

Overview of 2025 State of the Market Report for ERCOT

Presented to:

ERCOT TAC

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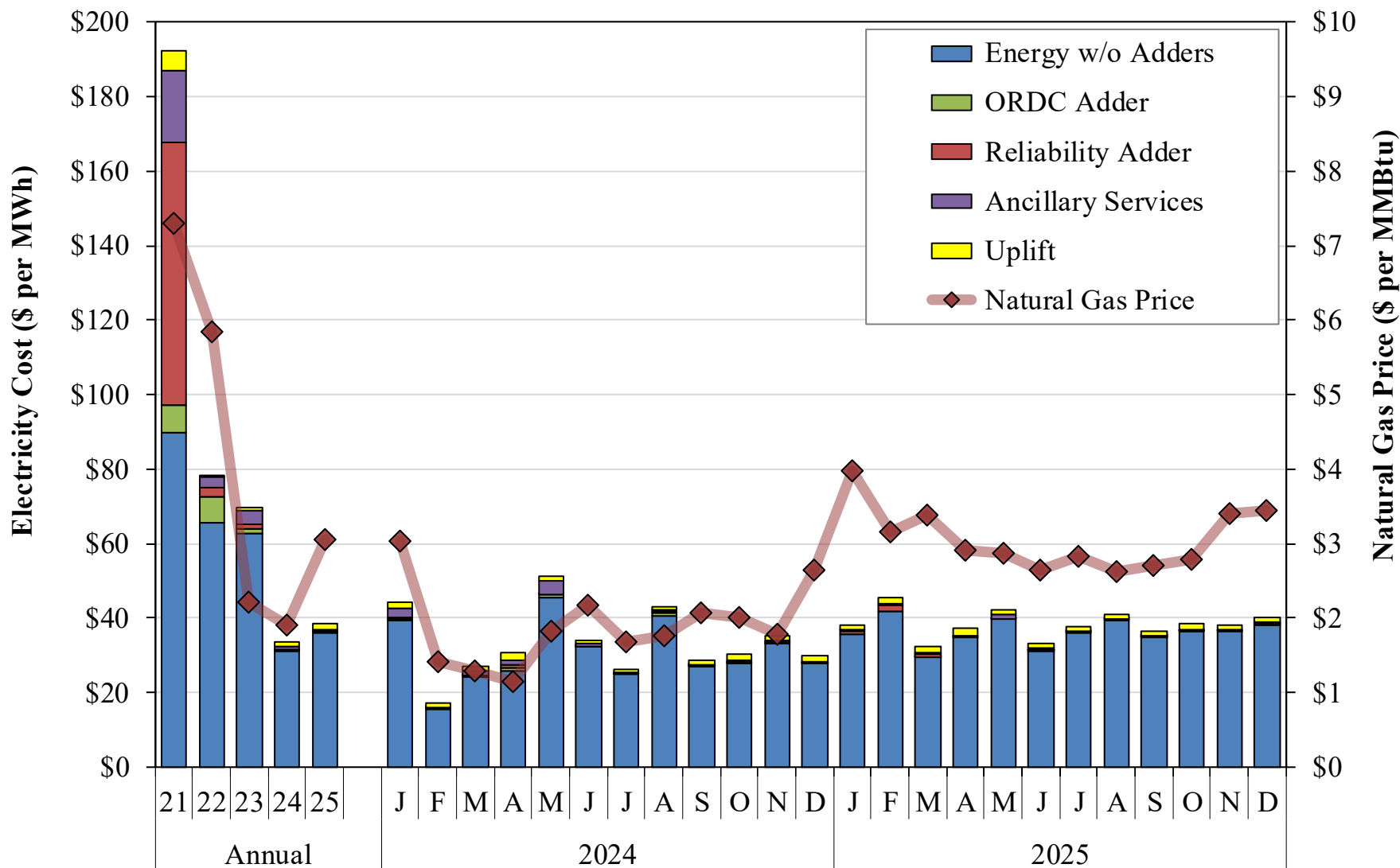
Highlights of the 2025 State of the Market Report

