



## Item 9.3: System Operations Update

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Vice President, System Operations

Board of Directors Meeting

February 9-10, 2026

### Purpose

- Provide an update on key operational metrics to the Board of Directors
- Provide information on recent Ancillary Services performance
- Provide information on hot topics

### For information only

No action is requested; for discussion only.

### Key Takeaways

- All key operational metrics are trending well, and all Ancillary Services are performing well.
- *Placeholder Key Takeaway for Winter Storm Fern*
- ERCOT implemented SOC and Cryptocurrency Mining Demand (Crypto) forecasting models to enhance system operations' situational awareness on forecasted energy sufficiency.
- Between January of 2025 and January of 2026 Data Centers' growth in actual demand was 15.5%

# Winter Storm Fern

# Placeholder

**Key Takeaway(s):**

# State of Charge and Cryptocurrency Mining Demand Forecasts

# State of Charge (SOC) and Cryptocurrency Mining Demand Forecasts

- ERCOT implemented SOC and Cryptocurrency Mining Demand (Crypto) forecasting models to enhance system operations' situational awareness on forecasted energy sufficiency.
- While these models continue to be tuned and improved, they have been used for general operational awareness since June 2025.

## SOC

- Machine learning models are used for forecasting hourly system-level SOC
- Model inputs include the active wind/solar/load forecasts, expected battery usage, and historical battery behavior

## Crypto

- ERCOT's MTLF Forecast does not explicitly model expected price response from crypto-demand, however some amount of historical response is captured in the forecast.
- The crypto model provides the forecasted response from these loads to better assess energy sufficiency when compared to the base MTLF.
- A statistical model is used for hourly forecasting
- Historical price-responsive and 4CP behavior are incorporated into the model

