Item 8.2: System Operations Update

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Reliability and Markets Committee

ERCOT Public
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Overview

- **Purpose**
  - Provide an update on key operational metrics to the R&M Committee
  - Provide information on recent Ancillary Services performance
  - Provide information on hot topics

- **Voting Items / Requests**
  - No action is requested of the R&M Committee; for discussion only

- **Key Takeaway(s)**
  - All key operational metrics are trending well, and all Ancillary Services are performing well.
  - Hurricane Beryl reached the ERCOT region on July 8, 2024 and resulted in significant outages in southeast Texas, but no ERCOT system reliability issues.
  - At the request of the PUC, ERCOT is performing a holistic review of AS.
  - ERCOT did some additional reporting on AS MW Shortfall Analysis.

Hot Topics

- Hurricane Beryl
- PUC Ancillary Services Study
- AS MW Shortfall Analysis
- IBR Ride-Through Survey Results

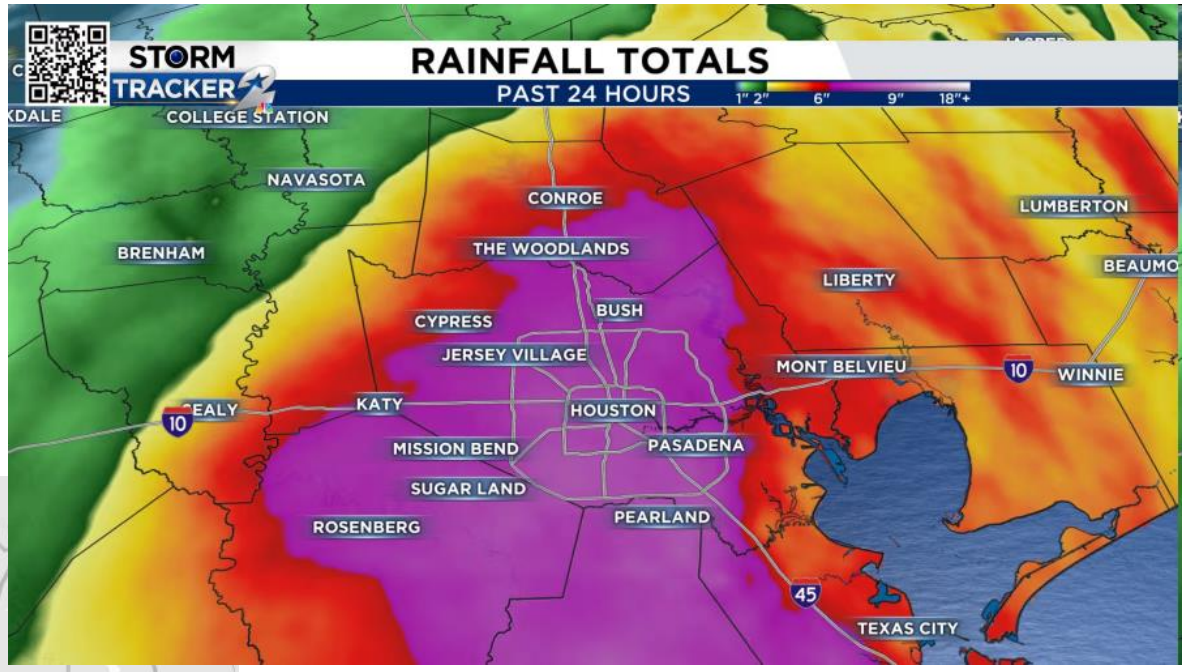
Hurricane Beryl

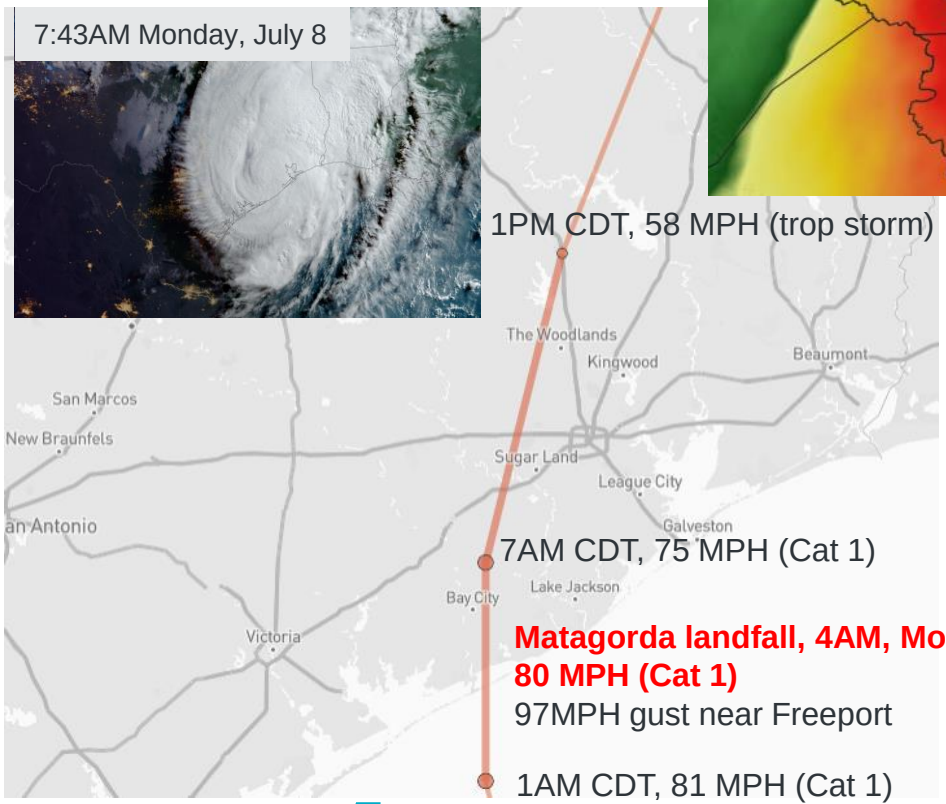
Key Takeaway: The National Hurricane Center (NHC) had projected landfall centered over Northeast Mexico on the evening of 7/4 (3.5 days prior to landfall)

