Item 10.2: System Operations Update

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Reliability and Markets Committee Meeting

ERCOT Public
December 18-19, 2023

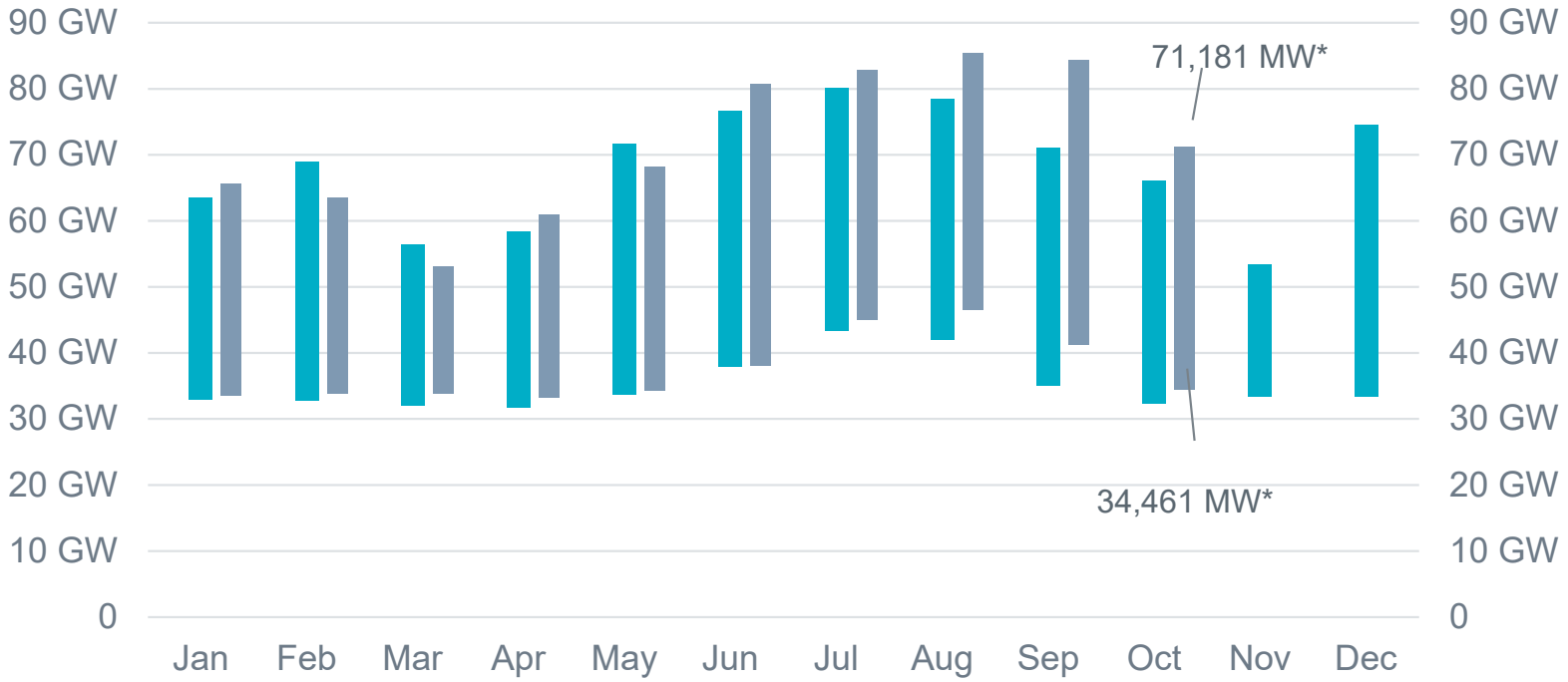
Overview

- **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 Reliability and Markets (R&M) Committee or Board; for discussion only

- **Key Takeaways**
  - All key operational metrics are trending well, and all Ancillary Services are performing well
  - Increase in peak demand since last year is due to both economic growth and hotter temperatures