- Summary of market pricing trends
 - All-in price of electricity
 - Implied heat rate
 - Shortage pricing
- Summary of operating reserve trends
- Conservative operations
 - Reliability Unit Commitment (RUC)
 - Ancillary Service Methodology

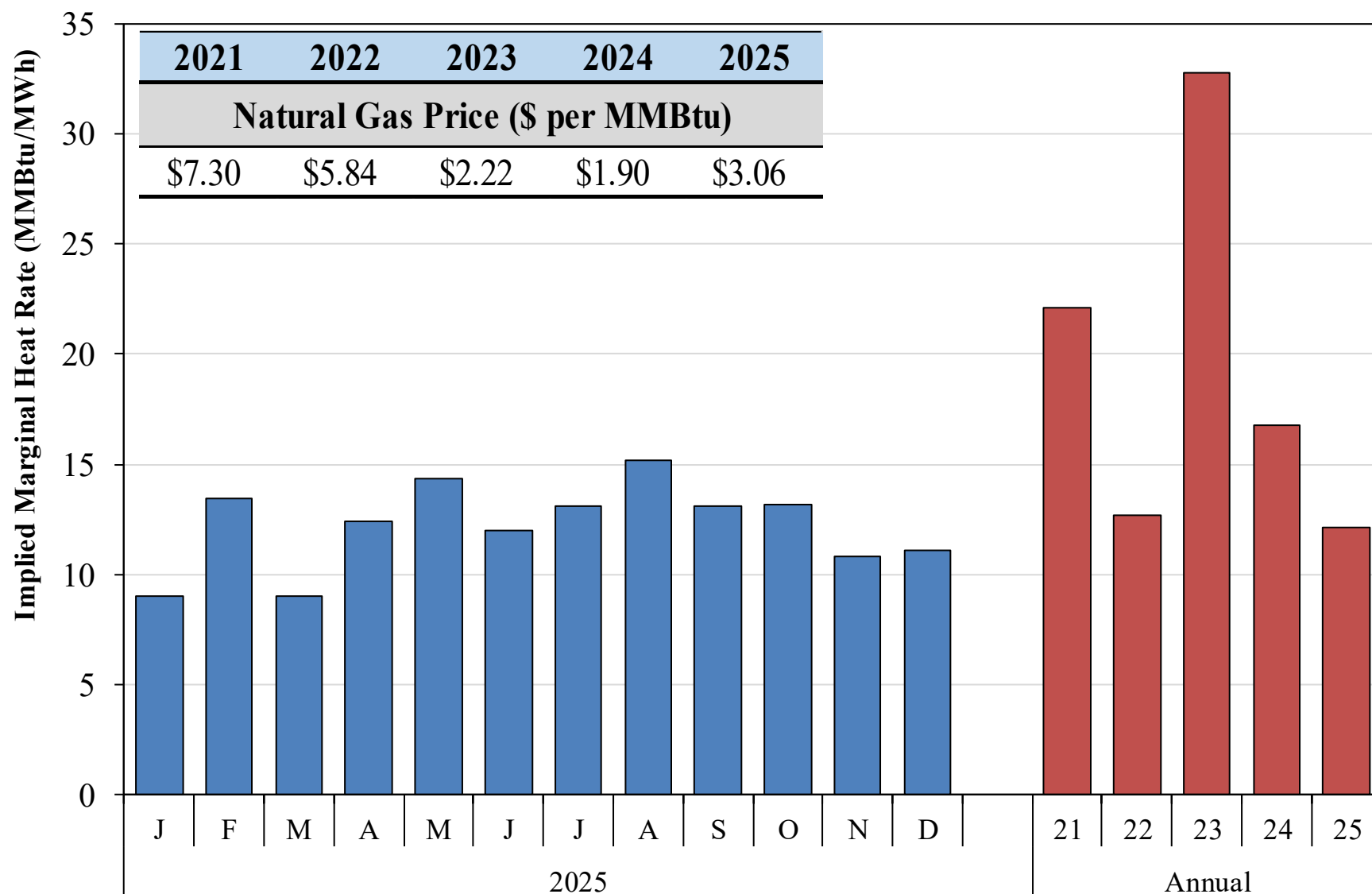
Summary of market pricing trends

- All-in price of electricity increased by only 13.8% despite 61% increase in the price of natural gas (YoY)
- The implied heat rate (price of electricity divided by the price of gas) decreased by 28% (YoY)
- Shortage pricing from the Operating Reserve Demand Curve (ORDC) was \$0.02/MWh on average for the year, the lowest since the ORDC was implemented
- Since the implementation of Real-Time Co-Optimization in December 2025, shortage pricing via the Ancillary Service Demand Curves (ASDCs) has been minimal

