Ascend Analytics
MARKET INSIGHTS

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ERCOT Energy Market Outlook: Soaring Growth, Constrained Supply

Driven by data center development, population growth, and new industrial demand, projected load growth in Texas is soaring to unprecedented levels. During the best of times, the Electricity Reliability Council of Texas (ERCOT) would struggle to bring sufficient supply online to meet such demand expectations. However, policy uncertainty and constrained gas supplies have the potential to further reduce the available supply of new electricity generation. With winter reliability risks also becoming more common, ERCOT will continue to ride a weather-dependent, boom-and-bust knife edge.

In a webinar previewing Ascend's most recent ERCOT power market forecast, Dr. Gary Dorris, CEO at Ascend Analytics, joined Dr. Brent Nelson, Managing Director of Markets and Strategy, to discuss "ludicrous" load growth projections, looming policy uncertainties, and potential energy market opportunities for generators, investors, and load-serving entities.

Key Takeaways

- With ERCOT's forecasted load growth 60% higher than even the rapid load growth of the early 2020s, and 3x the effective winter capacity additions of the last few years, supply will restrict growth and lead to perpetually tight conditions and scarcity risks.
- Even though the immense growth projections are questionable, ERCOT is entering a period of unprecedented load growth. However, practical limits will constrain the degree of load growth that is possible.
- The pace of supply additions will be limited by permitting timelines, labor constraints, project finance limitations, limited gas turbine supply, federal policy uncertainty, and ongoing state regulatory risk.
- ERCOT will be extraordinarily weather-dependent, with small shifts in weather able to drive large asymmetric movements in energy prices during tight supply conditions.
- As winter reliability becomes more of a challenge, resource capacity value will be tied much more strongly to winter peak availability than summer peak availability.
- Leveraging analysis from Ascend Market Intelligence™, the webinar offers guidance for where, what, and when to add new capacity resources in ERCOT.

Load Growth is Coming to ERCOT, But How Much Load?

Driven by data center development, population increases, and new industrial load, ERCOT is entering a period of unprecedented load growth. And while data center load growth is certain to be large, how large and for how long remain major sources of uncertainty.

That uncertainty, along with changes to rules about how load is accounted for, currently drives the bulk of the growth projections provided by transmission service providers (TSPs). **Figure 1** represents ERCOT's adjusted load forecast, which includes a haircut of approximately 80 GW – essentially equivalent to current peak demand – to the number provided by TSPs.

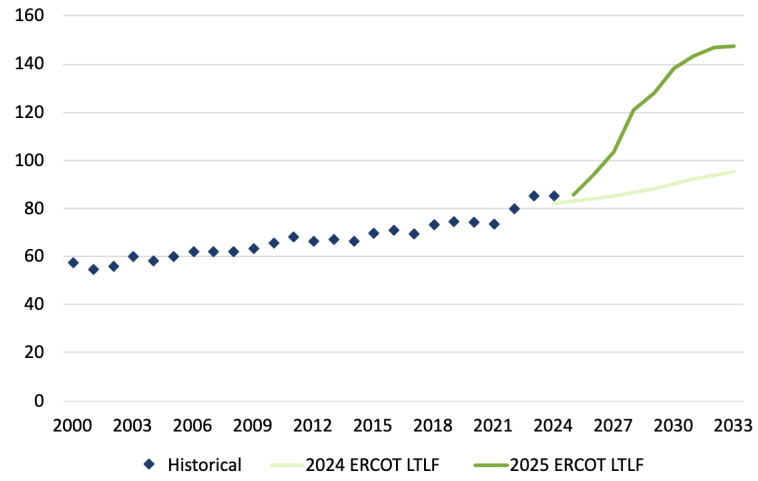

Figure 1. ERCOT Historical and Forecasted Peak Demand (GW)

Looking at what is realistic, however, paints a different picture. ERCOT remains the same system, with the same projects in development and the same interconnection queue. At its best, ERCOT has been able to add between 2-3 GW of ELCC peak demand-serving resources in a single year, which is just a fraction of the projected load forecast.

Supply Constraints Will Sharply Limit ERCOT's Ability to Meet Electricity Demand Growth

Inherently, all ERCOT load forecasts are unachievable in practice due to limitations on supply buildout. Even massive capacity additions in the past few years, which includes some gas and a lot of solar, have not necessarily translated to the ability to serve peak. In fact, ERCOT no longer has much of an afternoon peak problem: Texas sees more reliability issues when the sun goes down.

