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**PUC PROJECT NO. 54584**

**RELIABILITY STANDARD FOR THE  
ERCOT MARKET**

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**BEFORE THE  
PUBLIC UTILITY COMMISSION  
OF TEXAS**

**LOWER COLORADO RIVER AUTHORITY'S RESPONSE TO  
STAFF QUESTIONS FOR COMMENT**

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

The Lower Colorado River Authority (LCRA) appreciates this Commission's commitment to establishing a reliability standard for the ERCOT region. LCRA also commends Commission Staff for its work in preparing a comprehensive historical look at the Commission's work on this topic to date. As Staff's memo demonstrates, past Commissions' decisions to refrain from implementing a mandatory reliability standard have had significant impacts on today's wholesale market. With the passage of Senate Bill 3 during the 87<sup>th</sup> Legislative session, it is clear that declining to act is no longer an option, and the Commission should work expeditiously to comply with Senate Bill 3's mandate to adopt a reliability standard.

**I. GENERAL COMMENTS**

LCRA supports ERCOT's proposed reliability standard framework and the approach outlined in its letter to the Commissioners filed in this project on March 20, 2023, whereby ERCOT will examine the parameters of event duration, frequency, and magnitude. LCRA agrees that it is valuable to examine various reliability standards, including Loss of Load Expectation (LOLE), Loss of Load Hours (LOLH), Loss of Load Probability (LOLP), and Expected Unserved Energy (EUE). Traditionally, standard Loss of Load models have been utilized throughout electricity markets to serve as the industry standard for measuring the probability of adverse events.

While these Loss of Load models do a good job of measuring the likelihood and frequency of certain outcomes, they do not—as the Commission, ERCOT staff, and stakeholders have discussed—account for the degree or magnitude of loss that occurs during load shed events. These variables are better captured by an EUE model or normalized EUE model. While LCRA continues to support the use of the LOLE model or similar iterations, we agree that incorporating the EUE standard would be useful in providing a broader picture. In addition, any reliability standard the Commission adopts should also account for the emerging risks associated with extreme winter

weather, including above-average outage incidence rates, fuel supply shortages, and reduced performance from intermittent renewable resources. Accordingly, LCRA supports consideration of seasonality, which ERCOT has indicated can be addressed within its proposed framework and model. Finally, the reliability standard should also address the Effective Load Carrying Capability (ELCC) of different resource types for different seasons and hours.

## **II. RESPONSE TO QUESTION 1**

**1. The Commission has previously considered various reliability metrics, such as Loss of Load Expectation (LOLE), Loss of Load Hours (LOLH), and Expected Unserved Energy (EUE).**

- **Which reliability metrics, including those not previously studied, should the Commission consider in establishing a reliability standard for the ERCOT power region?**
- **Which reliability metric, or combination of metrics, should the Commission adopt for the reliability standard in ERCOT?**
- **What are the advantages of your chosen reliability metrics, and what are the disadvantages of alternative approaches?**

LCRA has consistently supported the 1-in-10 LOLE reliability standard,<sup>1</sup> which is the standard that was adopted by most electric systems in North America. A system with this level of reliability would expect to experience a load shed event one day every ten years. One basis for LCRA's historical support of 1-in-10 LOLE is to bring ERCOT into alignment with the recognized "industry standard."<sup>2</sup> The ERCOT region has long been an outlier by not targeting a specific reliability standard. The Commission's reliability standard must be sufficiently robust to support continued economic growth in Texas and provide assurance to businesses and end-use consumers that ERCOT is, and will remain, among the most competitive and reliable electric grids in the country. One advantage of the LOLE standard is that it is commonly accepted and well understood across industries, which aids in attracting investment in ERCOT and supporting continued economic growth.

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<sup>1</sup> See, e.g., LCRA comments filed in Project No. 54335, *Review of Market Reform Assessment Produced by Energy and Environmental Economics, Inc. (E3)* (Dec. 15, 2022); Project No. 47199, *Project to Assess Price-Formation Rules in ERCOT's Energy-Only Market* (Dec. 1, 2017); Project No. 42302, *Review of the Reliability Standard in the ERCOT Region* (Mar. 27, 2015); Project No. 40000, *Proceeding to Ensure Resource Adequacy in Texas* (Dec. 16, 2013).

