Reliability and Resiliency at ERCOT
Ongoing and New Activities

University of Texas School of Law
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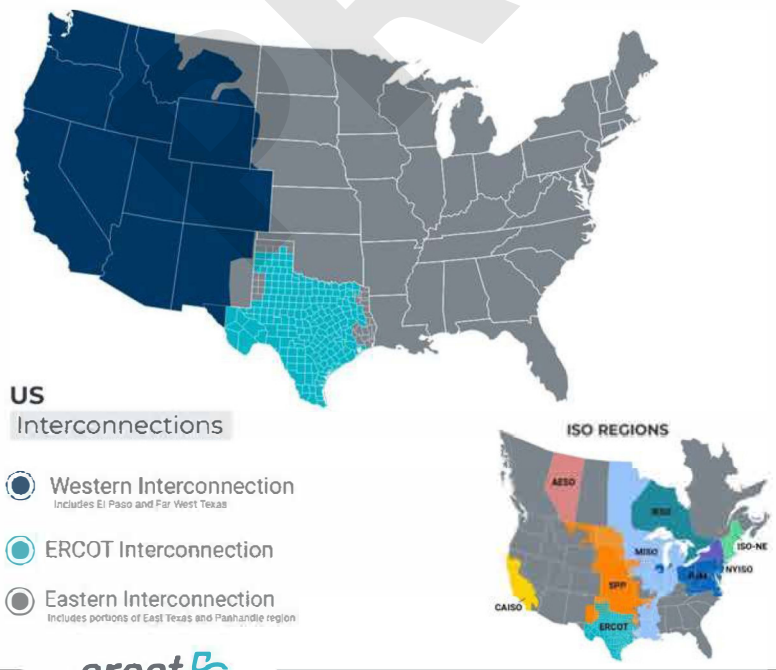
1

The ERCOT Region



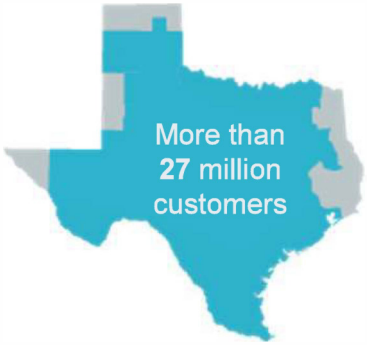
The ERCOT grid is the interconnected electrical system serving most of Texas with limited external connections.

ERCOT highlights include:
- 90% of Texas electric load
- 75% of Texas land
- More than 54,100 miles of transmission
- 1,250+ generation units (including PUNs)
- ERCOT connections to other grids are limited to ~1,220 MW of direct current (DC) ties, which allow control over the flow of electricity

Created by the Texas Legislature in 1999, ERCOT Inc. was assigned four primary responsibilities:
- Maintain system reliability
- Facilitate a competitive wholesale market
- Ensure open access to transmission
- Facilitate a competitive retail market

2

ERCOT Facts



85,508 MW
Record peak demand (August 10, 2023)

103,609+ MW
Expected capacity for summer 2024 peak demand

$3.23 billion
Transmission project endorsed in 2023

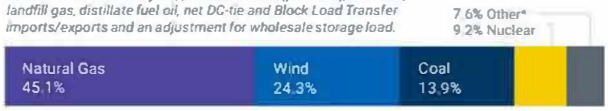
2024 Generating Capacity

Reflects operational installed capacity based on December 2023 CDR report for Summer 2024.

The sum of the percentages may not equal 100% due to rounding.
Other includes biomass and DC Tie capacity.

2023 Energy Use

*Other includes solar, hydro, petroleum coke (pet coke), biomass, landfill gas, distillate fuel oil, net DC-tie and Block Load Transfer imports/exports and an adjustment for wholesale storage load.



