



Item 18: 2022 ERCOT Methodologies for Determining Minimum Ancillary Service Requirements

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Board of Directors Meeting

ERCOT Public

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Background & Scope

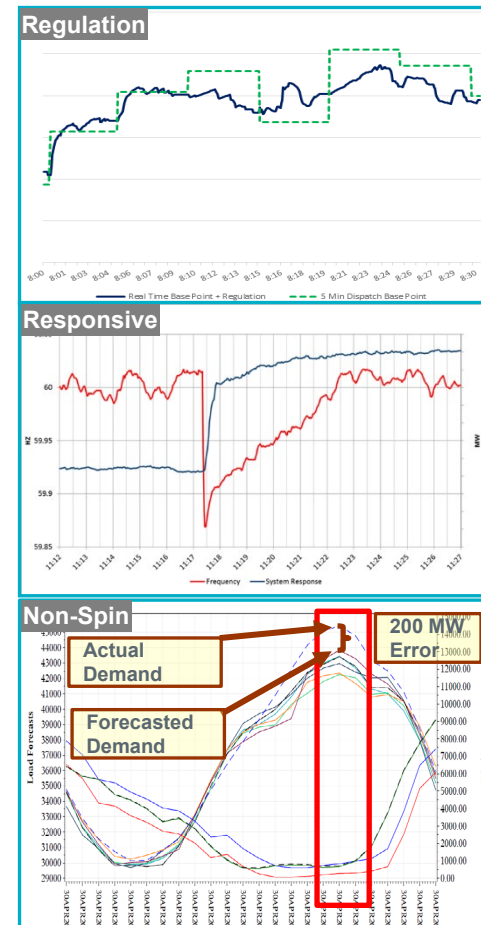
Protocol 3.16 Standards for Determining Ancillary Service Quantities

- (2) ERCOT shall, **at least annually**, determine with supporting data, the methodology for determining the quantity requirements for each Ancillary Service needed for reliability...
- (3) The ERCOT Board **shall review and approve** ERCOT's methodology for determining the minimum Ancillary Service requirements...

- ERCOT is not recommending any change to the methodology used for determining Regulation Service.
- ERCOT is recommending one change to the methodology used for computing Responsive Reserve Service (RRS) and three changes to the methodology used for computing Non-Spinning Reserve Service (Non-Spin).

Ancillary Services – An Introduction

- Ancillary Services are procured to ensure sufficient resource capacity is on-line, or able to be brought on-line in a timely manner, to balance the variability that cannot be covered by the 5-minute energy market.
- Currently, there are three types of Ancillary Services in ERCOT, namely:
 - Regulation Service: Regulation Service is capacity that can be deployed every 4 seconds to maintain frequency (i.e. balance supply & demand) between 5-min dispatch intervals.
 - Responsive Reserve Service (RRS): RRS is procured to ensure sufficient capacity is available to respond to frequency excursions during unit trips.
 - Non-Spinning Reserve Service (Non-Spin): Non-Spin is capacity that can be started or interrupted within 30 minutes to cover net load (load – wind - solar) forecast errors, replace loss of generation capacity, address risk of net load ramps, or when there is a limited amount of capacity available for Security-Constrained Economic Dispatch (SCED).

