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TEXAS ADVANCED ENERGY BUSINESS ALLIANCE

PROJECT NO. 54584

RELIABILITY STANDARD FOR THE ERCOT MARKET	§ §	PUBLIC UTILITY COMMISSION OF TEXAS

COMMENTS OF TEXAS ADVANCED ENERGY BUSINESS ALLIANCE

Texas Advanced Energy Business Alliance (TAEBA) hereby submits these comments regarding the development of a reliability standard for the ERCOT power region in reference to Project No. 54584, filed on March 7th, 2023. TAEBA includes local and national advanced energy companies seeking to make Texas's energy system secure, clean, reliable, and affordable. Advanced energy technologies include energy efficiency, energy storage, demand response, solar, wind, hydro, nuclear, and electric vehicles ("EVs"). Used together, these technologies and services will create and maintain a higher performing energy system—one that is reliable, resilient, diverse, and cost effective—while also improving the availability and quality of customer facing services. TAEBA's membership also includes advanced energy buyers, representing the interests of large electricity consumers interested in increasing their purchases of advanced energy to meet clean energy and sustainability goals.

TAEBA is supportive of the Commission's effort to explore effective implementation of a reliability standard in the ERCOT market. Creating a benchmark for market performance can be a useful tool for monitoring market security and resource adequacy, as well as monitoring the resource mix of an ever-changing grid. ERCOT's proposal to measure grid reliability across three dimensions—outage frequency, outage duration, and outage magnitude—is a good blueprint for designing and adopting a reliability metric which accounts for how outages affect the grid and its end-users, particularly retail customers. The blueprint is also comparatively better than exclusively using loss of load expectation (LOLE), a popular reliability metric, which only evaluates outage frequency.

Today, the ERCOT grid is exceptionally reliable when measured against the LOLE metric; resource adequacy is robust in the ERCOT market, with a LOLE of 0.02, better than the industry standard of 0.1.[1] Given that reliability concerns persist despite this robust generation availability on the ERCOT grid, any new reliability metric should address outages in a more

[1] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 46. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

holistic fashion beyond controlling only for expected outage frequency. If the end goal is to design the market to prevent another catastrophic event like Winter Storm Uri, the market must be designed, planned, and operated around an underlying reliability metric that measures outage duration and magnitude and not just frequency.

TAEBA responses to Commission Staff's 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?

TAEBA agrees with the parameters identified (outage frequency, duration, and magnitude) to evaluate reliability metrics. TAEBA suggests that modeling of these parameters accounts for the proliferation of load management technologies, such as distributed energy resources (DERs), demand response (DR), and energy efficiency (EE). The proliferation of these technologies will only increase in the future, and their grid resiliency potential should be accounted for. Measuring this shift in grid management capability should be utilized so ERCOT can match its outage expectations for its chosen parameters most closely to the reality of future grid response. When considering the management of the ERCOT grid specifically at the transmission level, the potential reliability gains of grid enhancing technologies (GETs) should also be considered.

- Which reliability metric, or combination of reliability metrics, should the Commission adopt for the reliability standard in ERCOT?

Of the proposed metrics above, EUE is the most robust because it accounts for duration and frequency of outages and encompasses efficient inclusion of intermittent energy sources and unit planned outages. While these components of the metric appear to at least partially encompass the abilities of load management technologies and GETs, further evaluation would be needed to understand how accurately and completely the metric does reflect those technologies' abilities. Some participants in the March 15, 2023, ERCOT meeting discussion for the reliability metric suggested methods encompassing multiple metrics, either to measure grid reliability on separate dimensions or to combine the metrics into one "composite score" for grid reliability. TAEBA believes the Commission and ERCOT should be open to composite methods, but further discussion and evaluation is needed to determine how to design and best incorporate such a method.

- What are the advantages of your chosen reliability metrics, and what are the disadvantages of alternative approaches?

See previous answer.

(2) What is the most effective way that the Commission can include deliverability in the reliability standard?

A dispatchability measurement could be instituted which measures the amount of 10-minute response reserve capacity on the ERCOT grid. Understanding response times for various resources is paramount to understanding their efficacy in times of grid stress or during an outage event. While some traditional generation resources have response times as low as 10 minutes, the ability of load management technologies is instantaneous, making them an effective "first line of defense" against outages.

(3) Additional considerations in establishing the reliability standard in the ERCOT power region.

- Should the reliability standard include a locational requirement?

Yes, the reliability should have a locational requirement because localized outages with higher frequency may be indicative of poorly responding grid management and/or local congestion issues that should be addressed. ERCOT has recently engaged in discussions around redrawing its load zones to be smaller for load settlement and aggregated distributed energy resource participation in the wholesale market.[2] The ERCOT IMM also recommended smaller load zones in its 2021 State of the Market Report, stating current load zone boundaries have led to "highly aggregated load zones [which] distort the incentives of both price-responsive demand and active demand response to manage congestion."[3] ERCOTs desire to understand localized pricing for these resources is evidence that there is obvious value in understanding local grid conditions when evaluating grid reliability, which is a major contributing factor in pricing models.