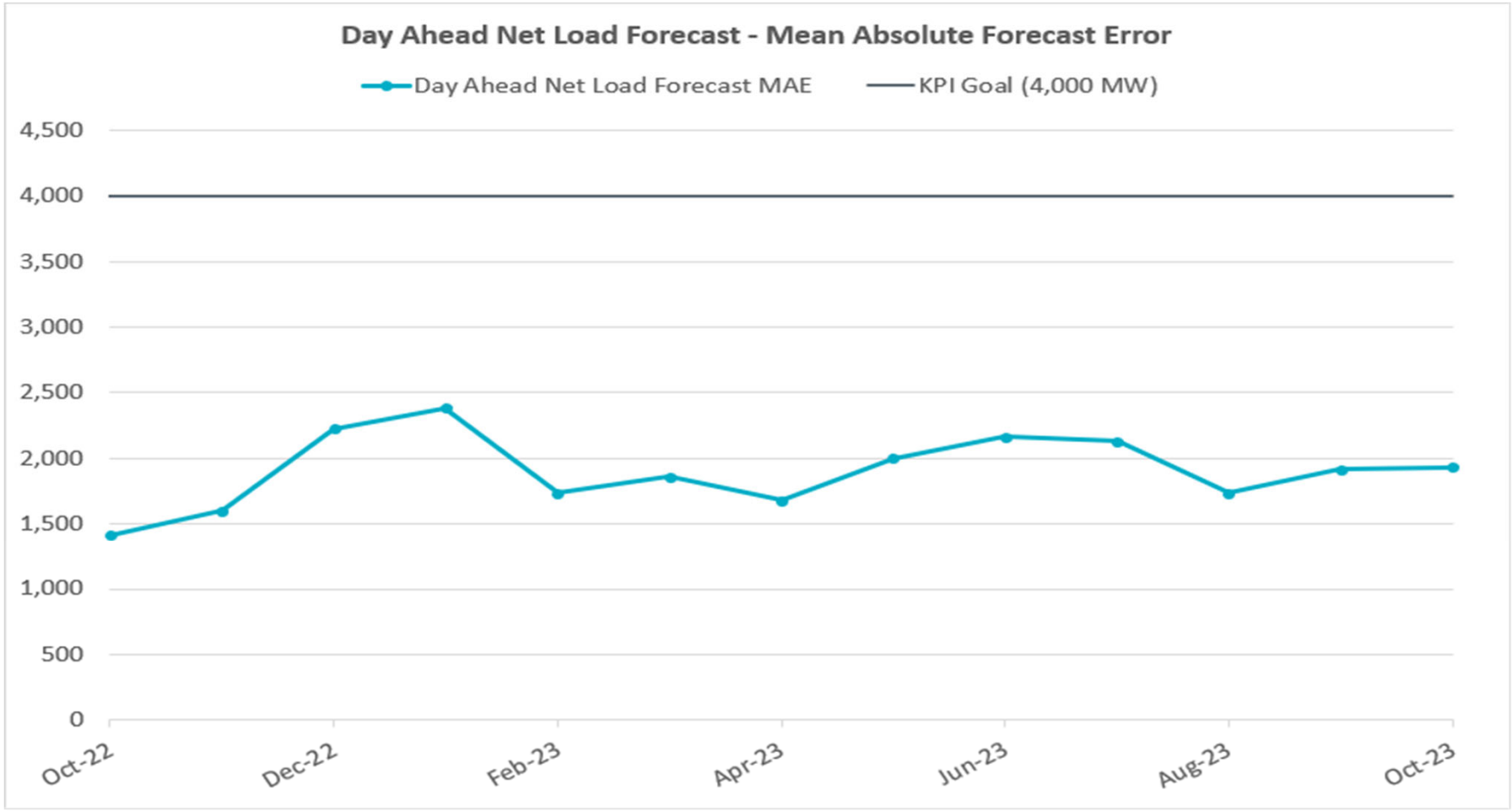
Demand



*Data for September and October are based on preliminary settlements.

Key Takeaway: ERCOT set a new record of 71,181 MW* for the month of October on 10/04/2023; This is 5,028 MW more than the October 2022 demand of 66,153 MW.