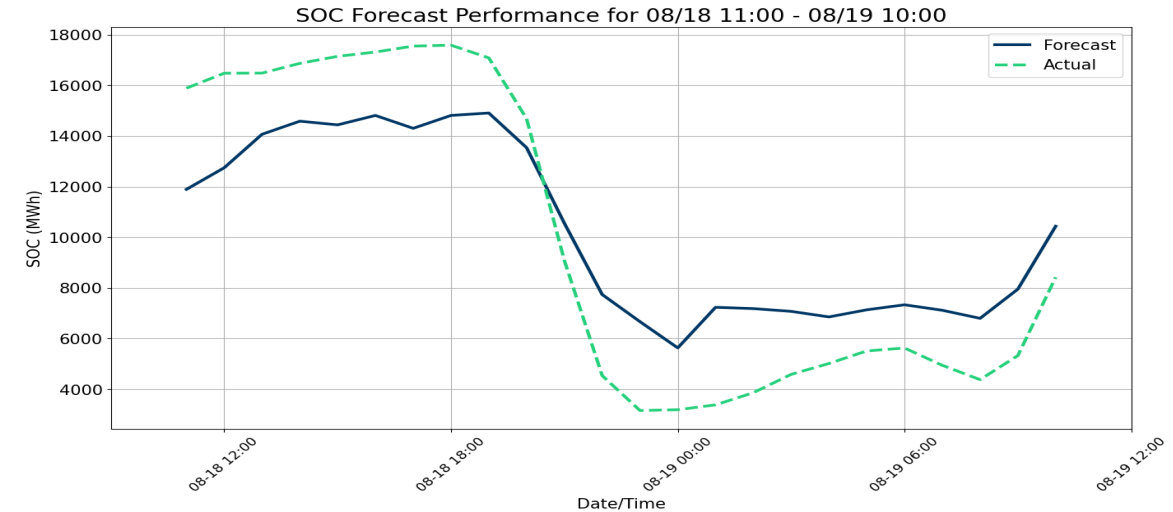


Fig. 1: Hourly SOC forecast created at 10:00am on 8/18/25

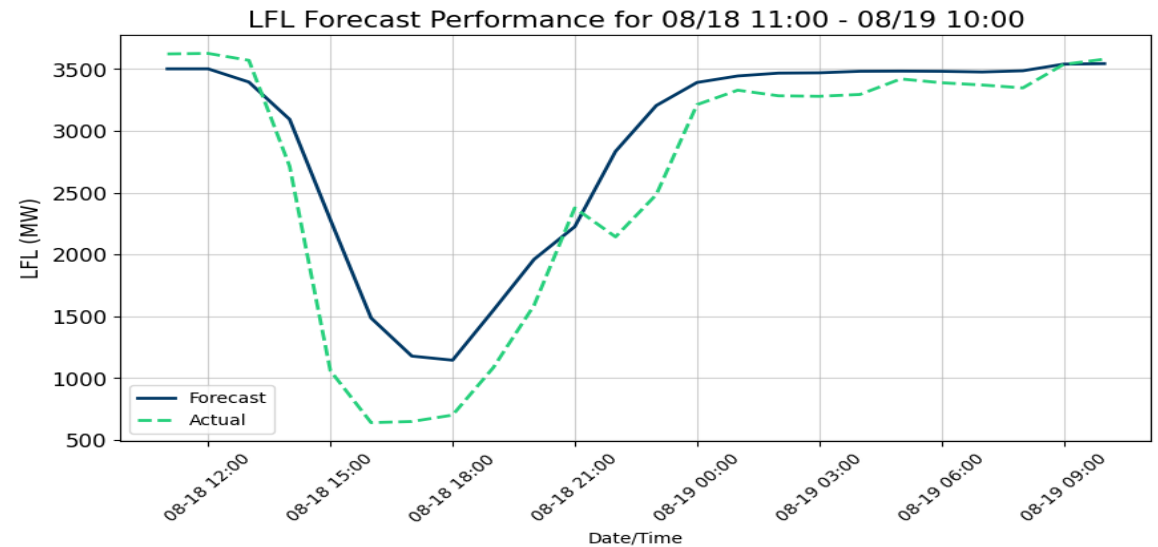


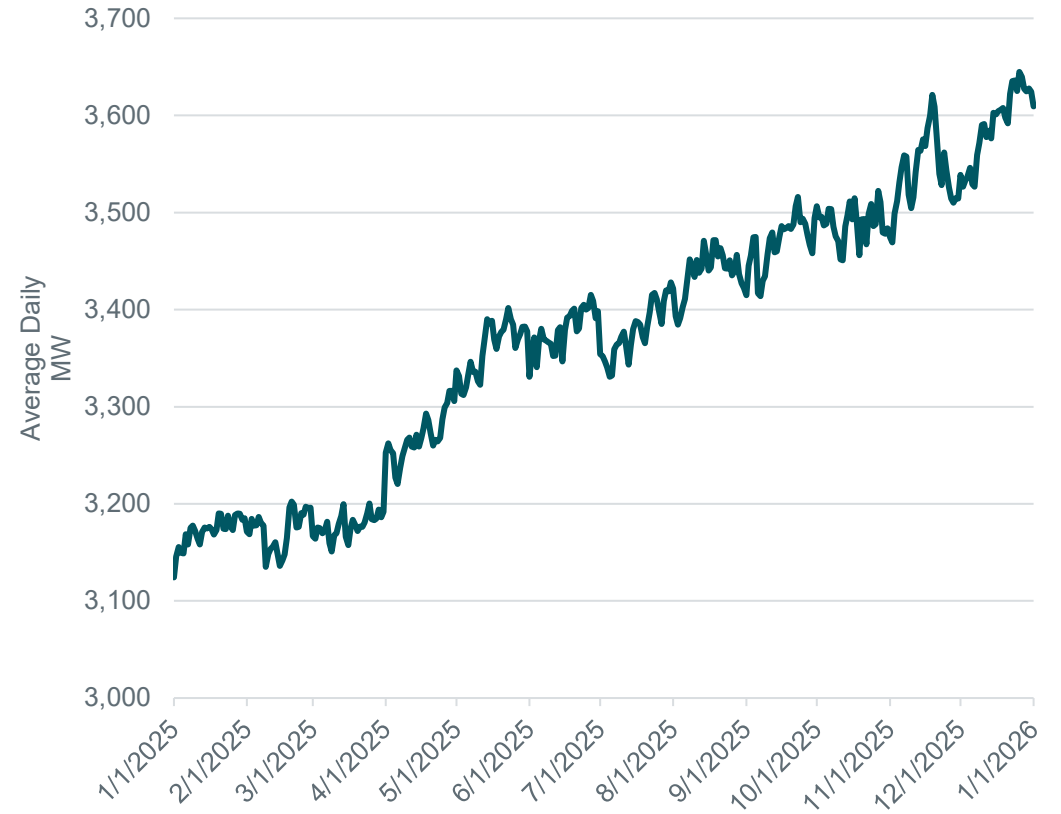
Fig. 2: Hourly LFL forecast created at 10:00am on 8/18/25

# Cloud-Based Data Center Growth

# Cloud-Based Data Center Growth Jan 2025 - Jan 2026

- Cloud-based data centers include facilities like cloud-based computing, storage, co-locations, and AI computation, but not crypto mining.
- ERCOT has evaluated usage patterns and other sources to identify operational data center demand at sites that are 1MW and greater (approximately 400 cloud-based data center sites).
- The current installed capacity at these sites = 9,850 MW Approved to Energize in the Large Load Interconnection process (LLI) + Operational (non-LLI).

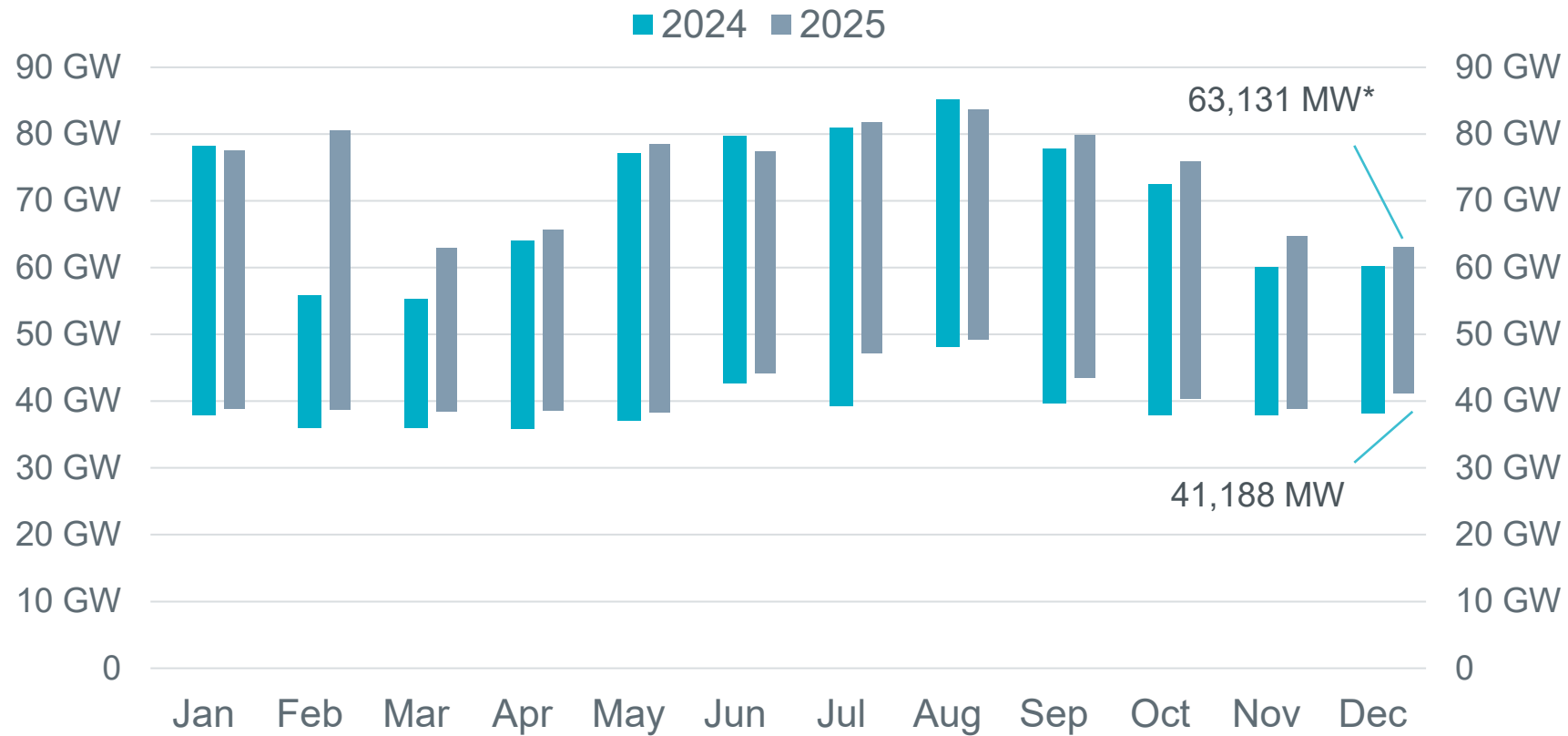
Note: this is a broader set of sites than the LLI tracking of requests that are 75MW and greater.



