
ERCOT Trending Topics

TOPIC: RELIABILITY STANDARD

Reliability Standard for the ERCOT Market Parameters of the Reliability Standard Framework Balance of Reliability and Cost

In this ERCOT Trending Topic, we explain what the Reliability Standard is, why it is needed as part of ERCOT's market design, 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. As part of a review of the ERCOT electric market, the PUCT mandated creation of a Reliability Standard. The Reliability Standard serves as a performance benchmark for the region's ability to meet consumer demand now and three years in the future. **The Reliability Standard is not designed to capture the impact of electric line outages that consumers experience as a result of extreme weather events (like hurricanes or ice storms) or other localized outages when an electric line is damaged.** If the Reliability Standard's performance criteria are not expected to be met for a forecasted year, then ERCOT will work with the PUCT to determine what market or reliability improvements could be necessary in the future.

The Reliability Standard comprises of three criteria designed to gauge capacity deficiency characteristics. A capacity deficiency occurs when available supplies of electricity (or demand-reducing resources) are insufficient to meet consumer demand. To remain compliant with the Reliability Standard, the ERCOT region must meet the following three criteria:

- **Frequency:** The frequency at which supply (electric generation) and demand (electric load) on the ERCOT grid are not balanced. On average, demand is not expected to exceed supply more than once every 10 years.
- **Magnitude:** The maximum amount of electricity lost (loss of load (LOL)) during any single hour of a potential outage. This LOL is expected to be less than the amount of electricity that can be rotated among consumers during the outage.

- **Duration:** The maximum duration of a loss of load event during a potential grid outage is expected to last 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 used a single reliability criterion of loss-of-load expectation (LOLE) (i.e., the expected number of days per year where demand is expected to exceed supply) to assess whether resource adequacy goals are being met. However, LOLE cannot address extreme events, nor does it reflect the characteristics of a modern power system with increasing levels of renewables, storage resources, and load flexibility. Multiple criteria will help identify targeted market design changes or policies to address these risks by evaluating the level of impact of a loss-of-load event, in addition to how frequently an event may occur.

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

The Reliability Standard assessment will use a probability-based model to determine if the ERCOT region is meeting the Reliability Standard and how likely it is to continue meeting it for the next three years. The model will look at thousands of outcomes for key risk variables, such as customer demand, resource availability (thermal, wind, solar, and energy storage), weather conditions, and the possibility of severe weather events to determine if the grid is meeting expectations based on the reliability criteria or if there are any deficiencies. If the assessment shows that the region fails to meet the Reliability Standard, ERCOT will provide the PUC with an analysis of the deficiency and propose market design changes to potentially address the issues. The PUC will then decide whether or not to make any changes to address the deficiency.

How will the Reliability Standard address any needed market design changes?

The PUC's Reliability Standard rule requires ERCOT and the Independent Market Monitor (IMM) to evaluate the costs as well as the benefits of any market design changes proposed to address deficiencies identified through the Reliability Standard assessment process. Such analysis would review recommended market design changes to consider impacts to customers when ERCOT calls for Transmission Operators to shed load during an energy emergency and costs associated with:

- producing electricity to supply the ERCOT grid;
- incentivizing existing generation to be available during grid scarcity conditions;
- using available resources to supply electricity to the grid during an energy emergency; or
- investment in new generation capacity in the ERCOT market.

Beginning in 2026, the Reliability Standard assessment will be conducted every three years and include a three-year forward review and analysis of the generation resource mix.

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, 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 policy makers to regularly evaluate the system and make informed decisions regarding costs and benefits of any improvements necessary to meet the growing demand for power in our state.

What's next?

On September 9, 2024, the Commission issued an [order adopting the new rule](#) establishing a Reliability Standard in the ERCOT region and a process for the regular assessment of whether the system is meeting that standard. ERCOT will work with PUC staff and Transmission Operators to determine the maximum number of megawatts of load shed that can be safely rotated by Transmission Operators during an energy emergency event. By December 1, 2024, ERCOT will file this information with the PUC, along with a summary of its methodology used to calculate the value, to support the determination of the magnitude criterion for the Reliability Standard. ERCOT will continue to update this magnitude-related value every year thereafter.