on OD 1/16 with a price of \$1,175.56/MWh.
- On-line Operating Reserve Demand Curve (ORDC) reserves were relatively high with the lowest value being 5,414 MW at 18:25 on OD 1/16. The ORDC adder (RTORPA) at this time was \$88.21/MWh.
- The ORDC floors, implemented last fall, impacted 6 Security-Constrained Economic Dispatch (SCED) intervals.
- A total of 915.9 MW of firm fuel service (FFSS) from 10 Resources was deployed.
- Two Resources received Reliability Unit Commitment (RUC) instructions between 1/16 Hour Ending 13 and 1/17 HE9 due to capacity concerns.
- 400 MW of ERCOT Contingency Reserve Service (ECRS) capacity was released to SCED from 18:25 to 19:07 on 1/16 due to available capacity insufficiency for the projected Net Load.



Day-Ahead and Real-Time Pricing during the storm

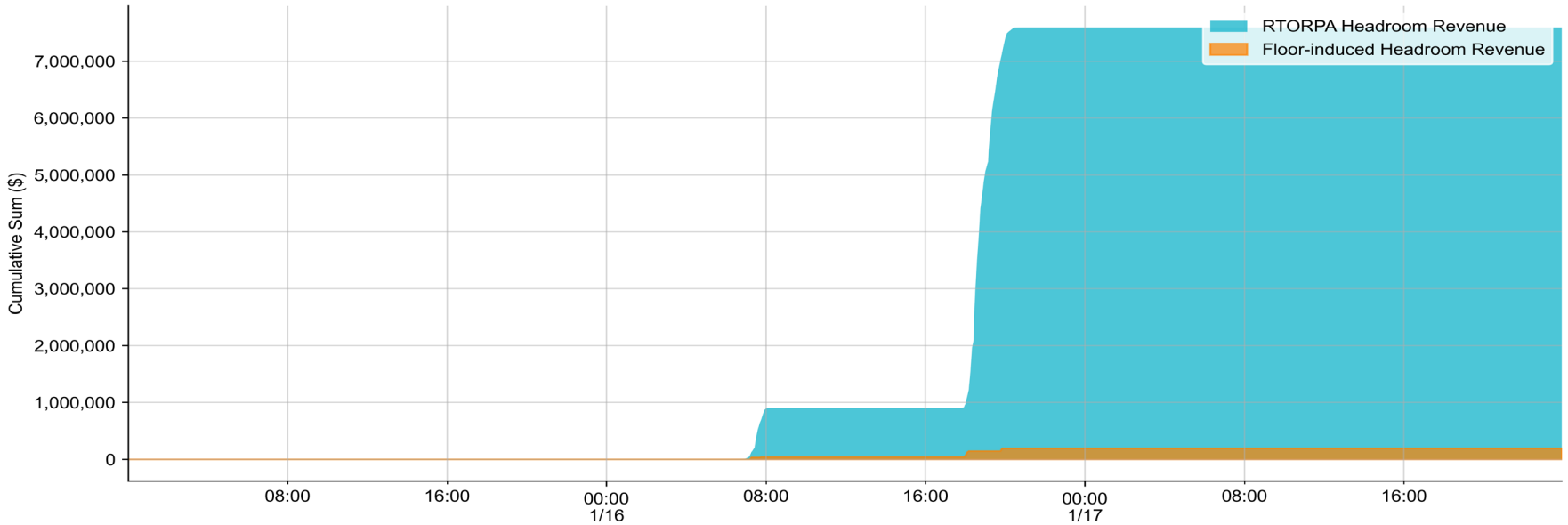


The Day Ahead market priced above the Real-Time except for the evening of the 16th.



- **Key Takeaway**
 - DA prices cleared higher than RT.

Impact of ORDC floors



Floor-impacted SCED Intervals

SCED_TIMESTAMP	RTORPA	RTORPA (No Floor)
1/16/2024 7:15	10	4.65
1/16/2024 7:45	10	8.99
1/16/2024 18:00	10	4.72
1/16/2024 18:05	20	11.42
1/16/2024 18:10	20	16.76
1/16/2024 19:50	20	12.09

Key Takeaway

- The ORDC floors impacted 6 SCED intervals and generated an estimated total of \$200,258.77 of increased revenue, calculated



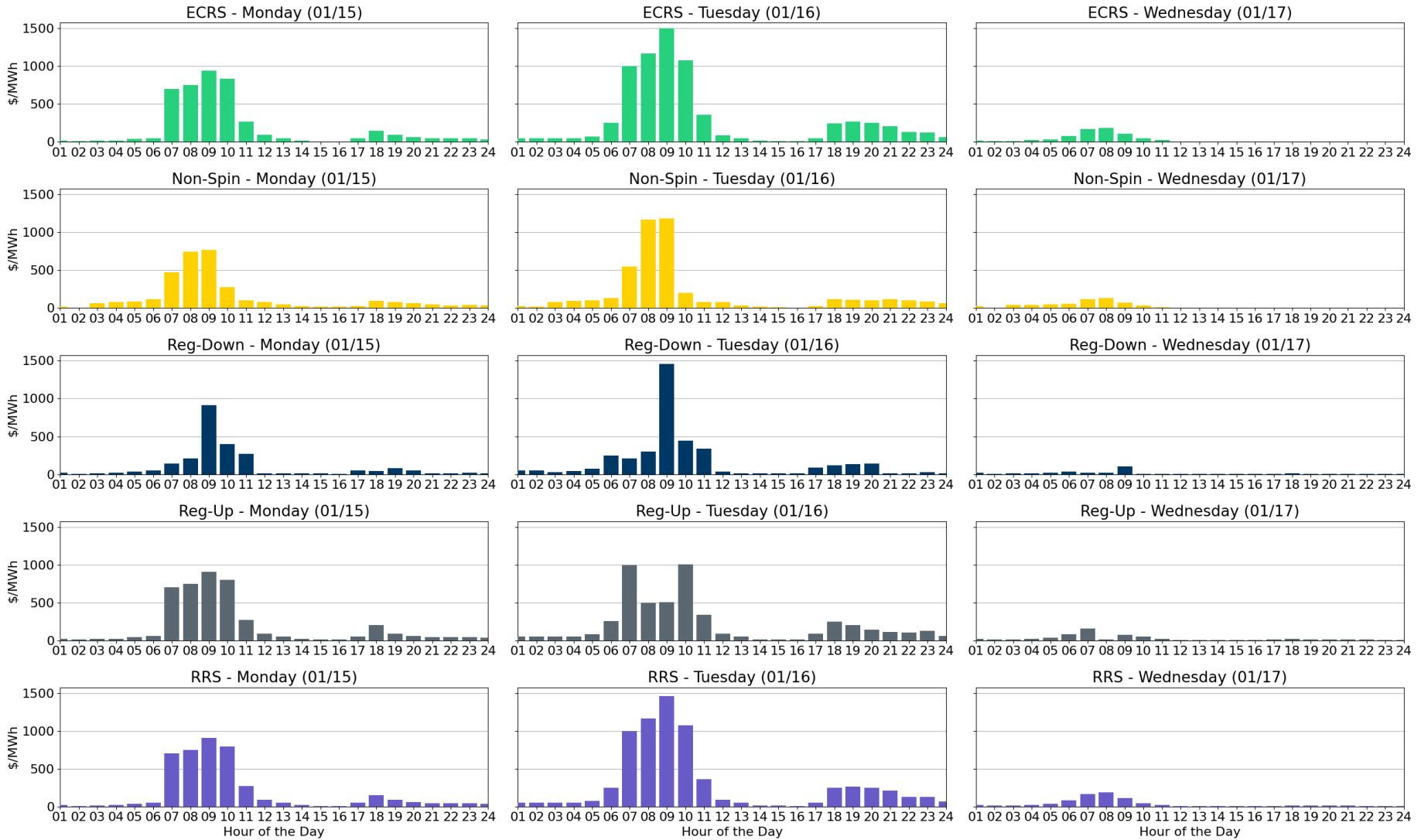
Price Correction Activity From January

- **Operating Days Not Meeting Significance Criteria**
 - On January 18, 2024, Emergency Basepoints were activated during a planned site failover. Analysis showed that this day had not met criteria for correction, with an estimated total dollar impact of \$54.03.
 - On January 23, 2024, Emergency Basepoints were activated during a model database load. Analysis showed that this day had not met criteria for correction, with an estimated total dollar impact of \$18.92.
- **Operating Days Meeting Significance Criteria and corrected by ERCOT Staff**
 - On January 20, 2024, an issue occurred resulting in the DAM not using the most up-to-date network model. Analysis showed that criteria was met for price correction, with the largest absolute value impact across all Settlement Point Prices being approximately \$15.
- **On-Going Price Correction Analysis**
 - On January 29, 2024, an issue was discovered impacting the ratings of certain transmission lines, series devices, and transformers. January 6 and 31, 2024 appear eligible for potential price correction by the Board. ERCOT is still evaluating which Operating Days meet the significance criteria needed for Board review of prices.