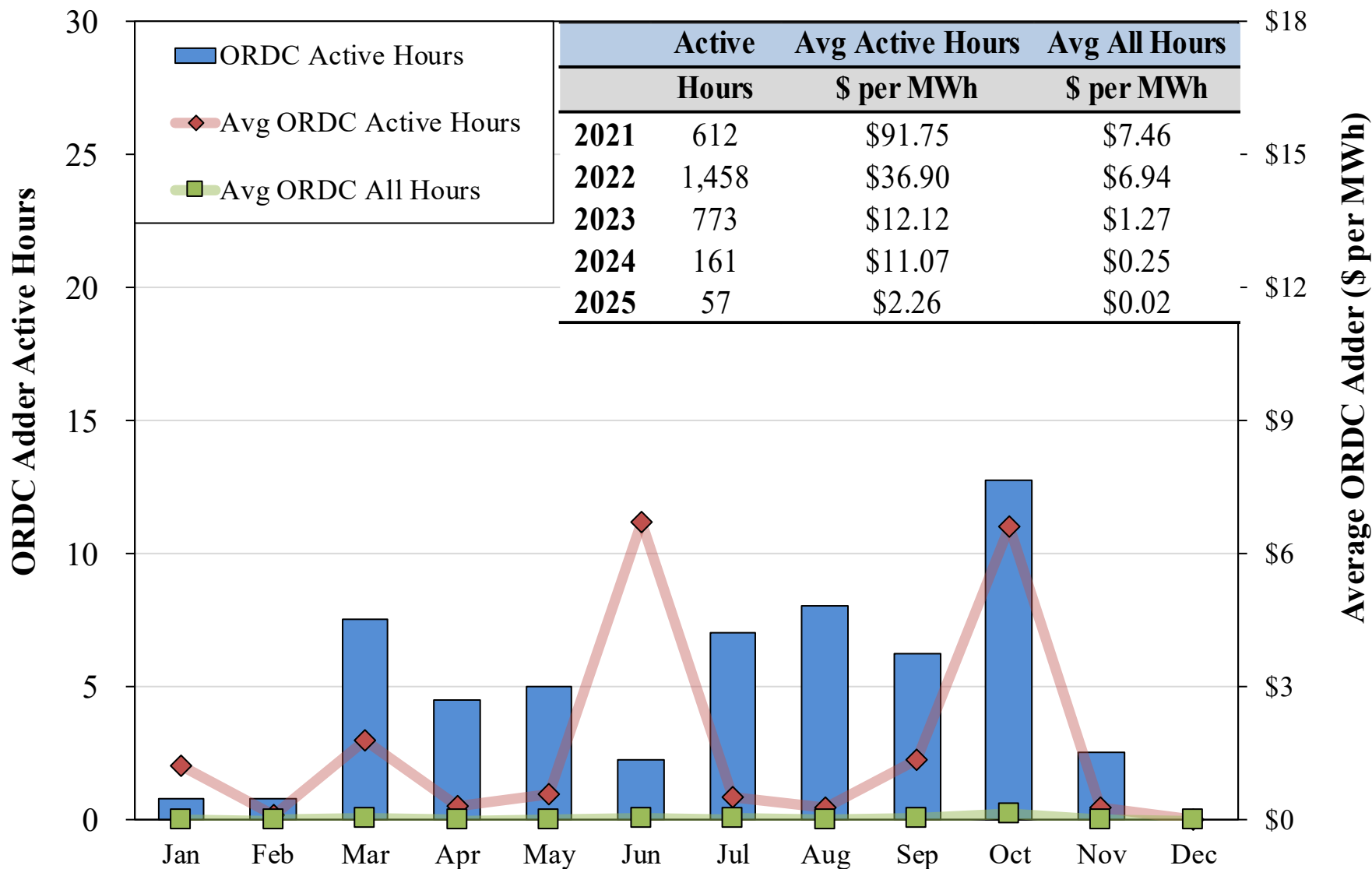
The all-in price of electricity was up slightly in 2025, mostly due to the price of natural gas