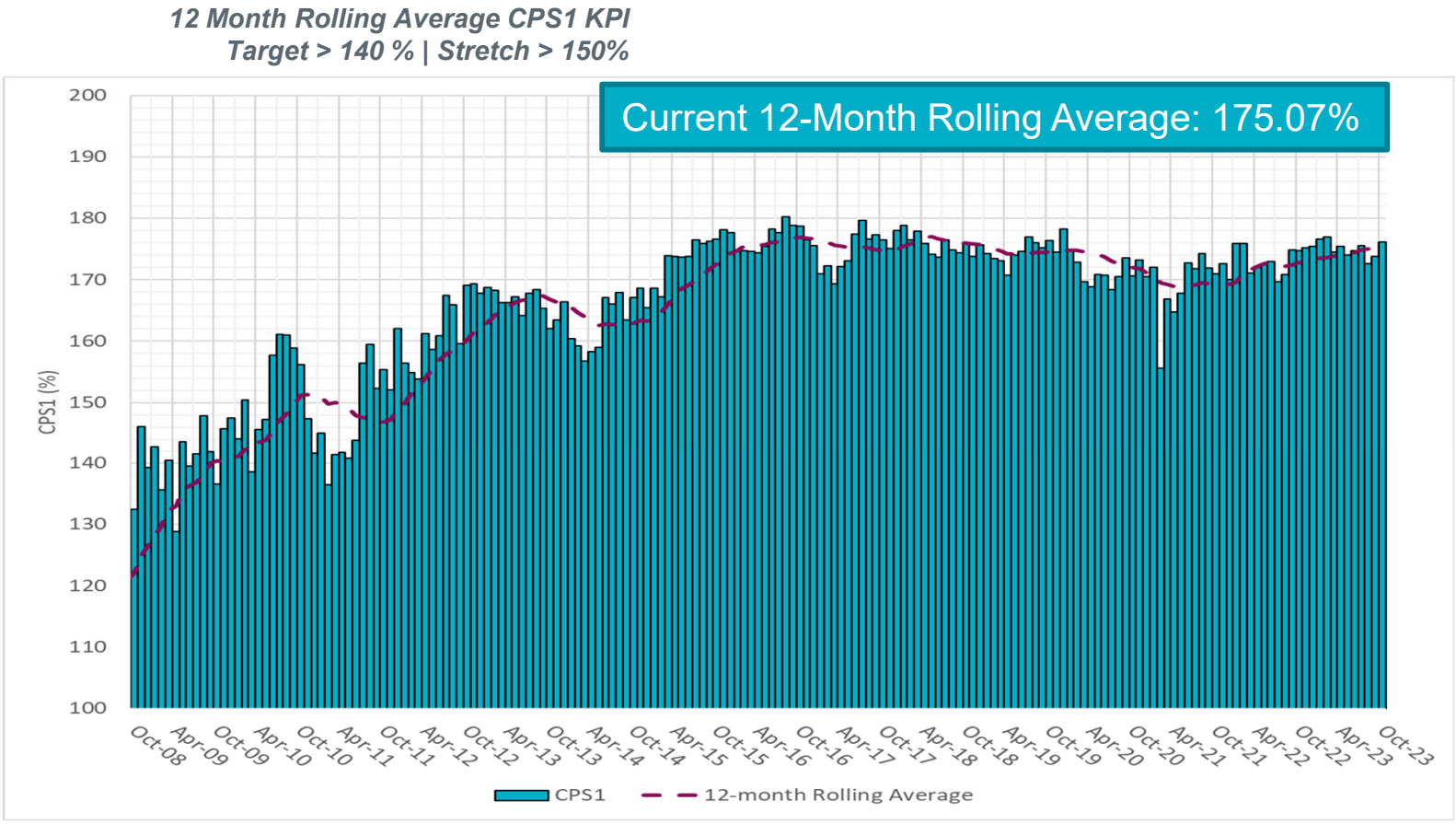
Forecast Performance



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

Frequency Control

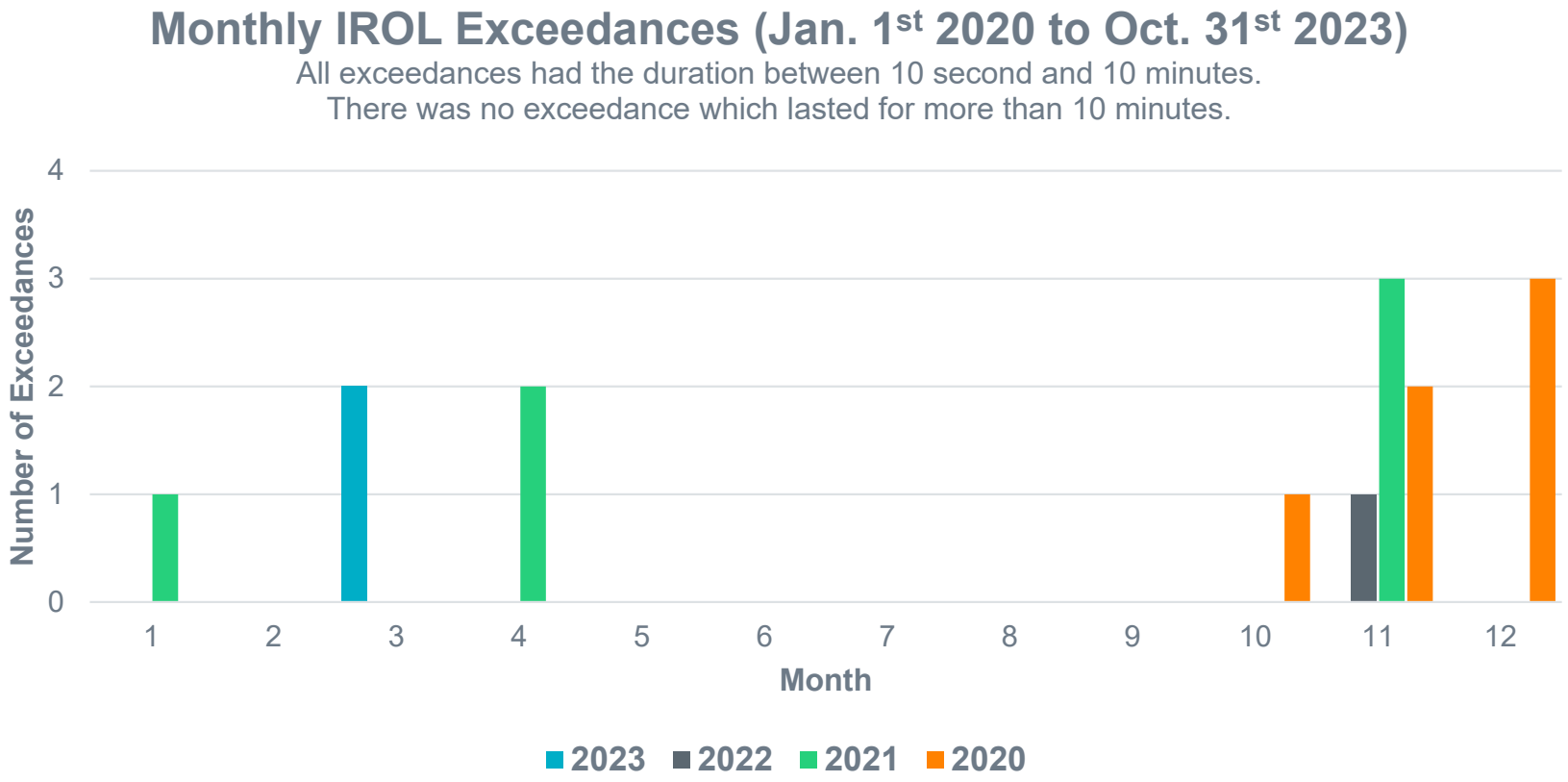
- Control Performance Standard 1 (CPS-1) is a measure of the frequency control on a power system, pursuant to NERC Standard BAL-001. The 12-month rolling-average of this measure is required to stay above 100%.



Key Takeaway: Frequency control has been performing extremely well.