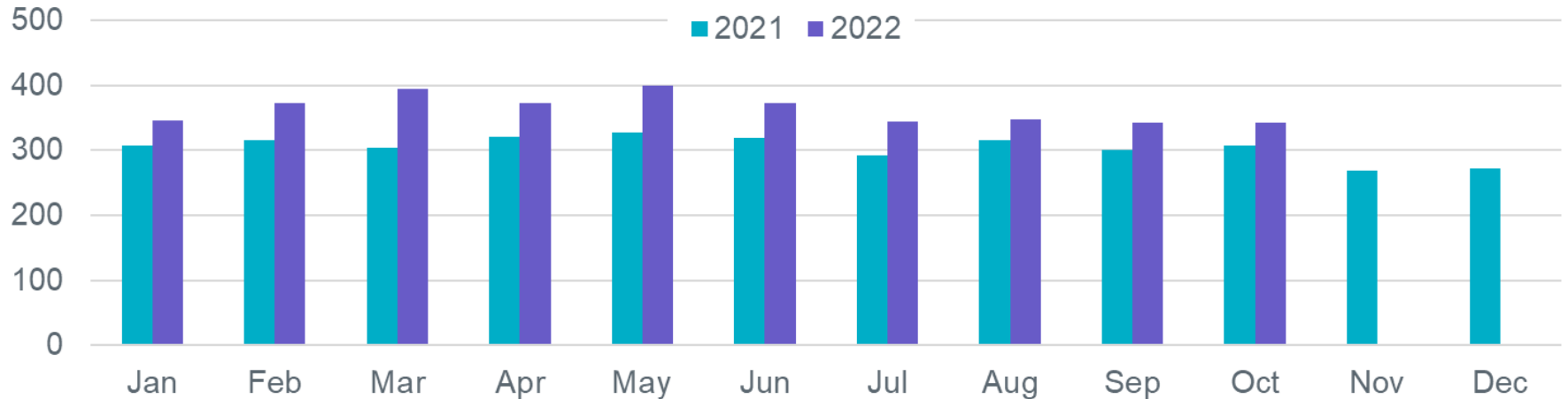


Regulation Service Methodology

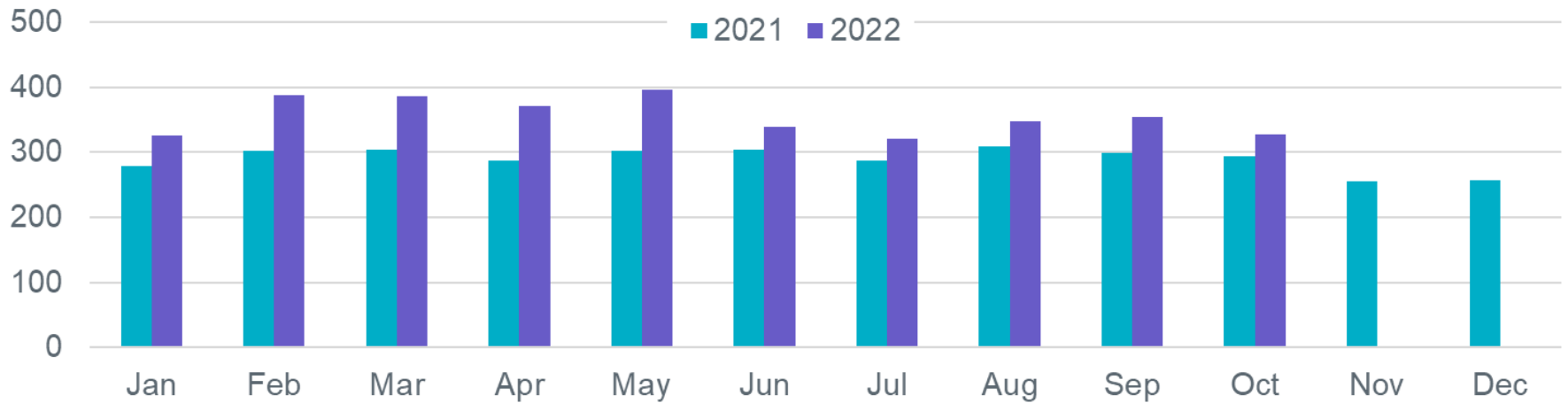
- ERCOT is not proposing any change to the methodology used to compute the minimum Regulation Service requirements for 2022.
- The preliminary Regulation quantities for January 2022 through October 2022 have been computed using current methodology (2020 and 2021 five-minute net load variability), updated Wind Adjustment tables and the updated Solar Adjustment tables.
 - Wind and Solar Adjustment Tables track incremental MWs of Regulation needed to account for additional variability per 1000 MW increase in installed wind and solar capacity, respectively.