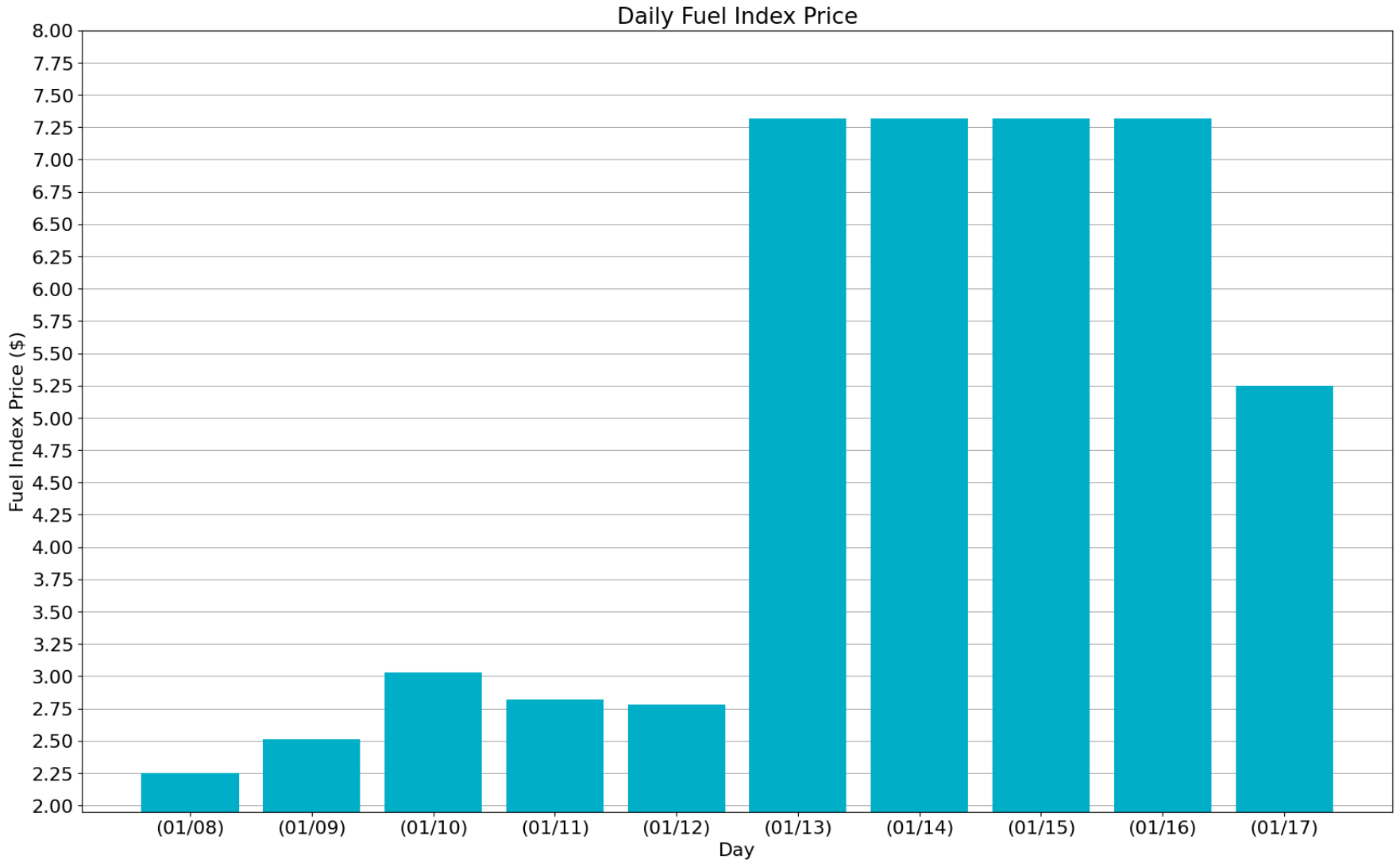
Appendix

Additional Data from January 14 to 17

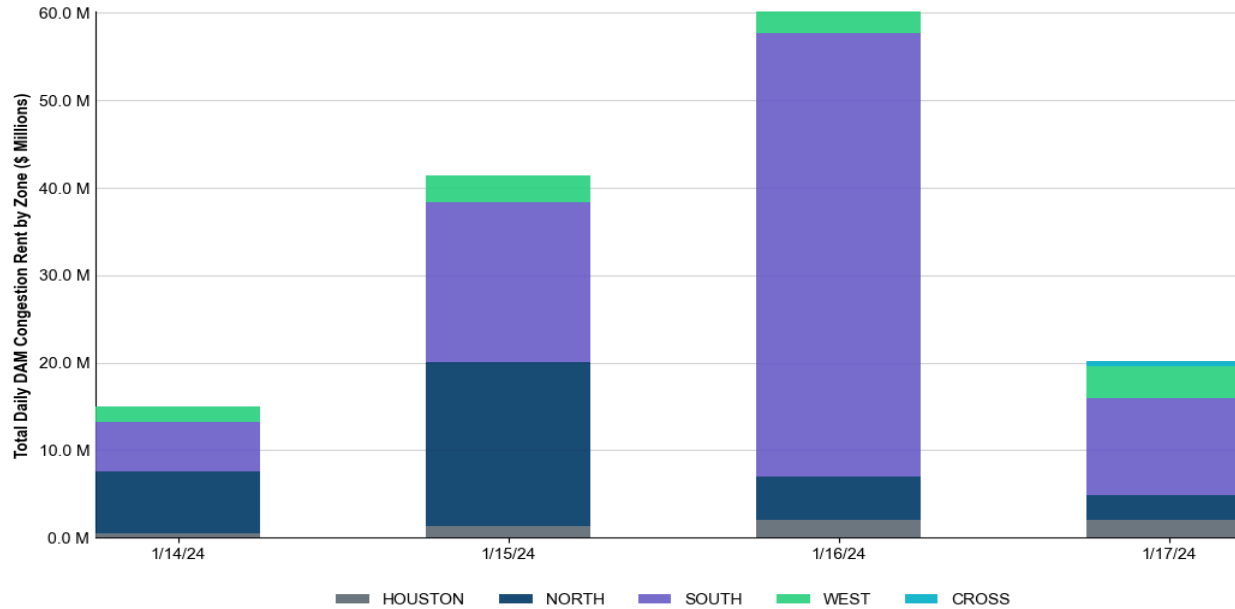
Day-Ahead Ancillary Service Prices by Type



Daily Fuel Index Prices (FIP) before and during winter storm Heather



Day-Ahead Congestion Rent by Zone



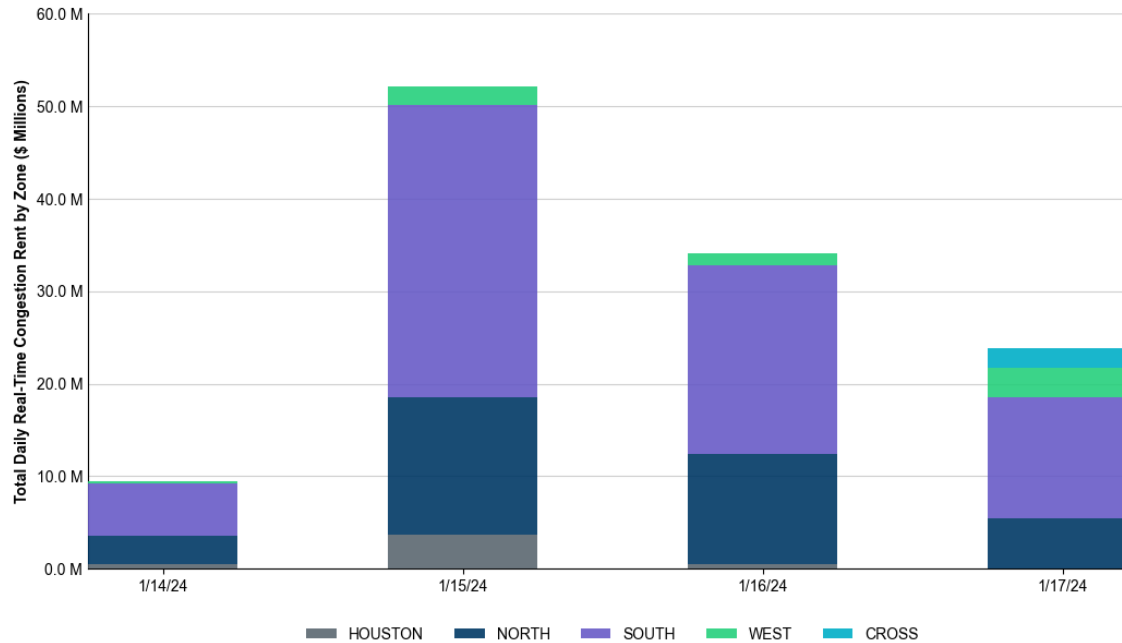
The Value of Jan 15th DA congestion rent were:

- North Zone at \$8.9M,
- South Zone at \$6.29M,

The Value of Jan 16th DA congestion rent were:

- South Zone at \$26.7M,

Real-Time Congestion Rent by Zone



The value of Jan 15th RT congestion rent was:

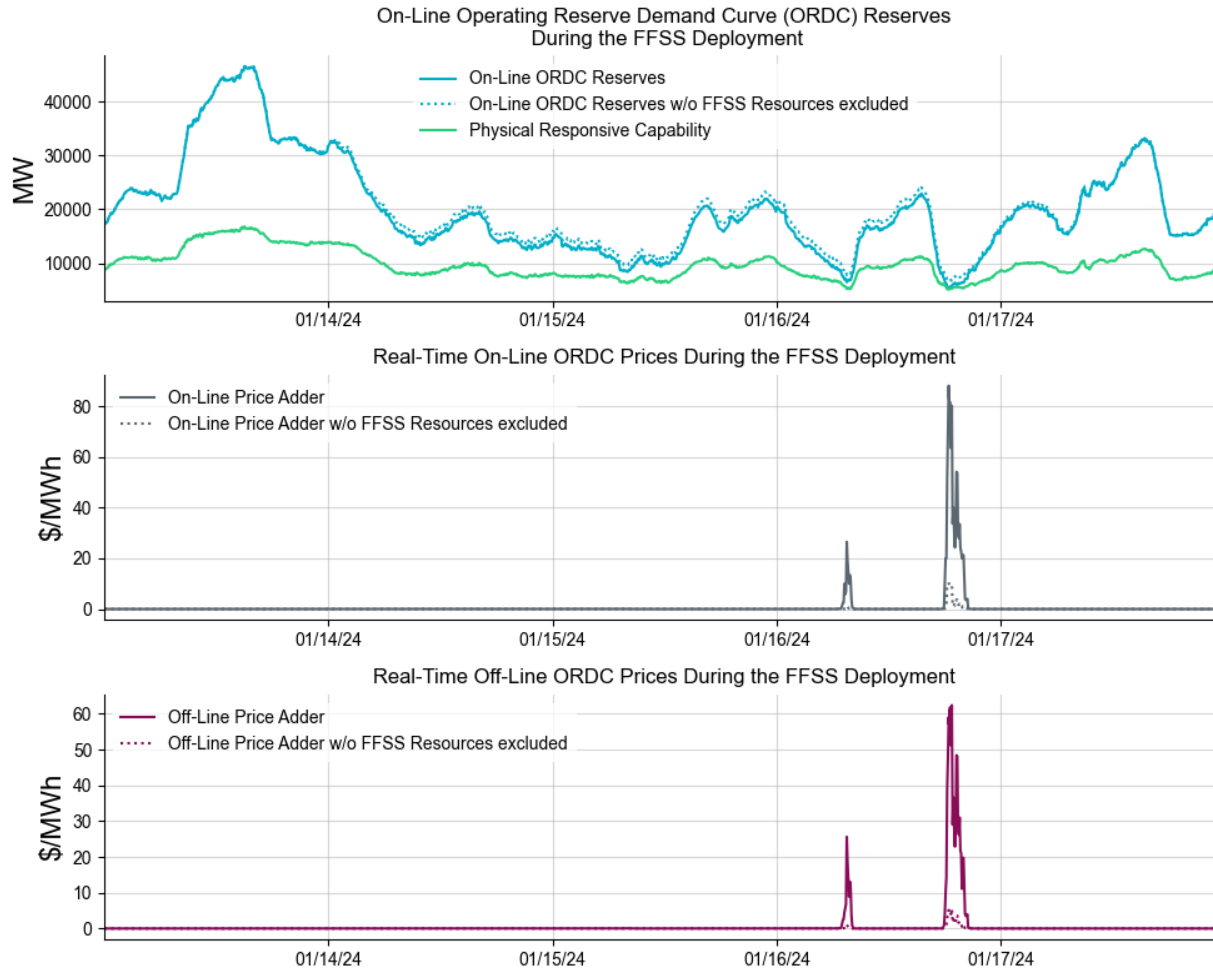
- South Zone \$8M
- North Zone \$6.4M

The value of Jan 16th congestion rent was:

- North Zone \$11.5M
- South Zone \$3.8M

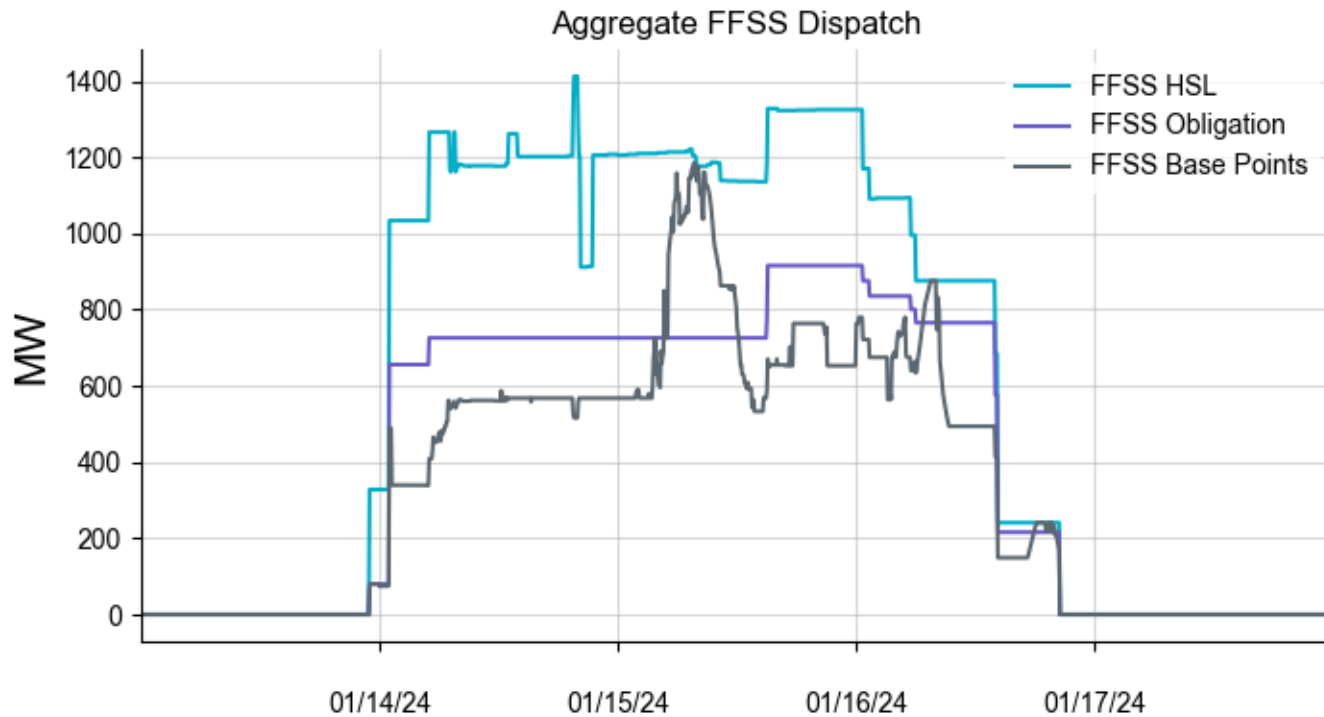


ORDC – Impact of FFSS



Note: The High Sustained Limit (HSL) of Resources deployed for FFSS are excluded from the on-line ORDC reserves.