Beryl made landfall in Grenada on July 1 as a Category 4 hurricane

On July 2, it became the earliest Category 5 hurricane on record to form in the Atlantic

Hurricane Beryl

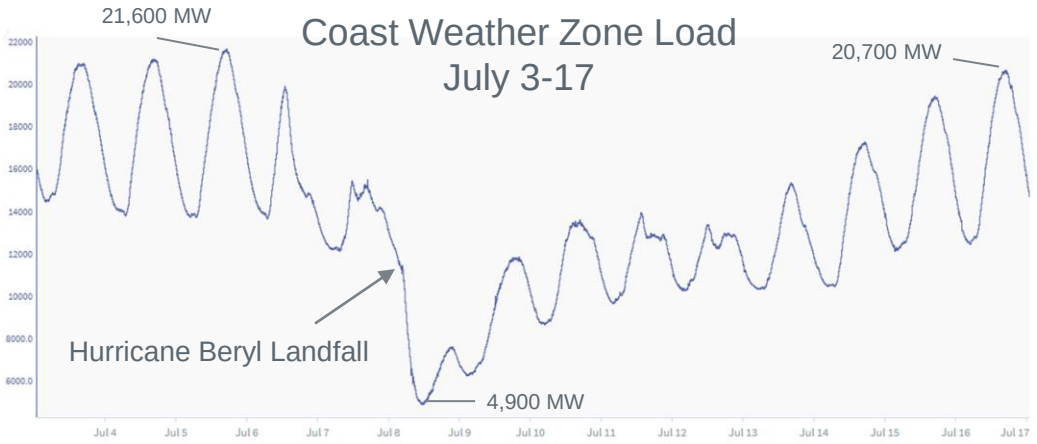




Key Takeaway: Beryl was slow to weaken as it moved inland and was still a Category 1 hurricane as it moved into the Houston metro, becoming a tropical storm at 10 a.m.

Hurricane Beryl: ERCOT Operations Impact

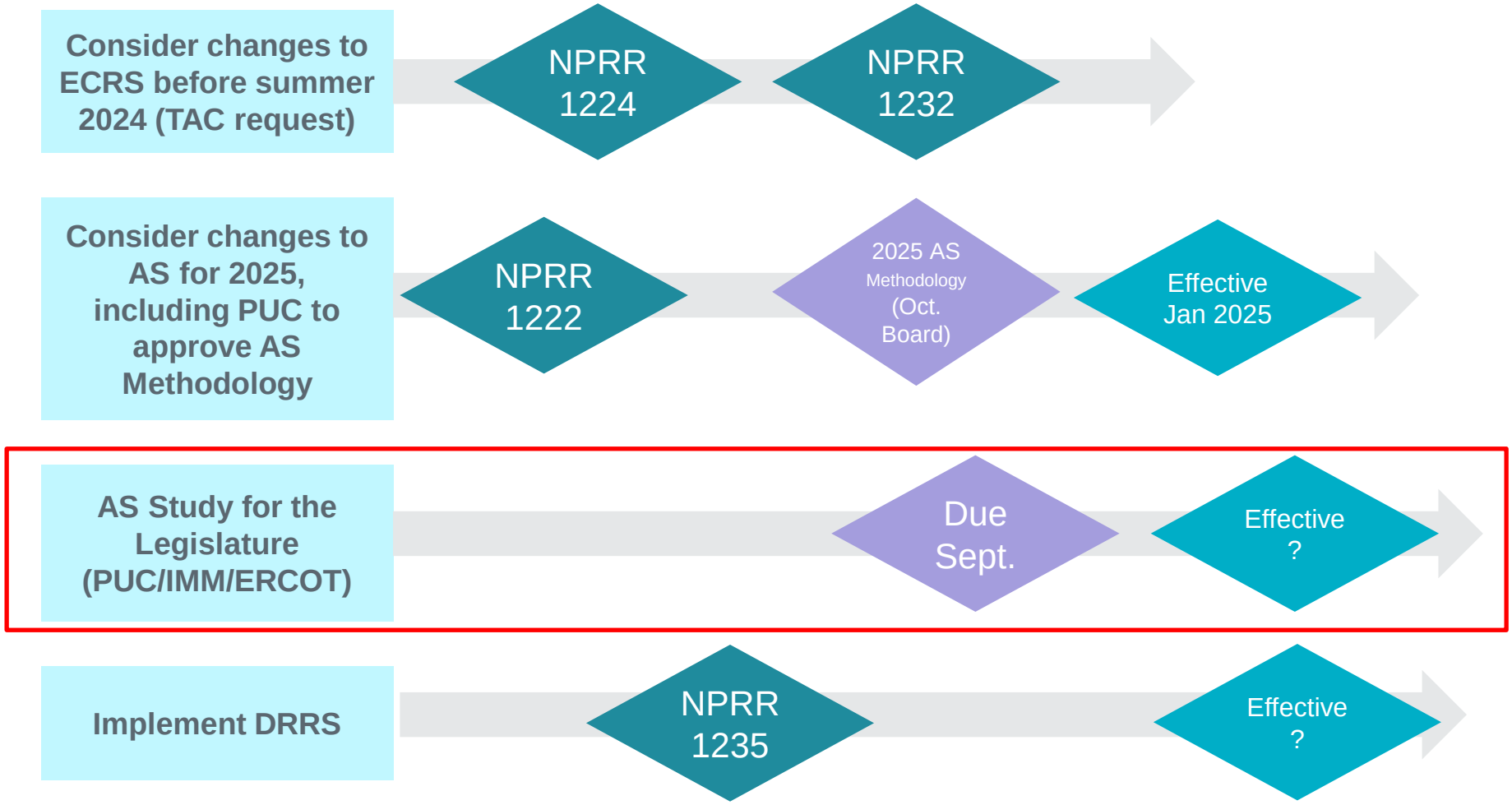
- Online reserves remained high throughout event
- Total count of outages throughout the event (not concurrent occurrences):
  - Transmission Circuits
    - 345 kV – 5
    - 138 kV – 80
    - 69 kV – 42
  - Generators
    - Thermal – 5
    - Energy Storage – 1



- RFI's will be sent to entities to understand the cause of transmission and generation trips and to see if there are any lessons learned or improvements
- Currently unaware of any NERC reportable misoperations

Key Takeaway: Hurricane Beryl resulted in significant outages in southeast Texas, but no ERCOT system reliability issues.