The implied heat rate was down in 2025, indicating less reliance on more expensive resources



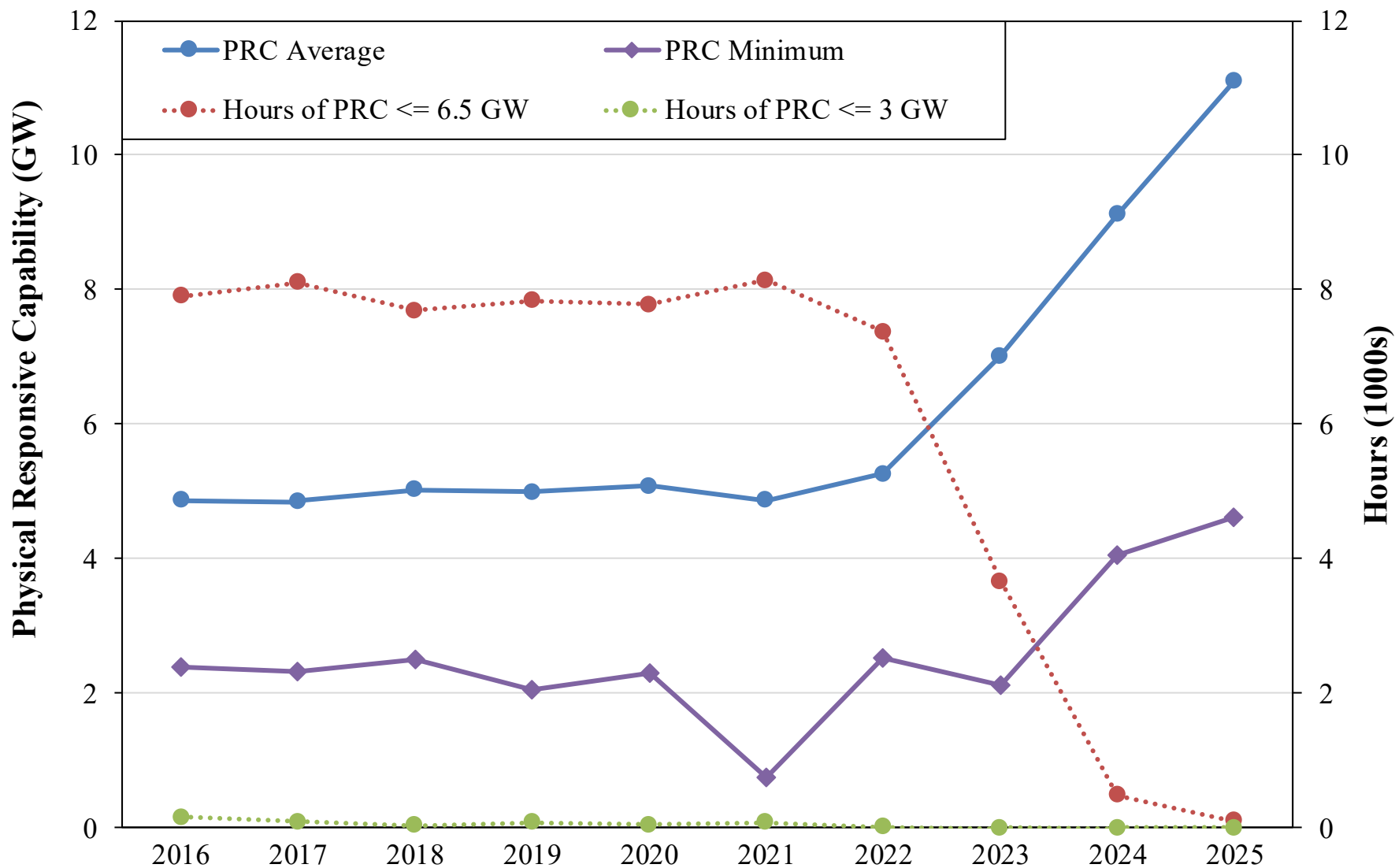
Shortage pricing was the lowest annual average since the ORDC was implemented