1 MW of electricity is enough to serve about 250 residential customers during ERCOT peak hours.

39,450 MW
Wind
of installed wind capacity as of June 2024, the most of any state in the nation

28,373 MW
Generation Record (January 4, 2025)

69.15 %
Penetration Record (April 10, 2022)

25,333 MW
Solar
of utility-scale installed solar capacity as of June 2024

21,667 MW
Generation Record (September 8, 2024)

44.17 %
Penetration Record (November 20, 2024)

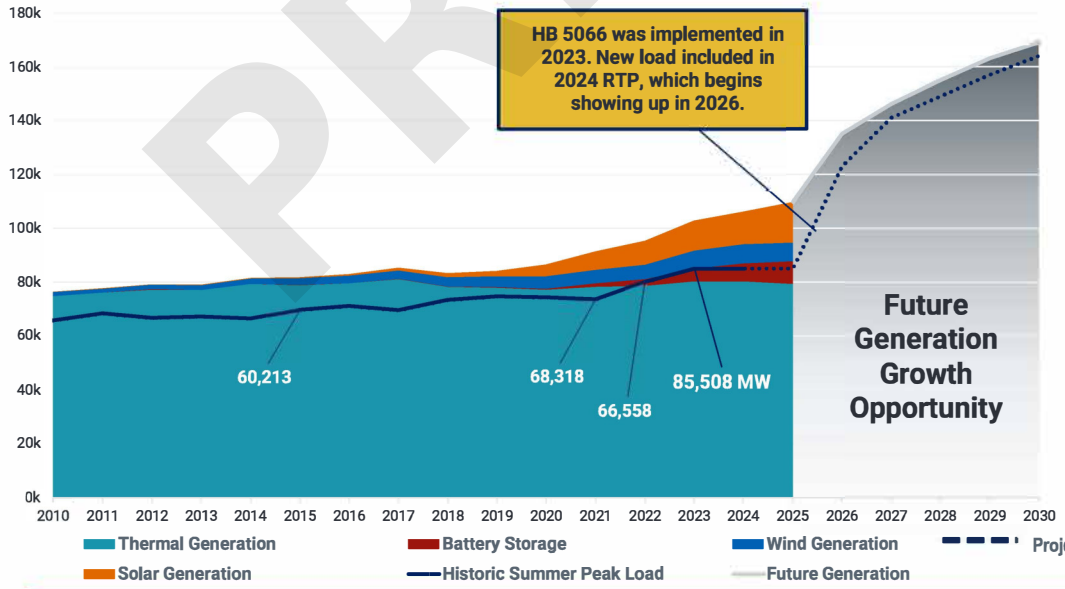
~75 % (~34,900 MW)
Preliminary **Wind + Solar** Penetration Record (March 29, 2024)

7,702 MW
Battery Storage
of installed battery storage as of June 2024

4,056 MW
Storage Record (October 7, 2024)

3

Challenges and Opportunities Ahead



Dispatchable Thermal Generation

(2009-2024) only 1,700 MW of net new dispatchable thermal generation added.
- 22,955 MW added
- 21,256 MW retired

58,056 MW of net new solar and wind added (2009-2024)

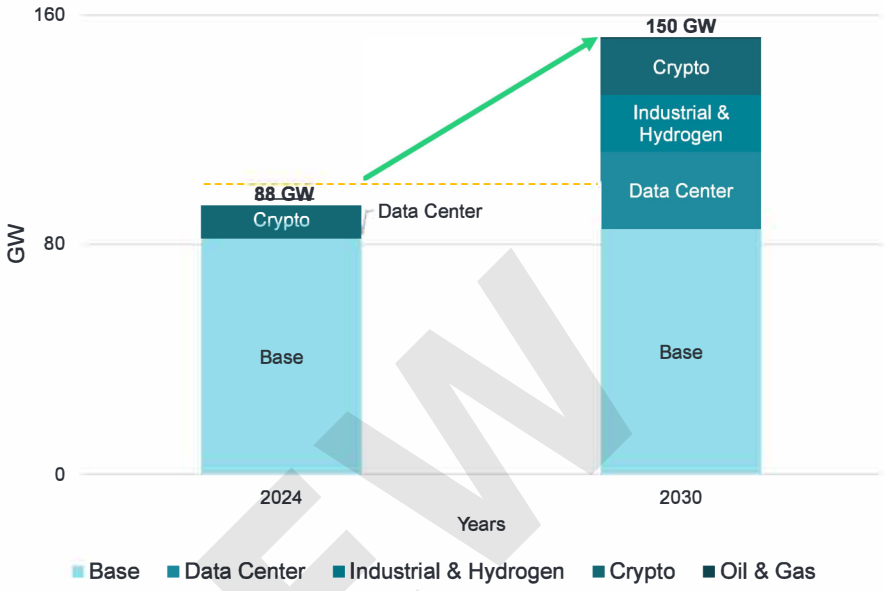
Total Thermal Fleet is 78,477 MW
- 41% is older than 30 years (32,082 MW) (1994)
- 27% is older than 40 years (21,214 MW) (1984)
- 12% is older than 50 years (9,646 MW) (1974)
- 2% is older than 60 years (1,751 MW) (1964)

