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# *Public Utility Commission of Texas*

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## **Memorandum**

**TO:** Interested Parties

**FROM:** Werner Roth, Market Analysis Division

**DATE:** March 7, 2023

**RE:** Project No. 54584 – Reliability Standard for the ERCOT Market  
Project No. 52373 – Review of Wholesale Electric Market Design  
Project No. 53298 – Wholesale Electric Market Design Implementation

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During the January 19<sup>th</sup> open meeting discussion on Project No. 52373, Review of Wholesale Electric Market Design, and within the subsequent memo<sup>1</sup> filed by Chairman Lake and approved by the Commission, Staff was asked to open a project to evaluate and establish an appropriate reliability standard in the ERCOT power region. Establishing a reliability standard for the rapidly evolving ERCOT grid is the next important step in implementing the reliability service required by Senate Bill 3. Ahead of the February 16<sup>th</sup> open meeting, Commissioner McAdams filed a memo<sup>2</sup> that, in part, asked for Staff to bring any thoughts they had to the March 9<sup>th</sup> Open Meeting. This memo responds to that directive and provides a brief history of projects pertaining to the reliability standard in ERCOT, as well as questions for stakeholder comment.

### **Project No. 40000, Commission Proceeding to Ensure Resource Adequacy in Texas**

Project No. 40000 was the Commission’s repository for resource adequacy related topics following the winter event and tight summer conditions in 2011.<sup>3</sup> As part of this project, the Commission held a series of workshops. The workshops included discussions with ERCOT, stakeholders, and other organizations on a wide variety of reliability topics, with a focus on resource adequacy objectives and their potential impact on the ERCOT market. Topics included operating reserves, scarcity pricing, and most notably, the potential need for a required planning reserve margin. In a memo<sup>4</sup> filed on August 16, 2012, Chairman Donna Nelson identified that “in addition to deciding the proper level for the reserve margin, we need to decide whether it is a mandatory number.” This prompted discussion that lasted over a year, but ultimately, the Commission did not implement a mandatory reliability standard.

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<sup>1</sup> *Review of Wholesale Electric Market Design*, Project No. 52373, Item 391, Order and Modified Memorandum (January 20, 2023).

<sup>2</sup> *Review of Wholesale Electric Market Design*, Project No. 52373, Item 398, Commission McAdams Memo (Feb. 15, 2023).

<sup>3</sup> The relevant filings from Project 37897 – PUC Proceeding Relating to Resource and Reserve Adequacy and Shortage Pricing and Project 40480 – Commission Proceeding Regarding Policy Options on Resource Adequacy were merged into Project 40000.

<sup>4</sup> *Commission Proceeding to Ensure Resource Adequacy in Texas*, Project No. 40000, Item 268, Chairman Nelson Memo (August 16, 2012).

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One of the concepts to address resource adequacy that arose during this project was the Operating Reserve Demand Curve, or ORDC. In November of 2012, GDF Suez filed a paper written by Dr. William Hogan that described the implementation of an ORDC to address resource adequacy concerns through appropriate scarcity pricing.<sup>5</sup> While the original concept involved the real-time co-optimization of energy and ancillary services, ERCOT worked with Dr. Hogan to create an alternative approach, the ORDC B+, that could be more quickly and cost-effectively implemented. At the direction of the Commission, ERCOT filed the protocol revision to implement the ORDC, and it went live on June 1, 2014.<sup>6</sup>

On January 31, 2014, the Brattle Group released its initial “Estimating the Economically Optimal Reserve Margin in ERCOT” report. The report prompted further Commission discussion on whether the target reserve margin based upon a 0.1 Loss of Load Expectation (LOLE) was the most appropriate reliability standard.<sup>7</sup> The Commission determined that it would be best to continue the discussion on the reliability standard in a new project.

