



## **Item 7.3: Commercial Markets Update**

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Vice President, Commercial Operations

Reliability and Markets Committee Meeting

ERCOT Public

October 16, 2023

# Overview

- **Purpose**

- Update the Committee on Aggregate Distributed Energy Resources (ADER) Pilot.
- Provide observations of Summer Prices for Energy and Ancillary Services.

- **Voting Items / Requests**

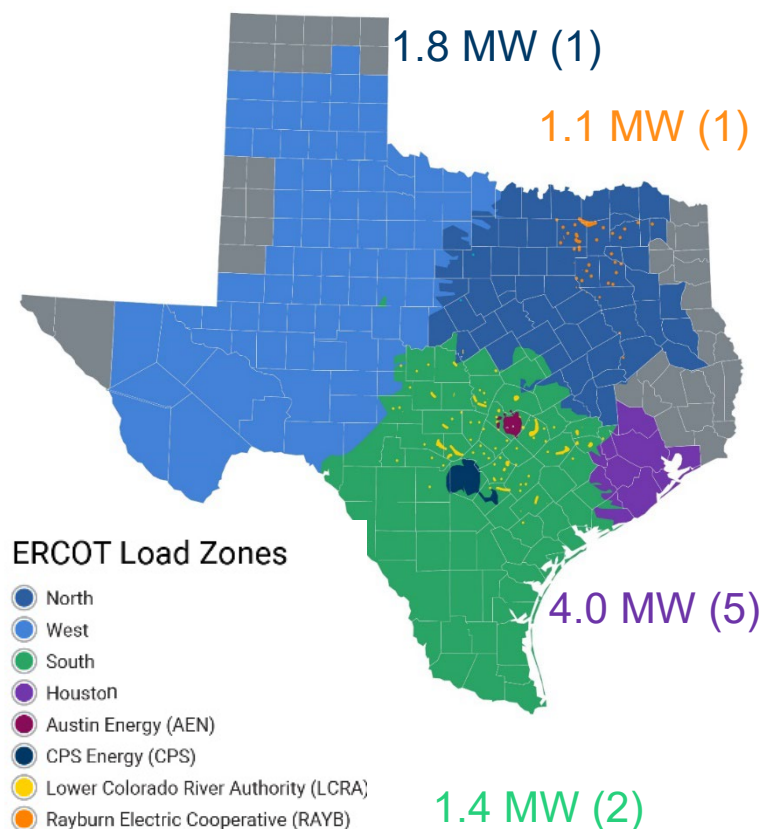
No action is requested of the R&M Committee or Board; for discussion only.

- **Key Takeaways**

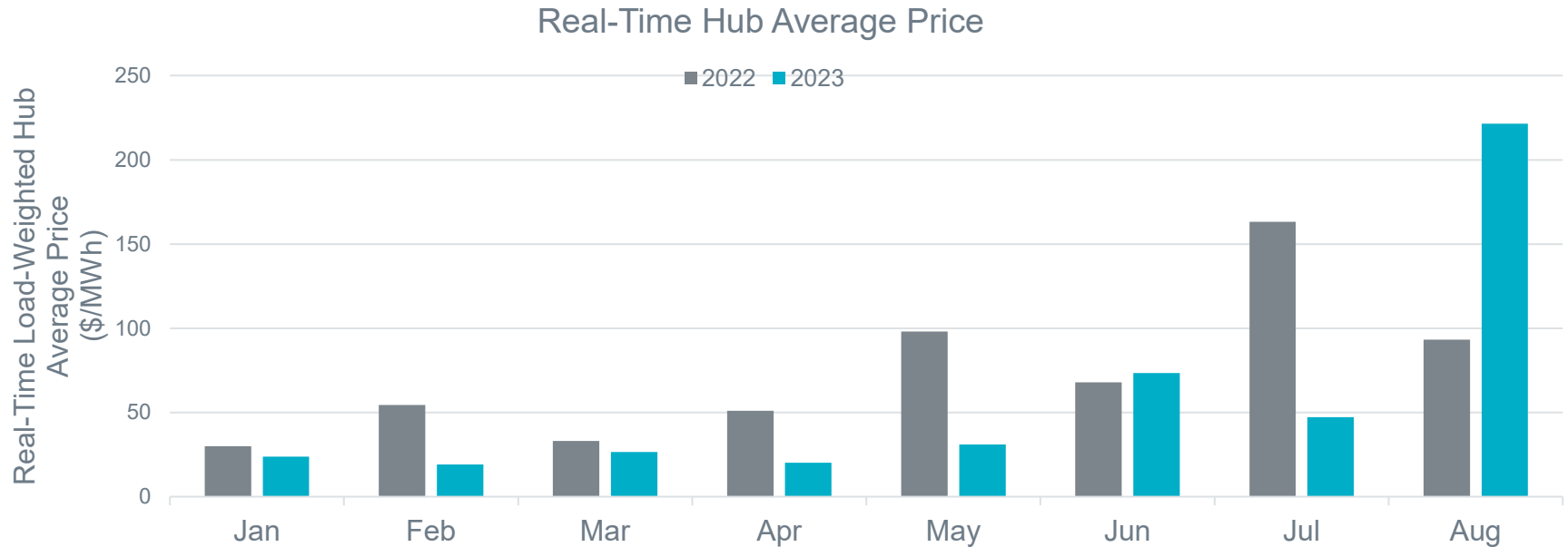
- Two ADERs have been successfully dispatched for real-time energy and have also been awarded and carried Non-Spinning Reserve Services in phase 1 pilot.
- Increased price scarcity from last summer and occurs later in the day due to the evening solar ramp.
- Summer prices have been significantly higher for energy and Ancillary Services. We have discussed the impact of ECRS and congestion but offers have played a significant role in high price formation by creating unresolvable congestion and setting prices.
- Significantly less Reliability Unit Commitments

# 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:
  - ERCOT-Wide Energy: **8.3 MW**
  - ERCOT-Wide Non-Spin: **2.7 MW**
- By 08/24/2023, two ADERs with a total capacity of 4.1 MW comprised of consumers with Tesla Powerwalls were qualified to participate in the real-time market, qualified to provide non-spinning reserve service, and started receiving energy dispatch instructions for the first time.
- As of 09/11/2023, they have carried non-spinning reserve service responsibility, but have not yet received instructions to deploy the service.
- Other ADERs have applied, but are in various stages of registration/qualification and cannot fully participate yet.

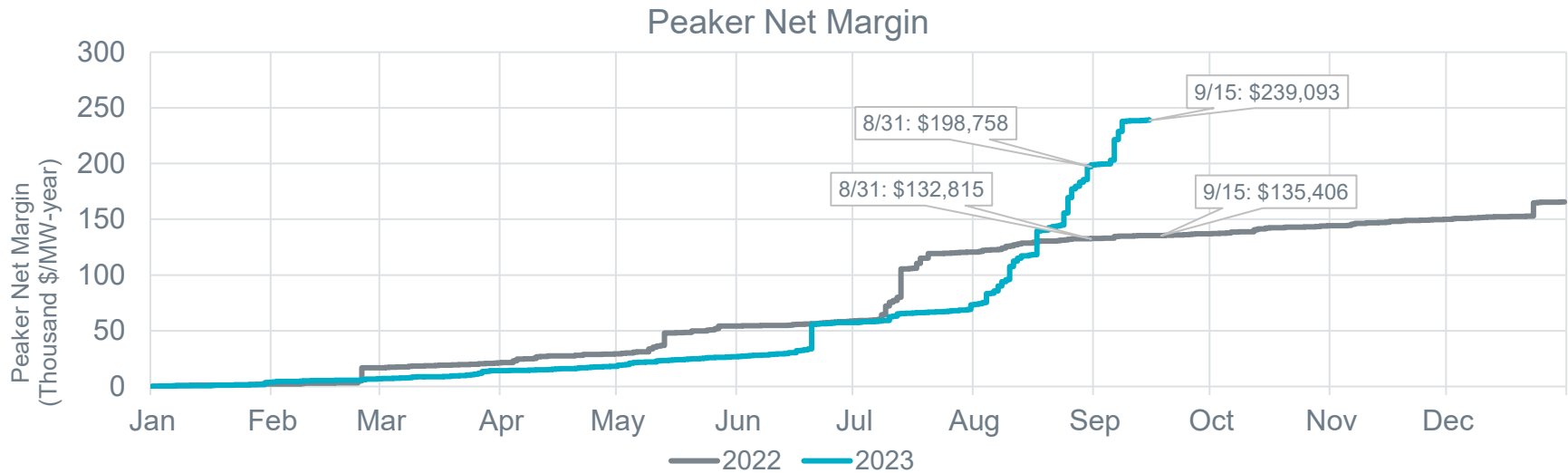


# Real-Time Energy Price and Peaker Net Margin



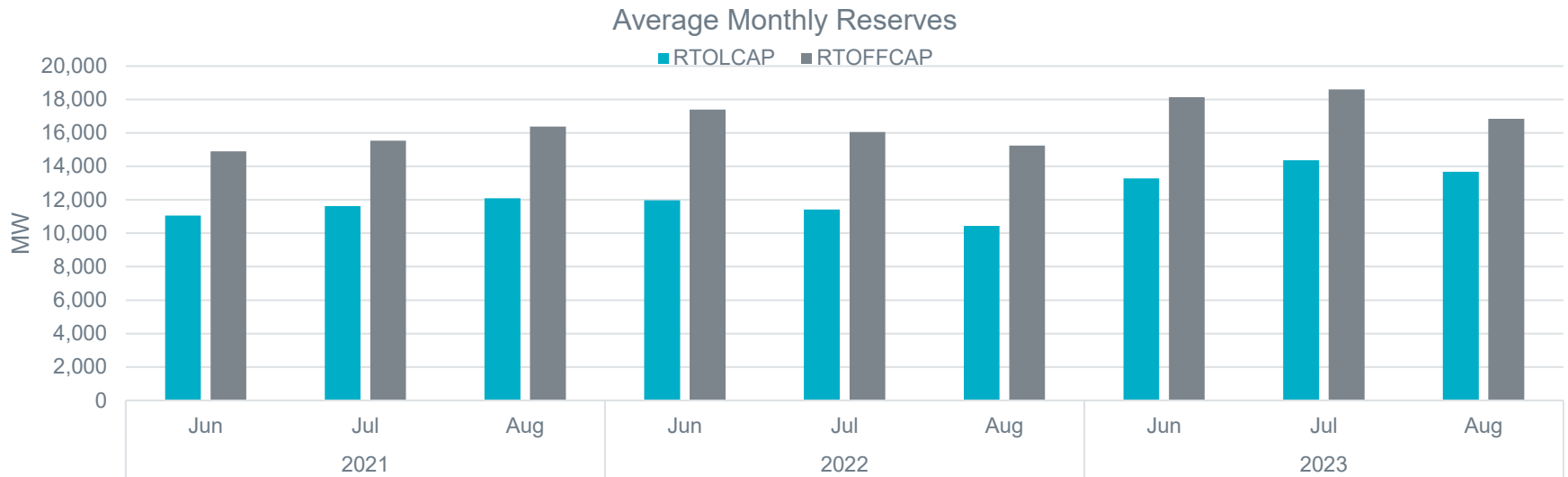
**Key Takeaway:** Prices have been much higher in August 2023 than the same month a year ago.