Summary of operating reserve trends

- Average PRC grew by nearly 2 GW per year from 2016 to 2022
- From 2016 to 2022:
 - Average PRC was approximately 5,000 MW.
 - PRC was below 6,500 MW for most of the year and was below 3,000 MW for 30-160 hours per year.
- In 2025:
 - Average PRC was over 11,000 MW
 - PRC was only below 6,500 MW for 106 hours and hasn't been below 3,000 MW since 2023
- Most of this increase in PRC can be attributed to installations of solar and energy storage resources
- Despite this surplus of supply, ERCOT's has adopted more conservative policies for maintaining excessive levels of operating reserves

The pricing outcomes are a result of the supply surplus currently in the ERCOT market



ERCOT has argued that PRC is an inappropriate metric for assessing reliability

- PRC measures the instantaneous volume of reserves available to the grid in the event of a contingency. Some arguments ERCOT has made for why it isn't a sufficient measure of reliability:
 - **Increased Reliability Risks due to Renewables and Batteries**
Renewables are intermittent, and batteries are duration-limited, and so additional reserves are needed to ensure the reliability of the grid. That said, if these risks were substantial under prevailing conditions, they would manifest through shortage conditions. Instead, the frequency of shortage conditions has dropped precipitously in recent years.
 - **PRC includes capacity from out-of-market reliability actions**
After adjusting for the supply and demand impacts of Reliability Unit Commitments and Emergency Reserve Service resources, the adjusted frequency of shortage conditions still indicated that the system had a surplus of capacity in 2025

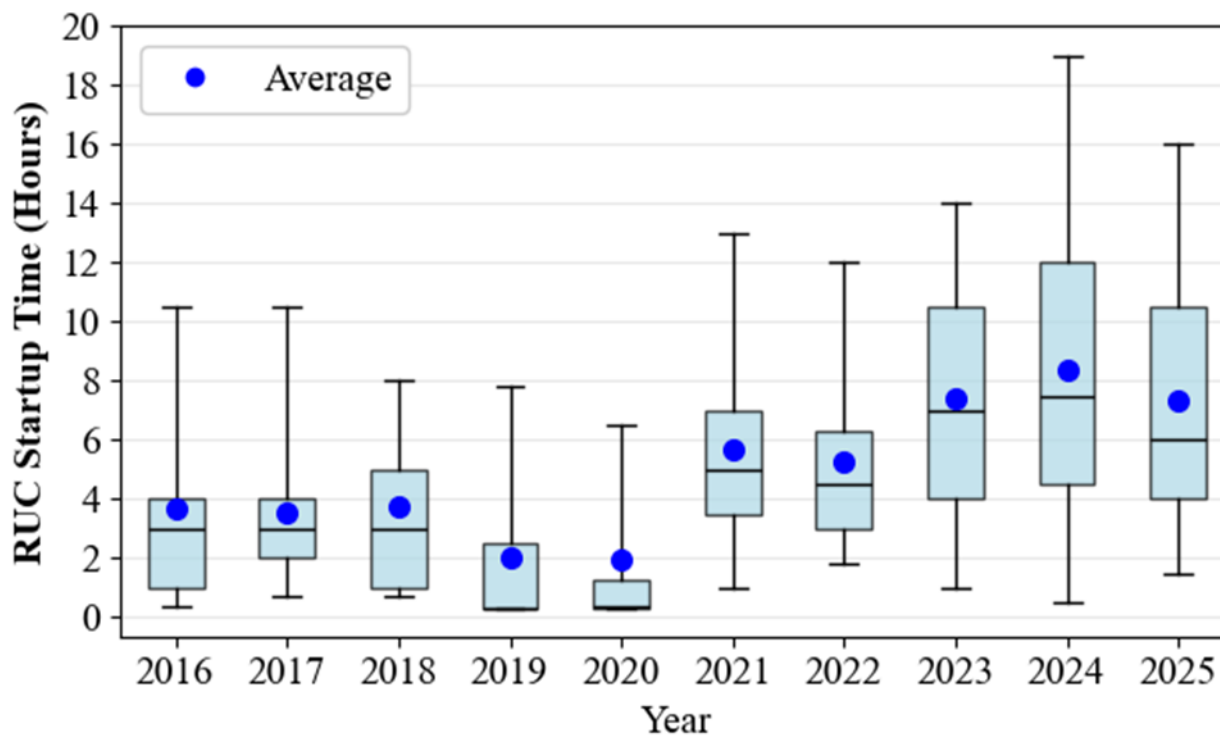
Despite the supply surplus, ERCOT continues to operate the grid conservatively