Transmission Limit Control

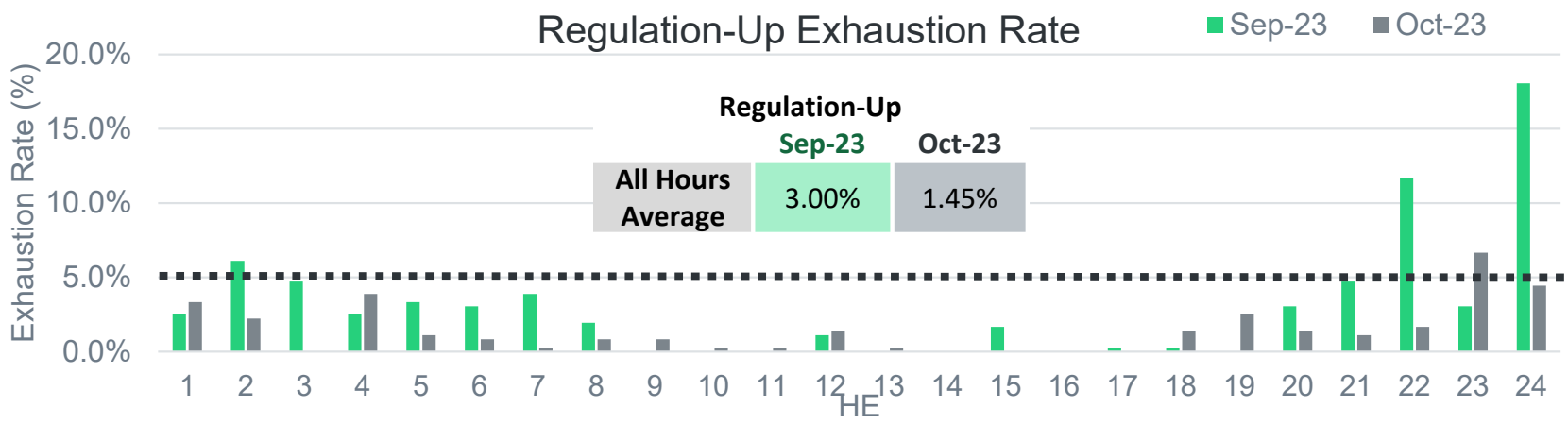
- The most-recent Interconnection Reliability Operating Limit (IROL) exceedance occurred in March 2023.

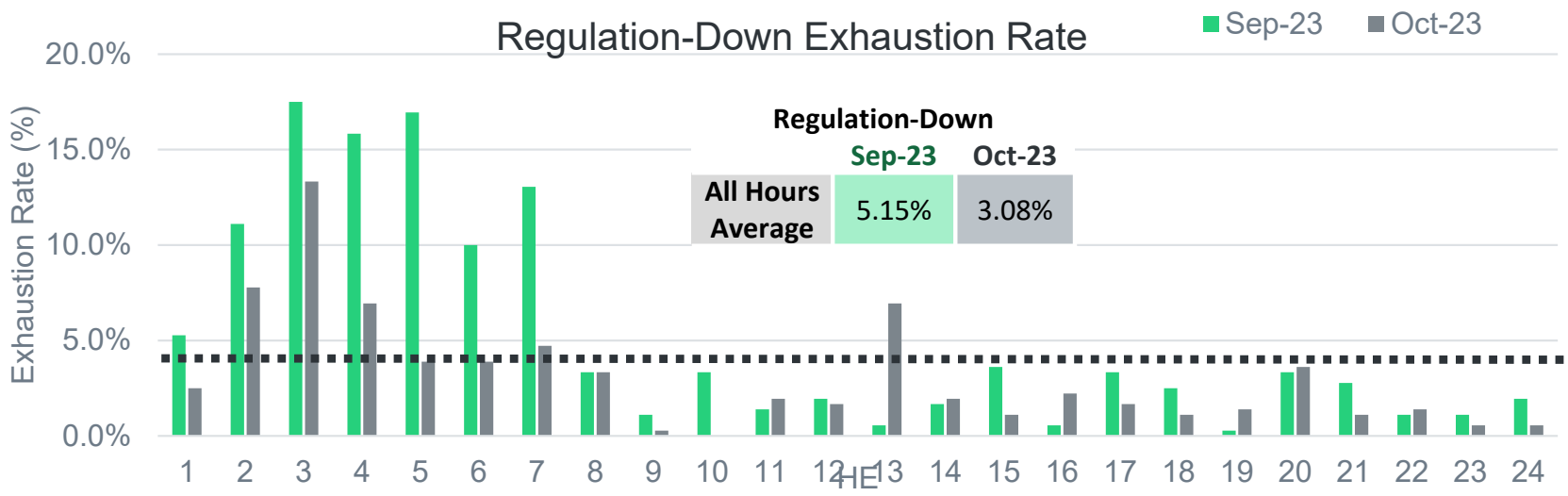


Key Takeaway: ERCOT has not experienced significant reliability risks associated with exceeding IROLs.