- Should the reliability standard include a seasonal component?

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[2] ERCOT Wholesale Market Subcommittee Meeting Notes at 6. (January 11, 2023) https://www.ercot.com/files/docs/2023/02/16/APPROVED-Minutes-WMS-20230111--.docx

[3] 2021 State of the Market Report for the ERCOT Electricity Markets, at xx. https://ftp.puc.texas.gov/public/puct-info/industry/electric/reports/ERCOT_annual_reports/2021annualreport.pdf

The standard should account for winter and summer peak loads as well as constrained grid hours, whether through an annual evaluation or explicit seasonal component. TAEBA

- How can extreme events be captured in a reliability standard?

Inclusion of meteorological data into the model for correlative analysis for potential outage magnitude can make for a more robust model, and utilization of robust data sets should include the most extreme weather events. The calculation should focus on (or least have a component of) analysis for grid flexibility in these conditions. While the historical probability of an extreme weather event may be 1 in 10 years, extreme storms are becoming more frequent (as trending data show). Reliability analysis must therefore incorporate the potential for extreme events while focusing on full-time grid operability.
GETs account for meteorological data in their software modeling for line management and could serve as a proxy for how to integrate expectations for weather events into available capacity expectations.[4]

- How can the value of distributed energy and load resources be captured in a reliability standard?

A DER and DR availability expectation calculation should be incorporated into the model to more accurately capture grid balancing and reliability. This measurement should also account for expected growth of DR and DER availability based on expected load growth in total. As DER and DR technologies accelerate in deployment due to cost reduction ability and more efficient implementation, ERCOT should endeavor to calculate their expected deployment in future years as a part of its reliability measurement. It is also important when modeling the value of DER/DR to account for the price sensitivity of these resources since their price responsiveness naturally smooths load throughout the day.[5]

(4) How frequently should the Commission update the calculation of the requirement necessary to meet the reliability standard?

An annual update seems appropriate given that many of the data sets that could be incorporated into ERCOT's analysis are produced on an annual basis. Updating a reliability metric any more frequently than once a year would also likely be difficult to do with accuracy

[4] "Grid-Enhancing Technologies: A Case Study on Ratepayer Impact," US Department of Energy at 5. https://www.energy.gov/sites/default/files/2022-04/Grid%20Enhancing%20Technologies%20-%20A%20Case%20Study%20on%20Ratepayer%20Impact%20-%20February%202022%20CLEAN%20as%20of%20032322.pdf

[5] "Redefining Resource Adequacy for Modern Power Systems," Energy Systems Integration Group at 21-22. (2021) https://www.esig.energy/download/redefining-resource-adequacy-for-modern-power-systems-report/?wpdmdl=7996&refresh=6423440606ea11680032774

given the load growth expected in Texas and the rate of new resource interconnection. Furthermore, more frequent updates would be difficult to incorporate into the market and would likely have diminishing returns on reliability outcomes.

- What criteria should help determine the frequency of the update?

Availability of data should be considered when deciding how frequently to update the model. An annual update seems reasonable since many studies accumulate data on an annual scale. Additionally, the market applications of the updated requirement should be taken into account; market participants may not be able to meaningfully respond to updates on a more frequent timescale.

(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.

TAEBA recommends the Commission read the Energy Systems Integration Group paper titled "Redefining Resource Adequacy for Modern Power Systems"[6] and their "Redefining Resource Adequacy for Modern Power Systems: Fact Sheet."[7]

[6] "Redefining Resource Adequacy for Modern Power Systems," Energy Systems Integration Group. (2021) https://www.esig.energy/download/redefining-resource-adequacy-for-modern-power-systems-report/?wpdmdl=7996&refresh=6423440606ea11680032774

[7] "Redefining Resource Adequacy for Modern Power Systems: Fact Sheet," Energy Systems Integration Group. (2021) https://www.esig.energy/download/redefining-resource-adequacy-for-modern-power-systems-fact-sheet/?wpdmdl=8013&refresh=642474cc332831680110796

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TAEBA offers the following recommendations regarding ERCOT's evaluation and design of a new market reliability standard:

- ERCOT's initiative to evaluate reliability standards based on how well they incorporate the identified reliability parameters (outage frequency, duration, and magnitude) is appropriate and will result in a more robust measure of grid reliability, particularly when accounting for extreme weather events.
- Incorporating load management technologies such as DERs, DR, EE, as well as the incorporation of GETs into any modeling of grid reliability is necessary to properly understand grid reliability in the future. These technologies should be treated the same as generation resources when evaluating the ERCOT grid's flexibility in meeting a reliability requirement.
- Further discussion of how to incorporate meteorological data into any future reliability standard is merited.