- Since Winter Storm Uri, ERCOT has established a “conservative operations” policy to maintain a high level of reserves on the grid at all times
- These reserves are brought online either through out-of-market reliability actions like Reliability Unit Commitment (RUC) or through inflated procurement targets for ancillary services (AS)
 - RUC is a process for instructing resources to commit out-of-market to manage congestion or system-wide capacity shortages
 - The Ancillary Service Methodology is used to determine the volumes of operating reserves the ERCOT wholesale markets will seek to procure
- Excess operating reserves tend to suppress clearing prices for energy, running counter to long-term concerns about resource adequacy

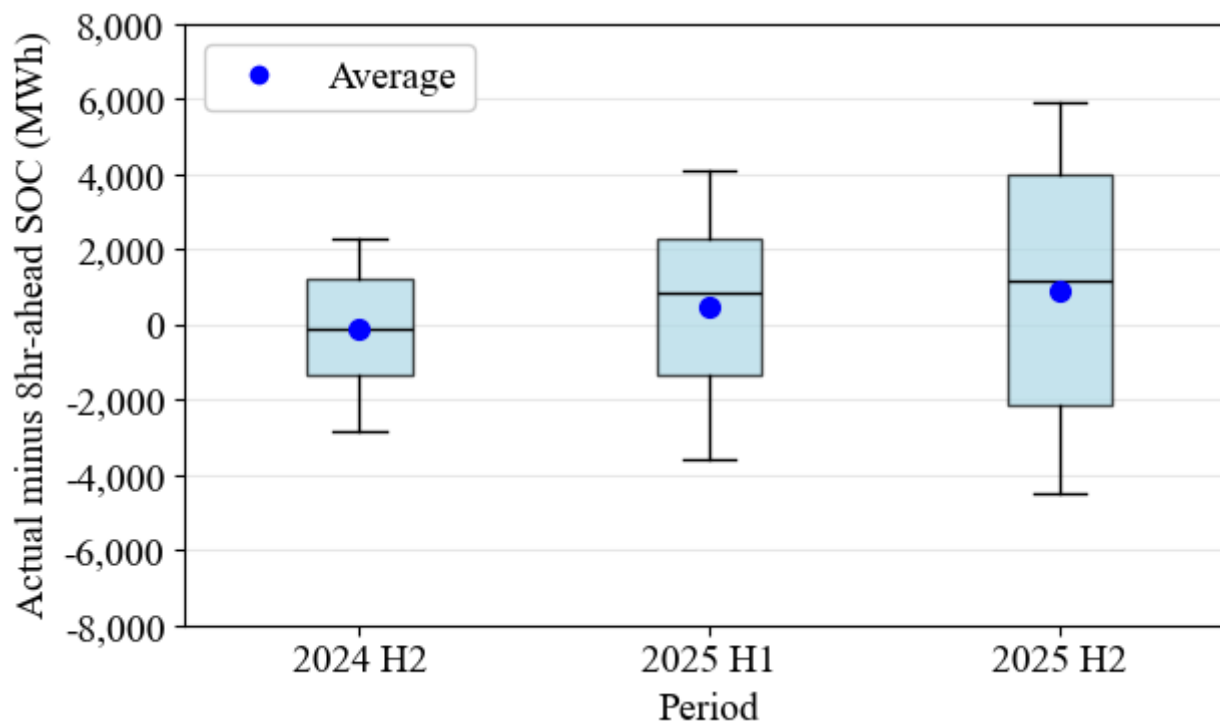
Trends related to Reliability Unit Commitment