Winter reliability is becoming a much larger issue, as well. When winter storms occur, peaks can reach levels on par with summer peaks. Worse, winter peaks typically happen overnight, are several hours in duration, and are associated with correlated thermal generation outages, which means that solar does not help, thermal supply stacks are more limited than during summer peaks, and ERCOT will need more longer-duration, weather-resilient resources.

In addition, natural gas combustion turbine (NGCT) supply remains limited over the near term: gas turbine providers are sold out, and buyers face years-long wait times and prices that have tripled. Skyrocketing costs have undermined the economics of gas, assuming new gas can be procured. Even if gas could be procured, near-vintage gas projects with inflated prices will struggle to compete against future gas projects after prices normalize.

The only resources that can realistically meet load growth are those already in the interconnection queue, which consist largely of renewables and storage. However, federal tariff and tax credit uncertainty are impeding project development. State policy is not helping, either. During the last Texas legislative session, the state House and Senate considered and/or moved bills forward that infringe on property rights, retroactively impose costs and other burdens, favor preferred technologies (thermal) and impede others (renewables and storage), and generally ignore the key drivers of reliability risks on the grid. While these measures did not pass, that they were advanced demonstrates an ongoing regulatory risk for future Texas legislative sessions.

Taken together, these factors combine to create general investment uncertainty, even for thermal resources. Gas generation projects, for example, are falling out of the Texas Energy Fund due to increased costs and challenging timelines.

ERCOT Will Continue to Ride the Scarcity Knife Edge

As a consequence of demand growth being constrained by supply additions, ERCOT will necessarily remain at perpetual risk of scarcity until demand growth slows down and supply can catch up. For energy market stakeholders in Texas, little things will make big differences on this scarcity 'knife edge.' As the reserve margin gets small, price spreads increase as a function of scarcity pricing. As shown in **Figure 2**, the difference between relative calm and extreme volatility was only a few GW, as 2024 contained many events that pushed prices very close to ERCOT's minimum target reserve margin, while also containing relatively few instances of prices that dropped below. Weather will also continue to play an outsized role: on the knife edge, extreme weather events drive outsized, boom-and-bust, value since even small shifts in weather create large asymmetric movements in ERCOT energy prices.

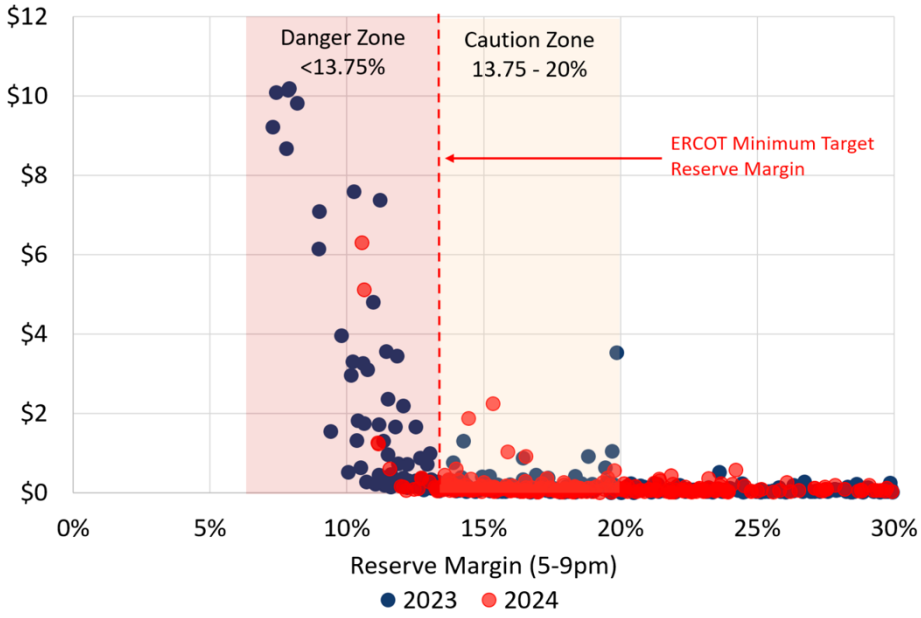

Figure 2. 2023-2024 ERCOT Daily RTB120 Volatility vs. Reserve Margin ($/kW)

Interested in Learning More?

Access the full webinar recording, which offers guidance for where, what, and when to add new capacity resources in ERCOT. The webinar also offers insights related to surging load growth, changing supply dynamics, forecasted volatility, and updated energy demand forecasts.

AscendMI™ (Ascend Market Intelligence), delivers proprietary power market forecasts that have been trusted in hundreds of projects and resource planning activities, supporting over $25 billion in project financing assessments. Contact us to learn more.

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