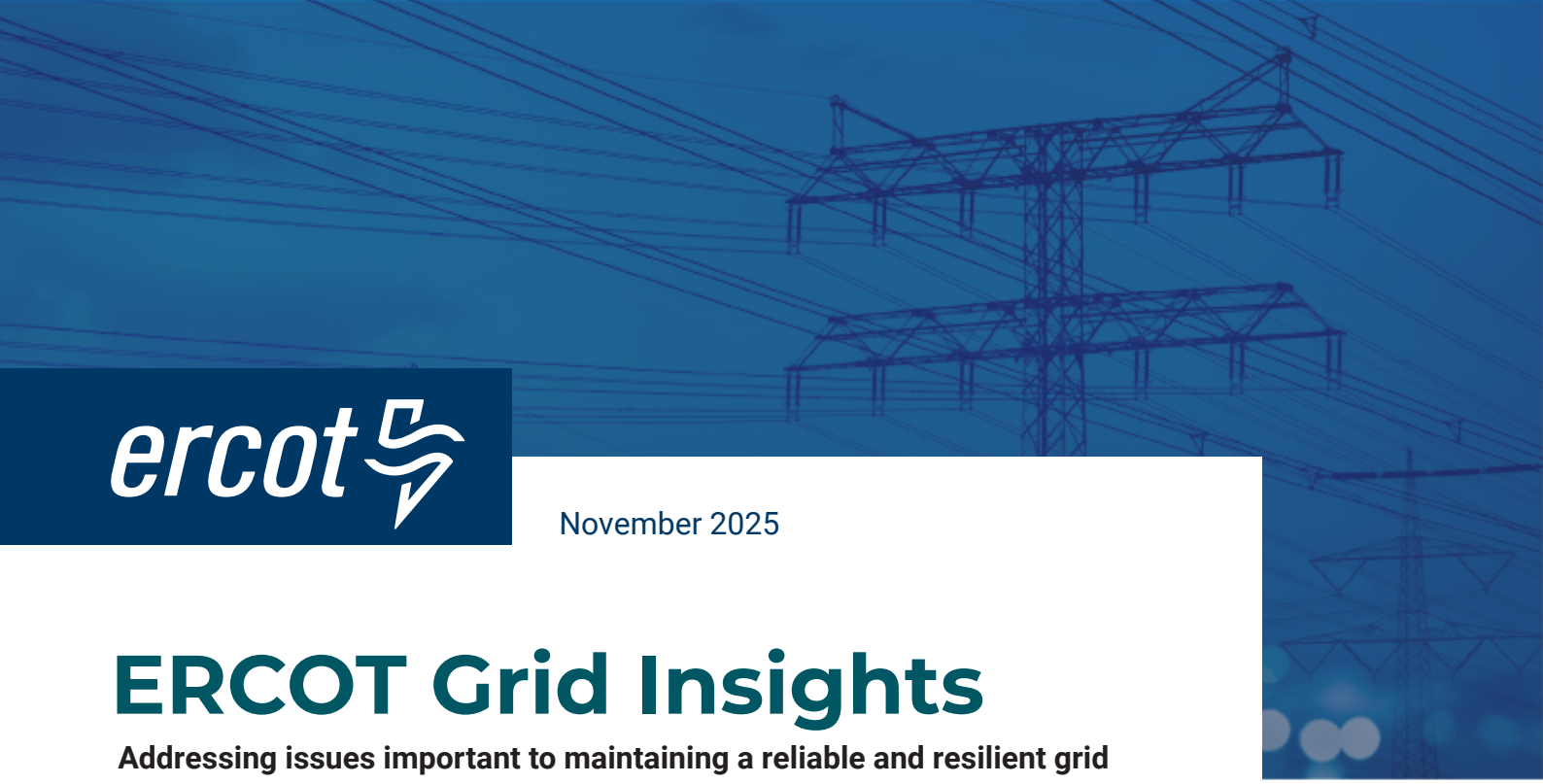


November 2025

ERCOT Grid Insights

Addressing issues important to maintaining a reliable and resilient grid

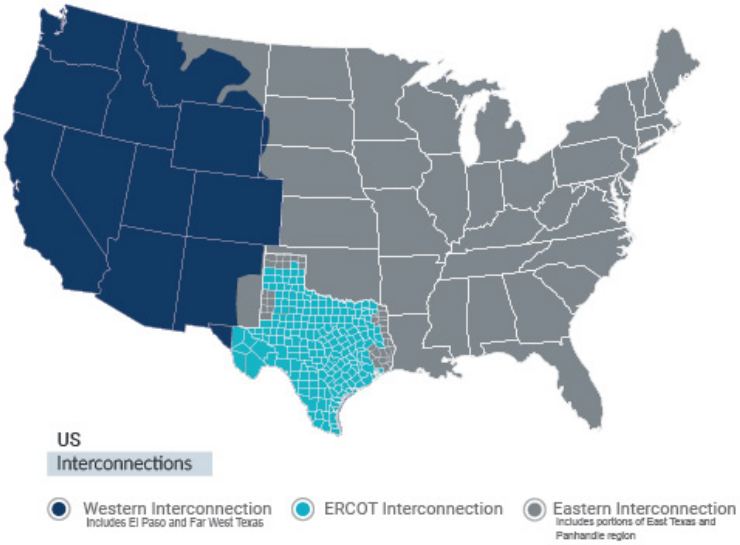
About ERCOT

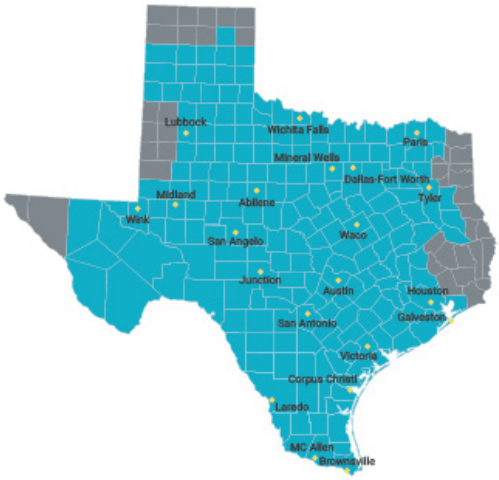
In this issue: An overview of the Electric Reliability Council of Texas, Inc. (ERCOT) as the Independent System Operator (ISO) for the ERCOT Region. As an ISO, ERCOT is responsible for coordinating and monitoring the operation of the electrical power flow in much of Texas. ERCOT manages the flow of electric power to more than 27 million Texas customers — representing about 90 percent of the state's electric load — and schedules power on the grid connecting more than 54,100 miles of transmission lines and 1,250 generation units, including Private Use Networks (PUNs). A PUN is an electric network connected to the ERCOT System but one that manages its own generation and load internally.

ERCOT is a membership-based nonprofit organization governed by a Board of Directors and regulated by the Public Utility Commission of Texas (PUCT), with oversight by the Texas Legislature. ERCOT's members include consumers, cooperatives, independent generators, power marketers, retail electric providers, transmission and distribution providers, and municipally owned electric utilities. As an ISO, ERCOT also performs similar functions as a Regional Transmission Organization (RTO) with larger responsibility in planning and managing the ERCOT Region's transmission network and administering the ERCOT wholesale electricity markets.

ERCOT REGION

What: North America consists of three energy interconnections: the Western Connection, the Eastern Connection, and the ERCOT Connection. The ERCOT grid is the interconnected electrical system serving most of Texas with limited external connections. The ERCOT Region includes the urban load centers of Houston, Dallas, Fort Worth, San Antonio, and Austin, as well as most of West Texas, portions of the Panhandle, and the Rio Grande Valley. It excludes the El Paso area, Northeast Texas (Longview, Marshall, and Texarkana), and Southeast Texas (Beaumont, Port Arthur, and The Woodlands).