- From 2017 through 2020
 - Resource-hours committed through RUC per year ranged from 202 to 613
 - The average startup time for resources committed through RUC was approximately three hours
- Since 2021
 - Annual RUC commitments have consistently totaled thousands of resource-hours
 - The average startup time for resources committed through RUC increased to almost seven hours
- In 2025, RUC was used extensively to manage congestion rather than system-wide scarcity
- One legitimate and growing challenge for ERCOT in using RUC appropriately is the (in)accuracy of the forecast for battery State of Charge

RUC Instructions Have Been Issued Further in Advance on Average Since Winter Storm Uri



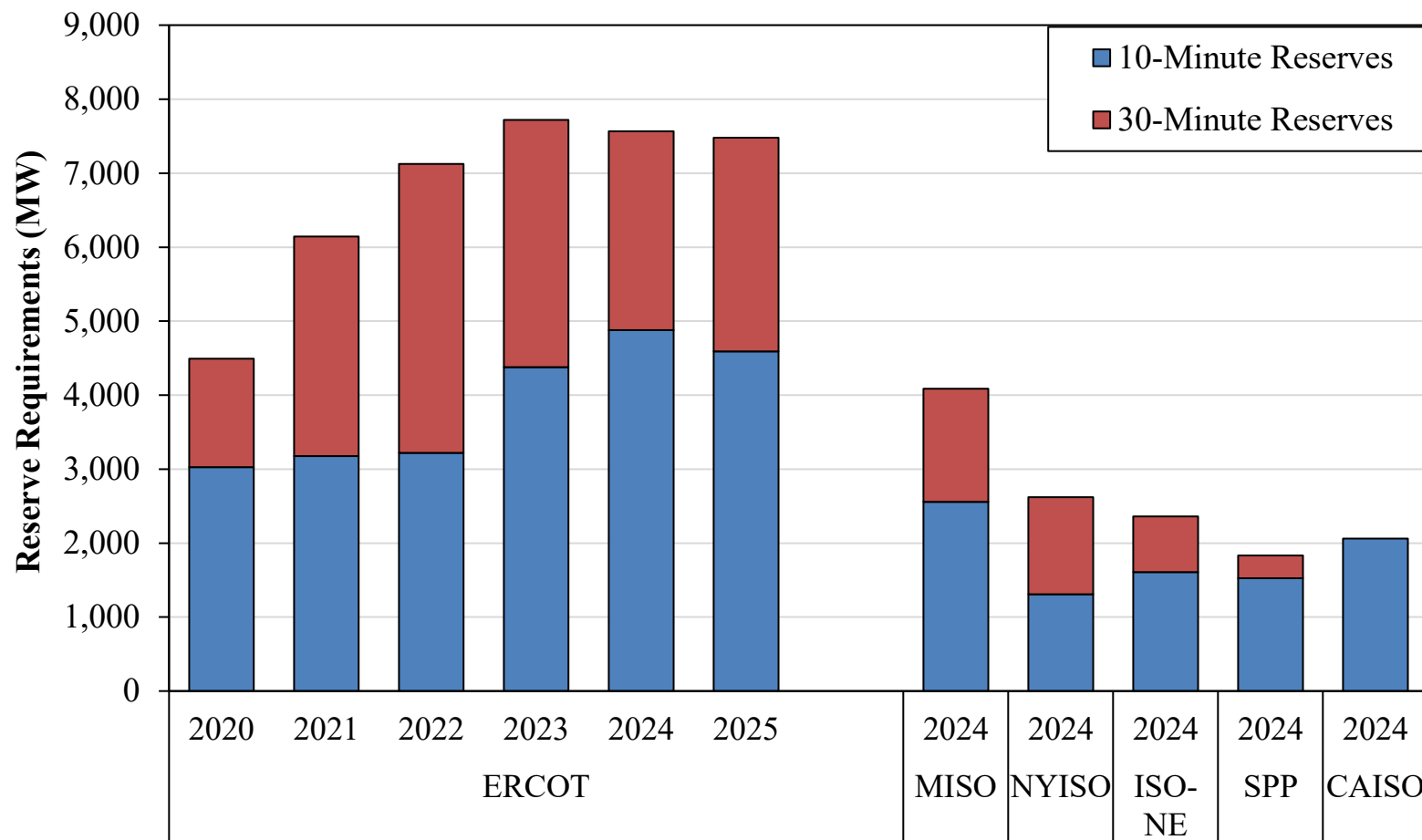
Forecast error for battery State of Charge is a growing challenge for using RUC appropriately