**Key Takeaway:** Between January of 2025 and January of 2026, Data Centers' actual MW growth was 15.5%

# Appendix Operational Metrics and Ancillary Services (AS) Performance

# Demand



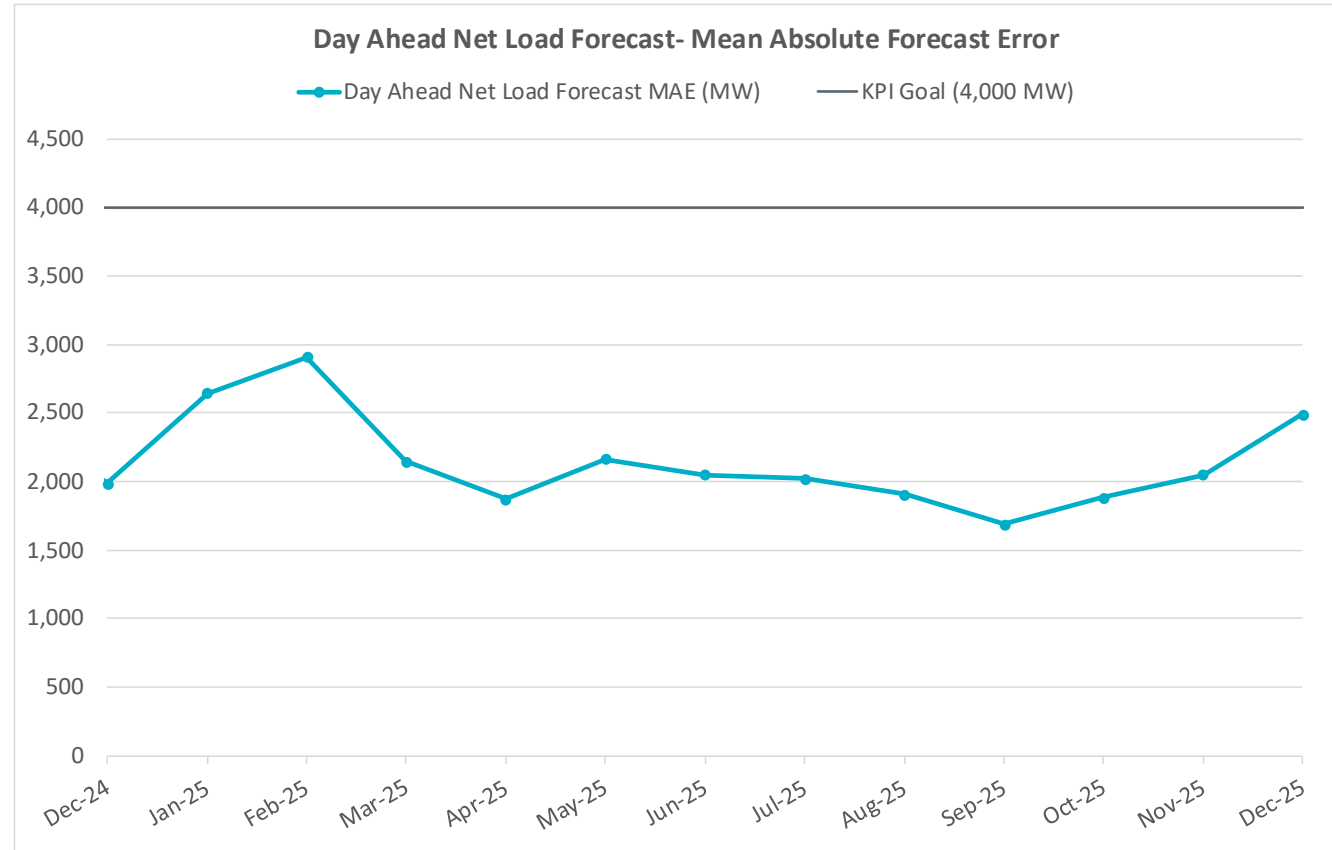
\*Based on the maximum net system hourly value from July release of Demand and Energy 2025 report.

\*\*Based on the minimum net system 15-minute interval value from January release of Demand and Energy 2026 report.

Data for latest two months are based on preliminary settlements.

**Key Takeaway:** ERCOT set a new all-time record of 64,698 MW\* for the month of November on 11/17/2025. This is 4,524 MW more than the November 2024 demand of 60,174 MW on 11/4/2024.

