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The Load-Serving Entity Reliability Obligation

A market design reform to ensure
electric reliability in Texas

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About the LSE Reliability Obligation

- + The LSE Reliability Obligation is a proposed ERCOT market design reform, submitted as a whitepaper to the PUCT under Project No. 52373 on September 30, 2021
- + The whitepaper was jointly authored by Energy + Environmental Economics, Inc. (E3) and Beth Garza, former ERCOT independent market monitor and current R Street Institute Senior Fellow



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- + The whitepaper was jointly sponsored by NRG Energy, Inc. and Exelon Corp.





Background and Motivation for Proposal

- + ERCOT's current market design does not have a formal reliability standard or mechanism to ensure sufficient resources to meet that standard**
 - Investment is incentivized and driven by expectation of high hourly energy prices during times of scarcity
 - Administrative constructs such as ORDC substitute for customers' value of reliability
- + Our proposal is designed to address three current and future challenges with the current framework:**
 - 1. Ensuring sufficient reliability generation**
 - Historical reserve margins have fallen short of what is needed to meet common industry reliability standards
 - Reforms, namely ORDC, have been introduced to increase energy prices and elicit higher investment
 - 2. Ensuring resource performance**
 - Significant failures of all types of generators have contributed to historical reliability events, particularly during Uri
 - 3. Adapting to higher penetrations of renewables**
 - Ensuring sufficient resources to reliably integrate increasing renewable generation will be a growing future challenge

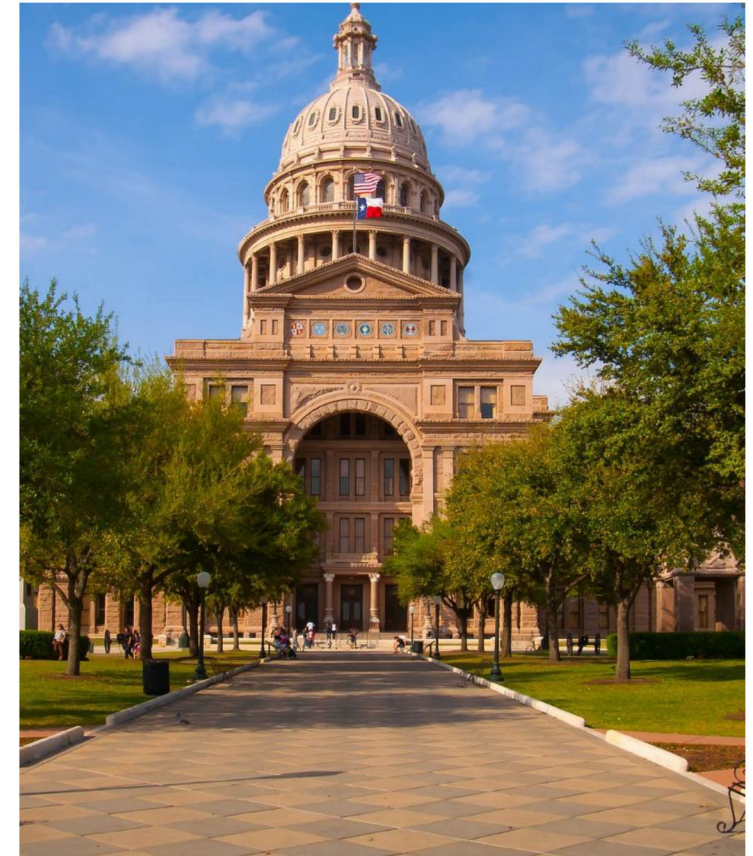
Our proposal is designed to work within ERCOT's competitive market framework, providing a "light-touch" regulatory overlay to ensure sufficient aggregate capability for the market to do its work



The LSE Reliability Obligation is directly responsive to several key provisions of SB3

+ Key SB3 Section 18 directives include the following:

- Establish requirements to meet the reliability needs of the power system
- Periodically, but at least annually, **determine the quantity and characteristics of ancillary or reliability services necessary to ensure appropriate reliability** during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production
- **Procures ancillary or reliability services on a competitive basis** to ensure appropriate reliability
- **Develops appropriate qualification performance requirements** for providing services... including appropriate penalties for failure to provide services
- Resources that provide services are dispatchable and able to meet continuous operating requirements for the **season in which they are procured**
- Winter resource capability qualifications... Include on-site fuel storage, dual fuel capability, or fuel supply arrangements
- Summer resource capability qualifications... include procedures to ensure operation under drought conditions





Precedent for LSE Reliability Obligation

- + Ensuring LSEs have procured sufficient reliability resources to cover their share of system reliability requirements has precedent in other jurisdictions

Australian National Electricity Market

- + The Australian national electricity market has historically operated under an energy-only framework, similar to ERCOT
- + Due to the advent of higher renewables, Australia has implemented a Retailer Reliability Obligation (RRO) that is triggered when the system operator projects a systemwide capacity shortfall



Southwest Power Pool (SPP)

- + The SPP market neighbors ERCOT directly to the north and serves parts of Texas
- + SPP requires LSEs to procure sufficient accredited capacity resources to cover their peak load + 12% planning reserve margin





Overview of LSE Reliability Obligation

+ The Load-Serving Entity (LSE) Reliability Obligation is an ERCOT market design reform proposal that

- Is directly responsive to SB 3 that directs the Public Utility Commission of Texas (PUCT) to “establish requirements to meet the reliability needs of the power region”
- Leverages LSEs (competitive retail providers, munis, co-ops) as natural vehicle to procure reliability resources, given their current role procuring energy
- Preserves competition and customer choice

The LSE Reliability Obligation introduces a formal reliability standard and a mechanism to ensure that there are sufficient resources to meet this standard

Key LSE Reliability Obligation Elements



- **Reliability Standard:** *Establish formal standard*



- **Resource Accreditation:** *Determine reliability value of each resource*



- **System Assessment:** *Project if sufficient resources to meet reliability standard*



- **Trigger:** *Enact LSE Reliability Obligation if system assessment forecasts deficiency*



- **LSE Requirement:** *Determine each LSE's reliability requirement*



- **LSE Showings:** *Each LSE shows sufficient accredited resources to meet their requirement*



- **Performance Assessments:** *resources are assessed penalties based on performance*



Key LSE Reliability Obligation Steps

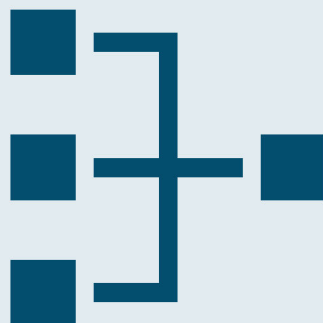
Set formal reliability standard and calculate need for reliability services

ERCOT proposes and PUCT establishes a formal reliability standard – ERCOT calculates required quantity of reliability services needed to meet it



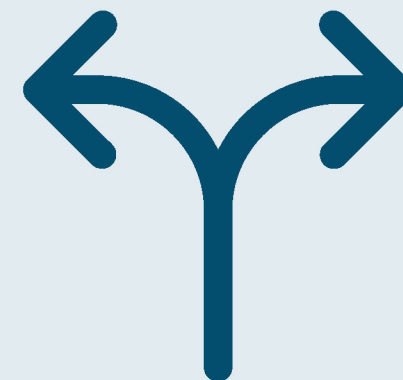
Perform system assessment

ERCOT forecasts on a 3-year forward basis whether there are sufficient accredited reliability resources to meet reliability standard