Ongoing Ancillary Services Initiatives



PUC Ancillary Service Study

Background:

- Ancillary Services (AS) serve two primary purposes:
  - Frequency control
    - Requirements based on NERC Reliability Standards
  - Mitigation of operational risk of under-commitment of Resources that have the characteristics needed to meet demand plus unexpected variations
    - Requirements based on risk analysis as described in the annual Ancillary Services Methodology
- Senate Bill 3 from the 87th Texas Legislative session requires the PUC to review (AS)
- The PUC asked ERCOT and the IMM to conduct a holistic AS review
- Upcoming timeline:
  - ERCOT-IMM-PUC workshop on August 28
  - Final report filed with the PUC by September 30
  - PUC workshop in late October
  - PUC recommendations submitted to the Legislature in January 2025

Key Takeaway: At the request of the PUC, ERCOT is performing a holistic review of AS.

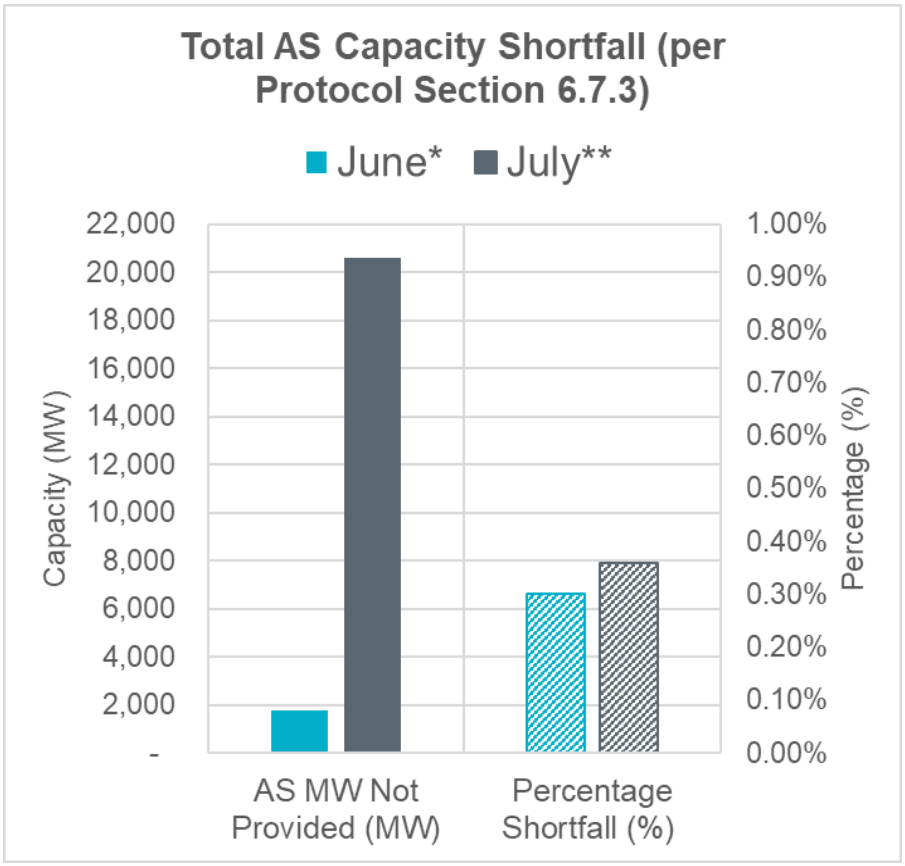
PUC Ancillary Service Study

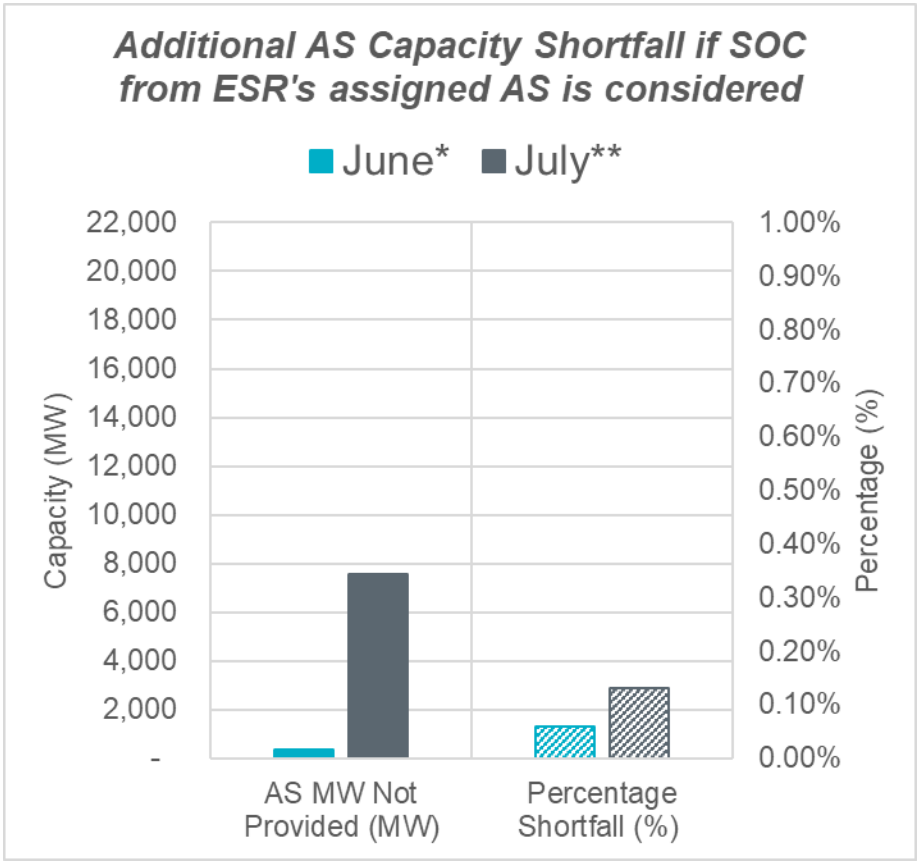
ERCOT's Preliminary Recommendations:

- No change to Regulation, RRS and the frequency-response portion of ECRS
- Change the methodology used to calculate the non-frequency-response portion of ECRS and Non-Spin to use a full statistical analysis of risks
  - Will require stakeholder input regarding analysis assumptions and criteria
- Re-examine the benefits of determining some portion of AS quantities closer to the operating day rather than strictly through an annual calculation
  - Will require stakeholder discussion regarding tradeoffs between AS quantity certainty and efficiency

Key Takeaway: No changes are needed for the methodology for Regulation, RRS, and a portion of ECRS, but improvements may be achieved for a portion of ECRS and Non-Spin. Additionally, dynamic AS procurement may realize efficiencies. The proposed changes should be vetted with stakeholders.