Ancillary Services Performance

Regulation Service Deployments for September and October 2023





Exhaustion Rate = % of 5 min intervals when all available Reg is less than 5 MW

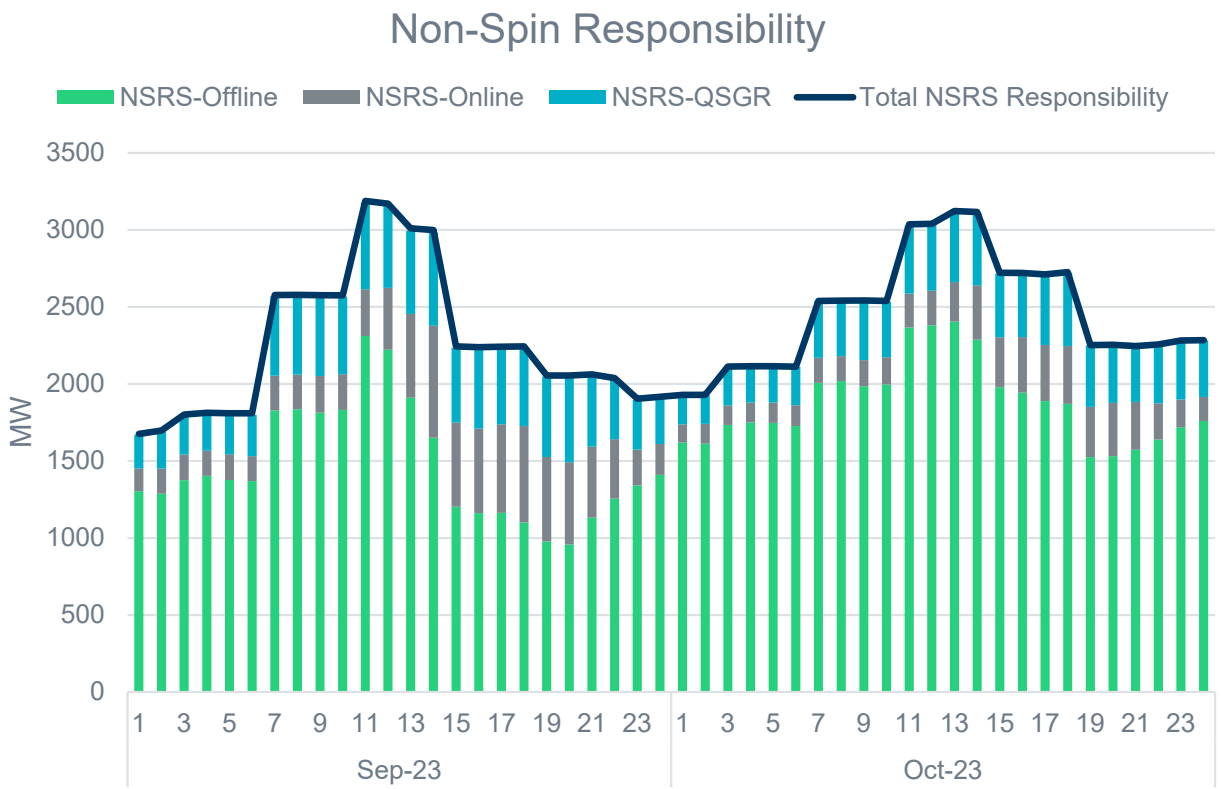
Key Takeaway: Average Regulation Up and Down exhaustion rates were similar to 2022.

Non-Spinning Reserve Service (Non-Spin) Deployments for September and October 2023

Between Sep 1st and Oct 31st 2023, there were 7 events that resulted in deployment of offline Non-Spin.

During this time, an average of ~29% 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)
9/5/2023 17:14	3:44:23	72
9/6/2023 15:06	5:57:48	254.5
9/7/2023 18:17	1:47:43	122
9/8/2023 16:09	3:46:20	155
9/23/2023 18:06	1:58:01	867
9/24/2023 17:35	1:44:59	161
10/19/2023 18:07	0:53:21	460