# Peaker Net Margin



**Key Takeaway:** High prices combined with high output has created one of the highest Peaker Net Margins (PNMs) we have seen. Lower natural gas prices in 2023 also contributed to a higher PNM

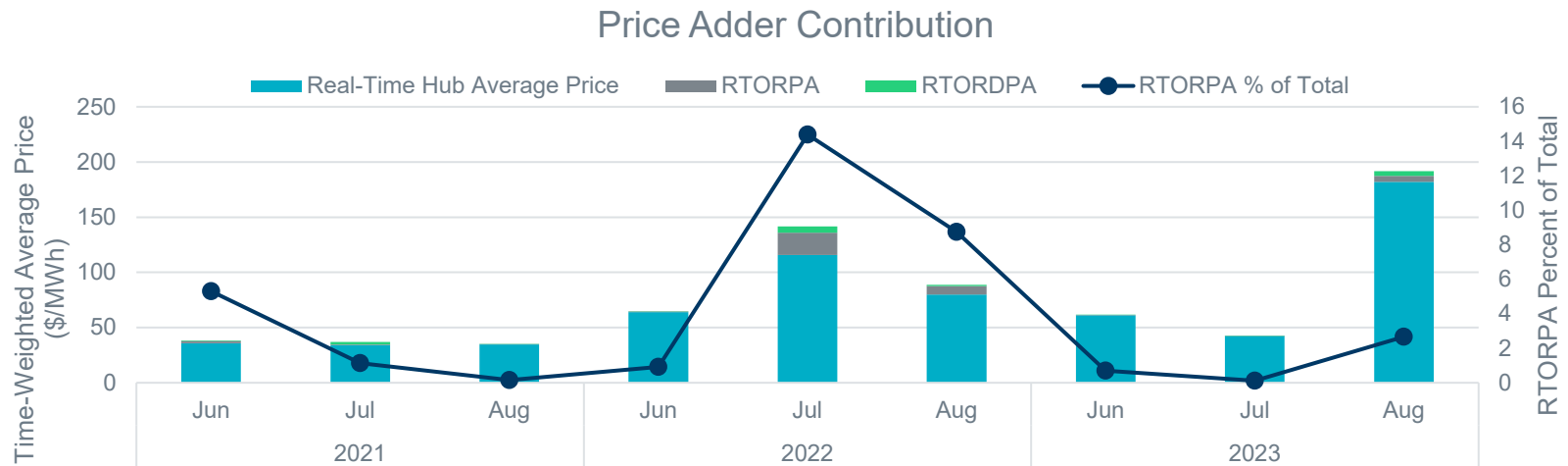
# ORDC Capacity consists of Online and Offline Reserves



RTOLCAP is the Real-time Online Reserve Capacity  
RTOFFCAP is the Real-time Offline Reserve Capacity

**Key Takeaway:** Online and offline reserves were greater in 2023 than in 2022.

# ORDC Contribution to Real-Time Prices:

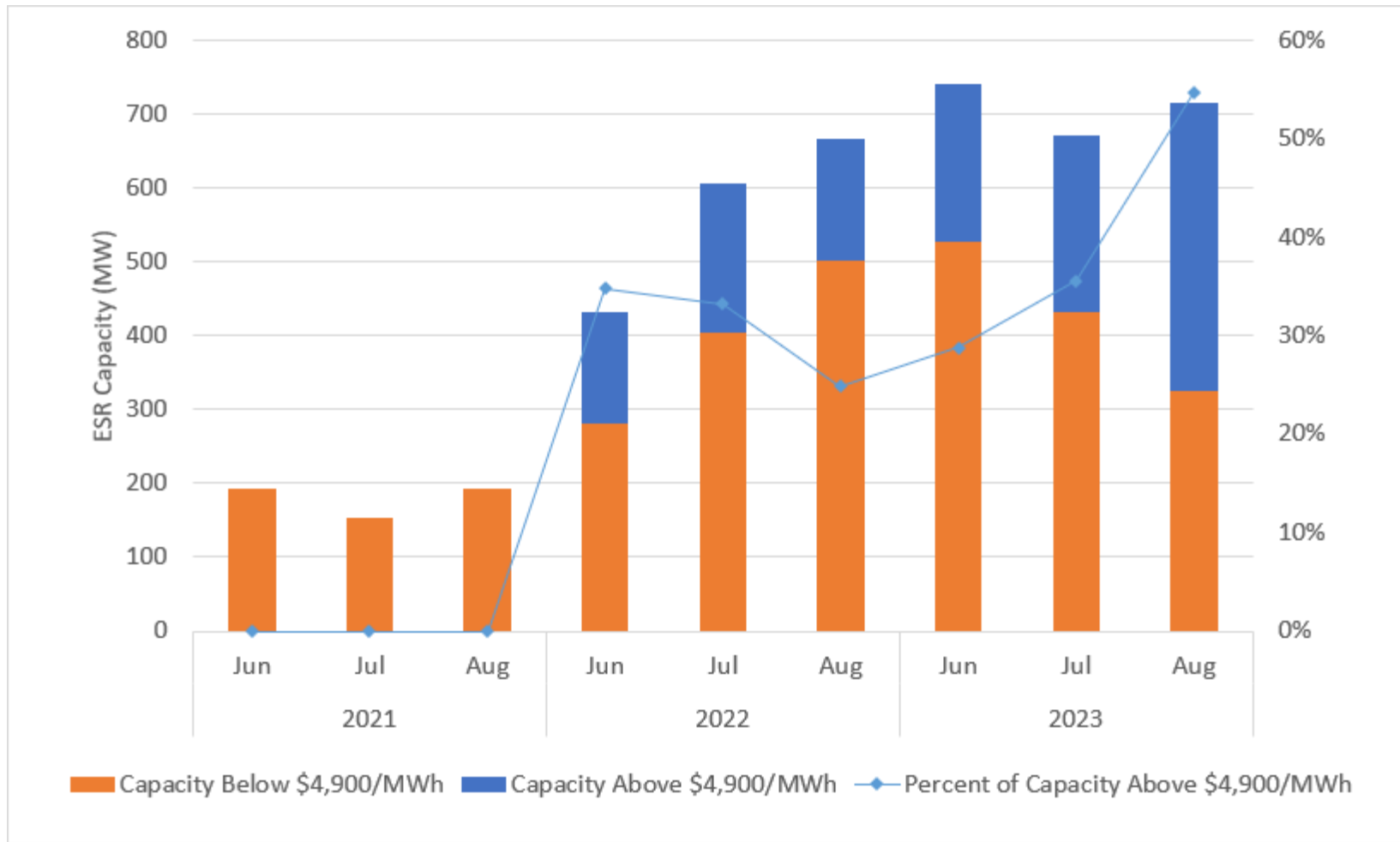


RTORPA is the Real-time Online Reserve Price Adder

RTORDPA is the Real-time Online Reserve Deployment Price Adder

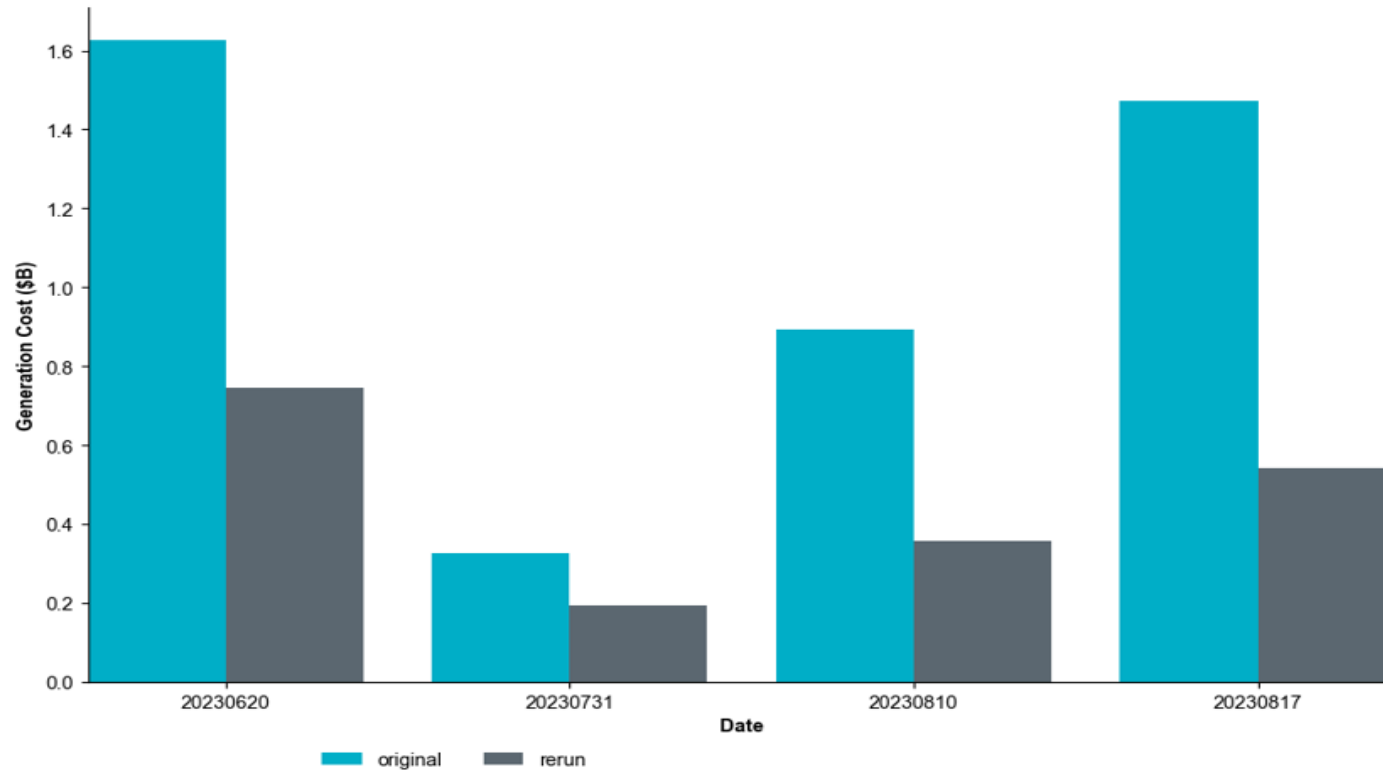
**Key Takeaway:** Adders had a lower contribution to the market price in 2023 relative 2022.