Additional Reporting: AS MW Shortfall Analysis



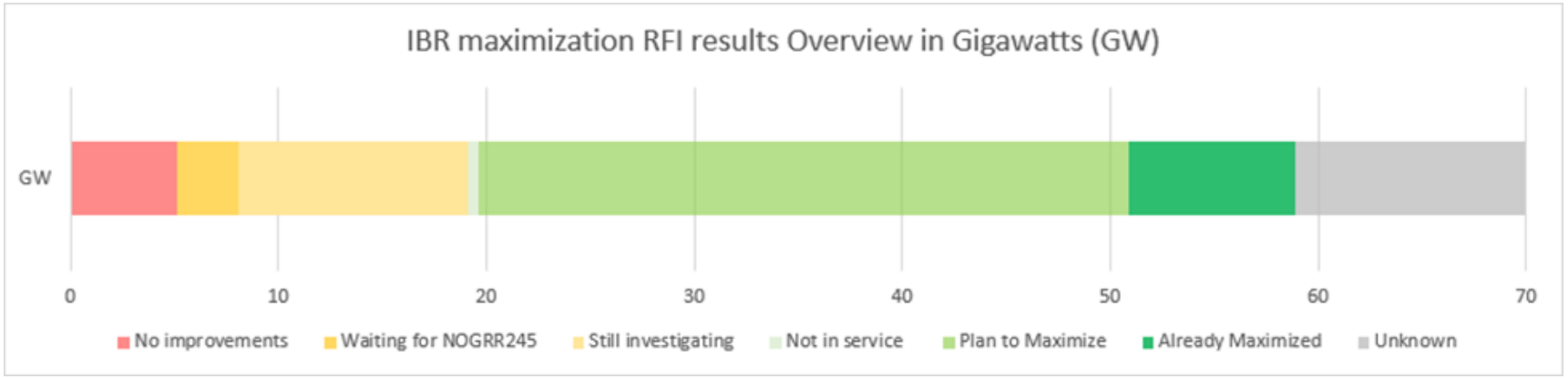


Key Takeaway: A (small) portion of the procured AS is not being assigned to resources (regardless of technology type) by QSEs and is not available in Real Time. The magnitude of AS capacity unavailable in Real Time increases further if SOC from ESRs that are assigned AS is considered.

**June data: 6/28/2024 - 6/30/2024. **July data: 7/1/2024 - 7/31/2024. ***Capacity data (MW) is plotted on primary y-axis and percentage shortfall (%) is plotted with a pattern format on secondary y-axis. Percentages in both graphs are based on total AS procured.*

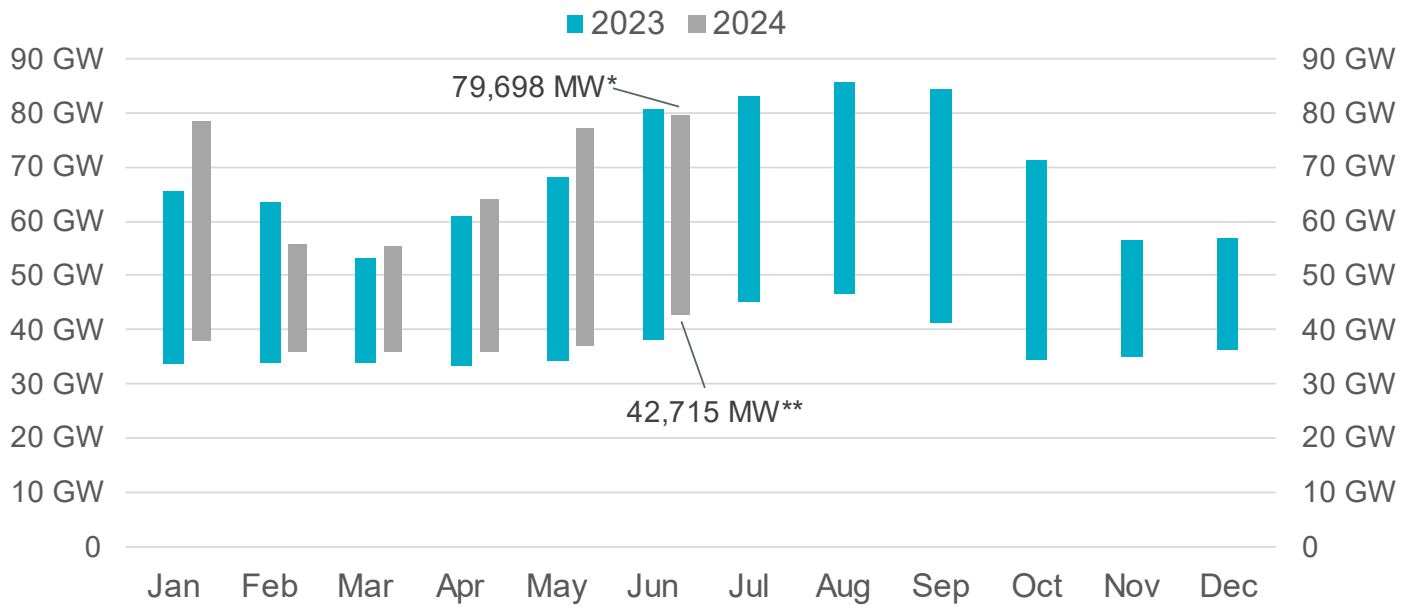
IBR Survey Responses

- ERCOT issued Market Notice to encourage IBRs to maximize their ride-through capability and not wait on outcome of NOGRR 245
- ERCOT issued an RFI to each IBR as to whether or not the Resource planned to maximize their ride-through capability
- Out of 682 RFIs, 85% responded and 15% did not respond (unknown)
- Of the 85% who responded, the responses could be categorized as:
  - No improvements planned
  - Still investigating capabilities
  - Plan to maximize
  - Waiting for outcome of NOGRR 245
  - The resource is not in service yet
  - Already maximized