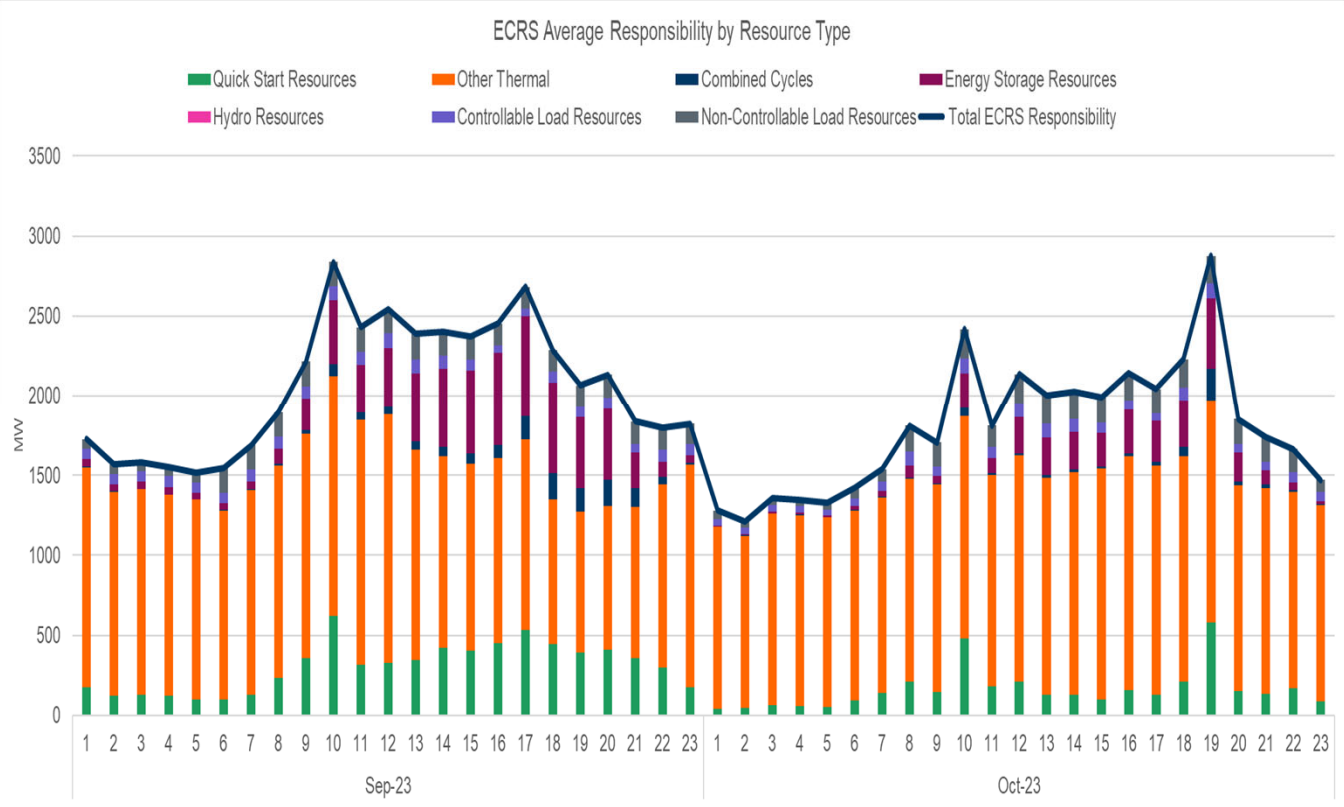


Key Takeaway: All recent Non-Spin deployments have been to meet 30-minute ramping needs. Non-Spin performed well in all deployments.

ERCOT Contingency Reserve Service (ECRS) Release for September and October 2023

Between Sep 1st and Oct 31st 2023, there have been 11 events that resulted in release of SCED dispatchable ECRS. 4 releases were for frequency trigger while 7 releases were to meet 10-minute projected net load.

Deployment Start Time	Deployment Duration	Maximum SCED Dispatchable MW Released	Reason
9/22/2023 10:09	0:04:00	232	Frequency below 59.91Hz
10/5/2023 19:50	0:06:12	498	
10/25/2023 22:30	0:00:12	651	
11/13/2023 6:21	0:03:36	149	
9/5/2023 19:20	0:42:08	500	Available capacity not sufficient for projected Net Load
9/6/2023 14:57	5:58:48	2600	
9/7/2023 18:34	1:29:04	1964	
9/8/2023 16:06	1:37:12	1000	
9/8/2023 18:56	0:36:00	750	
9/17/2023 18:56	0:31:00	500	
10/19/2023 18:17	0:27:08	500	

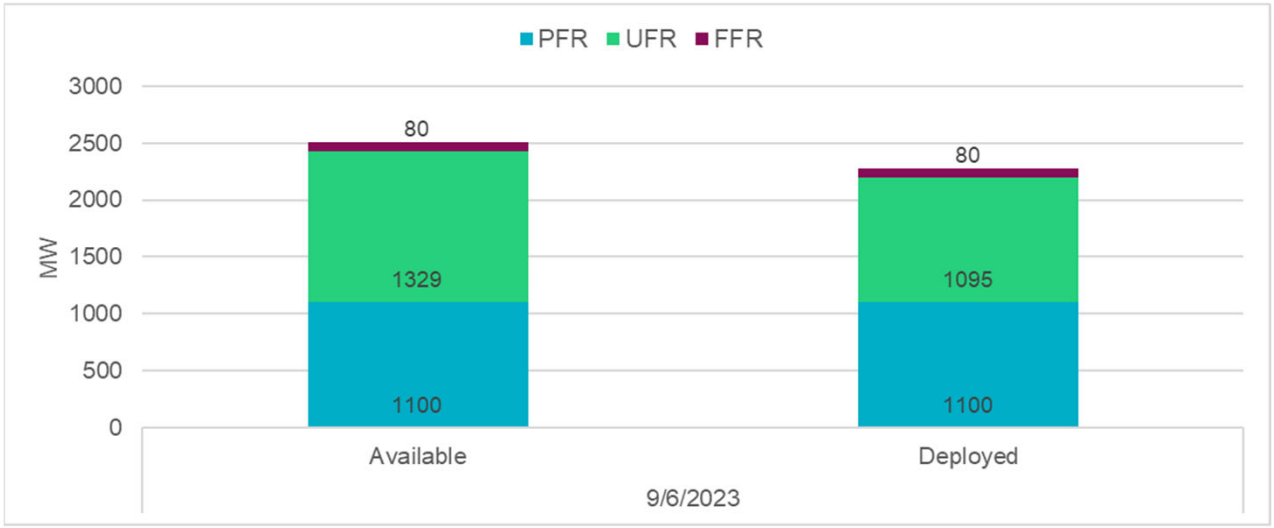


Key Takeaway: ECRS performed well in all deployments and helped recover from the events that triggered deployment.

Responsive Reserve Service (RRS) Released for September and October 2023

Between Sep 1st and Oct 31st there were 3 events where RRS was manually released. With 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.