ERCOT Region Map

How it Works: ERCOT is like an air traffic controller. ERCOT is not a Market Participant (energy provider, energy delivery company, or consumer representative). It doesn't own the energy generation facilities or transmission and distribution lines that deliver electricity to Texas consumers, but it monitors all the moving parts that keep electricity flowing, balancing supply and demand 24/7/365. ERCOT also uses various power flow avenues and procedures to transfer power between the ERCOT grid and grids on our seams (boundaries/interfaces with other RTOs), ensuring daily grid reliability and supporting emergency operations during scarcity conditions.

Grid Significance: On August 21, 1996, ERCOT became the first ISO in the United States. Then, in 1999, the Texas Legislature passed Senate Bill (SB) 7 that restructured the Texas electric market — into a deregulated energy-only market — and assigned ERCOT four primary responsibilities:

- Maintain system reliability — by balancing electricity supply and demand, monitoring the health of the grid in real time and coordinating generation, transmission, and demand-side resources across the ERCOT System. ERCOT also manages emergency operations and plans the electric system for the future.

- Facilitate a competitive wholesale market — through the operation of systems, rules, and oversight mechanisms that allow generators, retailers, and other participants to buy and sell power through the ERCOT wholesale market transparently, efficiently, and fairly, while ensuring grid reliability. ERCOT also ensures that all Market Participants are accurately paid or charged for their activity in the wholesale electricity market.

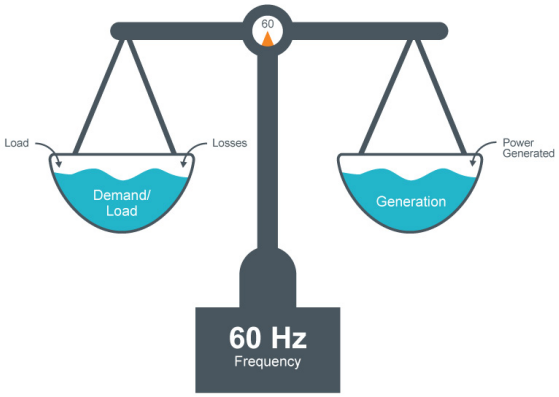
- Facilitate a competitive retail market — through the operation of systems, rules, and data processes that allow Texans in deregulated areas to choose their own retail electric provider, or switch retail electric providers.

- Ensure open access to transmission — by operating the electric grid as a neutral ISO providing non-discriminatory transmission service to all Market Participants regardless of who owns generation or sells electricity. This framework provides fairness, efficiency, and transparency.

ERCOT's energy-only wholesale market is exempt from wholesale regulation by the Federal Energy Regulatory Commission (FERC); although, ERCOT is subject to FERC oversight through the North American Electric Reliability Corporation's (NERC's) Reliability Standards for planning, operations, and critical infrastructure protection. Having flexibility in market design, with a single state regulator (PUCT), allows ERCOT to adapt to a changing grid — including responding more quickly to local energy demands during emergency conditions and policy shifts — without federal coordination or approval.

ELECTRICITY SUPPLY AND DEMAND

What: The fundamental concept behind ERCOT operations is that power generation (supply) must match load (demand) at all times. With continued economic and population growth in Texas, ERCOT monitors both real-time and forecasted supply and demand to maintain that balance 24/7/365. Additionally, ERCOT must maintain system frequency at 60 Hz, the standard in North America.



