ERCOT Trending Topics

TOPIC: RELIABILITY STANDARD

Reliability Standard for the ERCOT Market
Parameters of the Reliability Standard Assessment Framework to Evaluate Grid Reliability

In this ERCOT Trending Topic, we explain what the PUCT's Reliability Standard for the ERCOT Region is, why it is needed to support possible ERCOT market-design changes, and how it will improve grid reliability and performance.

FACTS:

What is the Reliability Standard?

In 2021, the Texas Legislature passed Senate Bill 3 (SB3), which required the Public Utility Commission of Texas (PUCT) to establish requirements to meet the reliability needs of the ERCOT Region. On September 9, 2024, the PUCT issued an order adopting a new rule establishing a Reliability Standard and a process for the regular assessment of whether that standard is being met on a system-wide basis.

The Reliability Standard serves as a performance benchmark for the ERCOT Region's ability to meet consumer demand now and three years in the future. It is not designed to capture the impact of electric line outages customers may experience as the result of extreme weather events or equipment issues. The first Reliability Standard assessment is being conducted in 2026 and will include a three-year forward review and analysis of the Region's generation resource mix.

What is a reliability assessment, and why is it needed?

The reliability assessment required by the Reliability Standard is the mechanism for determining if the Standard is being met and for identifying market-design options to address deficiencies in meeting the Standard. The assessment includes extensive public review opportunities to ensure full transparency and that public comments are considered throughout the assessment process.

ERCOT is required to use a probabilistic simulation model to conduct the assessment. To generate thousands of reliability outcomes, the model selects different values for key risk variables, such as customer demand, resource availability (thermal, wind, solar, and energy storage), and weather conditions.

If the Reliability Standard's criteria are not expected to be met for an assessed year, the PUCT will determine what market or reliability improvements may be necessary to meet the Standard after considering ERCOT's recommended changes, the Independent Market Monitor's (IMM) analysis, and public comments.

What are the Reliability Standard criteria?

The Reliability Standard consists of three criteria designed to gauge the risk attributes of loss-of-load (LOL) events. An LOL event consists of one or more consecutive hours when available supplies of electricity are insufficient to meet consumer demand that is not considered to be voluntarily curtailable. The criteria are probabilistic in that they reflect an average or maximum LOL event outcome based on simulating many possible reliability outcomes for each assessment year.

To be compliant with the Reliability Standard, the ERCOT Region must meet the following three criteria:

- **Frequency:** The average frequency of LOL events across all the simulated reliability outcomes must not exceed 0.1 events per year. This criterion is known as the Loss of Load Expectation (LOLE).
- **Magnitude:** The maximum size of an LOL event across all the simulated reliability outcomes must not exceed the amount of load that can be safely rotated among consumers during the outage.
- **Duration:** The maximum duration of an LOL event across all the simulated reliability outcomes must be less than 12 hours.

Why is there more than one reliability criterion?

Planning with a single reliability criterion may underestimate the amounts and types of resources needed to mitigate the risks of extreme events. North American grid operators have historically relied on LOLE to assess whether resource adequacy goals are being met. However, LOLE, as an average measure, fails to isolate the risk of extreme LOL events; for example, a multi-day event caused by a severe winter storm. Multiple criteria help identify targeted market-design changes or policies to address extreme LOL events as well as event frequency.

What is the Value of Lost Load (VOLL) in relation to the Reliability Standard?

The Value of Lost Load (VOLL) is a proxy for the costs and impacts experienced by customers due to a power outage. VOLL is an important value to weigh the benefits of future investments to improve grid reliability. For planning purposes to use in the Reliability Standard assessment, VOLL was established at $35,000 per megawatt-hour by the PUC after ERCOT conducted a comprehensive survey of residential, commercial, and industrial customers to determine the VOLL for the ERCOT Region.

What does this mean for Texas customers?

For the first time, the PUCT and customers in the ERCOT Region of Texas have a framework to measure the current and projected reliability of the grid. The Reliability Standard will allow policymakers to regularly evaluate the system and make informed decisions regarding the costs and benefits of any improvements necessary to meet the growing demand for power in the state.

What's next?

In preparation for the 2026 Reliability Standard assessment, ERCOT has filed with the PUCT the assumptions it plans to use in its assessment modeling. Once the PUCT considers public feedback and approves a set of modeling assumptions, ERCOT will run its analyses and provide market-design recommendations to the PUCT if the Standard is not expected to be met for 2029. The entire reliability assessment process is expected to span all of 2026.