Trigger LSE Obligation if system assessment indicates shortfall

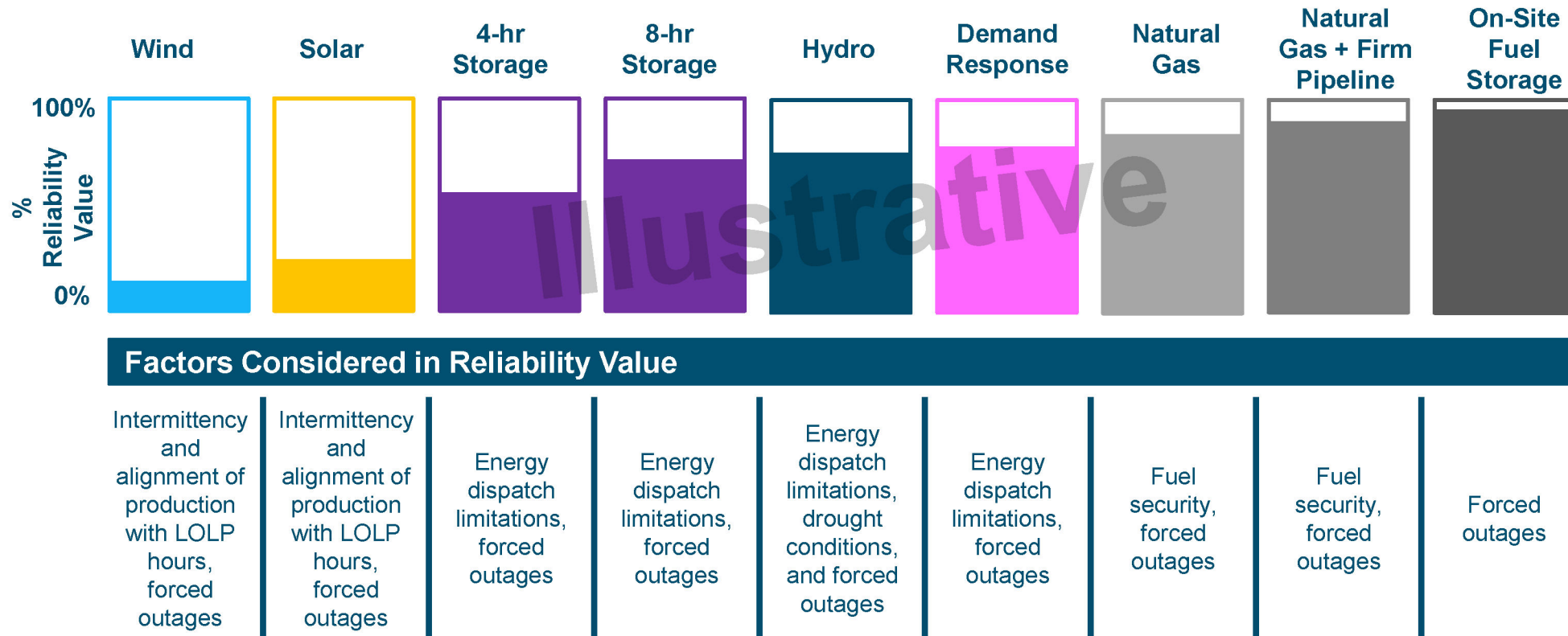
If the forward assessment indicates a shortfall, PUCT triggers Obligation for LSEs to procure specified quantities of accredited reliability resources





Resource Accreditation

- + ERCOT implements a seasonal reliability accreditation process for all resources that captures their ability to contribute to the specified reliability standard
 - Provides a technology-neutral mechanism for resources to compete to provide reliability and lower costs for consumers
- + Each resource would be accredited with a % reliability value to be used both in the system assessment and in individual LSE showings