Appendix

Demand



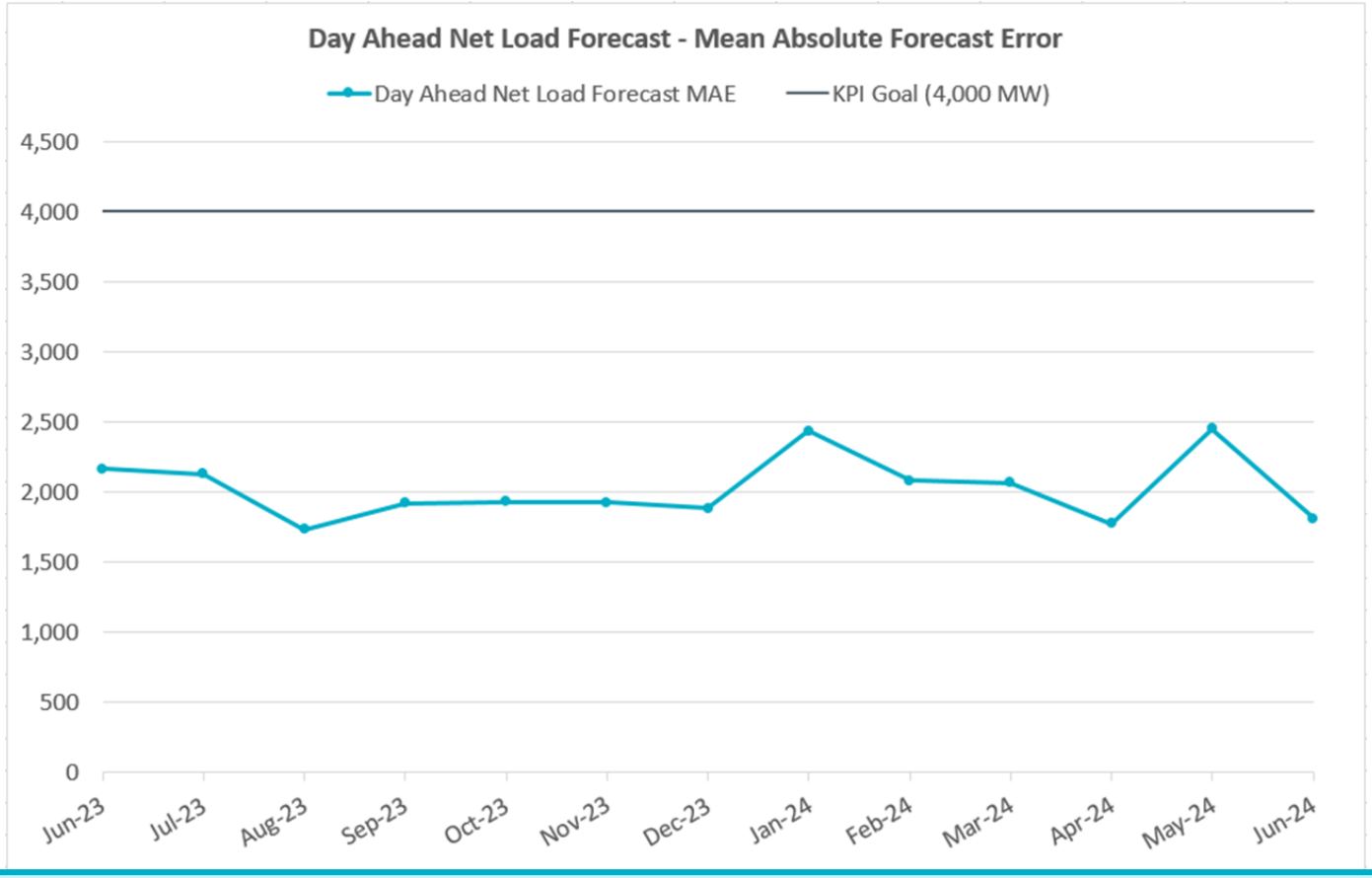
*Based on the maximum net system hourly value from June release of Demand and Energy 2024 report.

**Based on the minimum net system 15-minute interval value from June release of Demand and Energy 2024 report.

Data for latest two months are based on preliminary settlements.

Key Takeaway: ERCOT's maximum peak demand for the month of June was 79,698 MW*; this is 1,128 MW less than the June 2023 demand of 80,826 MW.