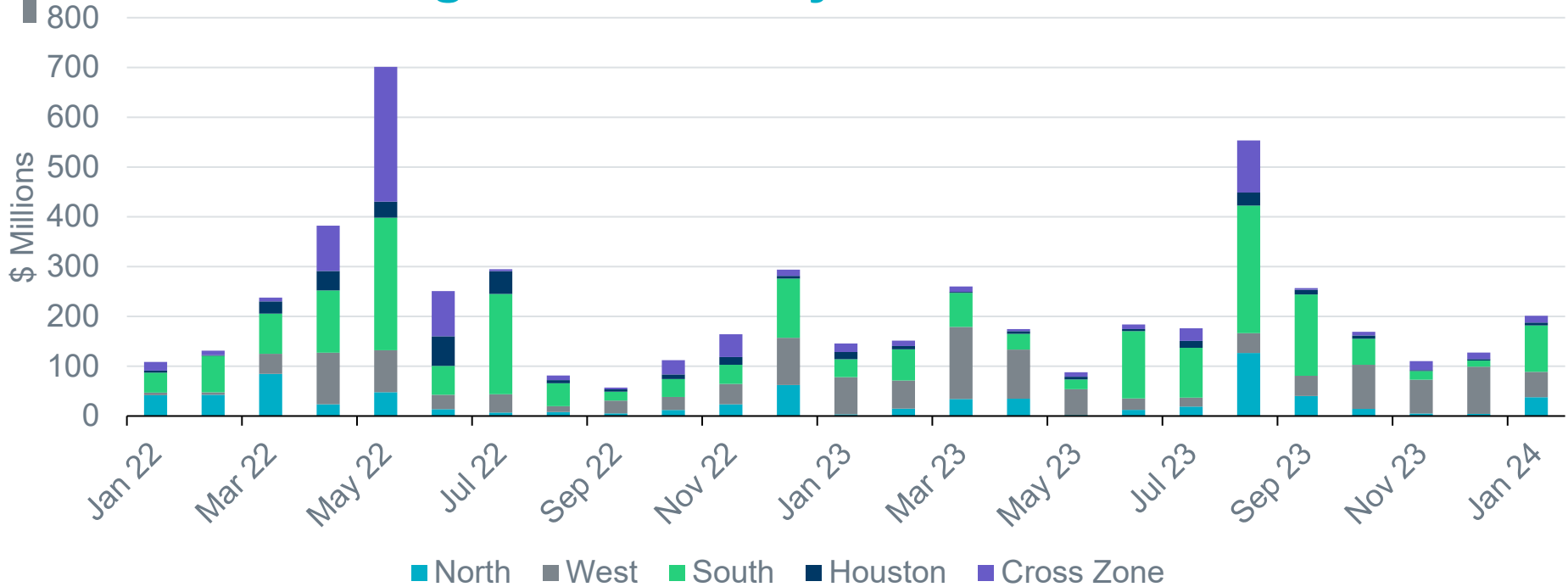
FFSS Deployment Performance



- 10 FFSS Resources were deployed
 - Obligated to provide a maximum of 915.9 MW of aggregate capacity, based on awards from the FFSS procurement process.
 - Telemetered a maximum aggregate HSL of 1413 MW
 - Given maximum aggregate base points of 1185.5 MW

Monthly Operations Data

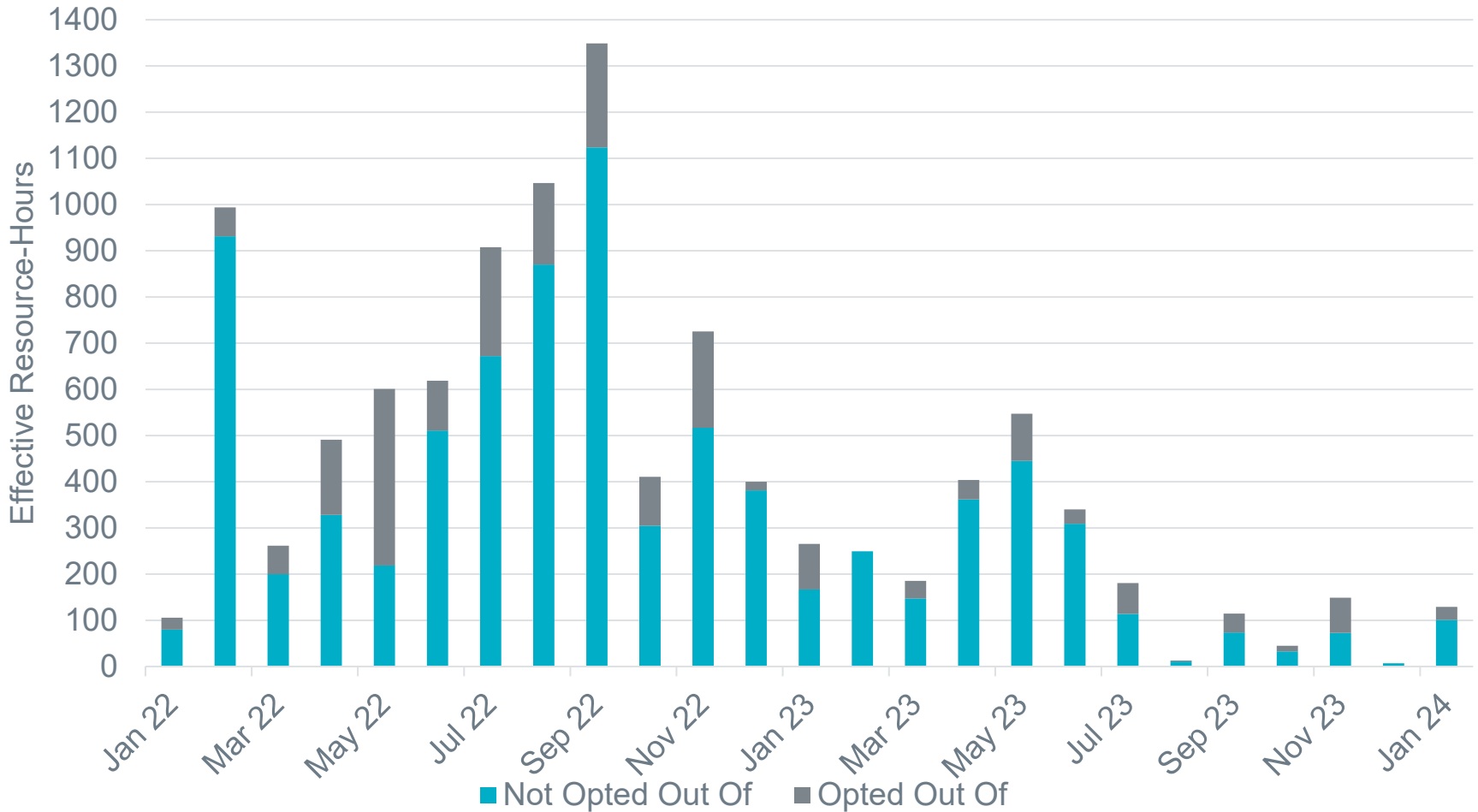
Real-Time Congestion Rent by Zone



- Total Real-Time congestion rent increased in January 2024 compared to December 2023, with the highest congestion rent in the South and West Zones.
 - Congestion rent in the South Zone was primarily driven by the loss of the 138 kV contingency from Kendall to Comfort overloading the 138 kV transmission line from Kerrville Stadium to Kendall.
 - Congestion rent in the West Zone was primarily driven by the loss of the double circuit 345 kV contingency from Cedar Canyon to Bakersfield overloading the 138 kV transmission line from Hargrove to Twin Buttes.
- 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.
- The “Cross Zone” category consists of cases in which the substations on either end of the constraint are in different zones.



