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PROJECT NO. 54584

**RELIABILITY STANDARD FOR THE
ERCOT MARKET**

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**PUBLIC UTILITY COMMISSION
OF TEXAS**

VISTRA CORP.’S REPLY COMMENTS

I. Introduction

Vistra Corp. (Vistra), on behalf of its Commission-jurisdictional subsidiaries, files these Reply Comments regarding Commission Staff’s questions issued on March 7, 2023.¹ These Reply Comments are timely filed on April 5, 2023. Vistra offers the following replies:

- The Commission and ERCOT should incorporate risk aversion into the reliability standard evaluation (which includes cost sensitivity).
- An expected unserved energy (EUE) metric is important to account for the magnitude of load shed events in the reliability standard, but multiple standards for “duration, frequency, and magnitude” should all be included, as set out in ERCOT’s initial framework, as well as a level of risk aversion deemed appropriate by the Commission.
- The calculation of the reliability *metrics* needed to meet the reliability standard should be updated frequently; the reliability *standard* should not.
- Demand-side resources should be appropriately accounted for in ERCOT’s proposed Strategic Energy and Risk Value Model (SERVM) while avoiding potential double counting.

II. Replies

1. The reliability standard should incorporate cost-sensitive “risk-aversion.”

As indicated by the reference to Winter Storm Uri in many comments,² Winter Storm Uri is not an event that anyone wants to see repeated, and it effectively chastened the public’s and

¹ Project No. 54584, Staff Memo and Questions for Stakeholder Feedback (Mar. 7, 2023).

² *E.g.*, Constellation Energy Generation, LLC’s Comments in Response to Staff Questions at 1 (Mar. 29, 2023) (hereafter Constellation Initial Comments) (“Each loss of load event can vary based on the duration and severity which is why incorporating a standard based on EUE will safeguard against long duration events like Uri.”); Comments of Form Energy at 5-6 (Mar. 29, 2023) (hereafter Form Initial Comments) (“...by taking an average, system planners may miss very costly “tail” events like Winter Storm Uri”); Lower Colorado River Authority’s Response to Staff Questions for Comment at 3 (Mar. 29, 2023) (“Finally, the framework should also account for the impact of extreme

policymakers' tolerance for load shed events, generally making them more risk averse. While the SERVIM modeling proposed by ERCOT will include extreme weather,³ a reliability standard based on the average outputs from that modeling will be inherently "risk-neutral" and effectively will therefore convey average expectations of the duration, frequency, and magnitude of load shed that likely will occur under a specified ERCOT resource and load profile.

Some commenters also expressed concerns about the economics of lost load⁴ – or even suggested that the Commission adopt or retain an "economically optimal reserve margin" (EORM) as a reliability standard.⁵ Concerns about cost are understandable and shared by Vistra, and Vistra supports the Commission's efforts to review and update the Value of Lost Load (VOLL) and to incorporate it into the reliability standard evaluation. However, Vistra agrees with observations made by the Office of Public Utility Counsel (OPUC) about the multidimensional nature of VOLL⁶ and cautions the Commission against viewing the cost estimates of potential reliability standards