# Forecast Performance

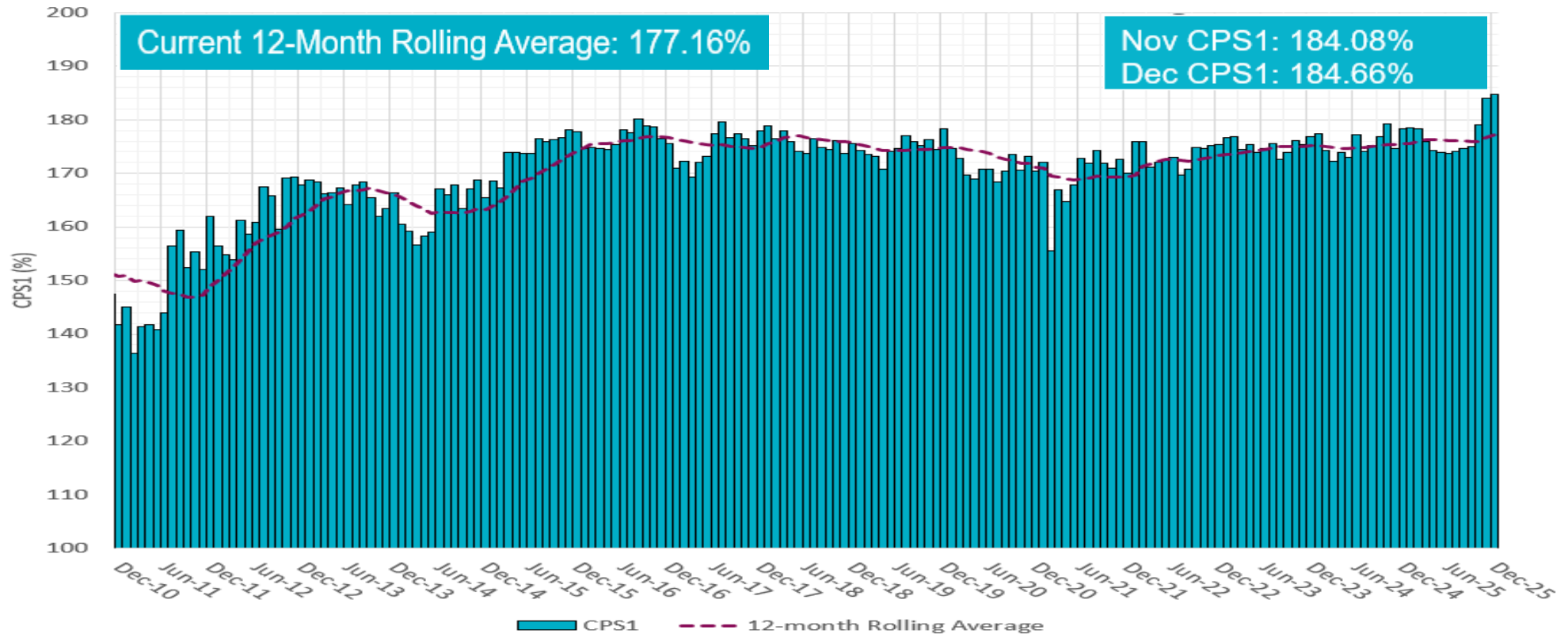


**Key Takeaway(s):** Day Ahead Net Load Forecast Mean Absolute Forecast Error has met the target and has been trending well.

# 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%.

12 Month Rolling Average CPS1 KPI  
Target > 140 % | Stretch > 150%



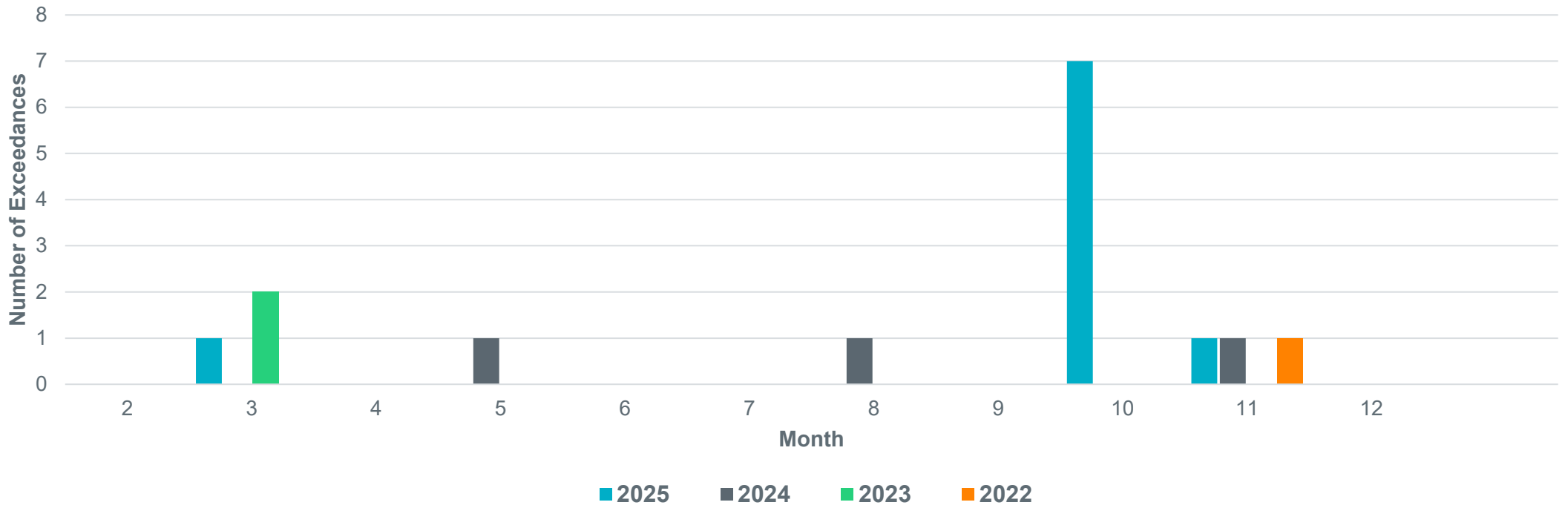
**Key Takeaway(s):** Frequency control has been performing extremely well.

# Transmission Limit Control

The most-recent Interconnection Reliability Operating Limit (IROL) exceedance occurred in November 2025.

### Monthly IROL Exceedances (Jan 2022 to December 2025)

All exceedances had the duration between 10 second and 10 minutes.  
There were no exceedances which lasted for more than 10 minutes.



**Key Takeaway:** In November, ERCOT had 1 IROL exceedance occur.

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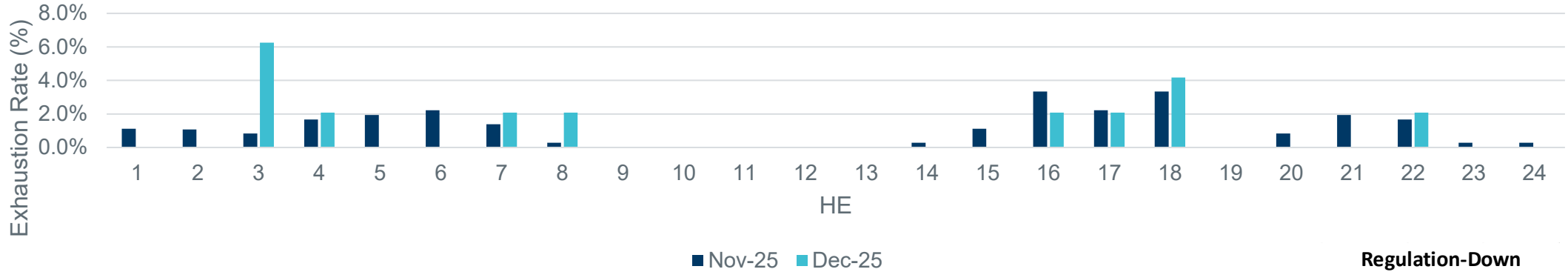
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# Regulation Service Deployments for November to December 4<sup>th</sup> 2025

### Regulation-Up

|                   | Nov-25 | Dec-25 |
|-------------------|--------|--------|
| All Hours Average | 1.07%  | 0.95%  |