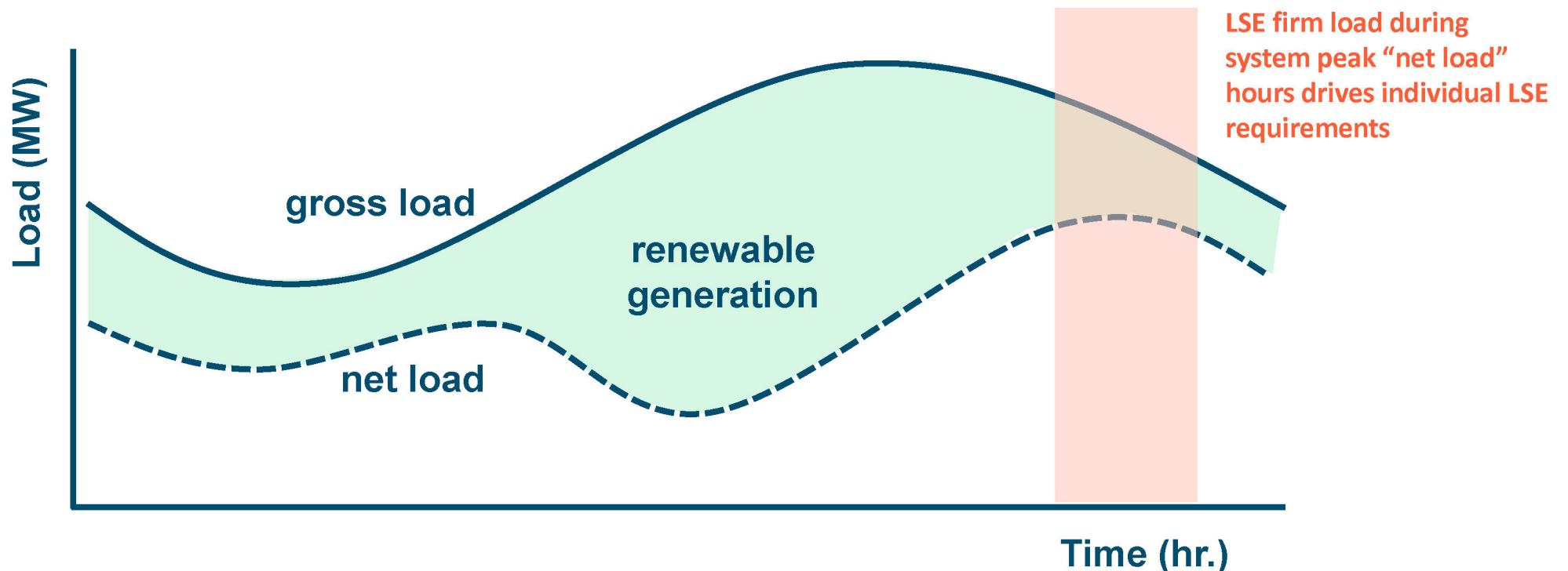


Captures each resource's expected production during all hours in which there is a non-zero probability for the system to experience a reliability event



LSE Requirement

- + If the Obligation is triggered, ERCOT assigns each LSE a reliability procurement requirement based on its share of total system-wide requirement
- + The LSE requirement would be based on each LSE's pro-rata share of firm (non-curtable) load during periods in which there is a non-zero probability of a reliability event
 - LSEs that can reduce or shift load away from these periods would have correspondingly lower LSE requirements





LSE Showings

- + If triggered, each LSE would be required to make a “showing”, demonstrating a contractual relationship with sufficient reliability resources to satisfy its LSE requirement
- + Showing would be conducted on a 1-year forward basis
- + LSEs that are deficient would be assessed a financial compliance penalty
 - ERCOT would use the penalty funds to procure resources on behalf of the deficient LSE





Performance Assessment

- + While LSE Obligation is extinguished at the end of the formal showing, generators and loads that sell reliability services will have an obligation to deliver what they sold during times of system need
 - Ensuring resources perform as accredited is key to achieving target level of reliability
 - Resources would be required to offer their full capability into the market during ERCOT-designated reliability events
- + Resources that do not perform would be subject to meaningful financial penalties
 - Resources may elect to not sell the maximum accredited value to LSEs to avoid performance requirements



SB 3 directs ERCOT to “develop appropriate qualification and performance requirements for providing services... including appropriate penalties for failure to provide the services”



How does LSE Reliability Obligation complement or replace other proposals?

The LSE Reliability Obligation is...