Date and Time Released to SCED	Date and Time Recalled	Duration of Event	Maximum MWs Released	Reason
9/6/2023 18:59	9/6/2023 19:54	0:55:00	1100	Released for Capacity
9/6/2023 19:20	9/6/2023 19:35	0:15:00	80	Automatic Deployment of RRS-FFR on Frequency
9/6/2023 19:23	9/6/2023 20:17	0:54:00	1099	Manual Deployment of Load Resources

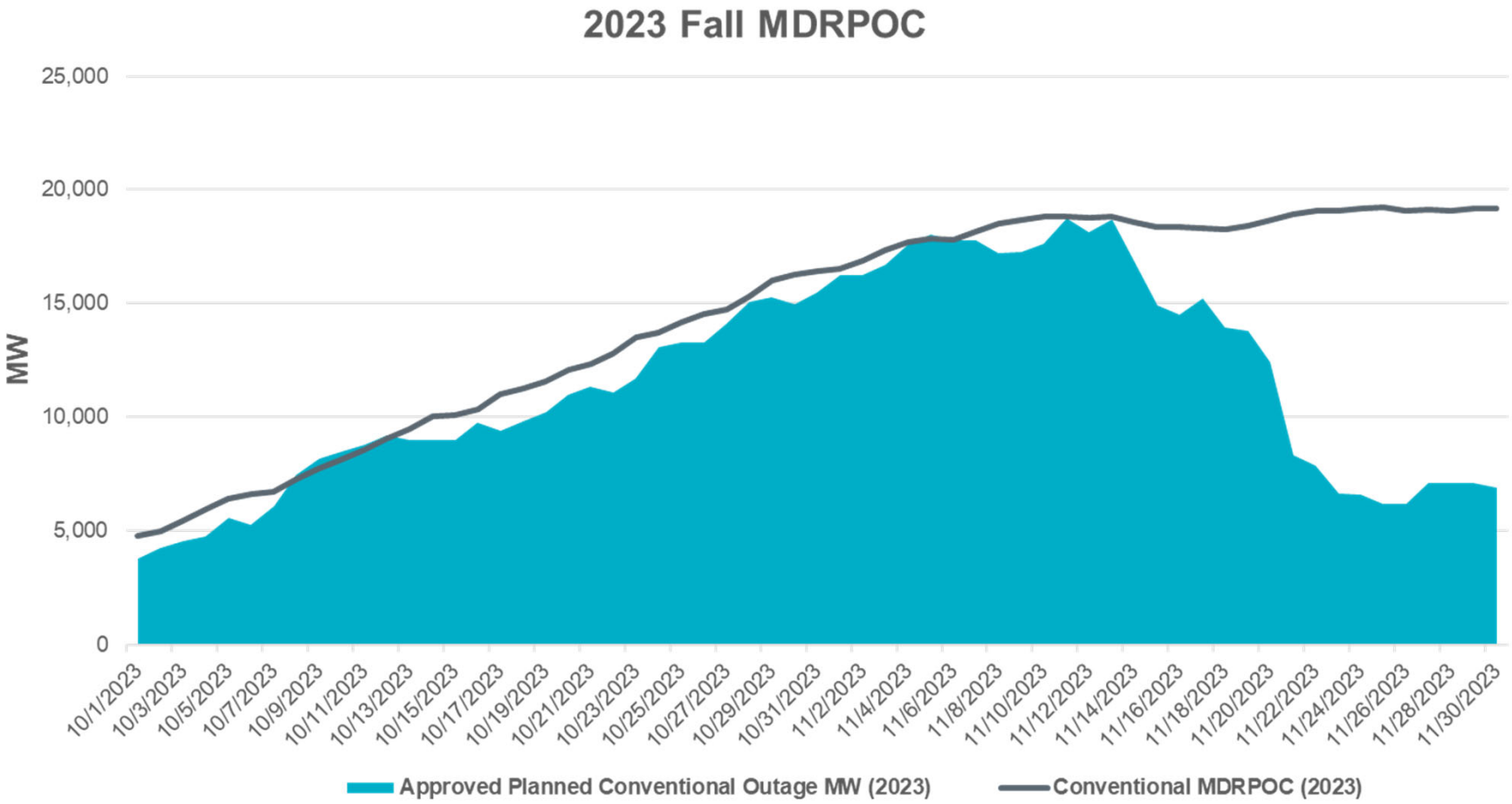


Types of RRS:
PFR = Primary Frequency Response;
UFR = Load Resources with Under-Frequency Relays;
FFR = Fast Frequency Response

Key Takeaway: RRS performed well in all 3 manual deployments in these events.