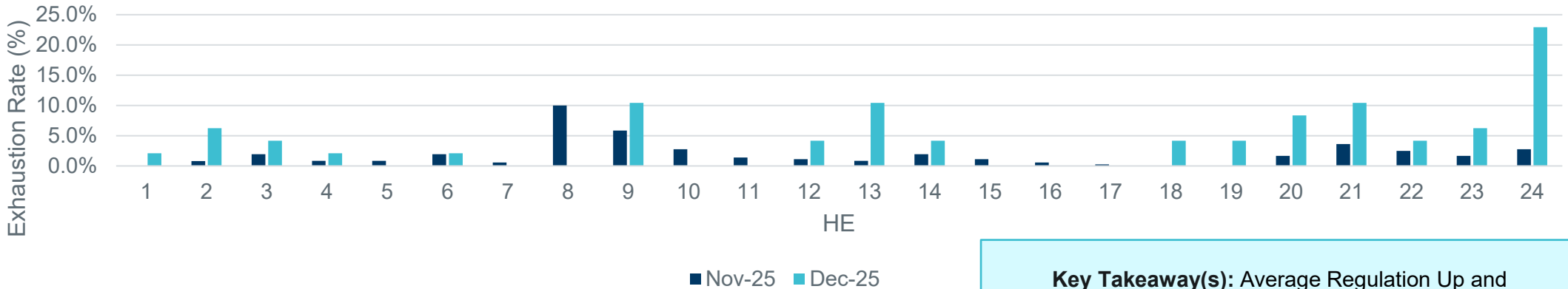
## Regulation-Up Exhaustion Rate



### Regulation-Down

|                   | Nov-25 | Dec-25 |
|-------------------|--------|--------|
| All Hours Average | 1.87%  | 4.43%  |

## Regulation-Down Exhaustion Rate



**Key Takeaway(s):** Average Regulation Up and Down exhaustion rates were similar in 2024

December data currently excludes days after RTC. Future reports will backfill December 2025 post-RTC.

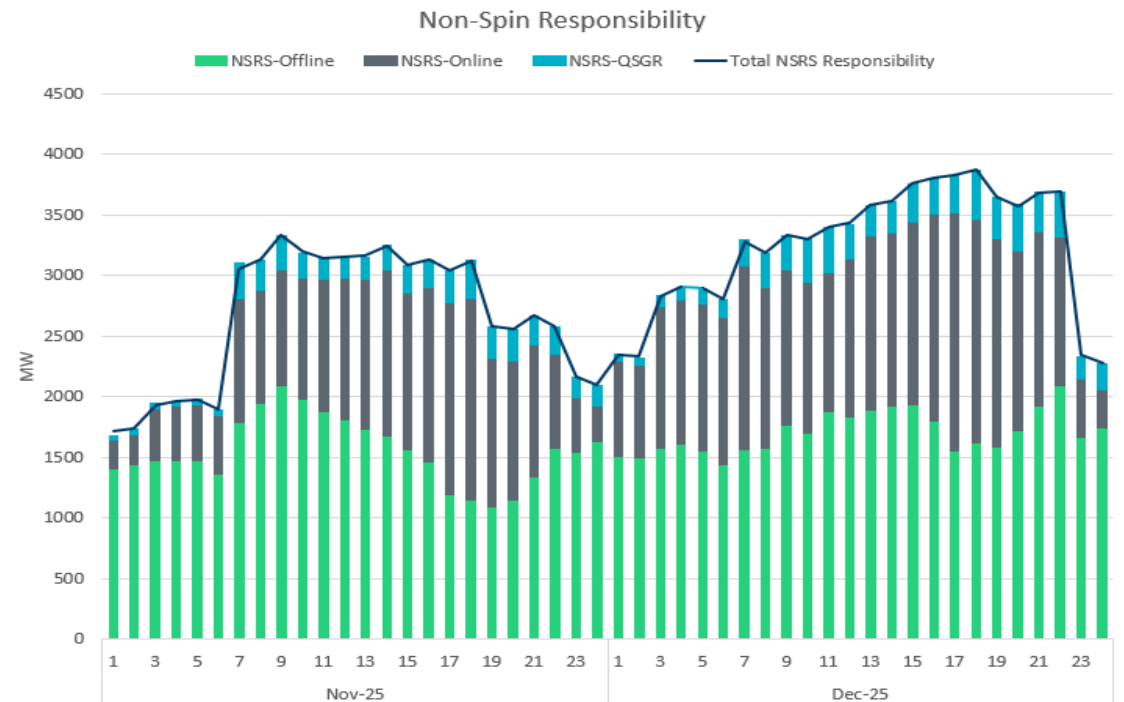
# Non-Spinning Reserve Service (Non-Spin) Deployments for Nov – Dec 2025

From Nov to Dec 2025, there were 4 events that resulted in deployment of offline Non-Spin.

From Nov to Dec 4<sup>th</sup> 2025, an average of ~43% of Non-Spin was provided using online capacity and by Quick Start Generation Resources.

From Dec 5<sup>th</sup> to Dec 31<sup>st</sup> 2025, an average of ~51% of Non-Spin awards was provided using online capacity and by Quick Start Generation Resources.

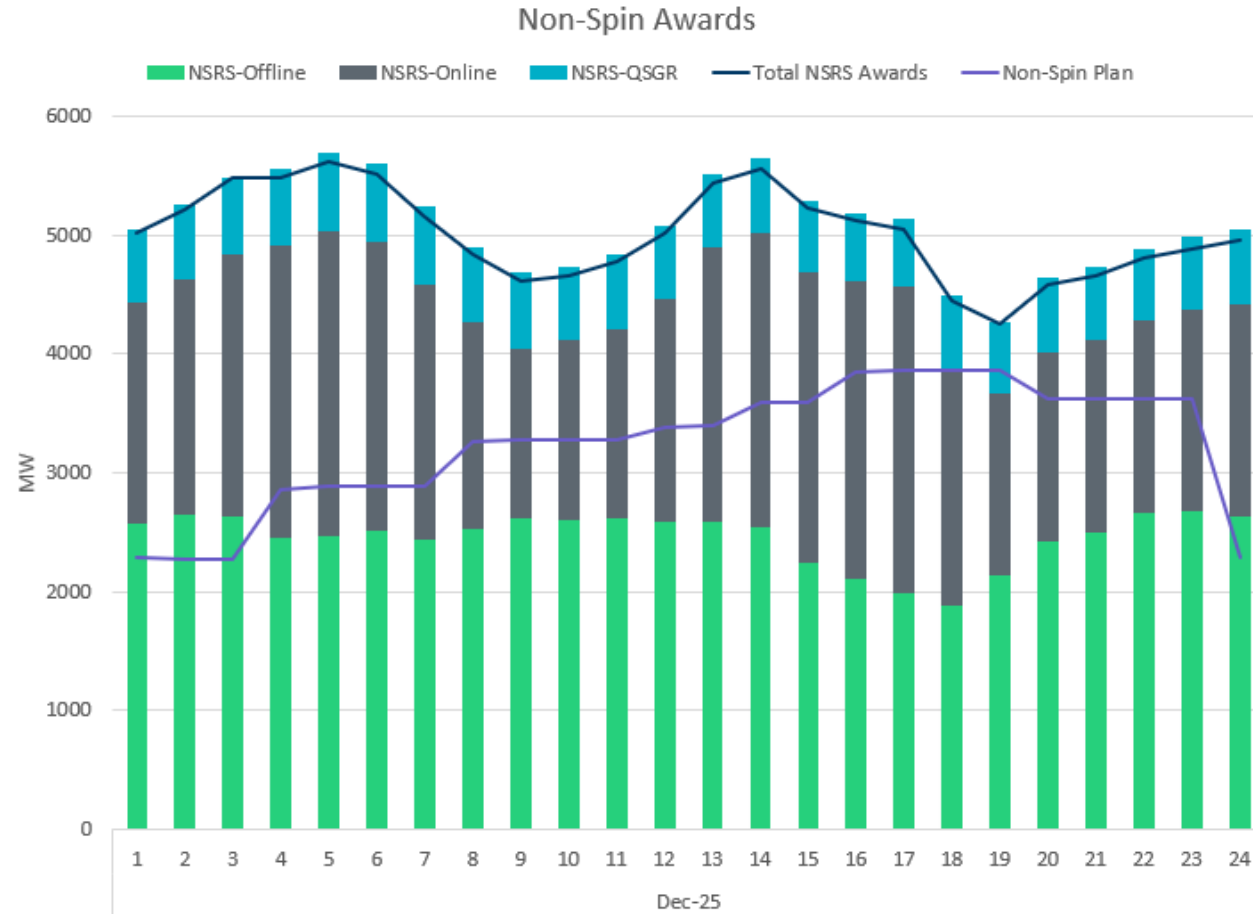
| Deployment Start Time | Deployment Duration | Max Deployment (MW) |
|-----------------------|---------------------|---------------------|
| 11/7/2025 16:36       | 01:43:31            | 736.6               |
| 12/6/25 16:43         | 01:31:00            | 1415.7              |
| 12/8/25 16:59         | 00:56:00            | 1281                |
| 12/11/25 16:34        | 00:56:00            | 1512.98             |