# Energy Storage Resource (ESR) Capacity Offered

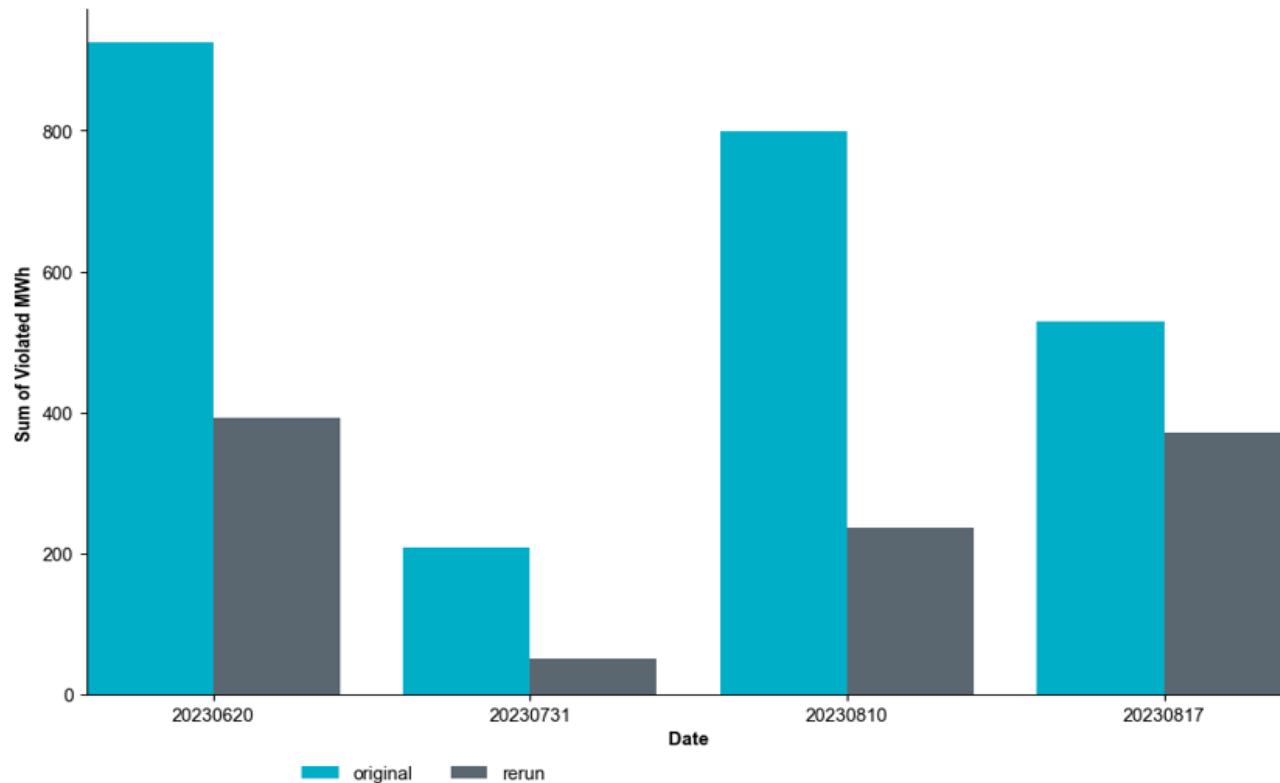




# Impact on System Costs if ESR offers were capped at \$150

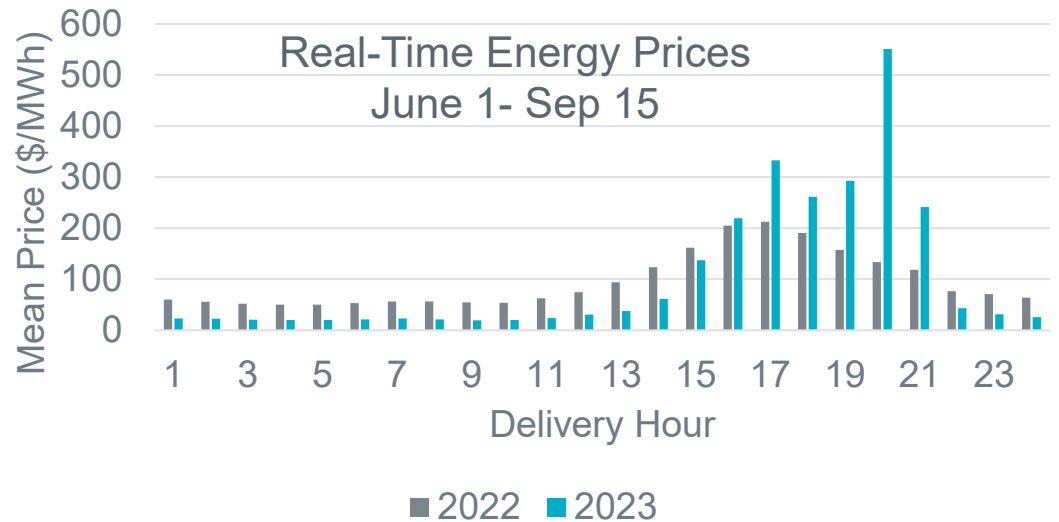
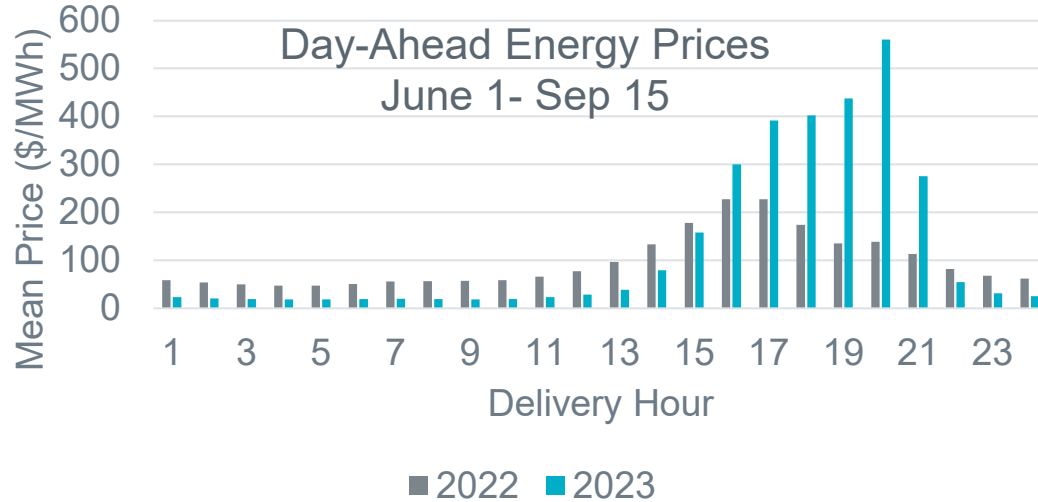