Key Takeaway: The new load forecast in ERCOT creates significant investment opportunities for balanced generation growth to serve Texans.

4

New Load Growth in the ERCOT System: 2024 - 2030

- Previous Regional Transmission Plan (RTP) rules did not allow ERCOT to factor in unsigned load.
- House Bill (HB) 5066 (88th Legislative Session) required ERCOT to include prospective load identified by Transmission Service Providers (TSPs).
- This led to significant increases in large loads considered in studies (i.e., crypto mining, hydrogen and hydrogen-related manufacturing, data centers, and electrification).



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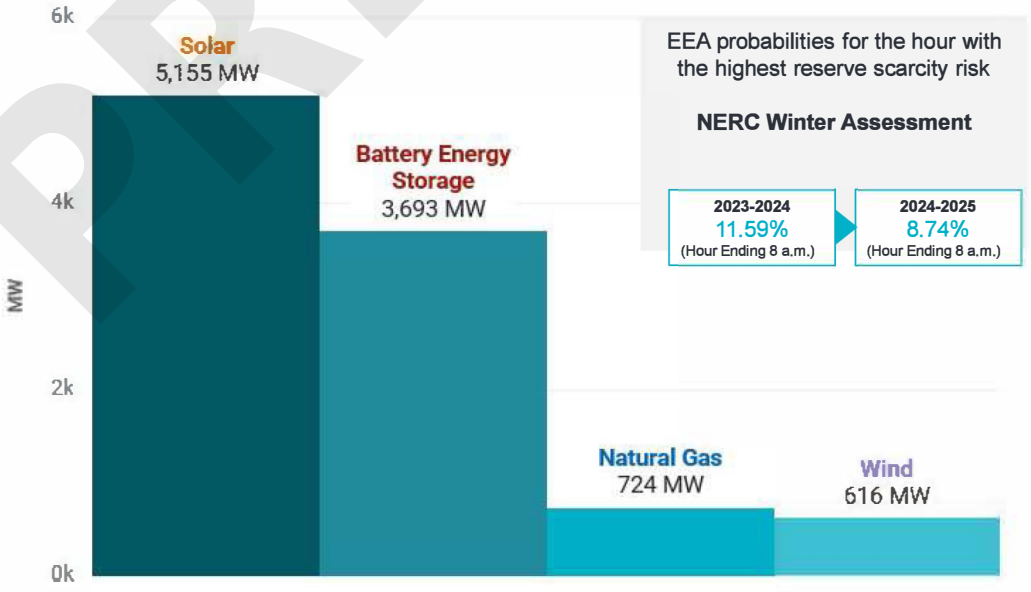
New Generation Since Last Winter (March 1 – November 1, 2024)



EEA probabilities for the hour with the highest reserve scarcity risk

NERC Winter Assessment

2023-2024	2024-2025
11.59% (Hour Ending 8 a.m.)	8.74% (Hour Ending 8 a.m.)

Key Takeaway: The ERCOT grid has seen the addition of more than 10,000 MW of new generation resources since last winter.

6

Title search: Reliability and Resiliency at ERCOT: Ongoing and New Activities

Also available as part of the eCourse
2025 Renewable Energy Law eConference

First appeared as part of the conference materials for the
20th Annual Renewable Energy Law Institute session
"Texas Grid Resiliency: Lessons Learned… and Yet to be Learned"