Data shown is from Nov to Dec 4<sup>th</sup> 2025.

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

# Non-Spinning Reserve Service (Non-Spin) Deployments for Nov – Dec 2025 Cont.



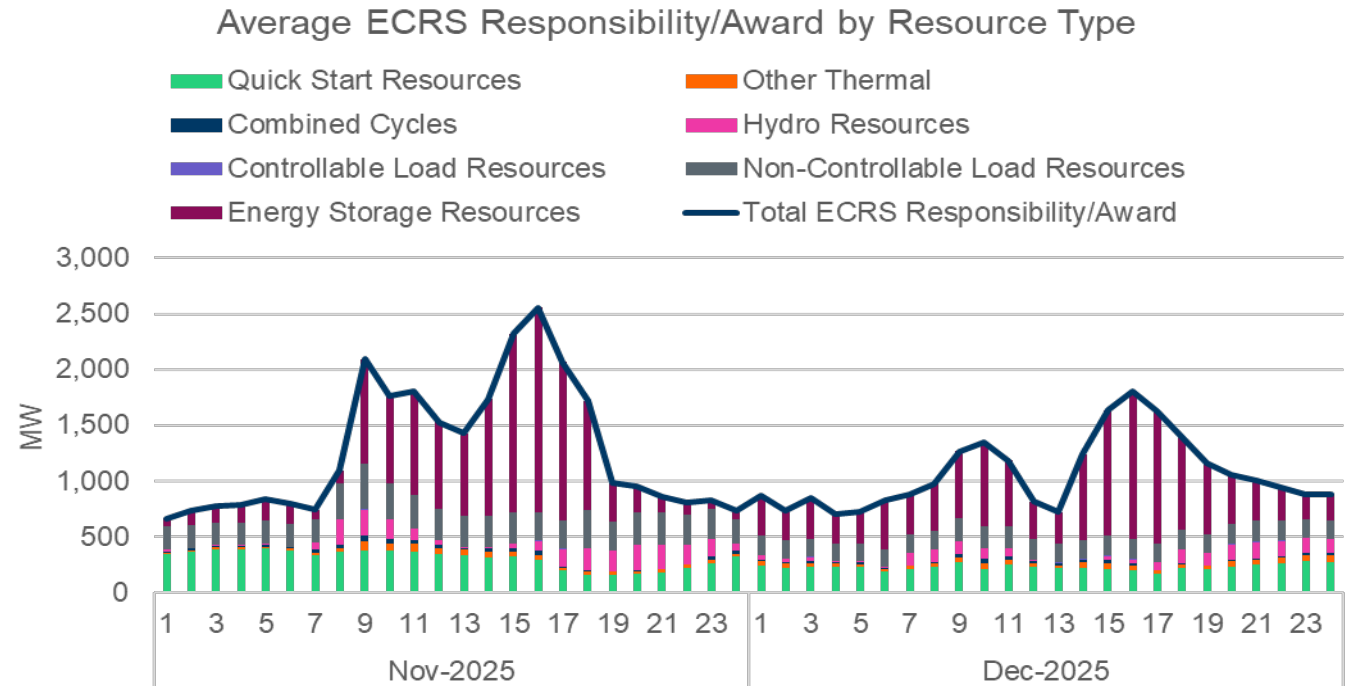
Data shown is from Dec 5<sup>th</sup> to Dec 31<sup>st</sup> 2025.

**Key Takeaway:** With the implementation of RTC Non-Spinning Reserve Service can be procured above the plan.

# ERCOT Contingency Reserve Service (ECRS) Release for Nov-Dec 2025

From Nov to Dec 2025, there were no events that resulted in the release of SCED dispatchable ECRS. With the implementation of RTC+B, ECRS is no longer released to SCED.

| Deployment Start Time | Deployment Duration | Maximum SCED Dispatchable MW Released | Reason |
|-----------------------|---------------------|---------------------------------------|--------|
| N/A                   | N/A                 | N/A                                   | N/A    |