Average Regulation Comparison

Average Regulation Up Requirement Comparison



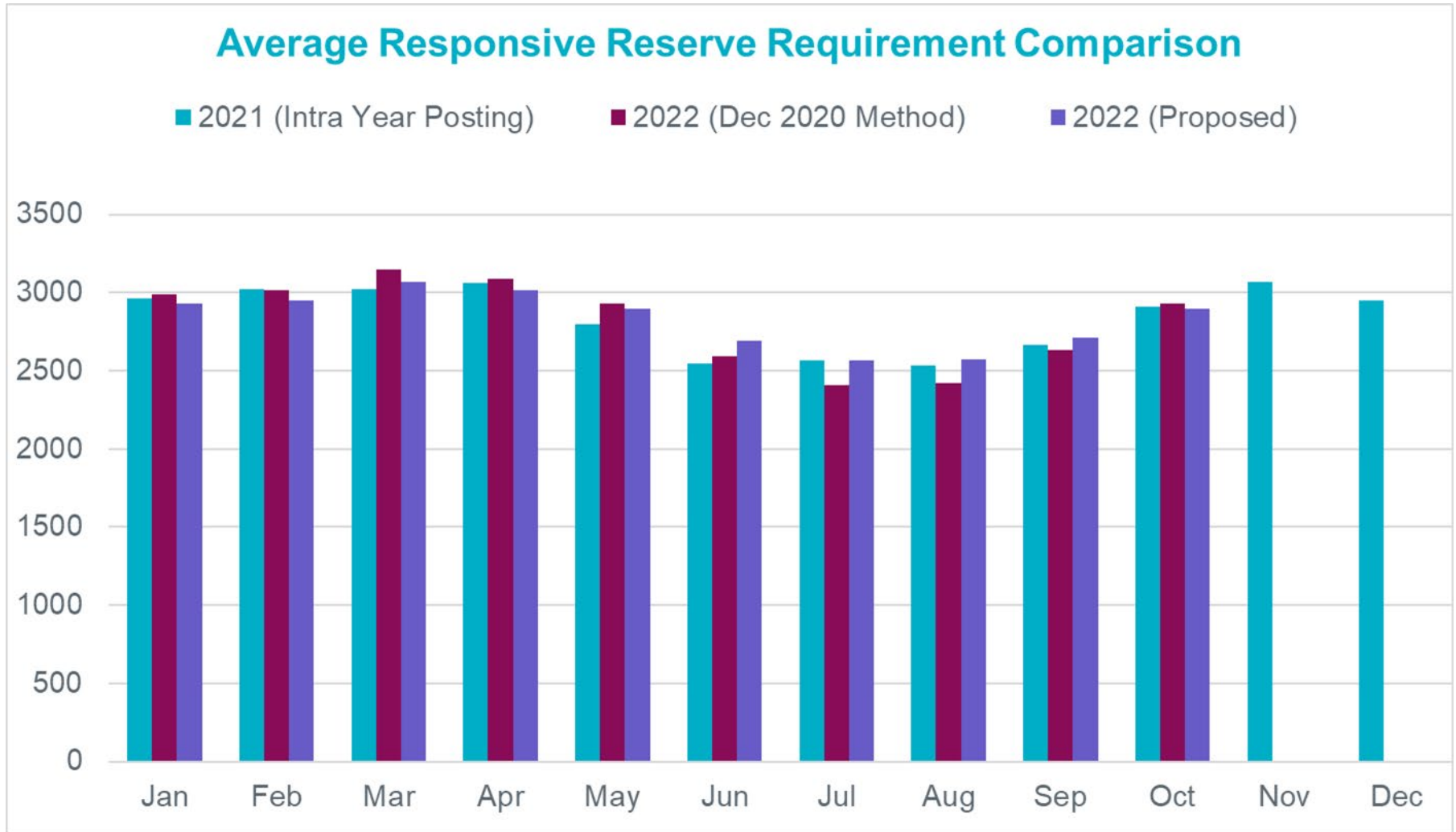
Average Regulation Down Requirement Comparison



Responsive Reserve Service Methodology

- ERCOT is proposing one change to the methodology used to compute the minimum RRS requirements for 2022.
 - A floor of 2,800 MW will be applied to RRS quantities during the peak. During the peak hour, this additional RRS will help maintain a larger operating margin to operate more conservatively.
- ERCOT is proposing to change the minimum RRS-PFR limit for 2022 to 1,240 MW to align with ERCOT's updated Interconnection Frequency Response Obligation (IFRO) for OY2022.
 - NERC's 2022 BAL-003 IFRO assessment for ERCOT shows a reduction in ERCOT's IFRO. This is primarily because of an update in the IFRO methodology that as approved as a part of the Project 2017-01, Modifications to BAL-003.
- The preliminary RRS quantities for January 2022 through October 2022 have been computed using 2020 and 2021 system inertia conditions and updated RRS table.
 - The RRS table tracks RRS requirements for different inertia conditions. This table has been updated in 2022 to use a minimum RRS-PFR limit of 1,240 MW.