## Impact on congestion if ESR offers were capped at \$150.



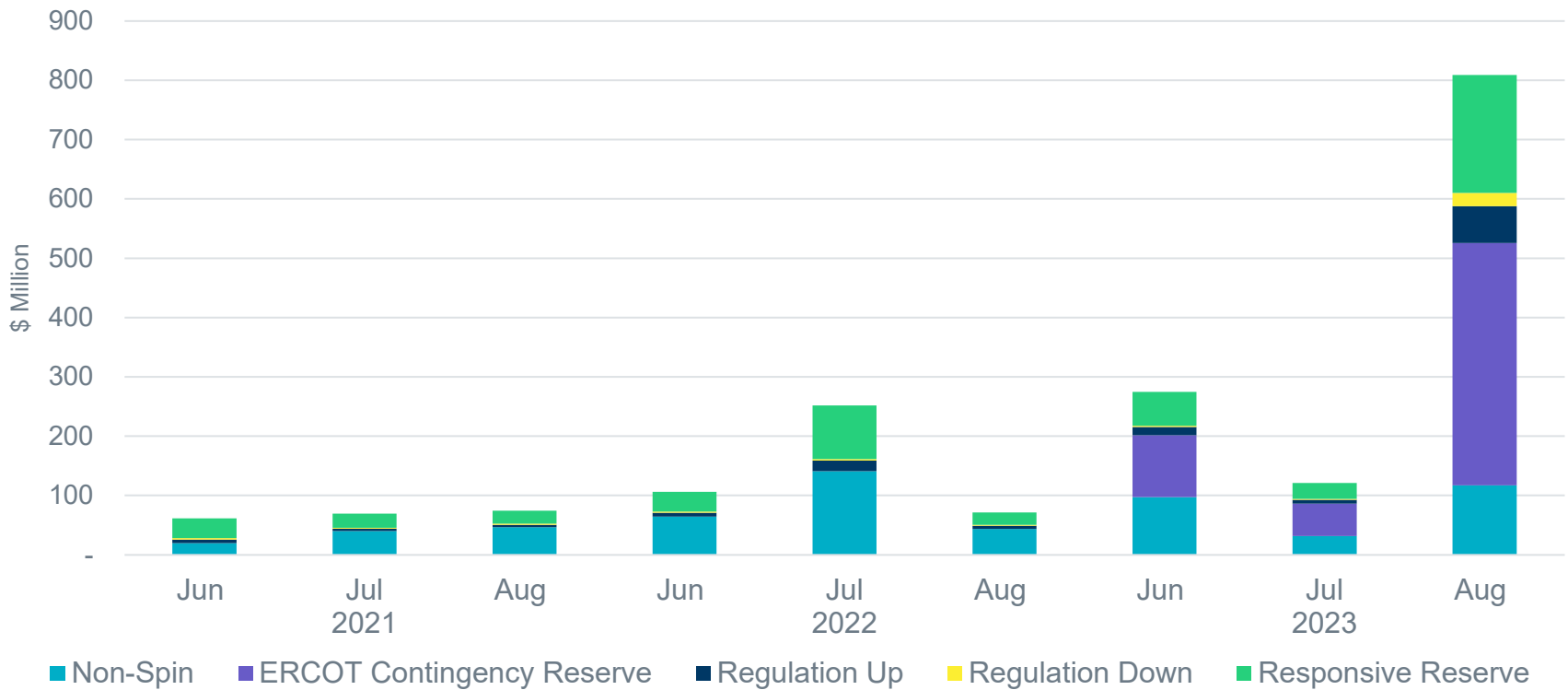
**Key Takeaway:** Offer caps and mitigation applied to ESRs are likely to help with congestion and would lower system costs. The appropriate level is a complicated process.

# Summer Scarcity Pricing Shifted into Evening Hours

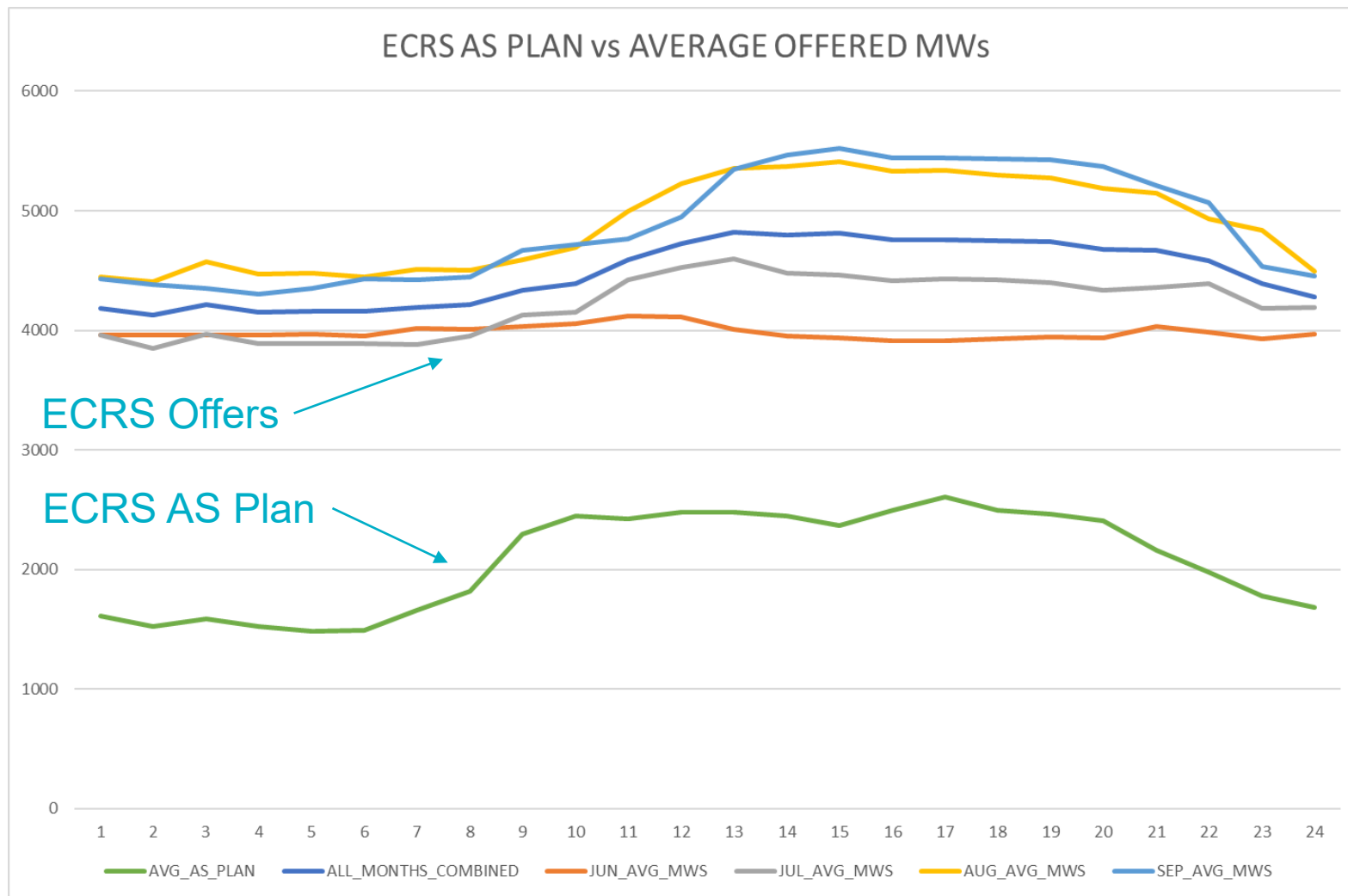


## Cost for Ancillary Services

- Ancillary Service costs in summer 2023 were substantially higher than previous two summers, particularly in August.
  - This corresponds with higher energy prices in the Day-Ahead Market (DAM) for August 2023.
  - Reminder ERCOT Contingency Response Reserve (ECRS) went live on June 10, 2023.