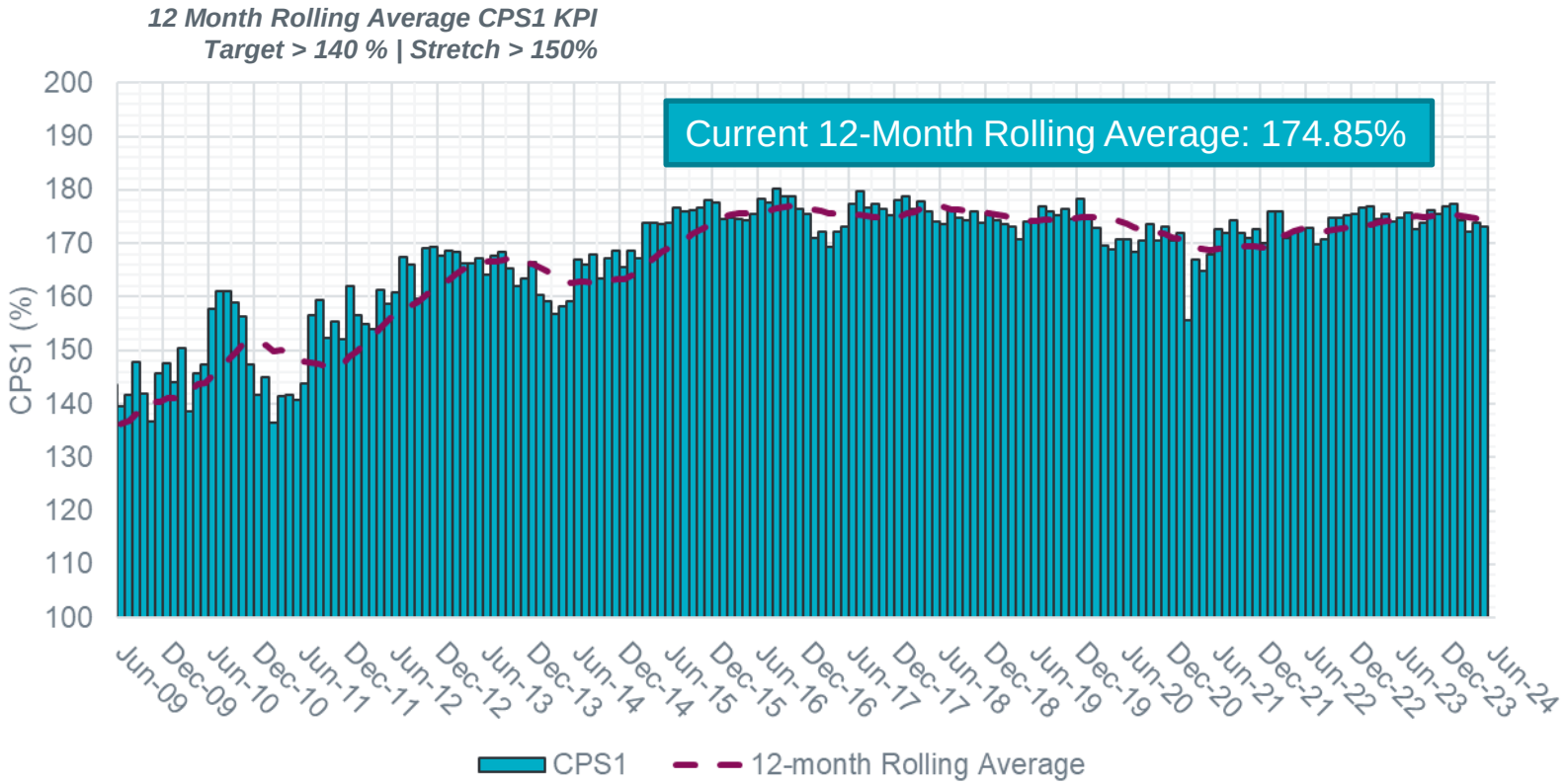
Forecast Performance



Key Takeaway: Day Ahead Net Load Forecast Mean Absolute Forecast Error is a new Key Performance Indicator from 2023. This metric has met the target and has been trending well.

Frequency Control

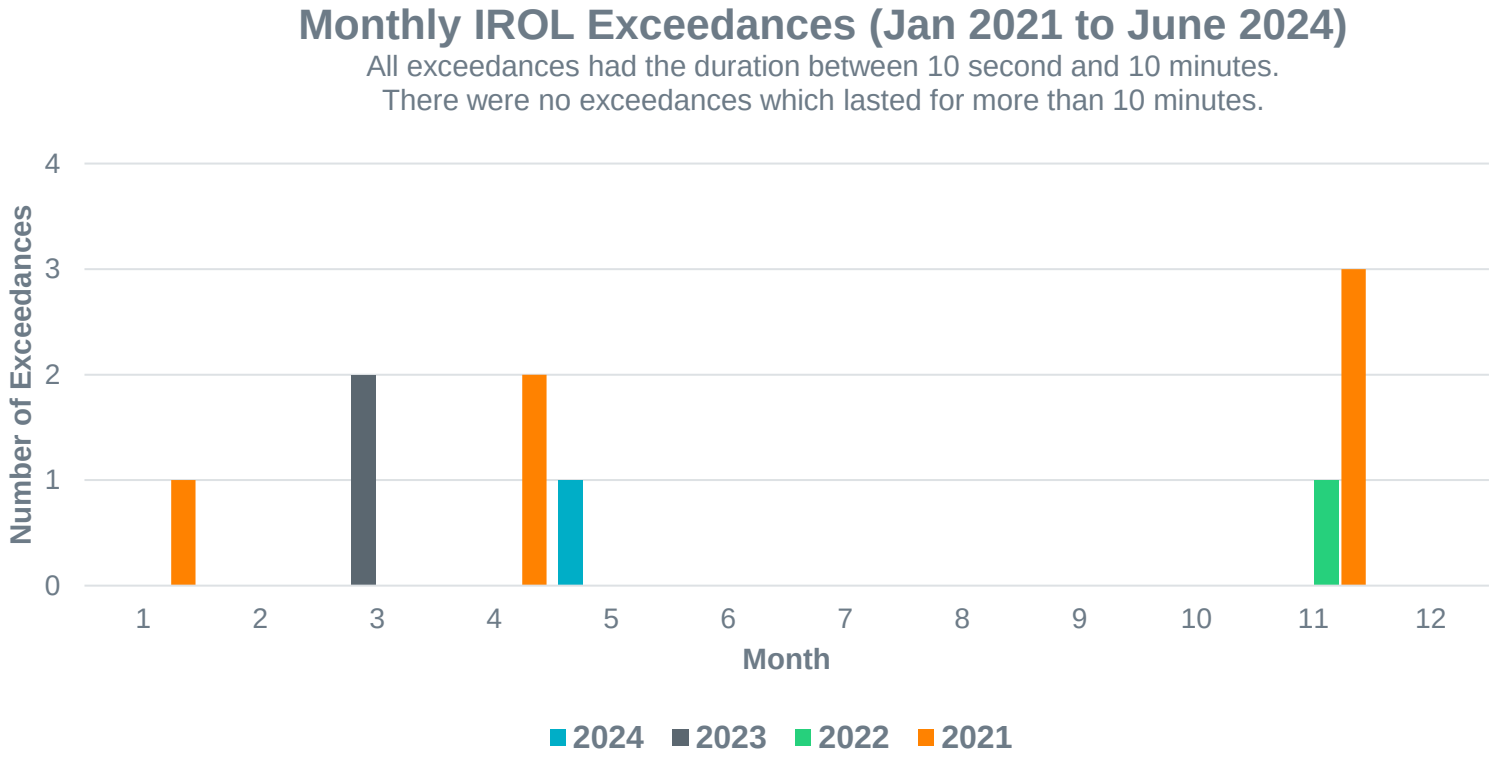
- Control Performance Standard 1 (CPS-1) is a measure of the frequency control on a power system, pursuant to NERC Standard BAL-001. The 12-month rolling-average of this measure is required to stay above 100%.