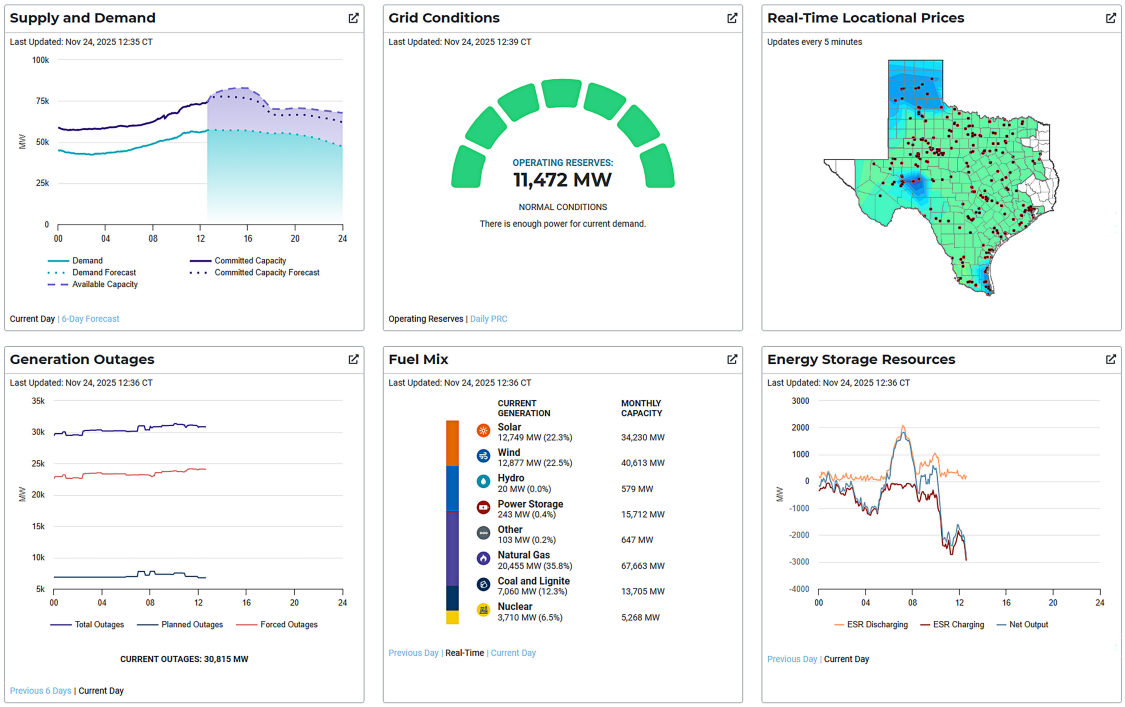
How It Works: With the evolving changes in the generation fuel mix (energy resources) providing power to the grid, it is essential that — in real-time — ERCOT monitors the energy (supply) available and schedules it on the grid. At the same time, ERCOT monitors the amount of electricity (demand) that Texans are using. ERCOT periodically studies the level of online reserves that must be preserved to maintain system reliability even during emergency conditions.

Grid Significance: ERCOT has a reliability-first approach to grid operations, bringing generating resources online early to mitigate sudden changes in generation or demand and to maintain the balance of supply and demand on the grid. As ERCOT forecasts Texas' electricity demand to rise to approximately 145 GW in 2031, it is critical for ERCOT to work with Market Participants to increase flexible and dispatchable energy generation, expand and upgrade transmission infrastructure, and modernize the grid to boost capacity to meet that demand and keep the grid balanced.

GRID AND MARKET CONDITIONS

What: ERCOT provides reliable and accessible information on real-time and forecasted grid operations and market conditions to all stakeholders.

How it Works: Texans can stay updated on ERCOT's Grid and Market Conditions page, which houses data-driven dashboards that provide transparent, real-time information on grid conditions. ERCOT provides data across 12 real-time dashboards and other communications channels, including social media, the ERCOT mobile app, and the Texas Advisory and Notification System (TXANS). TXANS provides advance notification of forecasted significant weather and higher demand.



ERCOT's Grid and Market Conditions webpage

Grid Significance: ERCOT's transparent and reliable communications keep Texans informed of grid operations and market conditions. This allows all stakeholders to understand the dynamics of Texas' electric grid for informed decision-making.