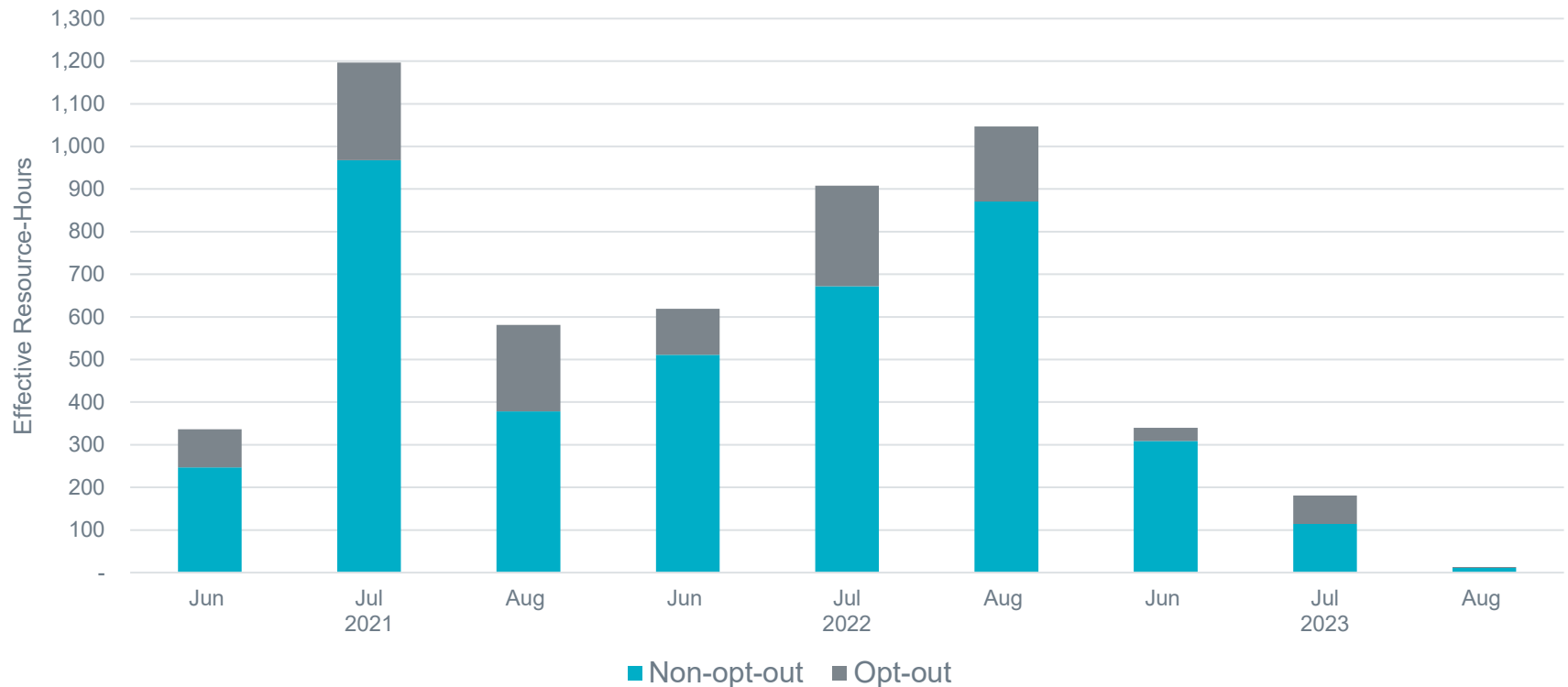


# ECRS Participation this Summer



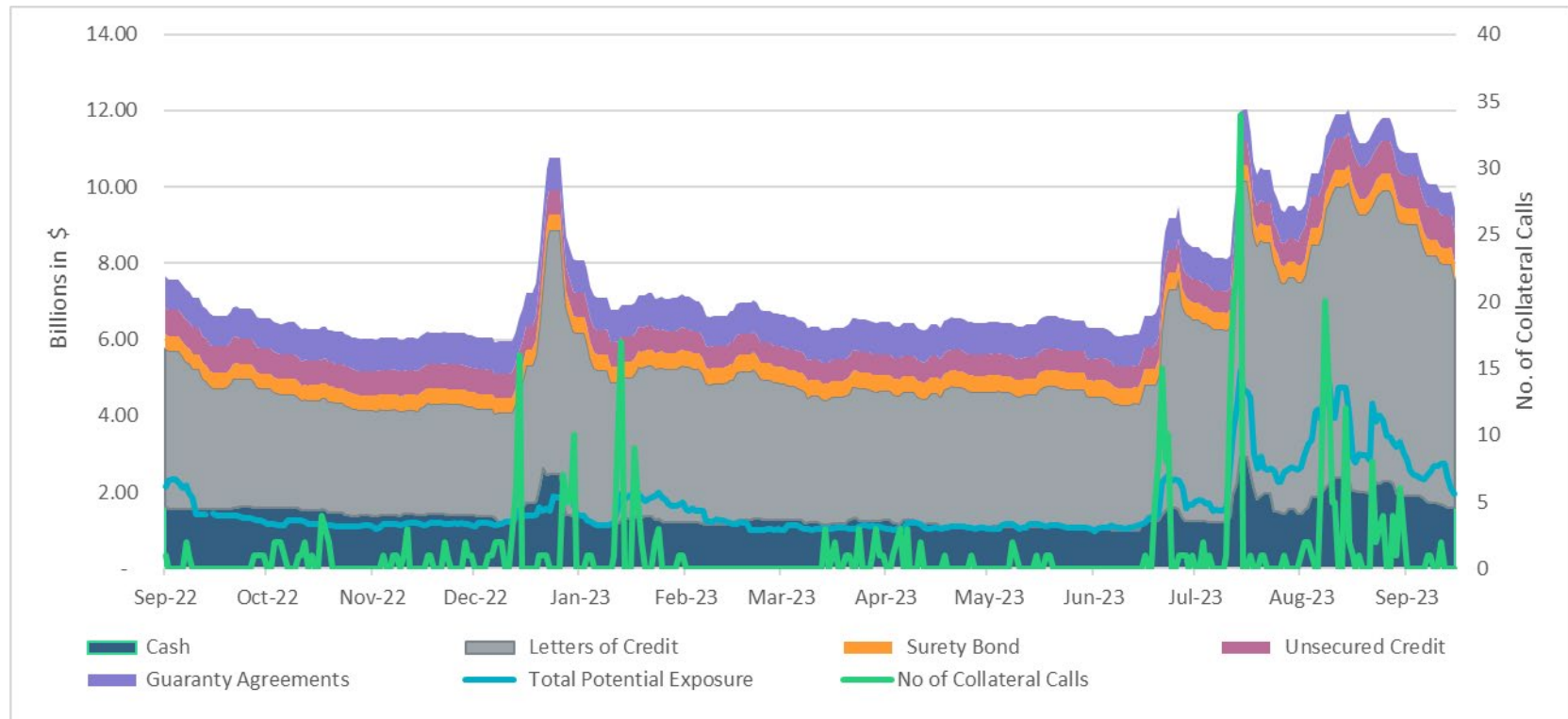
# Resources Committed Through RUC

- There were 534 total Reliability Unit Commitment (RUC) effective Resource-hours in summer 2023. This was a substantial reduction from the summer 2022 count of 2,573 Resource-hours.
- 36 unique Resources were committed from June to August 2023, while 42 unique Resources were committed 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.*

# Total Potential Exposure, Collateral and Collateral Calls September 2022 – September 15, 2023

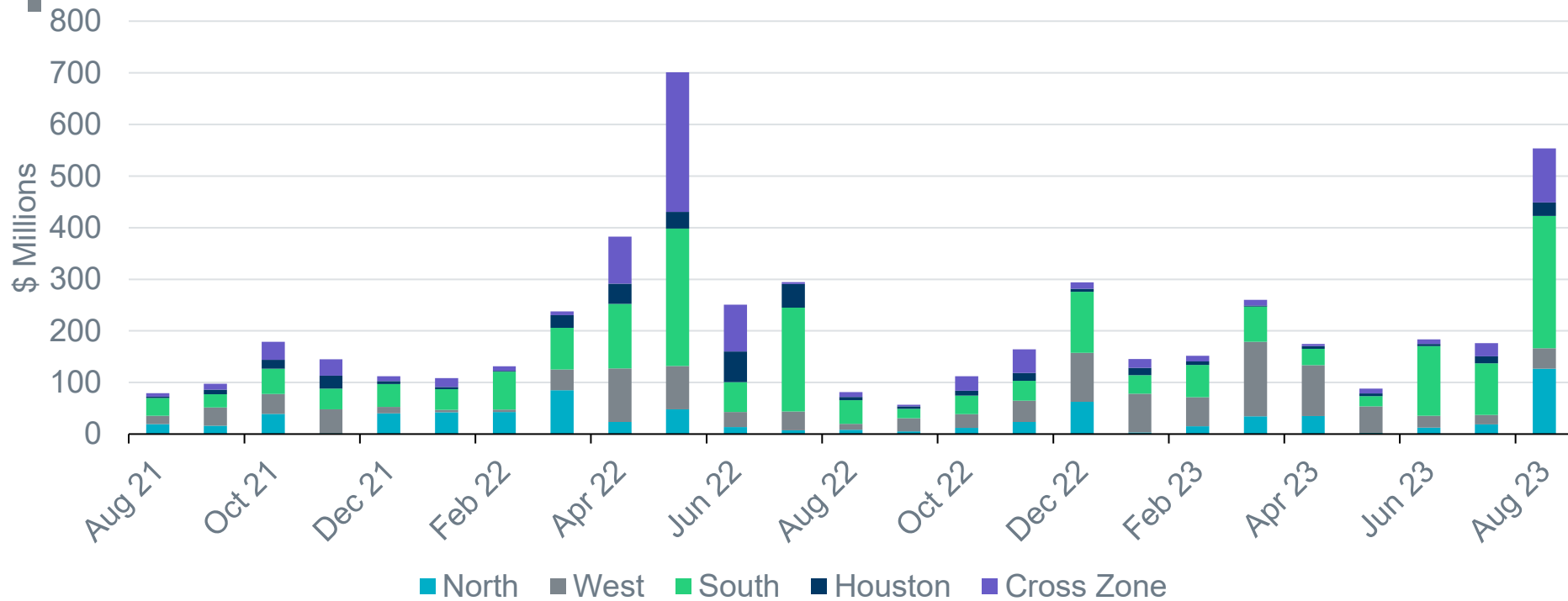


\* TPE excludes entities that defaulted from Winter Storm URI

# Appendix

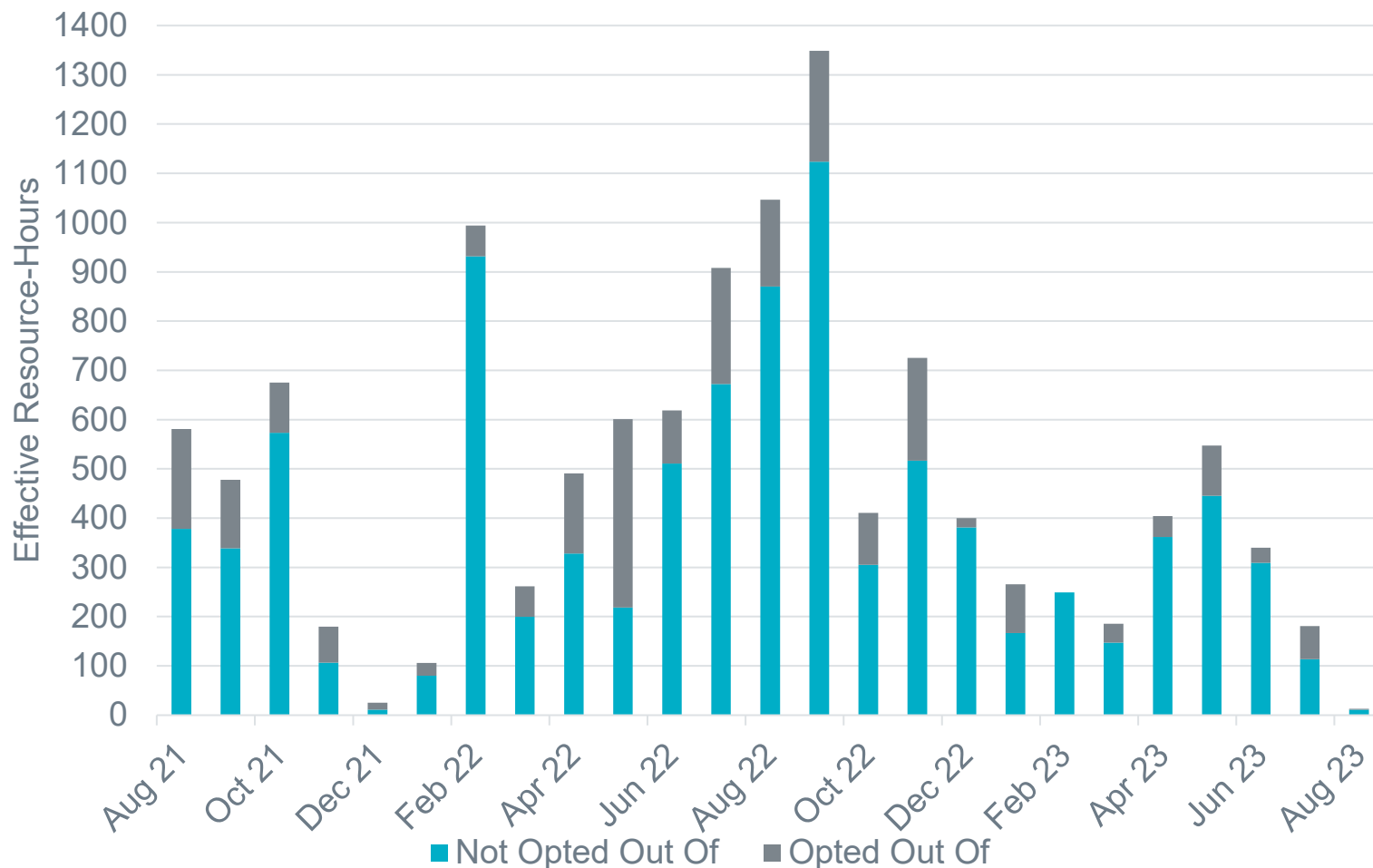


# Real-Time Congestion Rent by Zone



- Congestion rent increased in all zones in August compared to July.
- The two zones with the highest congestion rent were the South and North Zones.
  - Congestion rent in the South Zone was primarily driven by the loss of the double circuit 345 kV contingency from Elmcreek to San Miguel Gen overloading the 345 kV transmission line from Pawnee Switching Station to Calaveras.
  - Congestion rent in the North Zone was primarily driven by the loss of the 345 kV contingency from Rattlesnake Road Switch to Lake Creek overloading the 345 kV transmission line from St Johns Switch to Jewett.
- 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.