weather events like Winter Storm Uri"); Office of Public Utility Counsel's Initial Comments to Commission Staff's Questions for Stakeholder Comments at 5, 7 (Mar. 29, 2023) (hereafter OPUC Initial Comments) ("We know that Winter Storm Uri was a catastrophic event...."); Rocky Mountain Institute Initial Comments at 1 (Mar. 29, 2023) (hereafter RMI Initial Comments) ("RMI is motivated by recent extreme winter weather events, including Winter Storm Uri in 2021, to identify recommendations and opportunities for regulators, utilities, and other stakeholders to improve grid reliability and mitigate the impacts of grid outages."); Shell Energy North America (US), L.P. Initial Comments at 1 (Mar. 29, 2023) (hereafter Shell Energy Initial Comments) ("Uri was a tragic event and Shell Energy agrees with the Commission's approach of taking all measures needed to mitigate re-occurrence."); South Texas Electric Cooperative, Inc.'s Initial Comments to Commission Questions on the Reliability Standard for the ERCOT Market at (Mar. 29, 2023) (hereafter STEC Initial Comments) ("... avoid the outcomes experienced in Winter Storm Uri for the next polar vortex or wintry mix storm..."); The Steering Committee of Cities Served by Oncor and Texas Coalition for Affordable Power's Comments on the Reliability Standard for the ERCOT Market at 3 (Mar. 29, 2023) (hereafter Cities/TCAP Initial Comments) ("Winter Storm Uri demonstrated how extreme weather events directly impact generation and transmission. The Commission and ERCOT should consider each of these impacts in the reliability assessment..."); Texas Industrial Energy Consumers' Comments at 6 (Mar. 29, 2023) (hereafter TIEC Initial Comments) ("For example, a system that produced one Winter Storm Uri sized outage per decade would satisfy a 0.1 LOLE standard, while a system that produced two ten-minute outages that impacted ten customers over the same time span would not. As this example illustrates, an LOLE standard is one of the most arbitrary possible reliability metrics."); Joint Comments of Texas Solar Power Association and Solar Energy Industries Association on Staff Questions at 5 (Mar. 29, 2023) (hereafter TSPA/SEIA Initial Comments) ("as Winter Storm Uri demonstrated, weather-related correlated outages or other common mode failures are a major threat to the ERCOT system and should not be excluded from reliability analysis"); Texas Public Power Association's Response to Staff Questions for Comment at 5 (Mar. 29, 2023) (hereafter TPPA Initial Comments) ("the Commission should consider .. high-impact, long duration episodes like Winter Storm Uri...").

³ Comments of Electric Reliability Council of Texas, Inc. in Response to Commission Staff's Questions at 5 (Mar. 29, 2023) (hereafter ERCOT Initial Comments).

⁴ *E.g.*, Cities/TCAP Initial Comments at 4; CPS Energy's Response to Staff Questions for Comment at 6 (Mar. 29, 2023) (hereafter CPS Energy Initial Comments); Shell Energy Initial Comments at 3-5; Texas Oil & Gas Association's Comments at 1-2 (Mar. 29, 2023) (hereafter TXOGA Initial Comments); TIEC Initial Comments at 1-2; TSPA/SEIA Initial Comments at 6-7.

⁵ *See, e.g.*, The Advanced Power Alliance/American Clean Power Association Comments at 3 (Mar. 29, 2023); TIEC Initial Comments at 2; TPPA Initial Comments at 2.

⁶ OPUC Initial Comments at 6.

as absolute and capable of being “optimized” with mathematical certainty. That is, because both the modeling of market outcomes and estimation of VOLL are statistical exercises, they are by their nature limited to statistical precision (i.e., any outcome will have an error distribution around the estimate). Instead, the exercise of identifying a modeled EORM should be one anchor point for evaluation of whether a risk-averse reliability standard can be set with a reasonably comparable cost estimate.

The Conditional Value at Risk (CVaR) framework is a measure of the risk of “tail events”—e.g., events like Uri—and thus can provide a framework for such an analysis. As detailed in Vistra’s initial comments and explained in more detail in London Economics International LLC’s initial comments (and as also supported conceptually in some of the other initial comments),⁷ the CVaR framework can establish a reliability standard that will account for the public’s and policymakers’ risk aversion and strong desire to avoid the costs and significant disruptions of load shed, while accounting for cost sensitivities. For instance, as an alternative to a 50th percentile “risk neutral” metric, policymakers can modify the EUE metric to reflect what EUE would be in the worst 5% or 1% of scenarios—i.e., the times when it’s likely to matter most to Texans—and compare the estimated costs of each. This flexibility should be important to policymakers in using their judgment to identify areas where significant reliability improvements can be achieved (or conversely, significant reliability risks avoided) for a relatively small cost.

To wit, as further detailed in Vistra’s initial comments, ERCOT’s 2020 Report on the Economically Optimal Reserve Margin showed a relatively small cost difference between achieving the historic 1-in-10 loss of load event (LOLE) probability and virtually eliminating the risk of load shed (at roughly a \$300 million difference in total system costs).⁸ Given that policymakers and the public have consistently found the few system-wide load shed events to have occurred in ERCOT to be unacceptable, the Commission may find that it is worth the additional cost to set the reliability standard based on a higher presumed risk aversion.