Thirteen Resources were Committed in January for either Capacity or Congestion



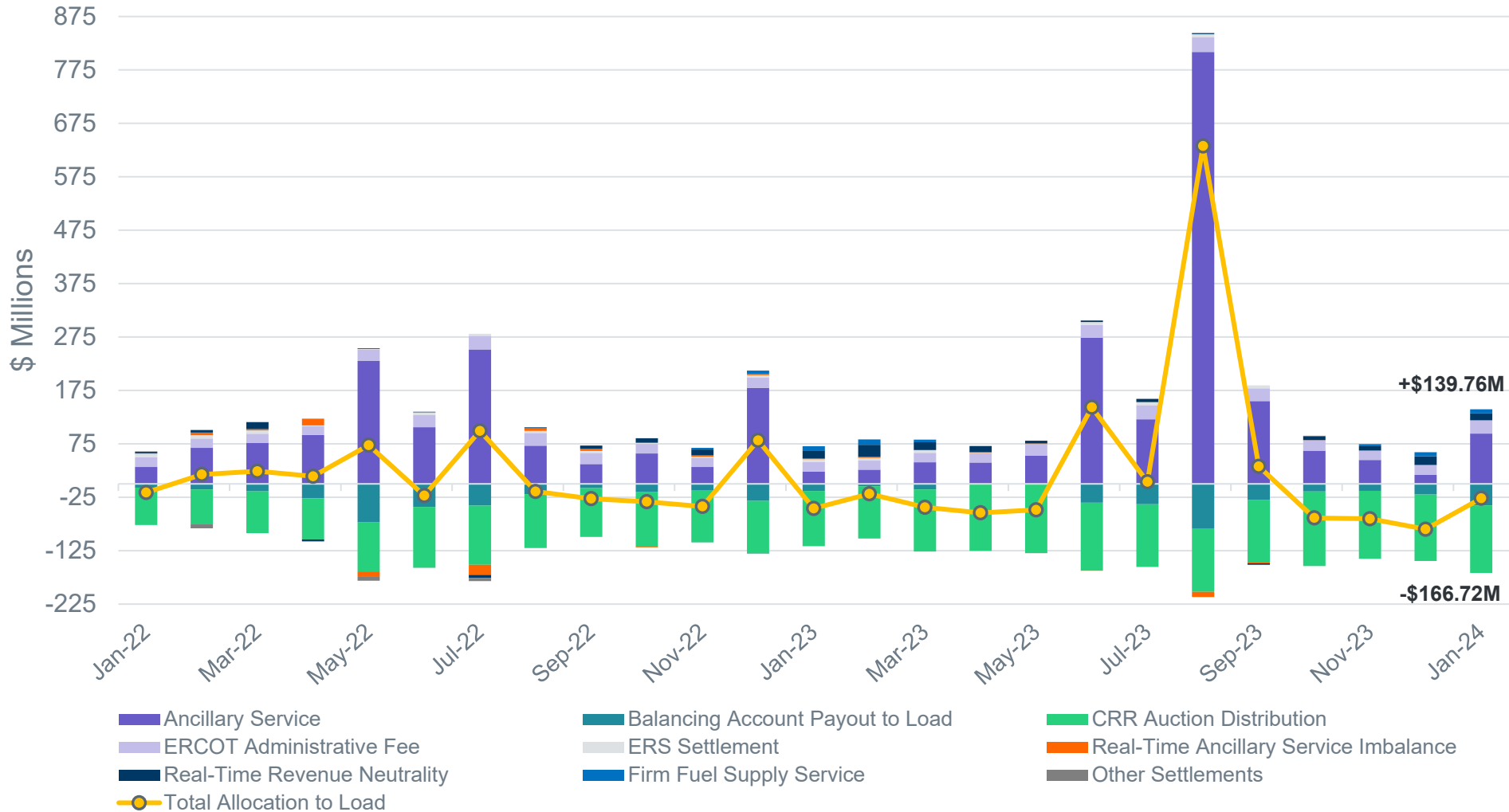
“Effective Resource-Hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.



Thirteen Resources were Committed in January for Capacity and Congestion

Resource #	Effective Resource-hours	Non-Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	14.0	14.0	0.0
2	8.0	8.0	0.0
3	14.0	0.0	14.0
4	4.0	0.0	4.0
5	5.0	5.0	0.0
6	8.7	8.7	0.0
7	3.0	3.0	0.0
8	10.0	0.0	10.0
9	10.0	10.0	0.0
10	9.3	9.3	0.0
11	9.0	9.0	0.0
12	21.0	21.0	0.0
13	13.0	13.0	0.0
Total	129.0	101.0	28.0

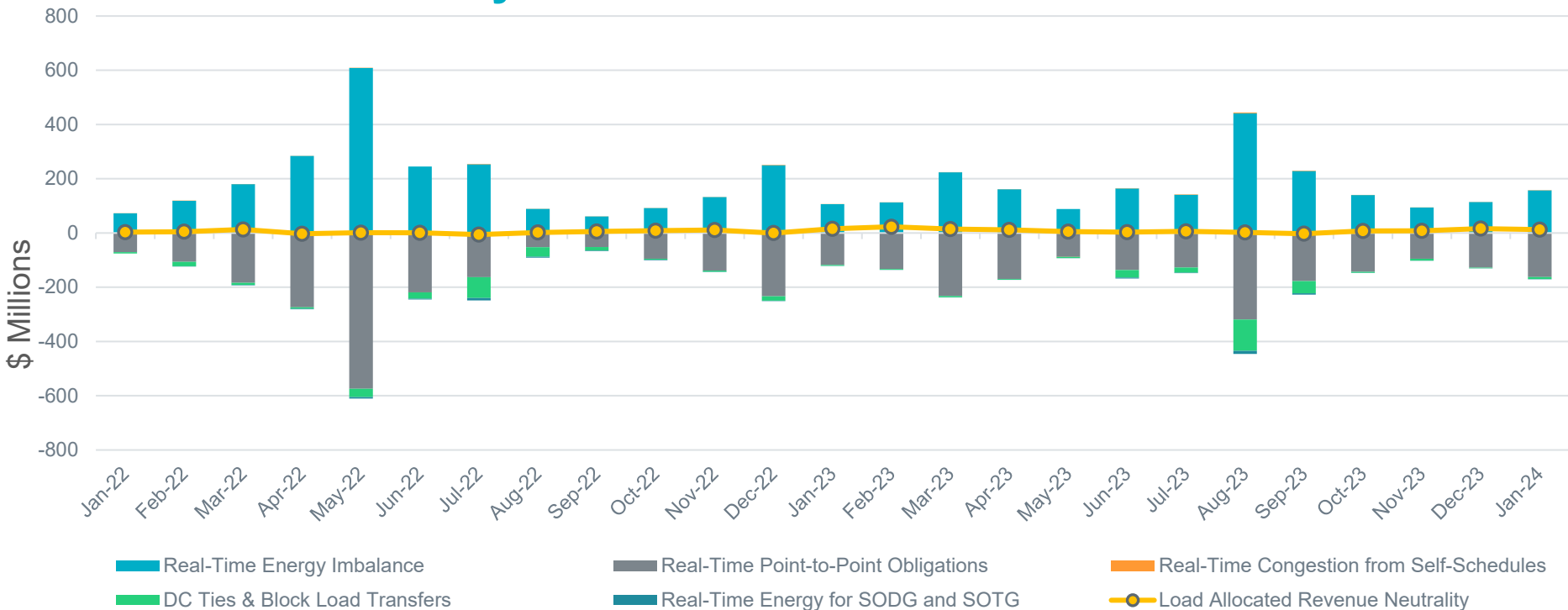
Net Allocation to Load in January 2024 was (\$26.96) Million



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



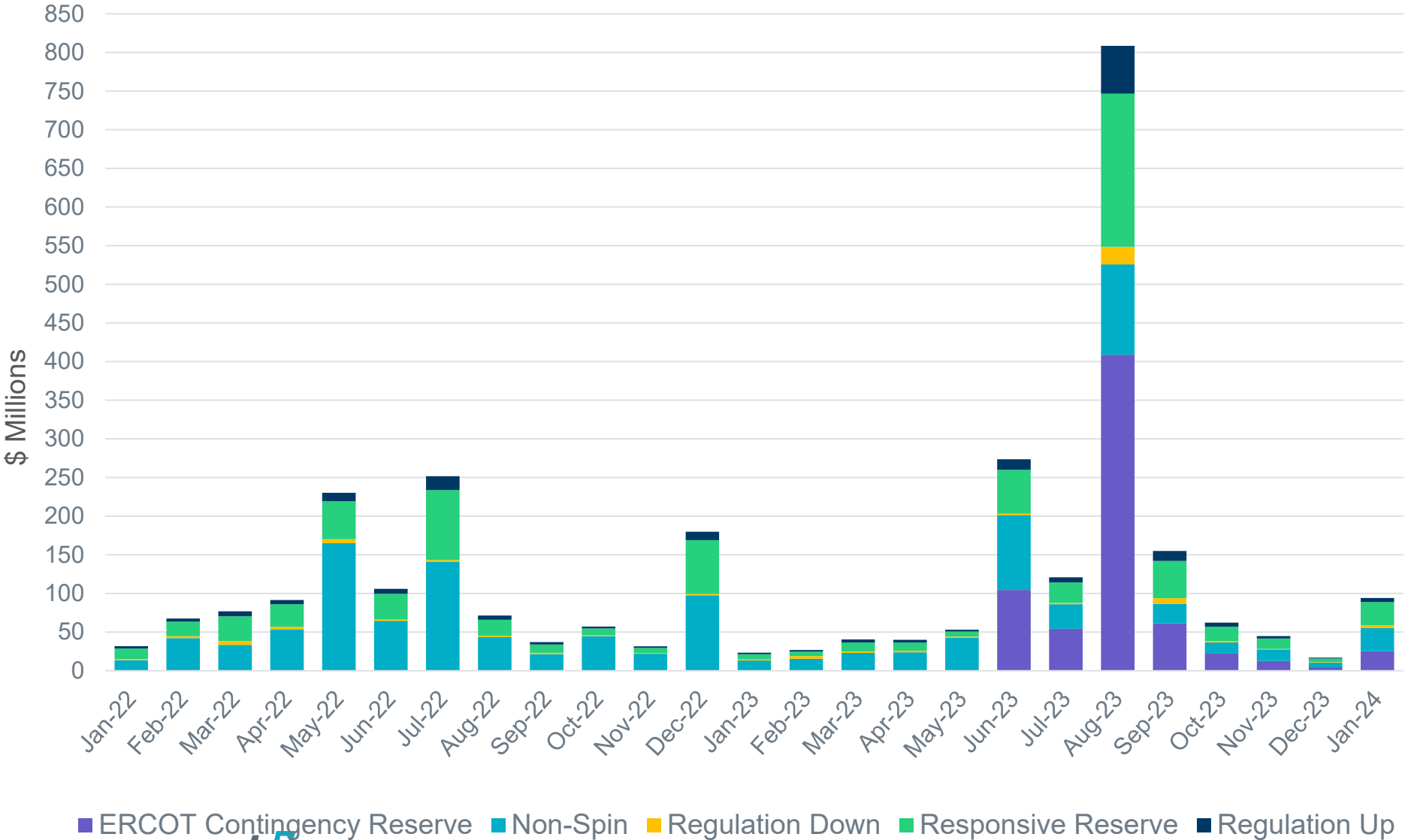
Real-Time Revenue Neutrality Allocated to Load was \$12.3M for January 2024



