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# *Public Utility Commission of Texas*

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## **Memorandum**

**TO:** Chairman Thomas Gleeson  
Commissioner Lori Cobos  
Commissioner Jimmy Glotfelty  
Commissioner Kathleen Jackson

**FROM:** Werner Roth, Market Analysis  
Chris Brown, PhD, Market Analysis

**DATE:** May 9, 2024

**RE:** **May 16, 2024, Open Meeting – Item No. 27**  
Project No. 54584 – Reliability Standard for the ERCOT Market

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During the Commission's May 2, 2024 technical conference on the Reliability Standard for the ERCOT Market, Staff committed to filing a memo ahead of the Commission's May 16, 2024 open meeting to lay out the various decision points that need to be made so that Staff can begin drafting the Proposal for Publication (PPF) for the reliability standard rulemaking. This memo is to fulfill that commitment.

### **Staff Response to Comments from the Technical Conference**

- 1) A formal, Commission-approved reliability standard is essential to achieve long-term resource adequacy.

Although the Commission has reviewed the reliability standard for the ERCOT region in previous projects,<sup>1</sup> none of that work resulted in the Commission choosing to adopt a formal reliability standard. After Winter Storm Uri, the legislature adopted Senate Bill 3 (87<sup>th</sup> Regular Session), which directed the Commission to establish requirements to meet the reliability needs of the ERCOT power region.<sup>2</sup> With this came the expectation that the Commission would establish a reliability standard for ERCOT, one that would rely on competitive markets to provide the financial incentives to attract and retain the resources necessary to meet that standard. A formal, Commission-approved reliability standard, along with a requirement to periodically review the ERCOT market design to ensure that expected revenues align with this standard, will help achieve the statutory and policy objectives inherent to a reliability standard.

- 2) Adopting a reliability standard does not require implementation of the Performance Credit Mechanism (PCM) to achieve it.

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<sup>1</sup> See *Review of the Reliability Standard in the ERCOT Region*, Project No. 42302.

<sup>2</sup> Codified as Tex. Util. Code Ann. § 39.159(b)(1).

Discussion during the technical conference shifted several times to the PCM and how it would tie into the reliability standard. Staff wants to be clear that, while the PCM itself does require a reliability standard to determine the amount of performance credits that will need to be procured, *the reliability standard does not require implementation of the PCM to be effective. Moreover, the PCM is not the only tool that could be used to meet the reliability standard.* The Commission has several policy options available to influence energy-only market outcomes that could impact market performance relative to an adopted reliability standard. For example, alterations to existing ancillary service products, design of new reliability products, or changes to the scarcity pricing signals each could be tailored to impact reliability standard metrics.

3) ERCOT has been responsive to Commission requests throughout this project, and Staff supports the results of the analysis.

Throughout the reliability standard project, both commissioners<sup>3</sup> and Staff<sup>4</sup> have requested additional information and refinements to ERCOT's analysis. To its credit, ERCOT has been extremely responsive to these requests, and Staff believes that the information contained in the final results from the Phase 4 analysis is sufficient to recommend a path forward. Staff is also generally supportive of the assumptions ERCOT has used to perform its analysis and views the direction of ERCOT's final recommendations for a reliability standard as a reasonable starting point.

## Decision Points and Staff Recommendations

### 1) Reliability Standard Metrics

The Commission's first decision point is to choose which metrics should form the reliability standard. Since the initial round of comments in this project, stakeholders have supported moving beyond the industry standard of 0.1 Loss of Load Expectation (LOLE), instead preferring an approach that includes more than this single metric. ERCOT proposed a three-part, multi-metric framework that establishes thresholds on three distinct criteria: frequency, magnitude, and duration.<sup>5</sup> The majority of stakeholders supported this approach, and Staff supports this direction for establishing the reliability standard in ERCOT. The preferred three-part framework is superior to a single LOLE metric because magnitude and duration are essential components of a reliability standard, and LOLE, as an average metric, does not capture these components. Magnitude and duration are essential to understanding and mitigating the risks to the ERCOT power region and customers posed by loss-of-load events.

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<sup>3</sup> *Reliability Standard for the ERCOT Market*, Project No. 54584, Item 47, Memorandum of Comm'r McAdams (Sept. 27, 2023).

<sup>4</sup> Project No. 54584, Item 50, Staff Memo and Attachment 1 (Oct. 26, 2023).

<sup>5</sup> *Wholesale Electric Market Design Implementation*, Project No. 53298, Item 30, ERCOT's Follow-up Info. re the Proposed Reliability Standard Framework and Potential Request for Proposal (PFP) for a Value of Lost Load (VOLL) Consultant (Mar. 20, 2023).