<sup>2</sup> Astrapé Consulting, *Effective Load Carrying Capability Study: Final Report* at 8 (Dec. 7, 2022), available at [www.ercot.com/files/docs/2022/12/09/2022-ERCOT-ELCC-Study-Final-Report-12-9-2022.pdf](http://www.ercot.com/files/docs/2022/12/09/2022-ERCOT-ELCC-Study-Final-Report-12-9-2022.pdf).

LCRA recognizes, however, that LOLE is not the only potential metric, that other regions are considering a move away from 1-in-10 LOLE, and that this metric does not account for the impact and magnitude of an event in terms of load shed quantity and duration. As such, LCRA supports the Commission and ERCOT’s consideration of a more robust standard that covers additional dimensions of a loss-of-load event—specifically, one that limits the magnitude of any single loss-of-load event *and* the frequency of loss-of-load events *and* the duration of any single loss-of-load event. Thus, while LCRA continues to support the use of the standard Loss of Load model, we agree that enhancing that model by also incorporating the EUE standard would be valuable. This would allow for a measure of lost day and/or hour occurrences while also taking into consideration the “fat tail risk.”

In addition, LCRA supports consideration of seasonality, as stakeholders discussed during the technical workshop on March 15, 2023. As has been widely observed, operational risks differ between summer and winter, and the Commission’s reliability standard should address seasonally correlated risks associated with different types of extreme weather, historical and expected resource outage rates, fuel supply shortages, and reduced performance from intermittent renewable resources. ERCOT has responded that seasonality can be addressed within its proposed analytical framework and model, and LCRA agrees that it should be.

Finally, the framework should also account for the impact of extreme weather events like Winter Storm Uri, and therefore must address above-average levels of resource outages and the expected concurrent reduction in intermittent renewable resource output. LCRA also supports consideration of ELCC per time interval. By examining the expected contribution of different resource types across different seasons and hours, ERCOT will be better equipped to address the challenges that accompany the growing renewable generation resource mix.

### **III. RESPONSE TO OTHER QUESTIONS**

LCRA is continuing to evaluate the other considerations identified in Staff’s memo and will address some or all of these issues in reply comments.

### **IV. CONCLUSION**

LCRA appreciates the Commission’s consideration of these comments and looks forward to engaging in further discussions with ERCOT staff and stakeholders.

Respectfully submitted,

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**BEFORE THE  
PUBLIC UTILITY COMMISSION  
OF TEXAS**

**LOWER COLORADO RIVER AUTHORITY'S  
EXECUTIVE SUMMARY**

- LCRA supports the Commission acting expeditiously to comply with the mandate in Senate Bill 3 (87th R.S.) to adopt a reliability standard for the ERCOT region.
- LCRA generally supports ERCOT's proposed reliability standard framework and the approach outlined in its letter to the Commissioners filed in this project on March 20, 2023, whereby ERCOT will collectively examine the parameters of event duration, frequency, and magnitude.
- LCRA has consistently supported the 1-in-10 Loss of Load Expectation (LOLE) reliability standard, which is the standard that was adopted by most electric systems in North America. One basis for LCRA's historical support of 1-in-10 LOLE is to bring ERCOT into alignment with the recognized "industry standard." The ERCOT region has long been an outlier by not targeting a specific reliability standard.
- LCRA continues to support the use of the standard Loss of Load model, but recognizes that enhancing that model by also incorporating the Expected Unserved Energy (EUE) standard would be valuable.
- The reliability standard should also account for the emerging risks associated with extreme winter weather, including above-average outage incidence rates, fuel supply shortages, and reduced performance from intermittent renewable resources. Accordingly, LCRA supports consideration of seasonality, which ERCOT has indicated can be addressed within its proposed framework and model. The reliability standard should also address the Effective Load Carrying Capability (ELCC) of different resource types for different seasons and hours.
- The Commission's reliability standard must be sufficiently robust to support continued economic growth in Texas and provide assurance to businesses and end-use consumers that ERCOT is among the most reliable electric grids in the country.