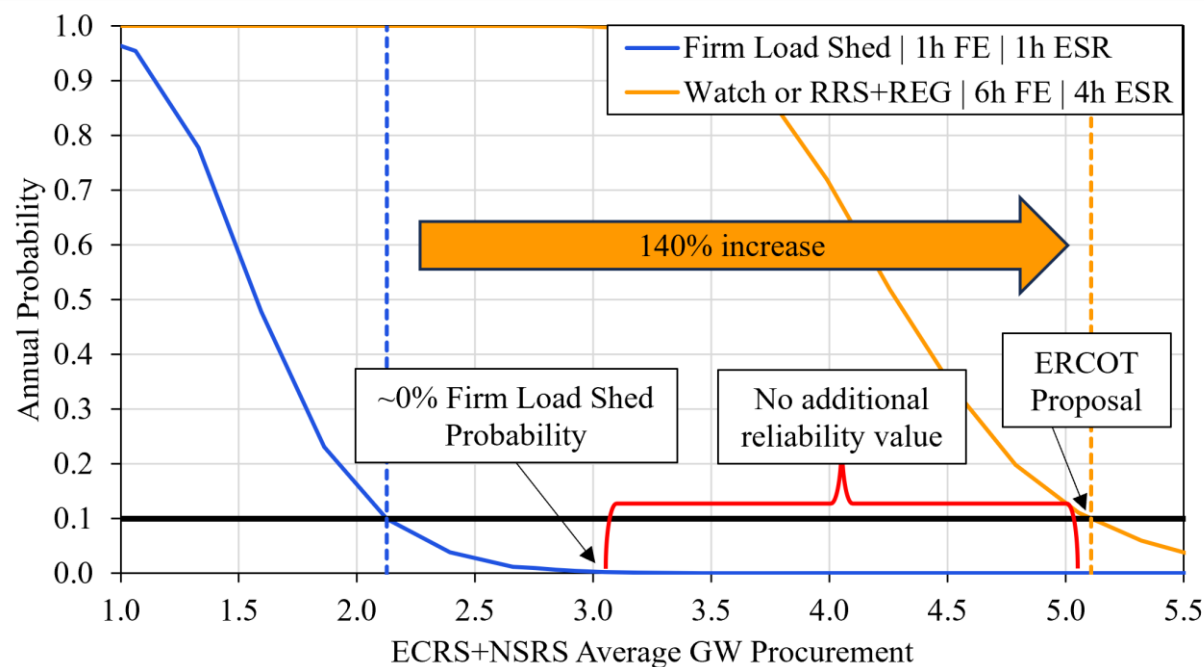
The AS Methodology has been inflated to procure more reserves in-market

- In response to ERCOT's increased use of RUC, stakeholders pushed for more reserves to be procured in-market
- Parameters that influence AS Procurement targets
 - Net load forecast error time-horizon
 - Operating to a “Watch” vs firm load shed
 - Discounting ESR capacity in reserve calculations
 - Discounting online headroom from capacity not providing AS

Operating reserve procurement targets have increased considerably since 2020



AS Methodology sets procurement well beyond providing incremental value in reducing probability of load shed



Questions?