## Eight Resources were Committed in August for Capacity or Congestion

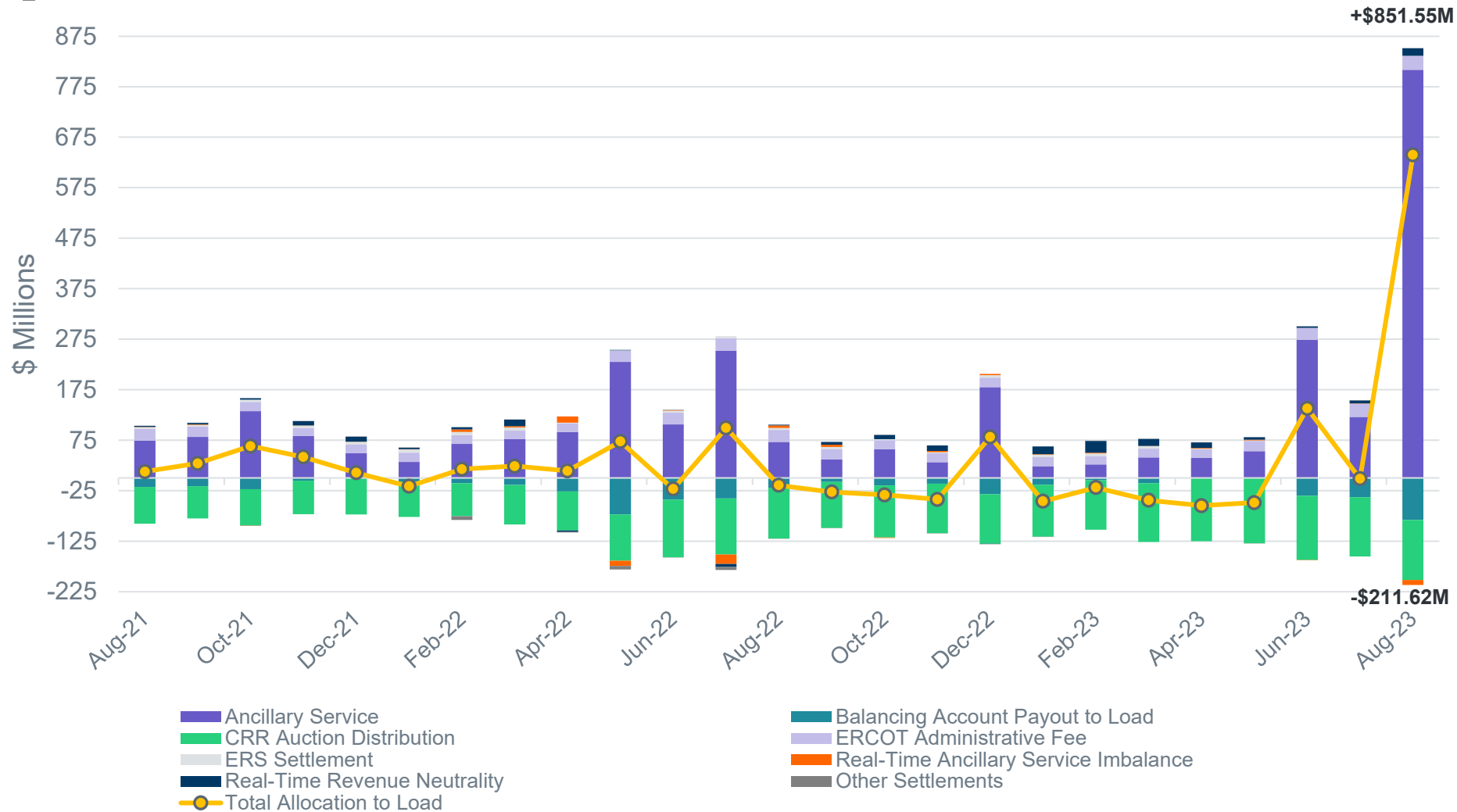


“Effective Resource-Hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.

## Eight Resources were Committed in August for Capacity or Congestion

Resource #	Effective Resource-hours	Non Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	2.0	0.0	2.0
2	2.1	2.1	0.0
3	2.1	2.1	0.0
4	1.0	1.0	0.0
5	1.8	1.8	0.0
6	2.0	2.0	0.0
7	1.0	1.0	0.0
8	1.0	1.0	0.0
Total	13.0	11.0	2.0

# Net Allocation to Load in August 2023 was \$639.93 Million



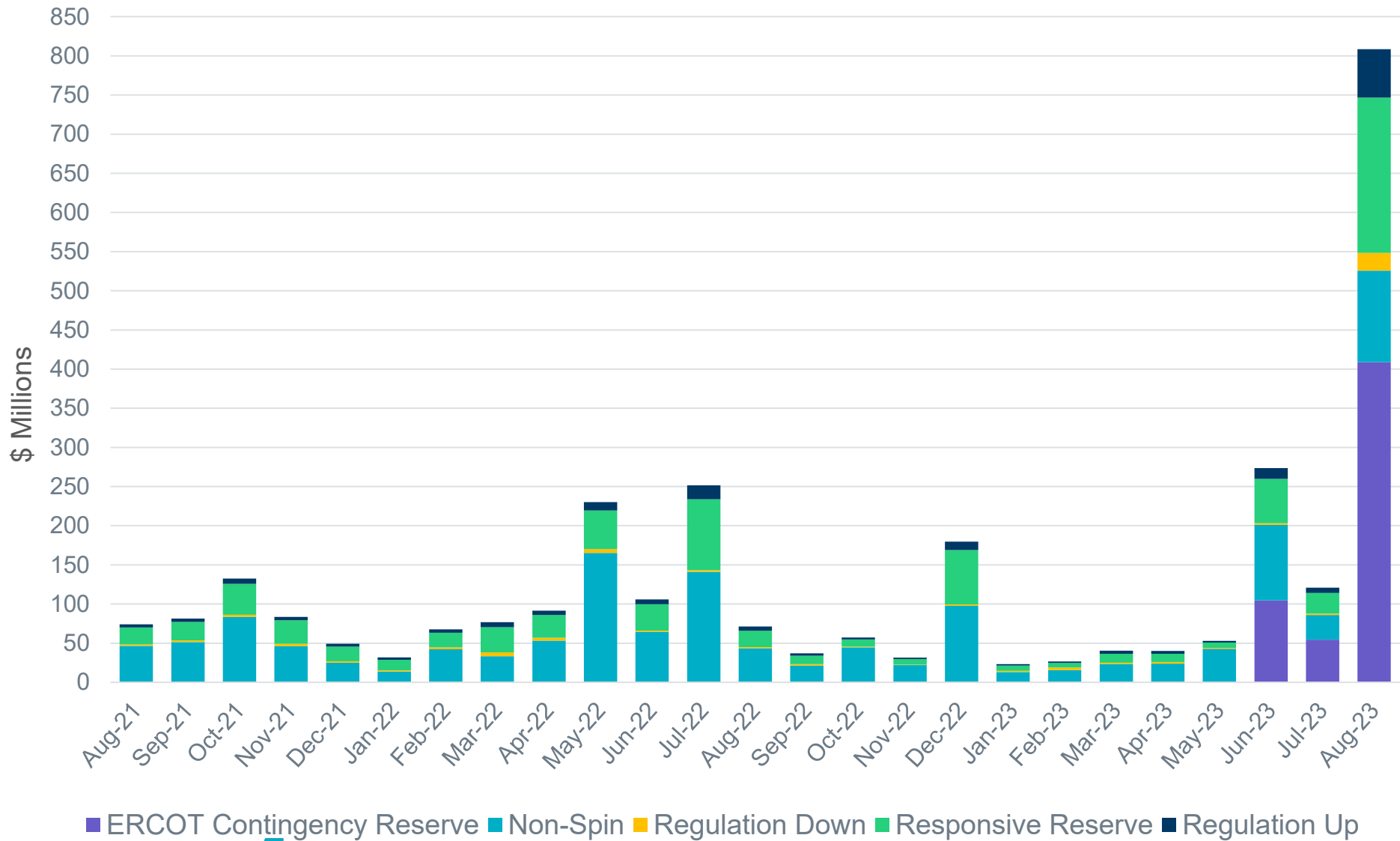
This information is available in tabular form in the Settlement Stability Report presented quarterly to the [Wholesale Market Subcommittee](#)

# Real-Time Revenue Neutrality Allocated to Load was \$14.77M for August 2023



August 2023 (\$M)	
Real-Time Energy Imbalance	\$426.19
Real-Time Point-to-Point Obligation	(\$319.10)
Real-Time Congestion from Self-Schedules	\$3.04
DC Tie & Block Load Transfer	(\$115.49)
Real-Time Energy for SODG and SOTG	(\$9.42)
<b>Load Allocated Revenue Neutrality</b>	<b>\$14.77</b>