⁷ London Economics International LLC, *Economic considerations for setting reliability standards for the wholesale power market in Texas* (Mar. 29, 2023) (hereafter LEI Initial Comments); see also RMI Initial Comments at 2 (similarly recommending consideration of a value at risk evaluation); Form Initial Comments at 6 (similarly recommending a 95th percentile standard for EUE to incorporate risk aversion).

⁸ Astrape Consulting, *Estimation of the Market Equilibrium and Economically Optimal Reserve Margins for the ERCOT Region for 2024*, at 35 (Jan. 15, 2021), available at: https://www.ercot.com/files/docs/2021/01/15/2020_ERCOT_Reserve_Margin_Study_Report_FINAL_1-15-2021.pdf.

2. EUE is important, but should not be the sole metric.

Vistra agrees with commenters who contended that EUE is a very valuable metric that should have some degree of primacy in the reliability standard evaluation,⁹ given that EUE takes into account the magnitude of expected lost load and, indirectly, would likely coincide with fewer loss of load shed events and hours depending on the specific parameters set for the standard. However, Vistra also agrees with comments that if EUE is the sole metric,¹⁰ more frequent outages or longer lasting outages could result and be considered “fine” by the metric—for example, if the EUE metric allowed for x% of load to be shed during a year, the metric could be satisfied even if a relatively small amount of load was shed for an hour multiple times during the year or in multiple consecutive hours. Thus, focusing on a single metric, like magnitude of load shed, to the exclusion of other metrics, like duration and frequency, could result in unacceptable outcomes. As illustrated by one commenter, depending on what metrics are considered, a single load shed event of 20,000 MW for one hour could be considered the same as 20 consecutive load shed hours of 1,000 MW, even though such occurrences likely would be viewed very differently by the public and policymakers.¹¹

Instead, the reliability standard should take into account minimum standards for duration, frequency, and magnitude of loss of load events, plus incorporate a risk aversion standard, in order to best meet the public’s and policymaker’s expectations that electricity will generally be available when they expect it. At a minimum, the expected duration and frequency of load shed events associated with the chosen reliability standard(s) (such as EUE) should be communicated to the public so that there is transparency, and the public can understand what an inherently technical standard (x% EUE) means to them (i.e., how often can they expect to lose electricity and for how long).

⁹ *E.g.*, Constellation Initial Comments at 2; Form Initial Comments at 4; Comments by Hunt Energy Network, L.L.C. at 2-4 (Mar. 29, 2023); NRG Energy, Inc.’s Comments in Response to Commission Staff Questions Concerning the Reliability Standard for the ERCOT Market at 1-3 (Mar. 29, 2023) (hereafter NRG Initial Comments); Shell Energy Initial Comments at 5; TIEC Initial Comments at 5; TXOGA Initial Comments at 1-2.

¹⁰ *E.g.*, CPS Energy Initial Comments at 2-3; STEC Initial Comments at 3-4; TSPA/SEIA Initial Comments at 3.

¹¹ CPS Energy Initial Comments at 3.

3. The calculation of the reliability *metrics* needed to meet the reliability standard should be updated frequently; the reliability *standard* should not.

There appeared to be some confusion about the nature of Question 4 in Staff’s request for comments. Some commenters responded with feedback for how frequently the Commission should evaluate updated calculations of what values for the reliability *metrics* are needed to meet the reliability standard (with “at least annually” being a fairly common response),¹² and Vistra does not disagree with the apparent consensus in that context. Others responded to Question 4 with their suggestions for how frequently the Commission should update the reliability *standards* (with suggestions ranging from annually to every 10 years, or even never).¹³ Vistra strongly urges the Commission to be very conservative regarding updates to the reliability standard itself once adopted.