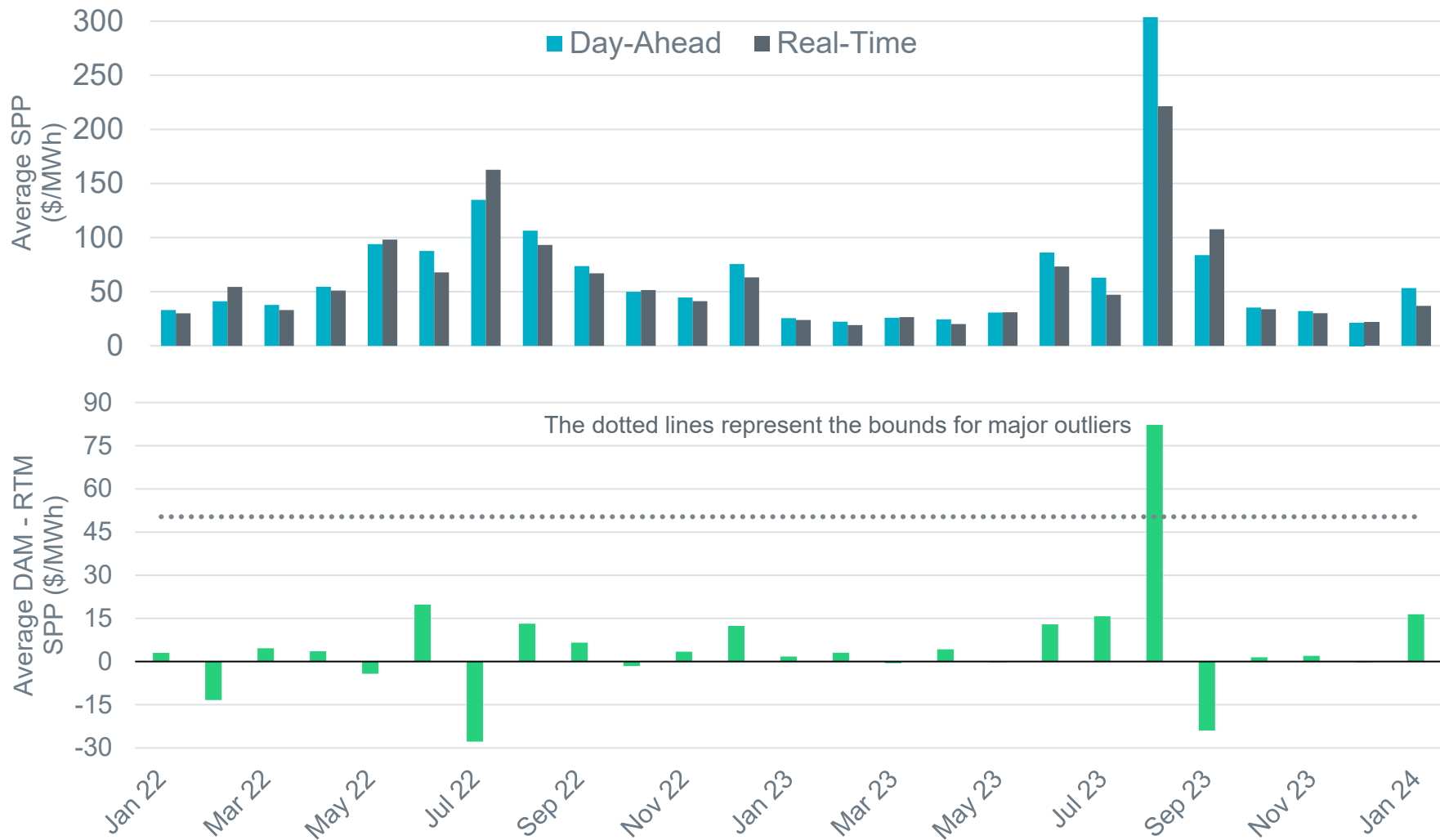
January 2024 (\$M)	
Real-Time Energy Imbalance	\$157.42
Real-Time Point-to-Point Obligation	(\$162.41)
Real-Time Congestion from Self-Schedules	\$1.05
DC Tie & Block Load Transfer	(\$7.70)
Real-Time Energy for SODG and SOTG	(\$0.66)
Load Allocated Revenue Neutrality	\$12.30



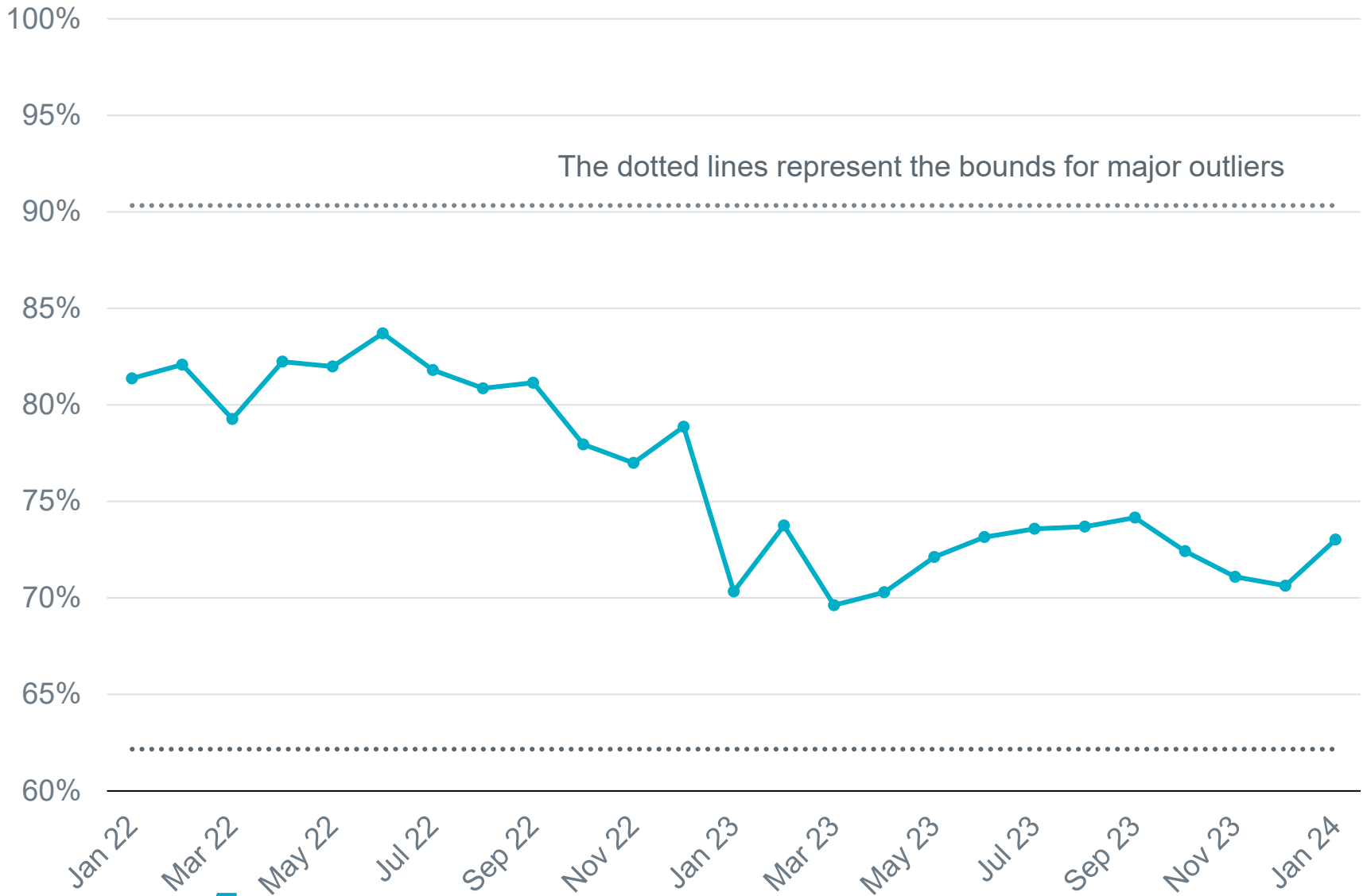
Ancillary Services for January 2024 totaled \$94.21M