Key Takeaway: Frequency control has been performing extremely well.

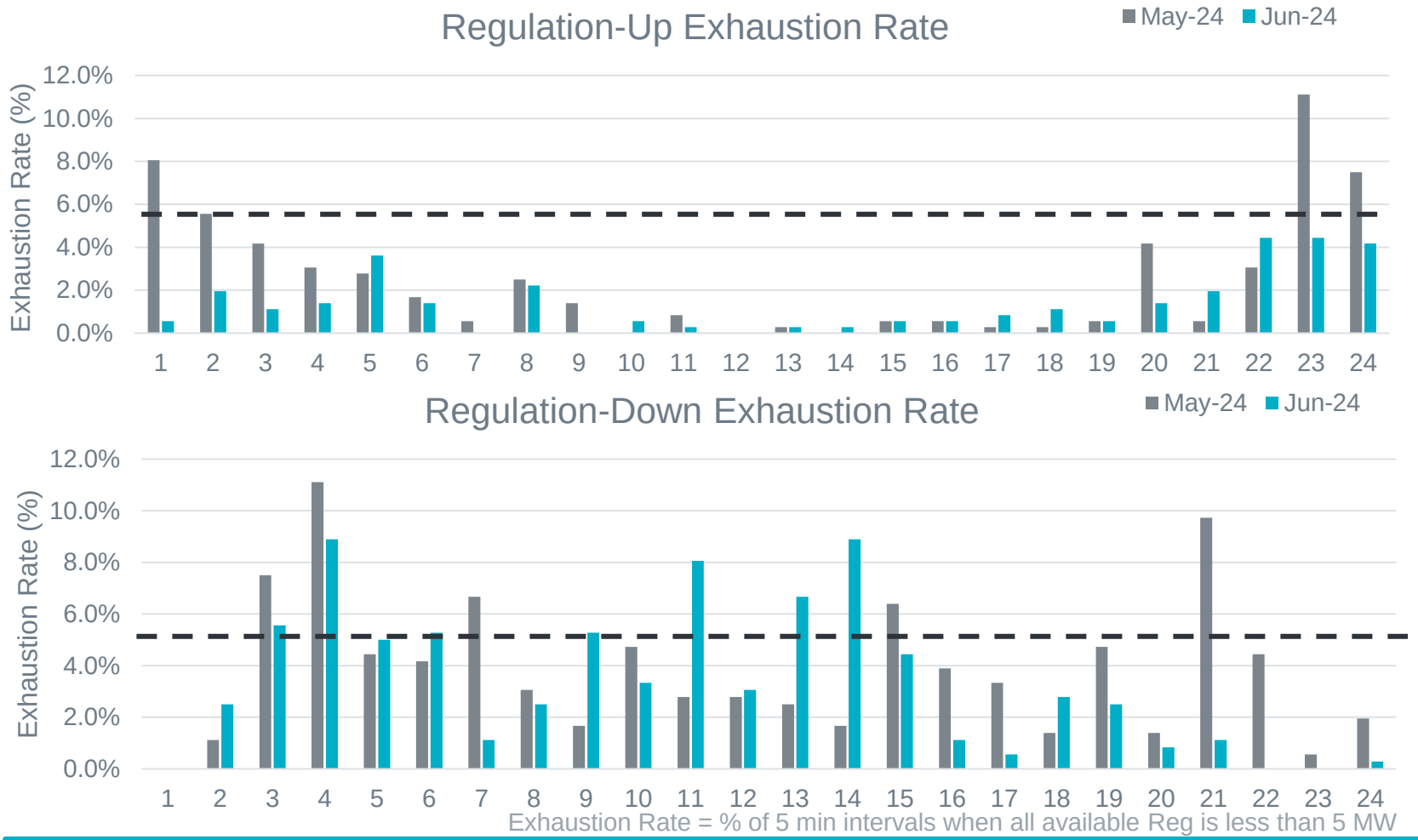
Transmission Limit Control

- The most-recent Interconnection Reliability Operating Limit (IROL) exceedance occurred in May 2024.



Key Takeaway: I_PASP IROL exceeded on May 9, 2024 for approximately 2.5 minutes due to a generator trip in South Texas.