Generally speaking, Vistra would, from a market principle standpoint, prefer that the Commission choose its reliability metrics (which, as noted, should have updated estimates of what values are needed to meet the reliability standard at least annually) and then set attendant reliability standards only once. However, part of establishing a risk-averse reliability standard is the mixed art and science of evaluating changing trade-offs between cost and reliability metrics. Thus, a more nuanced suggestion Vistra offers the Commission is to limit review of reliability standards to their level of risk-aversion, and only revisit the baseline (risk neutral) reliability standards upon a determination that good cause exists to revisit them (with a high threshold for determining that good cause exists – for example, if loss of load events do occur that are technically consistent with the reliability standards but nonetheless prove to be unsatisfactory to the public interest it may warrant a revision to any standards set for frequency or duration).

4. Distributed resources and Demand-side resources will already be accounted for in ERCOT’s modeling.

Some commenters expressed support for the inclusion of demand-side resources in the reliability metric through some sort of special recognition of these resources.¹⁴ However, as

¹² *E.g.*, ERCOT Initial Comments at 5-6; STEC Initial Comments at 6; OPUC Initial Comments at 9.

¹³ *E.g.*, TIEC Initial Comments at 12; CPS Energy Initial Comments at 7-8; LEI Initial Comments at 7; TPPA Initial Comments at 5; NRG Initial Comments at 4-5.

¹⁴ *E.g.*, Form Initial Comments at 6; Comments of the Microgrid Resources Coalition at 3 (Mar. 29, 2023); Comments of the Texas Advanced Energy Business Alliance at 2, 4 (Mar. 29, 2023).

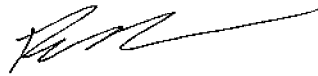
detailed by ERCOT in its comments,¹⁵ the SERVVM tool will already take into account these resources, in the sense that it will count registered resources directly and will count expected price-responsive demand response indirectly in the demand forecast. ERCOT should not count these resources in a way that double counts them—for example, if demand response is reflected in the demand forecast, it should not be separately counted as a resource. The impact of such resources should be counted one time, just like any other resource.¹⁶

III. Conclusion

Vistra appreciates the Commission's consideration of these comments and looks forward to working with the Commission, Staff, ERCOT, and other stakeholders in this timely proceeding.

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Respectfully submitted,



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¹⁵ ERCOT Initial Comments at 5.

¹⁶ *E.g.*, CPS Energy Initial Comments at 7 (“Care must be exerted to ensure that DERs are not double counted as both a reducer of demand and a producer of energy.”).

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Executive Summary

- A review of the initial comments makes clear that Winter Storm Uri has impacted the general tolerance of the public and policymakers for load shed events. Accordingly, Vistra continues to recommend that the Commission and ERCOT include in their evaluation a measure to take into account the “risk-averse” nature of reliability events, such as the “Conditional Value at Risk” (or CVaR) framework or something similar to it.
 - The CVaR framework lets policymakers incorporate risk aversion – particularly to extreme events – into other reliability standards by estimating what the reliability metrics would be in the worst X% of scenarios (e.g., 5% or 1%).
 - The CVaR framework also lets policymakers consider estimated cost trade-offs in evaluating risk aversion preferences and is well-suited to comparing estimates that are by their nature limited to statistical precision. Vistra supports cost evaluation as part of the reliability standard development process, which can be incorporated into the risk-averse framework.
 - The CVaR framework was detailed in the initial comments of London Economics International LLC, and some of the other initial comments conceptually supported a similar idea.
- Expected Unserved Energy (EUE) is an important metric that deserves some degree of primacy, but it should not be considered in isolation. Instead, the Commission should adopt minimum requirements across all three dimensions (i.e., duration, frequency, and magnitude) of ERCOT’s reliability metric study.
- The calculation of the reliability *metrics* needed to meet the reliability standard should be updated frequently (and there appears to be some consensus around “at least annually”); the reliability *standard* should not. Vistra recommends that the reliability standards themselves only be revisited upon a determination of good cause (with a high threshold for good cause) or be limited to review of the degree of risk aversion the Commission finds acceptable (if a risk-averse framework is adopted).
- In response to comments regarding the importance of including demand-side resources and distributed resources in the reliability standard modeling, Vistra notes that such resources will already be reflected in the modeling as detailed in ERCOT’s initial comments, and Vistra cautions against double counting these resources.