Complementary to ORDC reforms

- To the extent that ORDC reforms increase investment and improve reliability, this would minimize risk of LSE Reliability Obligation being triggered

Complementary with higher ancillary service requirements

- LSE Reliability Obligation ensures there is sufficient steel-in-the-ground to meet increased daily ancillary service requirements

Similar to proposals that impose “dispatchable”, “firm fuel”, or “duration” requirements

- LSE Reliability Obligation ensures sufficient reliability but is technology-neutral, allowing capabilities across *all* resources to compete, rather than preselecting specific technology buckets or solutions to procure

Inconsistent with centrally-procured out-of-market reserve capacity

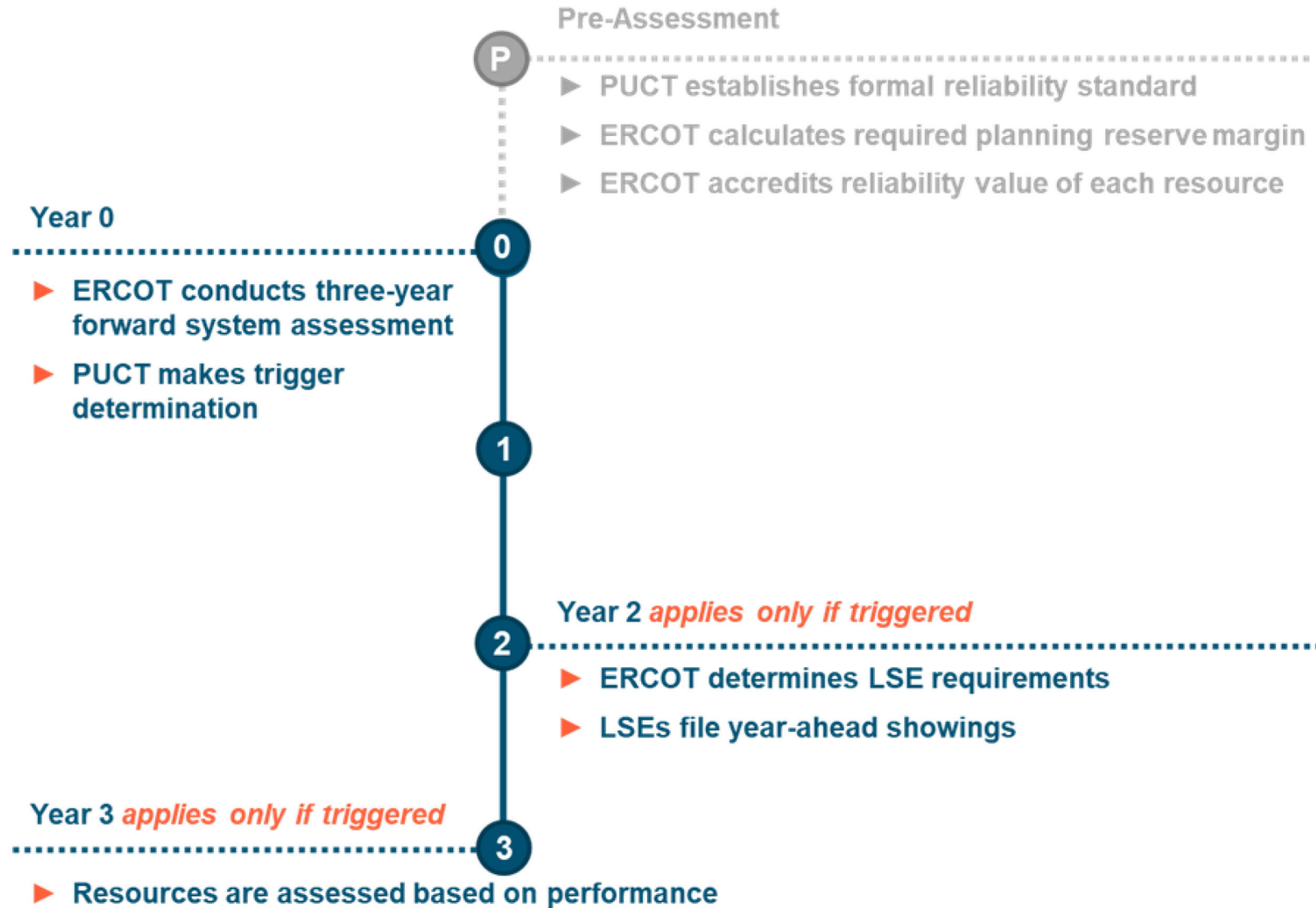
- LSE Reliability Obligation would procure sufficient steel-in-the-ground to meet a specified reliability standard without the need for out-of-market reserve capacity