Staff Recommendation: Staff recommends using the multi-metric framework ERCOT proposed last year and establishing a reliability standard that satisfies thresholds on three criteria: frequency, magnitude, and duration.

## 2) Values for metrics

In its April 4, 2024 update,<sup>6</sup> ERCOT offered the following recommendation for the values of each of the reliability standard metrics:

*ERCOT recommendation - Maximum Magnitude should not exceed 19 GW, Frequency should be no more frequent than 1-in-10 years (e.g., 1-in-20 years), and the maximum Duration should not exceed 14 hours.*

Staff provides the following thoughts on the appropriate values for each of the metrics.

### *Frequency*

Staff agrees with the ERCOT recommendation to utilize the industry standard of 0.1 LOLE (1-in-10) for the maximum acceptable frequency of events. At a minimum, the Commission-approved reliability standard should target a level of reliability that is comparable to other markets and regions across the country.

### *Magnitude*

The magnitude metric received the most attention and discussion during the technical conference. As indicated by ERCOT, the maximum magnitude is the most binding measure in the simulation results.<sup>7</sup> The ERCOT recommendation is based on a survey of ERCOT Transmission and Distribution Service Providers (TDSPs) that determined the maximum amount of total load that is neither critical nor transmission connected. ERCOT took roughly 60% of this value and estimated that up to 19 GW of load shed could be effectively rotated during an event.<sup>8</sup>

Staff does not believe that setting a firm MW value for maximum magnitude is appropriate for the reliability standard. While the other metrics are largely policy-driven decisions, the magnitude is directly tied to the operational capability of the distribution system. As discussed during the technical conference, the upper limit on the amount of load shed that can be safely rotated could increase if further investment to the distribution system or changes to the number or treatment of critical loads are made. This value should also account for any new load that is added to the system.<sup>9</sup> Although Staff agrees that the maximum magnitude of 19 GW is

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<sup>6</sup> Project No. 54584, Item 55, ERCOT Reliability Standard Study and CONE Study Update (Apr. 4, 2024).

<sup>7</sup> Project No. 54584, Item 57, ERCOT's Reliability Standard Tech. Conf. Presentation (Apr. 30, 2024).

<sup>8</sup> Project No. 54584, Item 55, ERCOT Reliability Standard Study and CONE Study Update (Apr. 4, 2024).

<sup>9</sup> *Id.*

appropriate for the system as it exists today, this value will need to be updated on a predictable, scheduled basis to align with any future changes to the load shed rotation capabilities of the system. Staff recommends ERCOT continue doing regular surveys to get information about load shed and rotation capabilities of the TDSPs.

Staff also appreciates the comments made during the technical conference highlighting the importance of balancing reliability and affordability. As the binding measure, the magnitude metric is the most likely to establish the overall target for the reliability standard. Staff recommends that the magnitude metric for the reliability standard allow for a 0.25% exceedance probability, which means that, on average, one would expect to have one event exceed the threshold of being able to safely rotate outages every 400 years. This balances the desire to avoid events where outages cannot be rotated with the cost of eliminating all such outages from the model entirely.

#### *Duration*

ERCOT noted that duration is closely correlated to magnitude in the scenario results and tied its duration value recommendation to the expected scenario outcome based on restricting the maximum magnitude value to less than 19 GW.<sup>10</sup> While a strong correlation between magnitude and duration exists within the analysis today, Staff does not want to preclude the possibility of this correlation weakening over time as the resource mix in ERCOT changes and non-traditional loads continue to be added to the system. Thus, Staff disagrees with the justification for having the maximum duration within the reliability standard set at 14 hours.

The Emergency Pricing Program required by PURA § 39.160 is activated when energy prices have been at the high system-wide offer cap for 12 hours within a 24-hour period. While the Emergency Pricing Program does not require these 12 hours to be consecutive, a 12-hour loss of load event would definitely activate this program. Staff believes that the Commission-approved reliability standard should establish a target that reduces the need to activate this program. Similar to the magnitude metric, Staff also believes that incorporating an exceedance allowance is appropriate. However, because the duration metric is not tied to the operational capability of the system, Staff believes that the duration metric for the reliability standard should allow for a more relaxed 1.00% exceedance probability. This would mean that, on average, one would expect to have an event with a duration of greater than 12 hours once every 100 years.