Average RRS Comparison

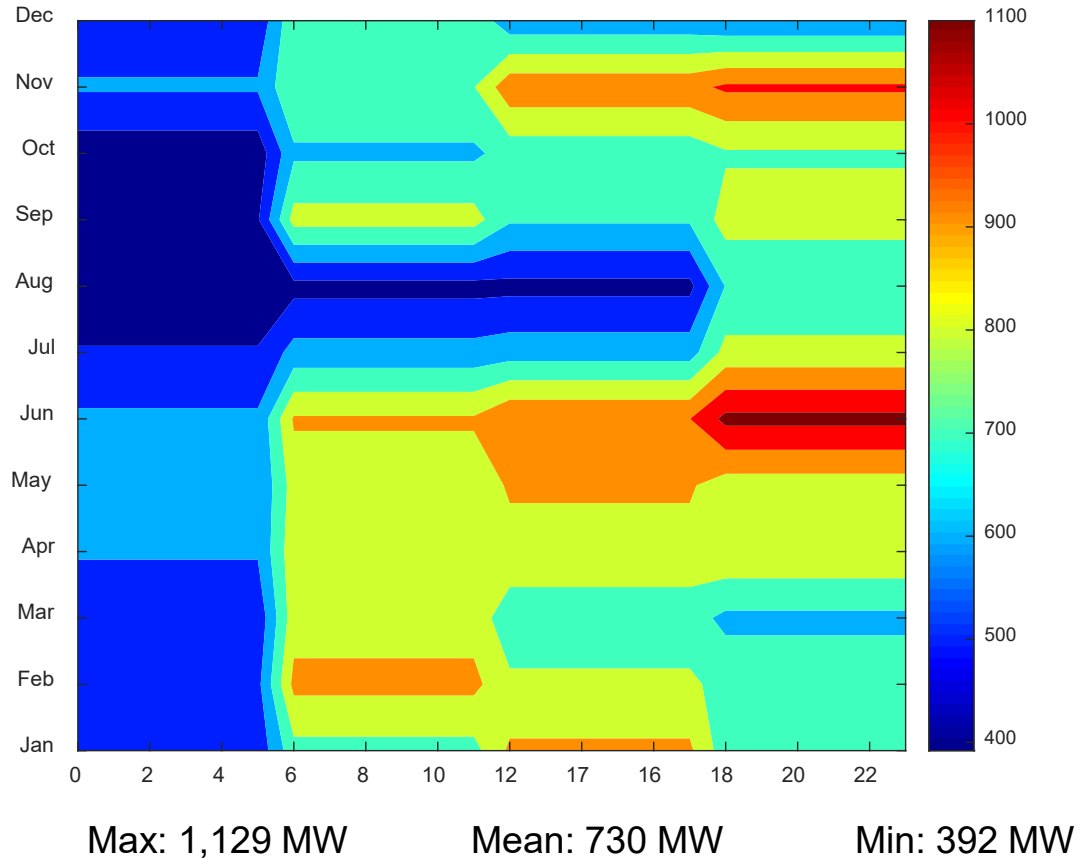


Non-Spinning Reserve Service Methodology

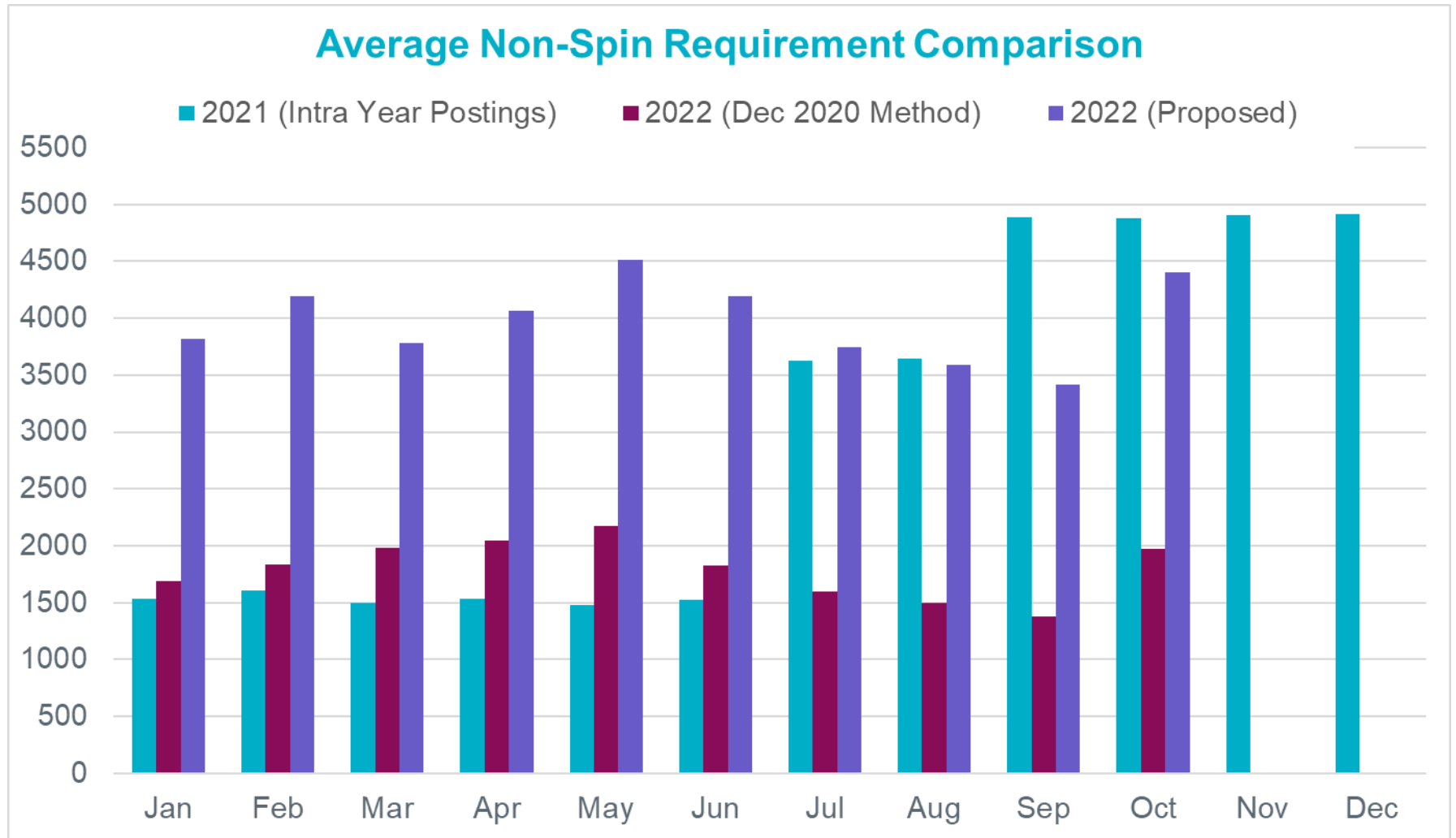
- ERCOT is proposing the following changes to the methodology used to compute minimum Non-Spin requirements in 2022
 1. Update the hourly net load forecast uncertainty calculation to use
 - a) the 6 Hours-Ahead net load forecast, and
 - b) the highest 5-min net load within the hour
 2. Change percentile coverage to vary between 85th and 95th. The applicable coverage for any hour will continue to be based on risk of net load up ramp in the hour.
 3. Include an adjustment to account for intra-day forced outages of thermal resources.
- The preliminary Non-Spin quantities for January 2022 through October 2022 have been computed using current methodology (2019, 2020 and 2021 Net load and Net load Forecast), updated Wind Over-Forecast Error Adjustment table and the updated Solar Over-Forecast Error Adjustment table.
 - Wind and Solar Over-Forecast Error Adjustment Table track estimated increase in over forecast error per 1000 MW increase in installed wind and solar capacity, respectively.

Intra-Day Forced Outage Table

- Intra-day Forced Outage table tracks incremental increase in Non-Spin needed to account for intra-day forced outages of thermal resources.



Average Non-Spin Comparison



Summary

- Following is a summary of the 2022 Ancillary Service Methodology.
 - ERCOT is not recommending any changes to the methodology used for computing Regulation Service requirements.
 - ERCOT is recommending one change in the methodology used for computing Responsive Reserve Service (RRS) requirements.
 - ERCOT is also proposing to change the minimum RRS-PFR limit for 2022 to 1,240 MW based on updates to NERC's BAL-003 Interconnection Frequency Response Obligation (IFRO) assessment for OY2022.
 - ERCOT is recommending three changes in the methodology used for computing Non-Spinning Reserve Service (Non-Spin) requirements.
- ERCOT is seeking ERCOT Board of Directors' approval of the 2022 Ancillary Service Methodology as noted above.