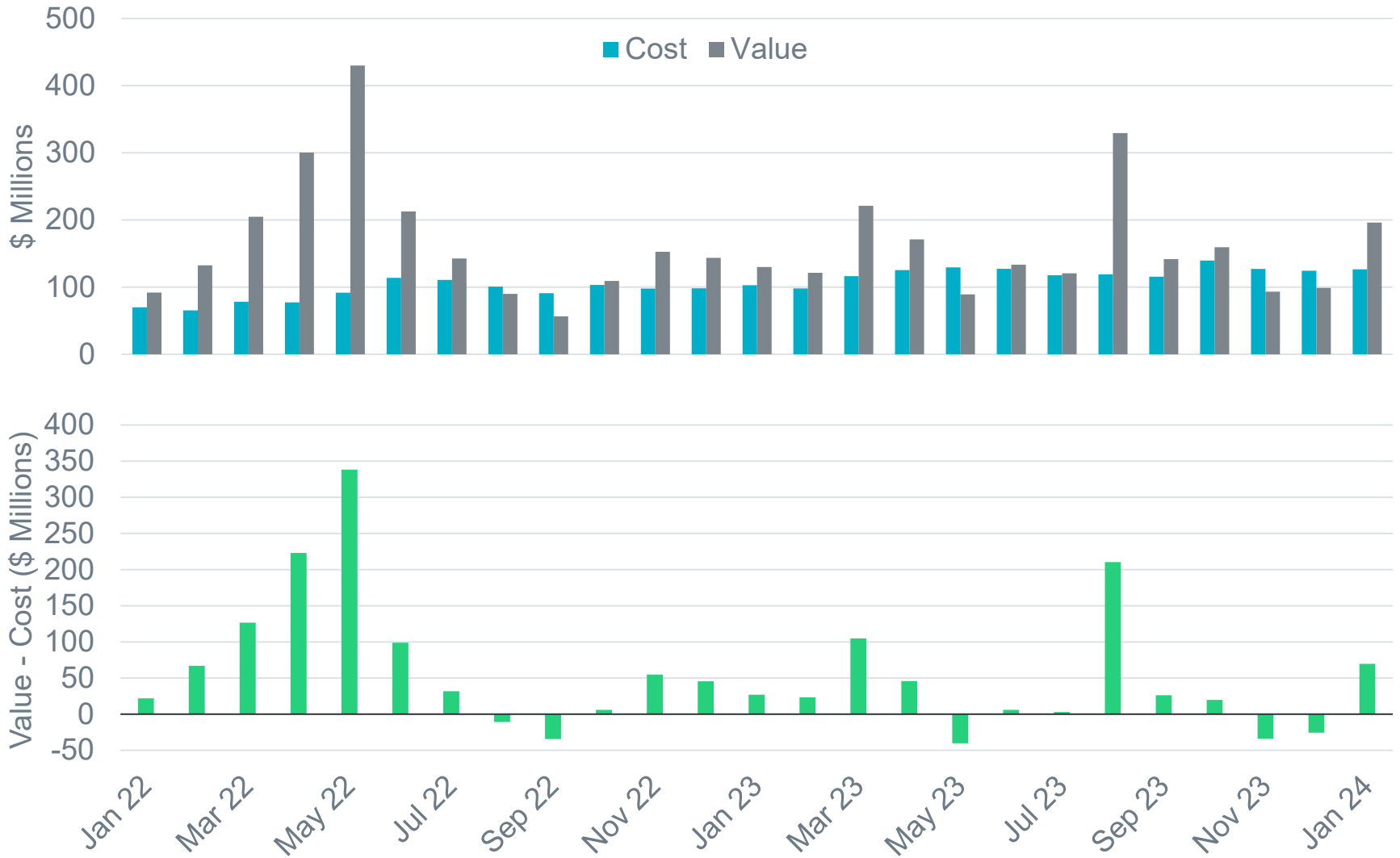
Day-Ahead and Real-Time Market Price Differences



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



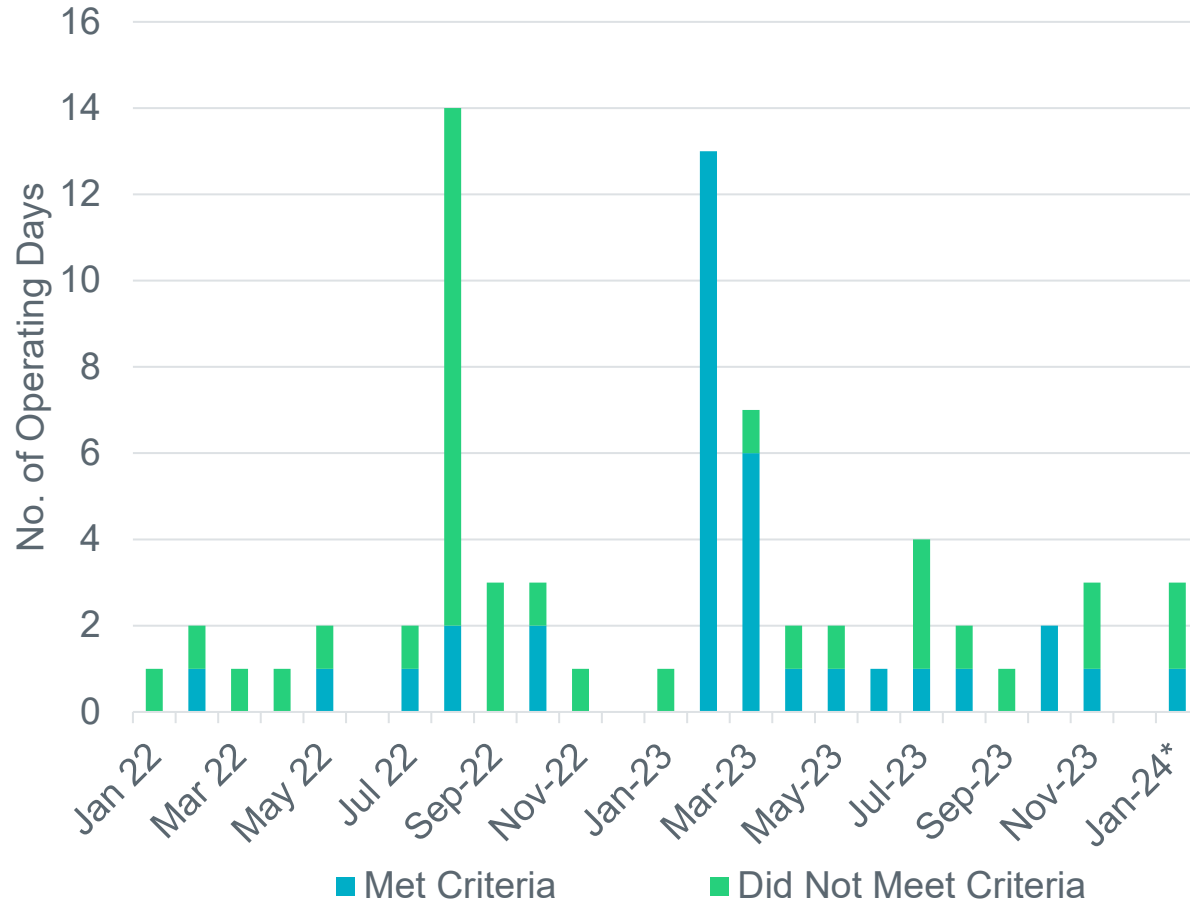
CRR Value and Cost Differences



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; and
- Days that were not corrected because they did not meet the criteria for “significance” under NPRR1024.



* Additional price corrections are likely for January '24, however the number of Operating Days impacted is still being evaluated. Additional information is on the next slide.



Details for Price Corrections Review

Operating Days Not Meeting Significance Criteria

- On January 18, 2024, Emergency Basepoints were activated during a planned site failover. The resulting impact analysis showed that this day had not met criteria for correction, with an estimated total dollar impact of \$54.03.
- On January 23, 2024, Emergency Basepoints were activated during a model database load. The resulting impact analysis showed that this day had not met criteria for correction, with an estimated total dollar impact of \$18.92.