Staff Recommendation: Staff recommends the following values for each of the three metrics:

- Frequency: Staff recommends using the industry standard of 0.1 LOLE.
- Magnitude: Staff recommends setting the maximum magnitude based on the maximum number of MW of load shed that can be safely rotated during an event, as determined by ERCOT, with a 0.25% exceedance allowance. This value would be updated on a schedule determined by the Commission.

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<sup>10</sup> *Id.*

- Duration: Staff recommends setting a maximum duration of 12 hours, with a 1.00% exceedance allowance.

*Table 1: Overview of Reliability Standard Metrics, Exceedance Probabilities, and System Costs*

Frequency	LOLE	Exceedance Probability Magnitude >19,000 MW	Exceedance Probability Duration >12 hours	System Cost (Million \$/Year)
1 in 8.3	0.120	0.70%	0.90%	\$12,265
1 in 9.0	0.111	0.57%	0.76%	\$12,250
1 in 9.4	0.107	0.59%	0.70%	\$12,256
1 in 10.0	0.100	0.51%	0.55%	\$12,260
1 in 10.4	0.096	0.32%	0.40%	\$12,265
1 in 11.1	0.090	0.25%	0.38%	\$12,264
1 in 11.8	0.085	0.15%	0.29%	\$12,286
1 in 12.4	0.081	0.17%	0.25%	\$12,316
1 in 12.8	0.078	0.13%	0.23%	\$12,291
1 in 13.7	0.073	0.08%	0.15%	\$12,328
1 in 15.7	0.064	0.04%	0.06%	\$12,388
1 in 20.5	0.049	0.04%	0.04%	\$12,459
1 in 27.0	0.037	0.00%	0.02%	\$12,535
1 in 35.8	0.028	0.00%	0.00%	\$12,634

### Frequency of review of ERCOT market design parameters

Lastly, the Commission will need to determine how frequently it will require a review of the ERCOT market design to ensure that expected market outcomes provide the price signals necessary to incentivize the level of resources needed to meet the Commission-approved reliability standard. A required, periodic review of the ERCOT market design will be important to maintain the reliability standard, as the revenue flows in the market will change as the generation mix continues to evolve and the shape of the load profile accounts for more non-traditional loads on the system. Additionally, this periodic review will enable the Commission to examine the chosen reliability standard values to ensure that they reflect current system conditions.

During the technical conference, invited parties discussed a range of possible review timeframes. Staff notes that, as part of the creation of the Emergency Pricing Program, the Commission is required to review each system-wide offer cap program at least once every five years.<sup>11</sup> Specifically, 16 TAC § 25.509(d) states that “Beginning on January 1, 2026, and every five years thereafter, the commission will review each of the system-wide offer cap programs to determine whether to update aspects of each program.” Since these system-wide offer cap programs would be one of the market design elements considered as part of the review,

<sup>11</sup> Tex. Util. Code Ann. § 39.160(f)

expanding the review of these programs into a broader evaluation of the ERCOT market design would create efficiencies for the Commission. This timeline would not preclude the possibility of more frequent reviews of the ERCOT market design if the Commission determined it was needed, but it would provide regulatory certainty that a review will take place on a predictable schedule. If the Commission prefers a requirement to review the ERCOT market design more frequently than every five years, Staff can propose modifications to 16 TAC § 25.509(d) as well.

In its final update on the reliability standard study, ERCOT also included recommendations for several modeling assumptions that needed to be made to perform the analysis.<sup>12</sup> These assumptions included weatherization effectiveness, the number of historic weather years to include, the level of thermal retirements to account for, and the type of new capacity that would be added to the system to achieve the various levels of reliability. While Staff does not have a concern with any of the assumptions ERCOT chose for the current reliability standard analysis, Staff believes that the Commission should approve any such assumptions before they are incorporated into the review of the ERCOT market design parameters in future analyses.

Staff Recommendation: Staff recommends aligning a required review of market design parameters with the existing timeline to review all system-wide offer cap programs in 16 TAC § 25.509(d). Staff also recommends including language in the rule that gives the Commission the explicit ability to review the ERCOT market design parameters more frequently. Lastly, Staff recommends that, when a project is opened to review the ERCOT market design parameters, ERCOT should be required to file a memo with the Commission outlining the key assumptions that need to be made and providing recommendations on those assumptions. Staff proposes that the Commission approve these assumptions before the analysis takes place.

### **Next Steps**

Staff intends to bring its proposal to publish a rule for public comment to the Commission's June 13, 2024 open meeting.

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<sup>12</sup> Project No. 54584, Item 55, ERCOT Reliability Standard Study and CONE Study Update (Apr. 4, 2024).