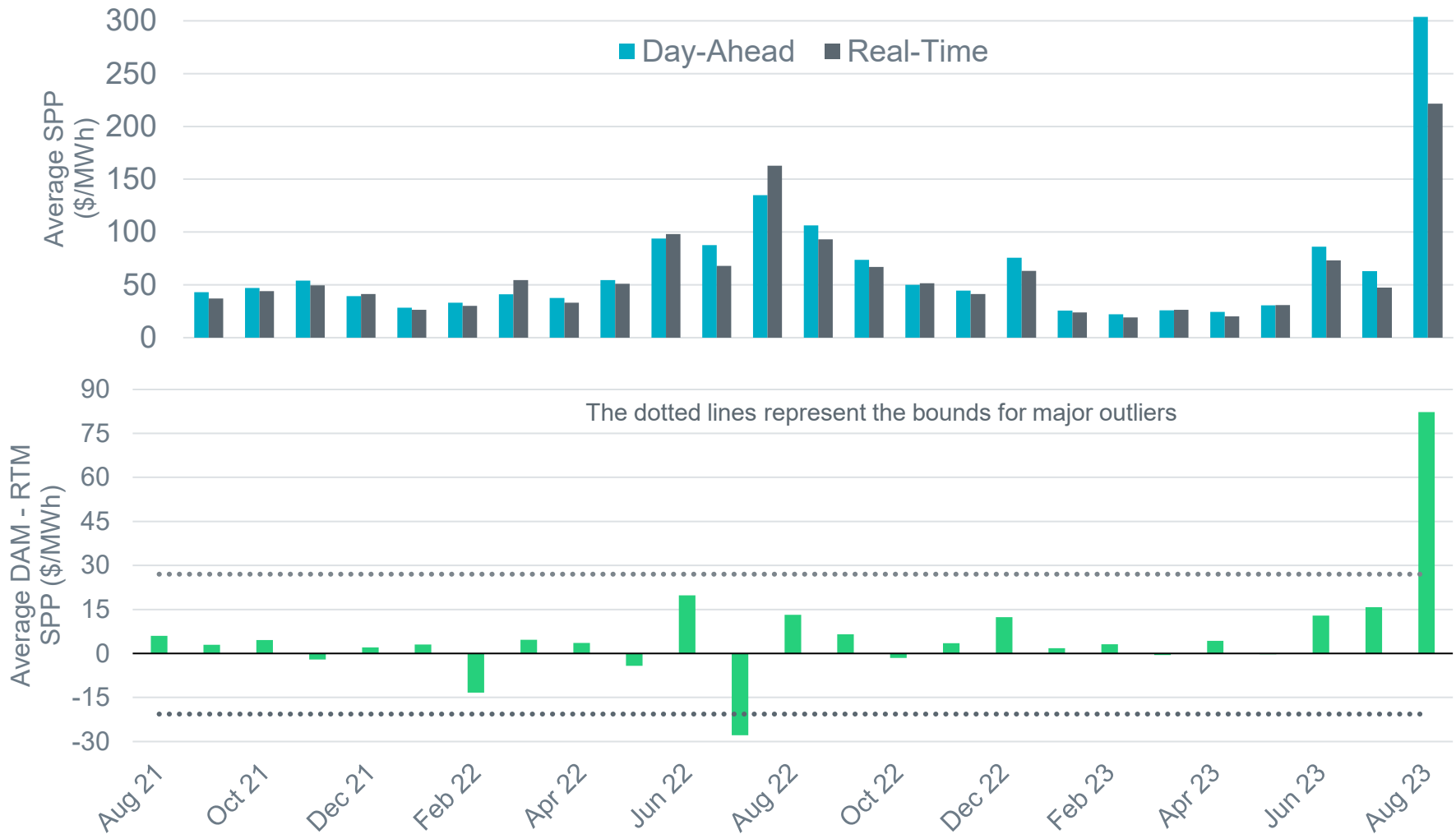
# Ancillary Services for August 2023 totaled \$808.5M



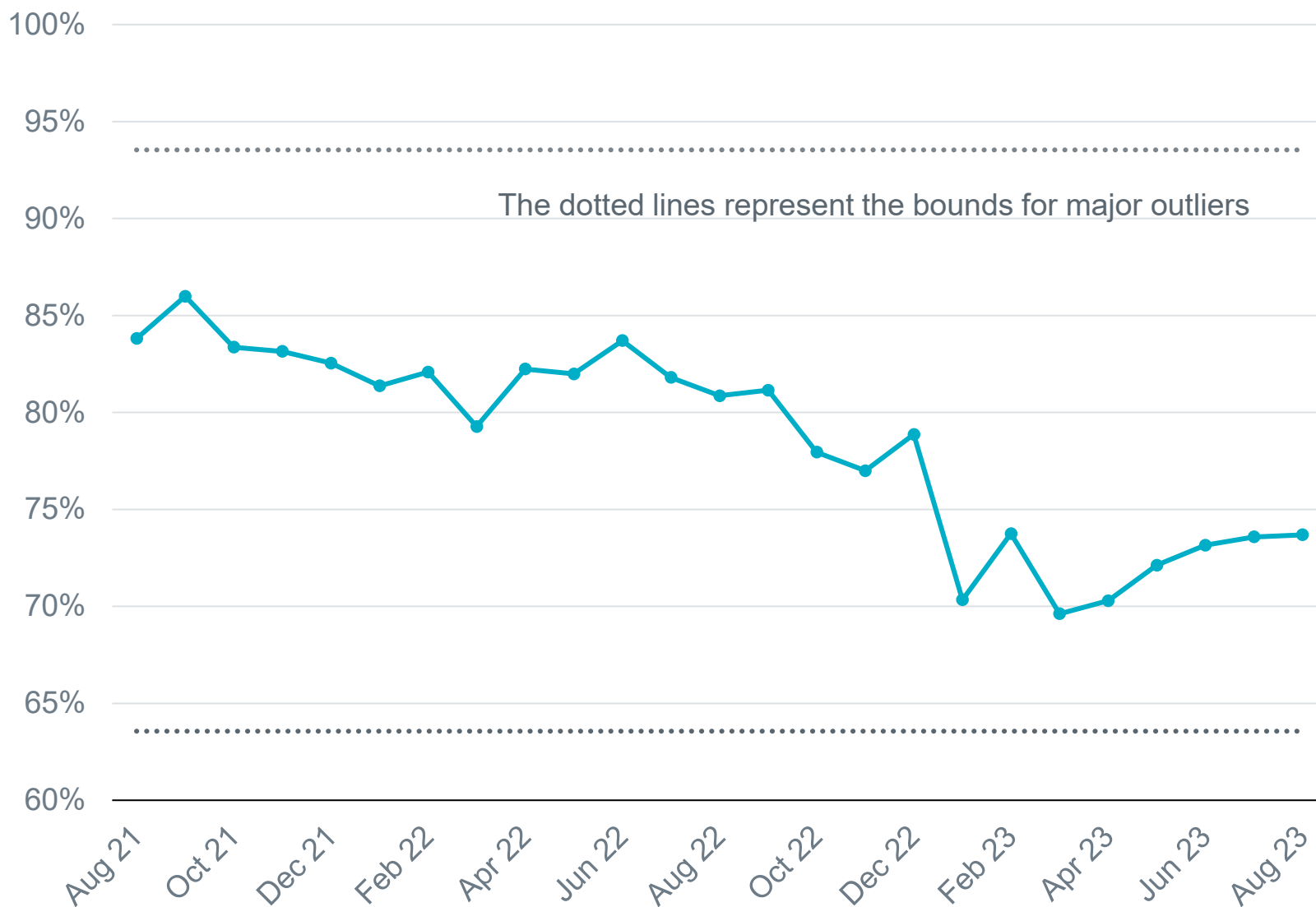
ERCOT Contingency Reserve Non-Spin Regulation Down Responsive Reserve Regulation Up