Regulation Service Deployments for May-June 2024



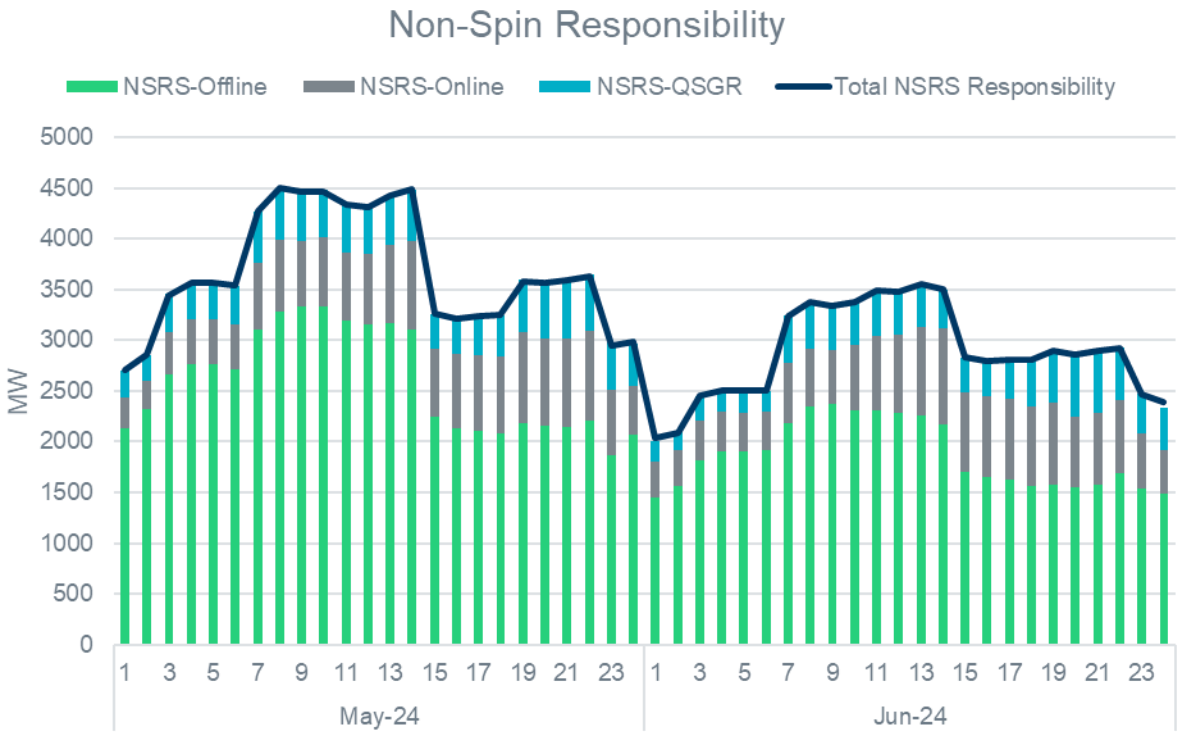
Key Takeaway: Average Regulation Up and Down exhaustion rates were similar in 2023.

Non-Spinning Reserve Service (Non-Spin) Deployments for May-June 2024

From May to June 2024, there were 5 events that resulted in deployment of offline Non-Spin.

During this time, an average of ~32% of Non-Spin was provided using online capacity and by Quick Start Generation Resources. This type of Non-Spin is always available to SCED to dispatch (with an offer floor of $75) and no operator action is needed to deploy this capacity.

Deployment Start Time	Deployment Duration	Max Deployment (MW)
5/8/2024 18:48	2:11:51	498.3
5/9/2024 12:23	9:45:00	164.0
6/17/2024 10:18	0:07:36	51.0
6/17/2024 11:09	0:09:04	102.0
6/20/2024 10:41	1:06:32	2.5

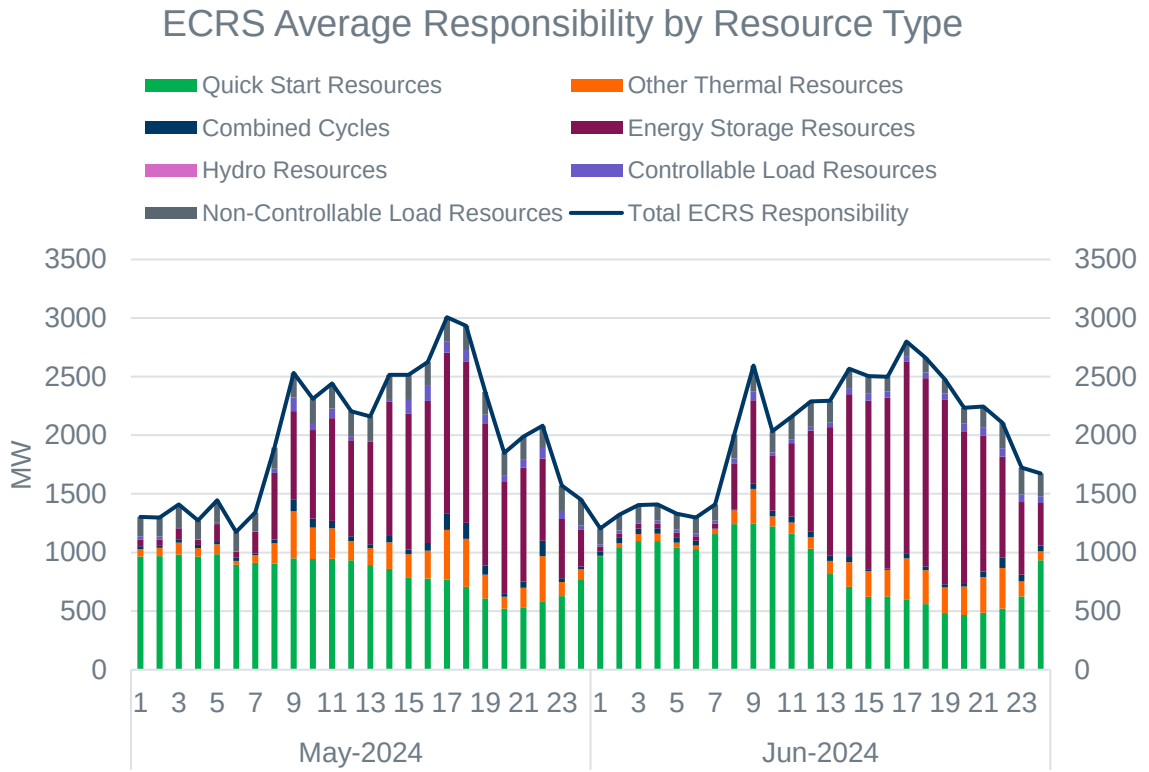


Key Takeaway: All recent Non-Spin deployments were to meet 30-minute ramping needs. Non-Spin performed well in all deployments.

ERCOT Contingency Reserve Service (ECRS) Release for May-June 2024

From May-June 2024, there was 1 event that resulted in release of SCED dispatchable ECRS. The release was to meet 10-minute projected net load.

Deployment Start Time	Deployment Duration	Maximum SCED Dispatchable MW Released	Reason
5/8/2024 19:07	1:41:00	1826.8	Available capacity not sufficient for projected Net Load



Key Takeaway: ECRS performed well in all deployments and helped recover from the events that triggered deployment.

Responsive Reserve Service (RRS) Released for May-June 2024

- From May to June 2024, there was no manual release of RRS
- With the implementation of ECRS, RRS capacity autonomously deploys when frequency exceeds the frequency dead-band. RRS may be manually released to SCED during scarcity events when additional capacity is needed.

Key Takeaway: No Manual RRS Release from May-June 2024.