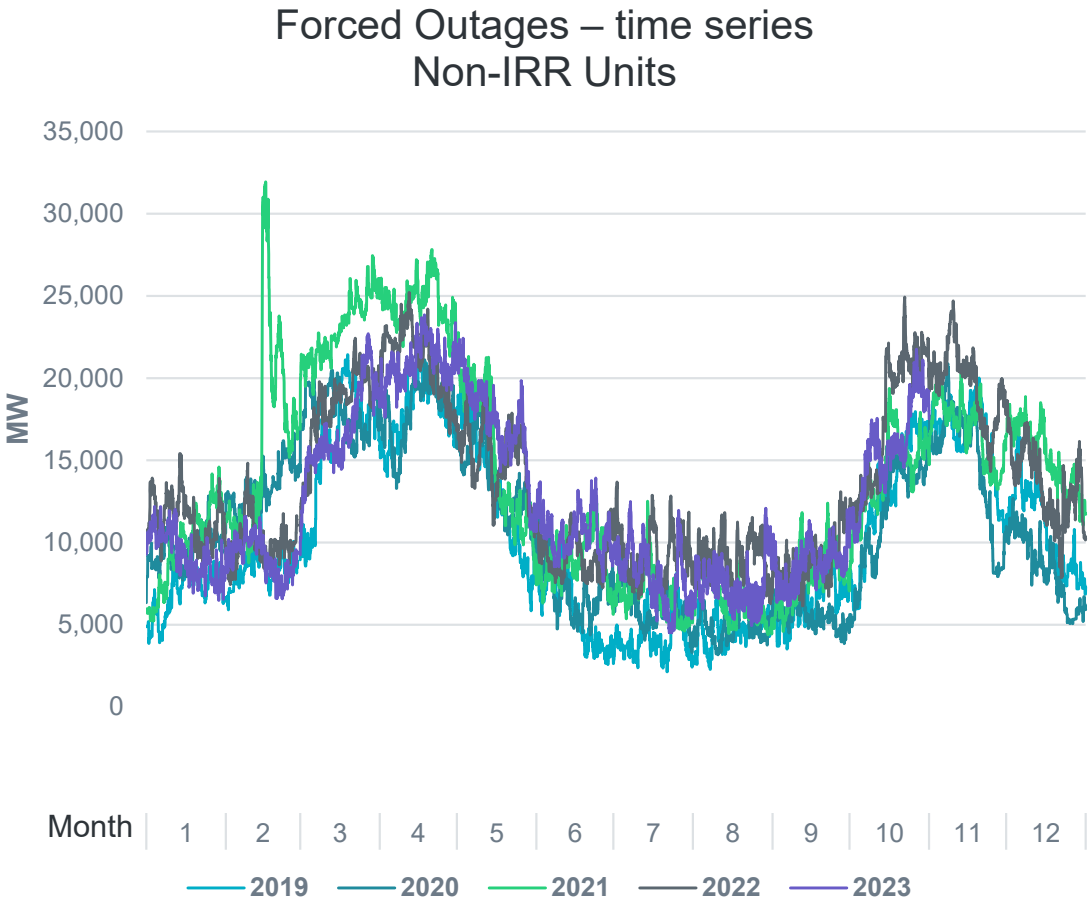
Hot Topics

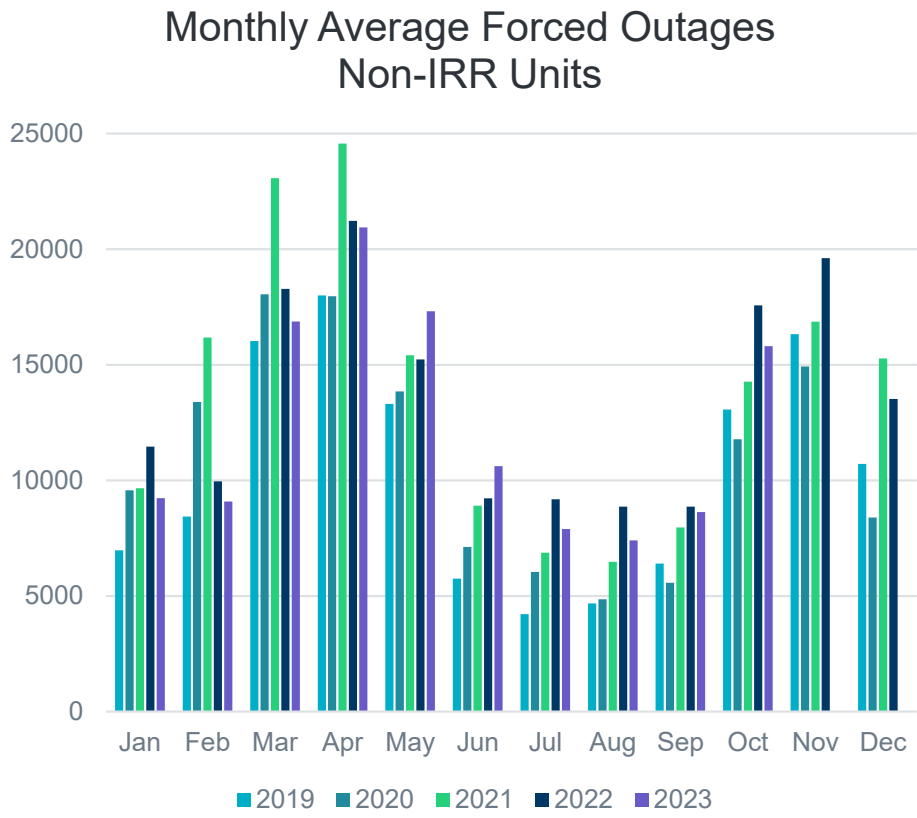
Currently Approved Planned Outages versus Maximum Daily Resource Planned Outage Capacity (MDRPOC)



Key Takeaway: MDRPOC has provided sufficient margin to accommodate planned resource outages. Tight capacity days can still occur when actual conditions differ from the assumptions used to derive the MDRPOC.

Forced Outage Trends (Non-renewable Units)





Key Takeaway: Increase in Forced Outage quantities in summer preparation period (May-June); less consistent pattern in fall

Update on NOGRR 245

- ERCOT has continued to work with stakeholders to refine NOGRR 245 related to inverter-based resource ride-through requirements

- ERCOT issued an RFI to Original Equipment Manufacturers (OEMs) and Resource Entities (REs) to ascertain their capabilities for meeting the requirements proposed in this NOGRR

- Based on the information received, ERCOT plans to propose one more set of comments which will:
  - Allow additional limited exceptions for some older units where major retrofits or repowers would be needed to meet performance
  - Require REs to provide correct models that reflect their limitations for planning and operational studies

- This NOGRR is now expected to come to the Board for approval in February