# Day-Ahead and Real-Time Market Price Differences



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





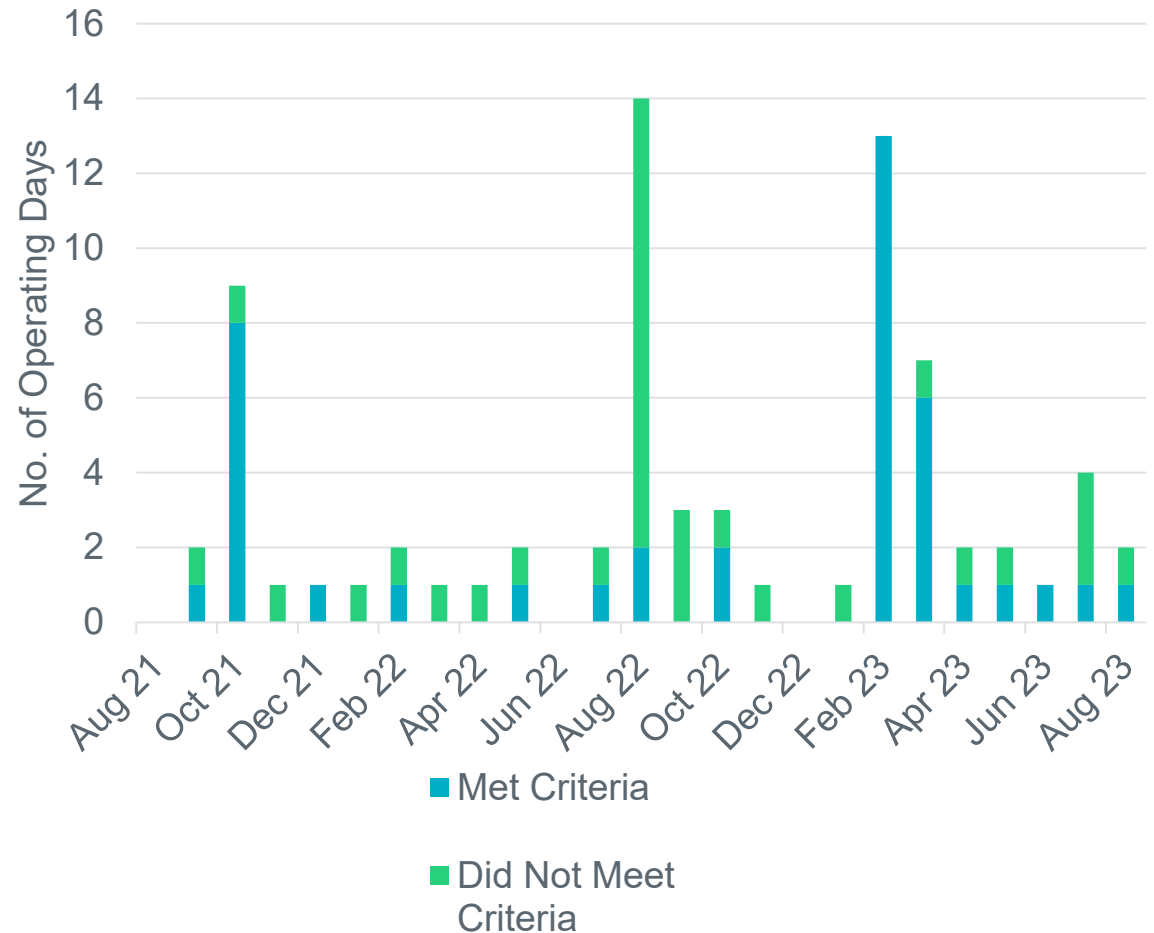
# CRR Value and Cost Differences



# 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 two 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.



# Details for Price Corrections Review

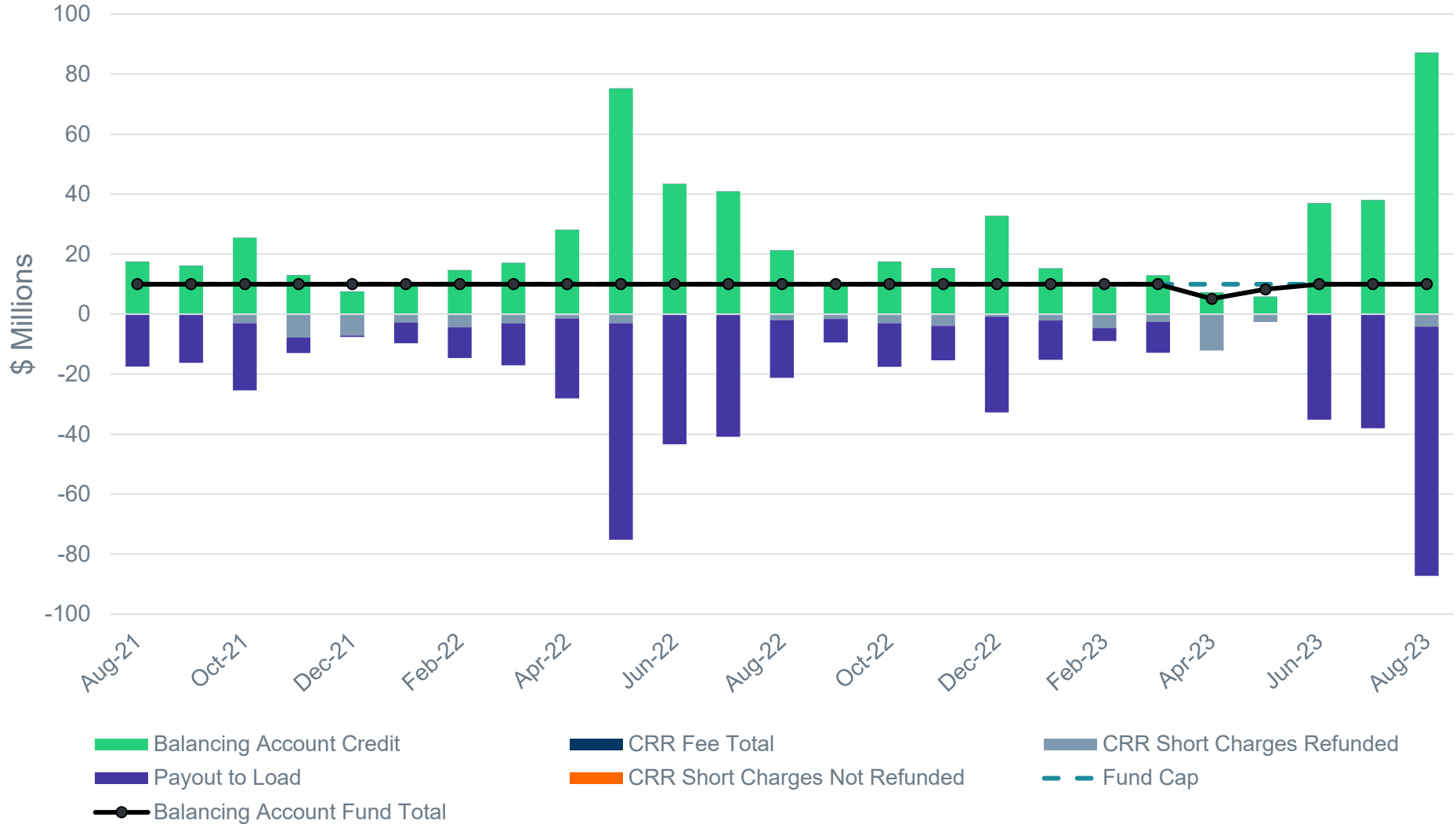
## Operating Day Meeting Significance Criteria

- On August 8, 2023, SCED failed to run for interval 05:45. Emergency basepoints were activated between 05:47 and 05:50. Upon completion of the impact analysis, ERCOT determined that criteria was met for price correction with the estimated total dollar impact to Real-Time Metered Prices (RTRMPRs) being approximately \$786.

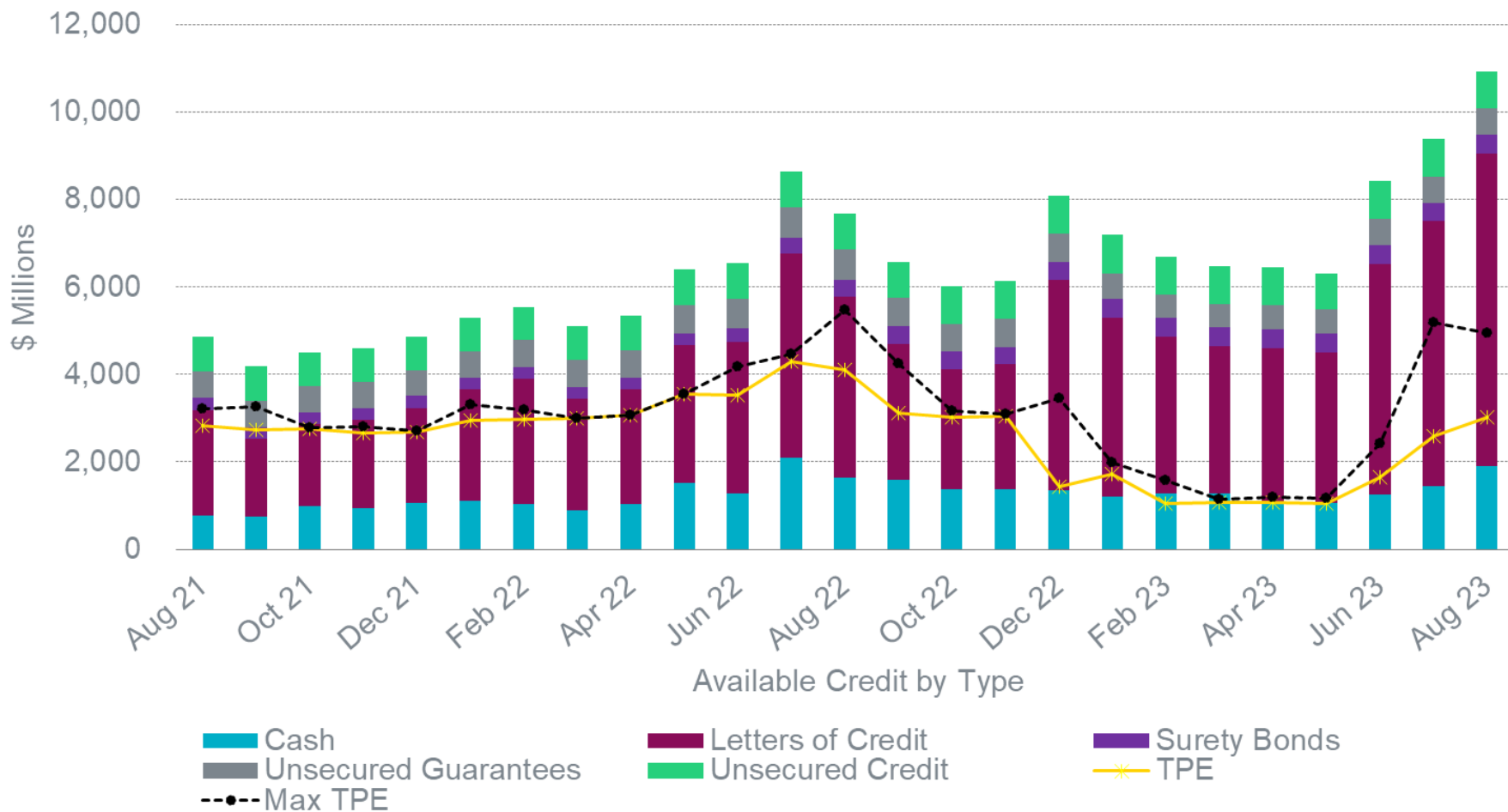
## Operating Days Not Meeting Significance Criteria

- On August 9, 2023, Emergency Basepoints were activated during a planned failover. The resulting impact analysis showed that this day had not met criteria for price correction, with an estimated total dollar impact of \$272.07.

# 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 – August 2023

	Year-To-Date		Transactions Received	
Transaction Type	August 2023	August 2022	August 2023	August 2022
Switches	787,775	885,046	119,121	102,478
Acquisitions	0	0	0	0
Move - Ins	2,101,353	2,088,305	282,005	320,855
Move - Outs	944,837	942,892	127,670	142,108
Continuous Service Agreements (CSA)	311,596	518,754	28,454	62,201
Mass Transitions	0	24,463	0	0
Total	4,145,561	4,459,460	557,250	627,642