**Key Takeaway:** There were no events that resulted in events that triggered ECRS deployments.

## Responsive Reserve Service (RRS) Released for November - December 2025

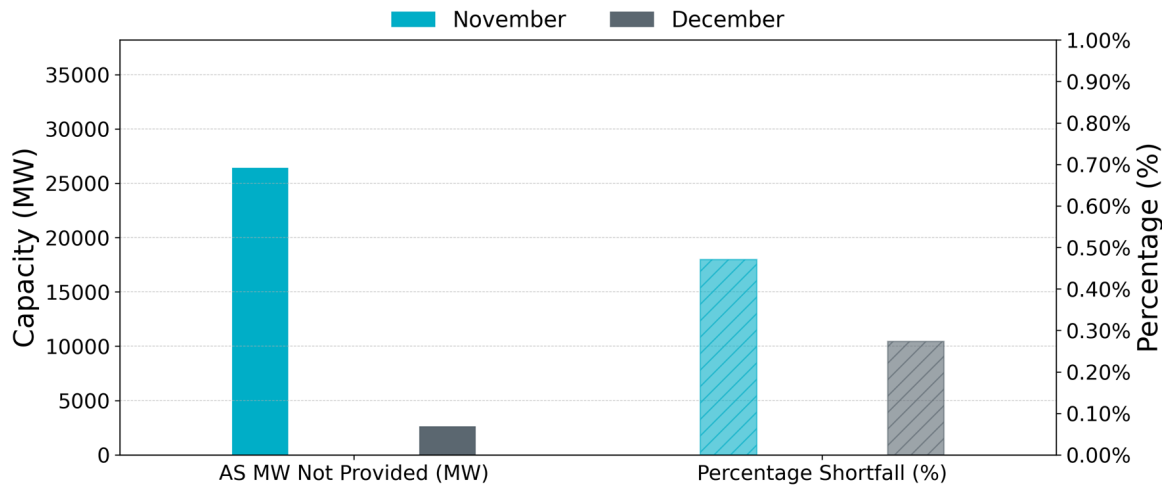
From November to December 2025, there was no manual release of RRS.

With the implementation of RTC+B, RRS is no longer manually released to SCED.

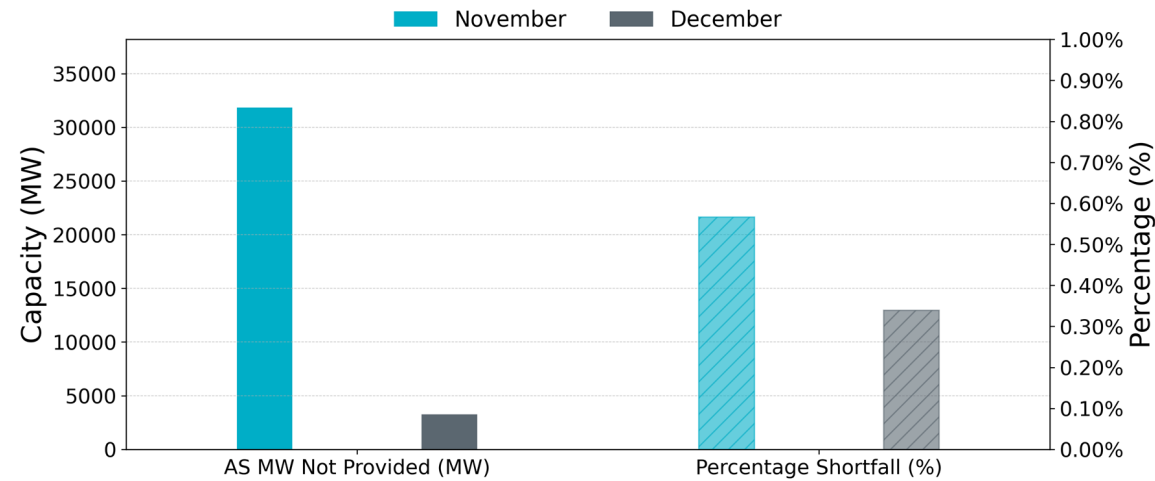
**Key Takeaway:** There was no manual RRS release from November-December 2025.

# AS MW Shortfall Analysis

**Total AS Capacity Shortfall (per Protocol Section 6.7.3)**



**Additional AS Capacity Shortfall if SOC from ESR's assigned AS is considered**



**Key Takeaway(s):** This slide will be deprecated post-RTC as SOC is now an input to SCED when awarding AS. November and December 1-5<sup>th</sup> data will be the last data reported as RTC-cutover occurred on 12/5/2025.

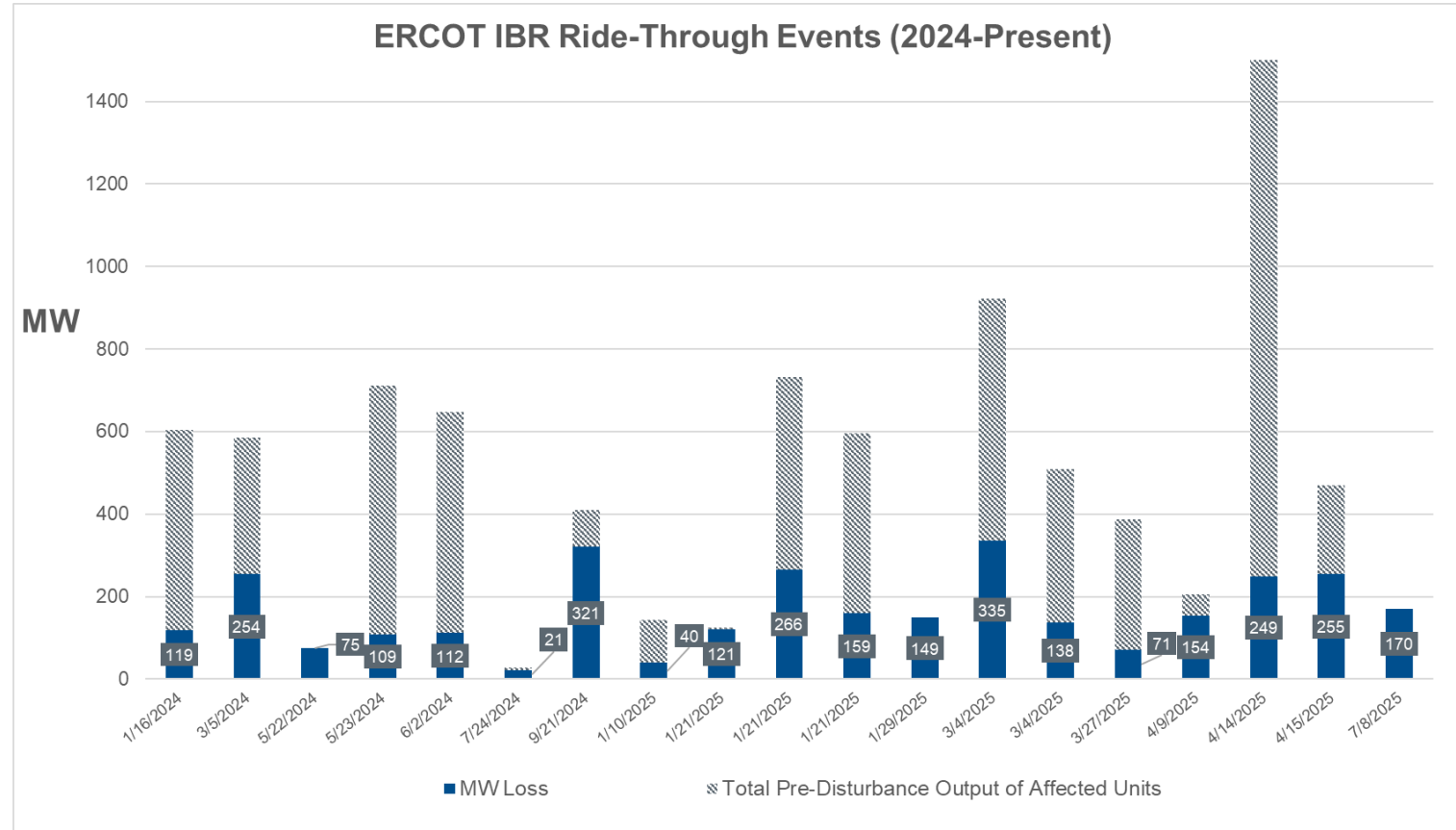
## 2025 Year-to-Date (YTD) Event Analysis Summary