Appendix





Timeline of LSE Reliability Obligation Process



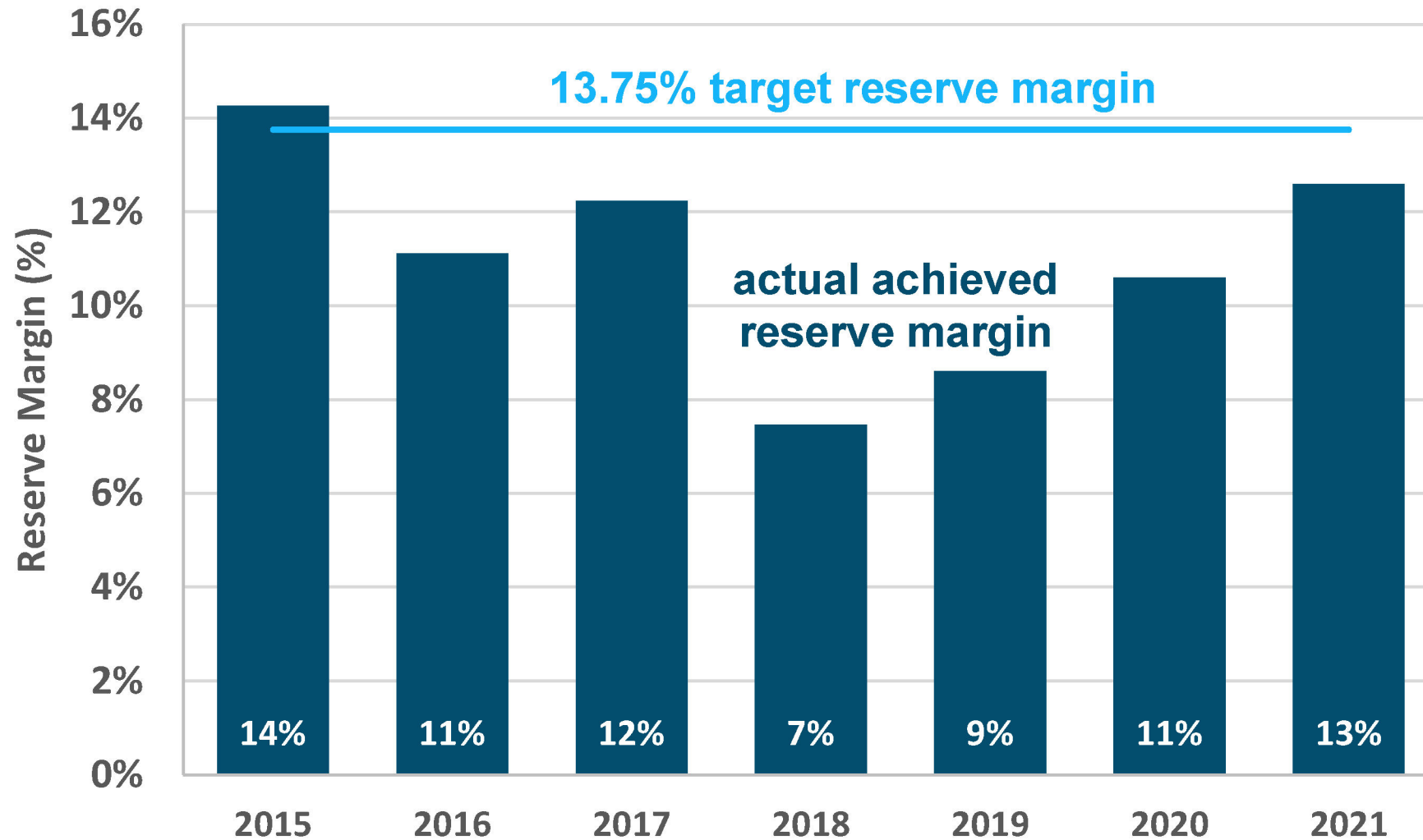


Key Objectives of Market Reform

-  **Resource Adequacy**
Does the market design result in more steel in the ground that contributes to the reliability needs of the system?
-  **Operational Reliability**
Is the existing steel in the ground incentivized to be on standby to account for unexpected changes in renewable output?
-  **Cost/Efficiency**
Does the market design achieve resource adequacy and operational reliability at minimal cost to society?
-  **Competitive/Free Market**
Does the market design maintain consumer choice and allow for retail provider differentiation?
-  **SB3 Responsiveness**
Do the market design reforms provide a solution to the requirements imposed by Senate Bill 3?
-  **Stakeholder Acceptability**
Is the proposed market design acceptable to the unique set of Texas stakeholders?
-  **Implementation Barriers**
Can the market design reform be implemented in a timely manner, without additional legislative action?



ERCOT Historical Reserve Margin





- + A strategic reserve is a quantity of supply that is held outside of the market for use during scarcity or other time periods**
- + Economic literature is relatively aligned on the shortcomings of this strategic reserve**
 - Potential to distort market pricing if used efficiently in short-run by offering below price cap
 - Crowds out private investment, leading to reduced reliability in the long-run or cycle of increasing dependency on more strategic reserves
 - Currently only used to a small extent in three countries (Belgium, Germany, Sweden)



TIEC Proposal vs LSE Reliability Obligation

Similarities

Agree that a “flattening” of the ORDC may reduce incentives for resources to perform during system stress and may exacerbate existing issues of compensating resources that do not contribute substantially to the most system critical hours

Agree that all resources, including renewables, should be held accountable through performance standards to ensure they provide firm electricity during critical system hours

Differences

LSE Reliability Obligation

Comprehensive, bottom-up reliability construct centered around the LSE, evaluating reliability contribution of resources on a technology-neutral basis

Compensates all resources equally through ORDC for providing energy

Creates incentives for LSEs to procure least-cost portfolios of resources that have the requisite reliability attributes

TIEC

Top-down procurement of reliability to identify an identified net load gap but without technology-neutral competition between resources, ultimately increasing consumer costs