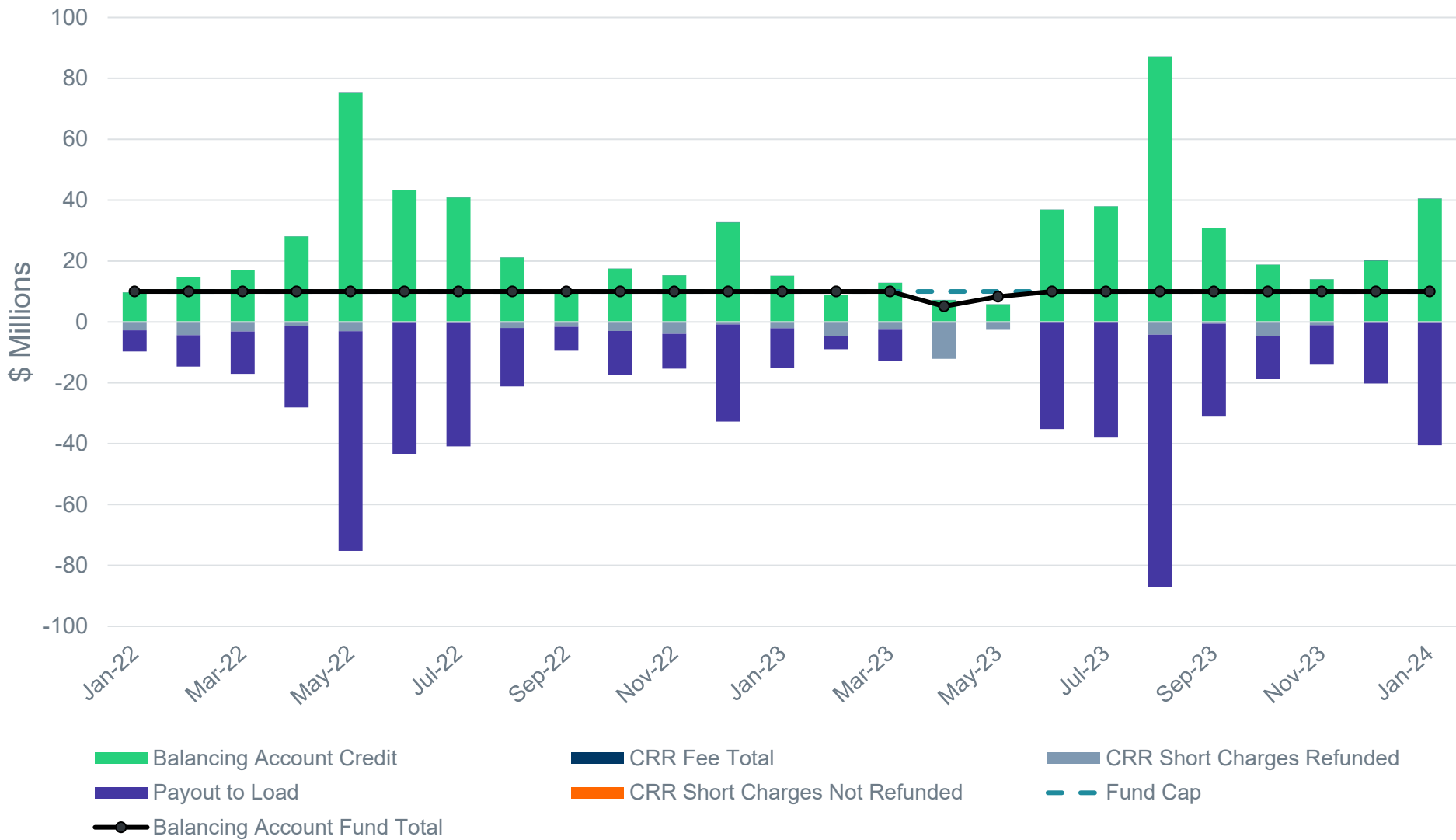
Operating Days Meeting Significance Criteria

- On January 20, 2024, an issue occurred resulting in the DAM not using the most up-to-date network model. The resulting impact analysis showed that criteria was met for price correction, with the largest absolute value impact across all Settlement Point Prices being approximately \$15.

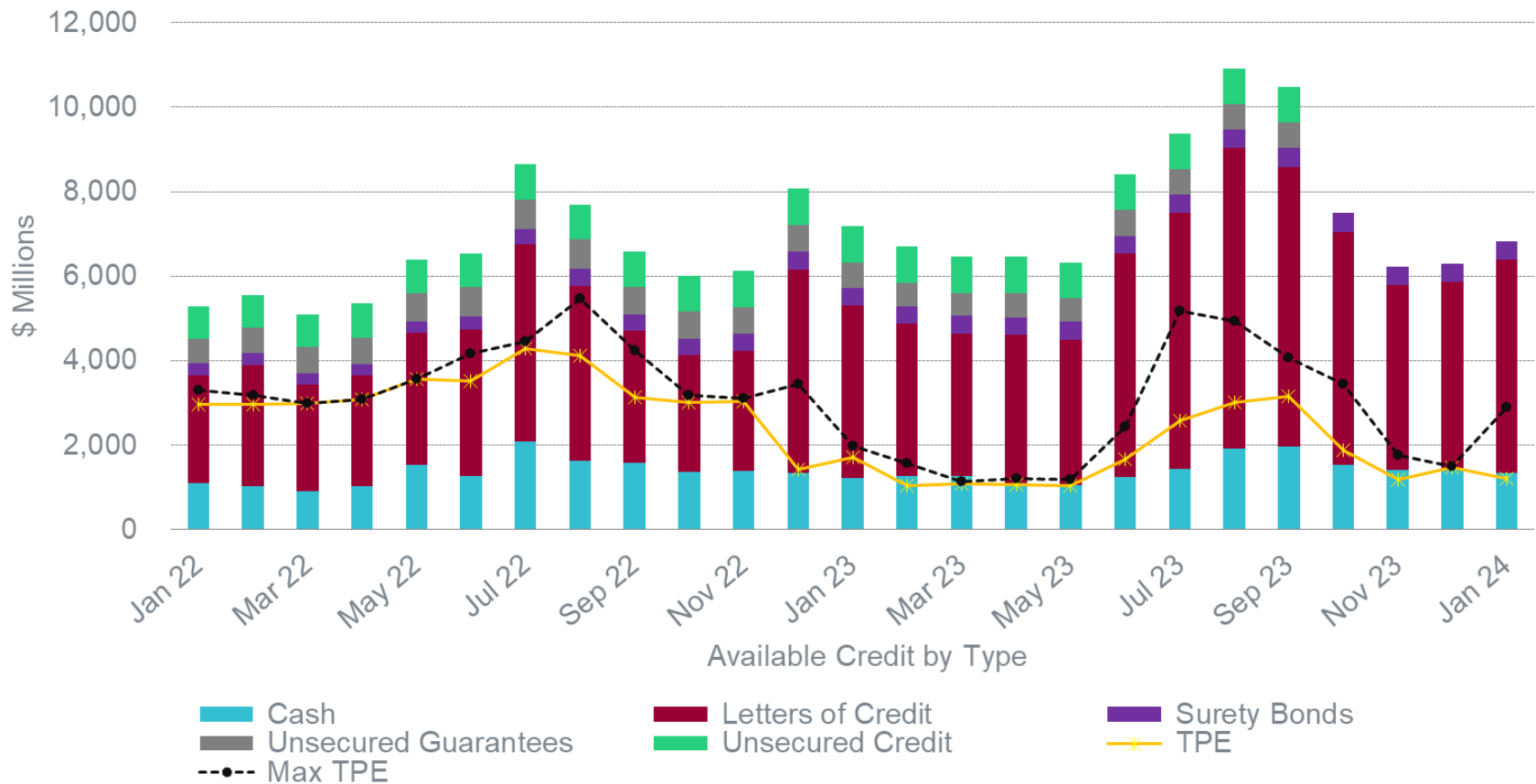
On-Going Price Correction Analysis

- On January 29, 2024, an issue concerning the ratings of certain transmission lines, series devices, and transformers was discovered. Initial analysis indicates that multiple Operating Days for both the DAM and Real-Time Market were impacted by these erroneous ratings. While these rating errors existed between November 8, 2023 and January 31, 2024, only Operating Days between January 6 and 31, 2024 are eligible for potential price correction consideration by the Board. ERCOT is still evaluating which Operating Days meet the significance criteria needed for Board review of prices.

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



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



*Numbers are as of month end except for Max TPE



Retail Transaction Volumes – Summary – January 2024

Transaction Type	Year-To-Date		Transactions Received	
	January 2024	January 2023	January 2024	January 2023
Switches	84,343	79,563	84,343	79,563
Acquisitions	0	0	0	0
Move - Ins	263,084	245,413	263,084	245,413
Move - Outs	108,465	108,022	108,465	108,022
Continuous Service Agreements (CSA)	22,247	38,440	22,247	38,440
Mass Transitions	0	0	0	0
Total	478,139	471,438	478,139	471,438