| Event Type  | Number of Events (2025) | Number of Events (Nov-Dec 2025) |
|---|-------------------------|---------------------------------|
| NERC Reportable by ERCOT*                         | 0                       | 0                               |
| Inverter Based Resource (IBR) Ride-Through Events | 12                      | 0                               |
| Large Load Ride-Through Events                    | 12                      | 2                               |
| Large Load Oscillation Events                     | 1                       | 0                               |
| IBR Oscillation Events                            | 24                      | 4                               |
| IBR Large MW Change Events (no fault associated)  | 39                      | 8                               |
| Miscellaneous (transmission or telemetry event)   | 4                       | 0                               |

**Key Takeaway:** The Event Analysis team investigates each event to keep the system reliable and prevent reoccurring issues.

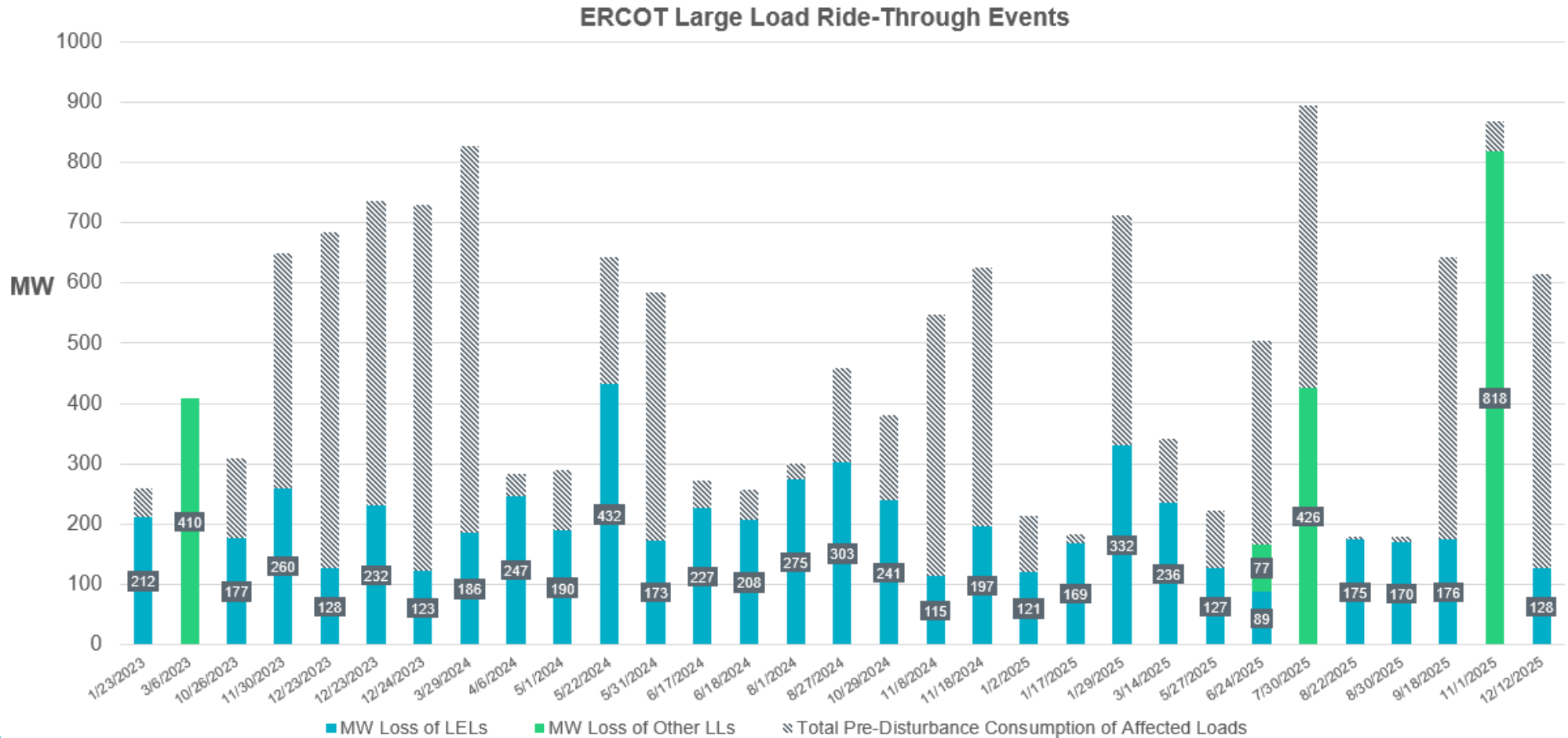
\*Meeting the criteria for NERC's Electric Reliability Organization Event Analysis Process and requiring ERCOT to submit a report.

# IBR Ride-Through Events



**Key Takeaway:** ERCOT continues to have IBR ride-through events, although the magnitude of events has remained below 500 MW. The most common cause of ride-through failure has been individual turbines tripping on a variety of different fault codes such as UPS failure, crowbar circuit failure, vibration sensors, etc. Also, improper frequency measurements during fault events have caused Power Plant Controllers to inhibit proper ride-through operation of turbines and inverters.

# Large Load Ride-Through Events



**Key Takeaway:** Large Electronic Loads reduce consumption quickly when system faults occur in their area. The magnitude and frequency of these events will likely increase as more of these types of loads are connected to the system, especially when they are concentrated in an area.