Differentiates ORDC compensation based on technology, even when providing identical energy during critical system hours

Proposes taxpayer funded subsidy targeted to specific technologies that would not achieve reliability at least cost



LCRA Proposal vs LSE Reliability Obligation

Similarities

Agree that ERCOT should structure market design reform around achieving a specific reliability standard such as “1-in-10”

Agree that resource characteristics (such as duration) should impact their reliability value

Financial penalties for failure to deliver accredited reliability value

Differences

LSE Reliability Obligation

Allows all resources to compete to provide reliability services

Reliability value for resources with different durations (e.g. 4-hr vs. 24-hr) would be determined through resource accreditation process and create apples-to-apples competition among *all* resources

Compensates resources for “firm fuel” and allows competition of this reliability feature vs. other reliability investments e.g. storage

LCRA

Only specifies procurement of dispatchable resources, despite recognition that non-dispatchable resources reduce necessary quantity of dispatchable resource to meet 1-in-10 reliability standard

24-hr duration requirement not based on analysis and does not compensate benefits of shorter duration resources (e.g. two 12-hr batteries are more valuable than one 24-hr battery due to more max output potential)

Procures firm fuel but does not allow this to compete with other lower cost reliability investments – also does not specify quantity of firm fuel that should be procured



Vistra Proposal vs LSE Reliability Obligation

Differences	
LSE Reliability Obligation	Vistra
No position on shape of ORDC, but recognizes that change in shape may have little impact on new investment	Proposes reduction in ORDC price cap and flattening of curve
Competitively procures sufficient quantity of reliability resources to meet specified reliability standard	Carves out portion of system need as dispatchable standby reserves (DSR) without establishing how that quantity would be determined
All resources can efficiently bid and dispatch in energy, minimizing operational costs to consumers	Dispatchable Standby Reserves (DSR) would not be efficiently bid or utilized in market (withholds capacity), increasing customer costs
Deficient LSEs procure additional reliability resources to cover their requirement; sufficient LSEs are not saddled with inequitable cost	Dispatchable Standby Reserves (DSR) costs would be spread across all LSEs, regardless of whether they were contributors to its need or not