### **Project No. 42302 Review of the Reliability Standard in the ERCOT Region**

In March of 2014, the Commission directed Staff to open Project No. 42302 to examine issues related to the reliability standard in the ERCOT power region. The project was established to review the effectiveness of the 0.1 LOLE reliability metric, examine its underlying reasoning, and evaluate potential alternatives. Staff’s work in this project consisted of several items, including:

- Researching the reliability standards utilized within the other NERC Regional Entities and in other parts of the world.<sup>8</sup>
- Soliciting multiple rounds of comments from interested parties.
- Hosting a staff-led workshop that featured ERCOT presenting on the NERC LOLE study requirements, Brattle presenting on its Economically Optimal Reserve Margin report, and various stakeholders providing perspectives on how reliability should be measured in ERCOT.
- Having ERCOT perform a reserve margin analysis, where they provided the commission with LOLE, Loss of Load Hours (LOLH), and Expected Unserved Energy (EUE) for various reserve margin percentages.<sup>9</sup>

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<sup>5</sup>*Commission Proceeding to Ensure Resource Adequacy in Texas*, Project No. 40000, Item 355, Supplemental Comments (November 14, 2012).

<sup>6</sup> ERCOT Nodal Protocol Revision Request 568, (November 19, 2013).

<sup>7</sup> *Commission Proceeding to Ensure Resource Adequacy in Texas*, Project No. 40000, Item 650, Commissioner Anderson Memo (February 5, 2014).

<sup>8</sup> *Review of the Reliability Standard in the ERCOT Region*, Project No. 42302, Item 4, Discussion and Possible Action (June 13, 2014).

<sup>9</sup> *Review of the Reliability Standard in the ERCOT Region*, Project No. 42302, Item 19 Page 5, Discussion and Possible Action (December 11, 2014).

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The work produced several reliability standard options, including continued use of the 0.1 LOLE standard, utilizing the market equilibrium and economically optimal reserve margins, switching to expected unserved energy, or using a combination of multiple reliability metrics. These alternatives were discussed, but the Commission did not remove the 0.1 LOLE target standard. However, the Commission directed ERCOT to provide updated values for the Economically Optimal Reserve Margin and Market Equilibrium Reserve Margin on a regularly scheduled basis.<sup>10</sup>

### **Questions for Stakeholder Comment**

Staff has attached to this memo questions for public comment. Comments may be filed through the interchange on the commission's website or by submitting a paper copy to Central Records, Public Utility Commission of Texas, 1701 North Congress Avenue, P.O. Box 13326, Austin, Texas 78711-3326. Initial comments are due by March 29, 2023, and reply comments are due by April 5, 2023. All comments should reference Project No. 54584. **Each set of comments should include a standalone executive summary as the last page of the filing. This executive summary must be clearly labeled with the submitting entity's name and should list each substantive recommendation made in the comments.**

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<sup>10</sup> Estimation of the Market Equilibrium and Economically Optimal Reserve Margins for the ERCOT Region for 2024 (Jan 15, 2021); Accessed at [https://www.ercot.com/files/docs/2021/01/15/2020\\_ERCOT\\_Reserve\\_Margin\\_Study\\_Report\\_FINAL\\_1-15-2021.pdf](https://www.ercot.com/files/docs/2021/01/15/2020_ERCOT_Reserve_Margin_Study_Report_FINAL_1-15-2021.pdf)

**Staff seeks comments in response to the following questions:**

- (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 reliability 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?
- (2) What is the most effective way that the Commission can include deliverability in the reliability standard?
- (3) Additional considerations in establishing the reliability standard in the ERCOT power region.
  - Should the reliability standard include a locational requirement?
  - Should the reliability standard include a seasonal component?
  - How can extreme events be captured in a reliability standard?
  - How can the value of distributed energy and load resources be captured in a reliability standard?
- (4) How frequently should the Commission update the calculation of the requirement necessary to meet the reliability standard?
  - What criteria should help determine the frequency of the update?
- (5) If you have any industry or academic papers on the topic and best practices that you believe the Commission should review while establishing the reliability standard for the ERCOT power region, please provide them.