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Large Load Interconnection: Some Policy and Legal Issues

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The Challenge

- In just over the last few years, forecasts of growth in electricity consumption ("load") across the United States have doubled and tripled, mostly due to new large loads
  - WECC: load growth in 2025 to 2034 will increase at four times the growth rate seen in 2013-2022, and double the growth rate just recently forecasted in 2022;
  - ERCOT: a grid with about 103 GW of installed capacity currently, in 2024 increased its five-year load forecast by over 40 GW from its 2023 forecast;
  - MISO: needs to triple its annual rate of generation capacity additions in order to keep up with load growth for the next 20 years;
  - Berkely National Laboratories: data center electricity use could increase by more than 700 percent from 2018 to 2028, from 76 TWh to 580 TWh (from 1.9% of total U.S. electricity consumption in 2018 to 12% in 2028);
  - PJM: 40 GW of generation to retire between 2022 and 2030, while load is rapidly growing, leading PJM to "project a potential shortfall in generation supply by the end of this decade" (i.e., in five years).

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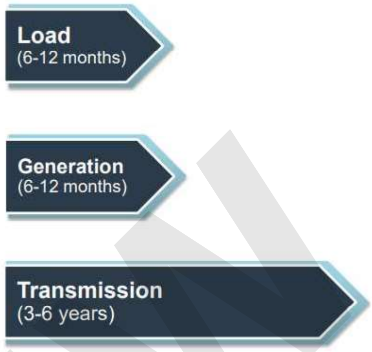
Load Additions: Faster than Gen and Transmission

Transmission System Challenges & Complexities

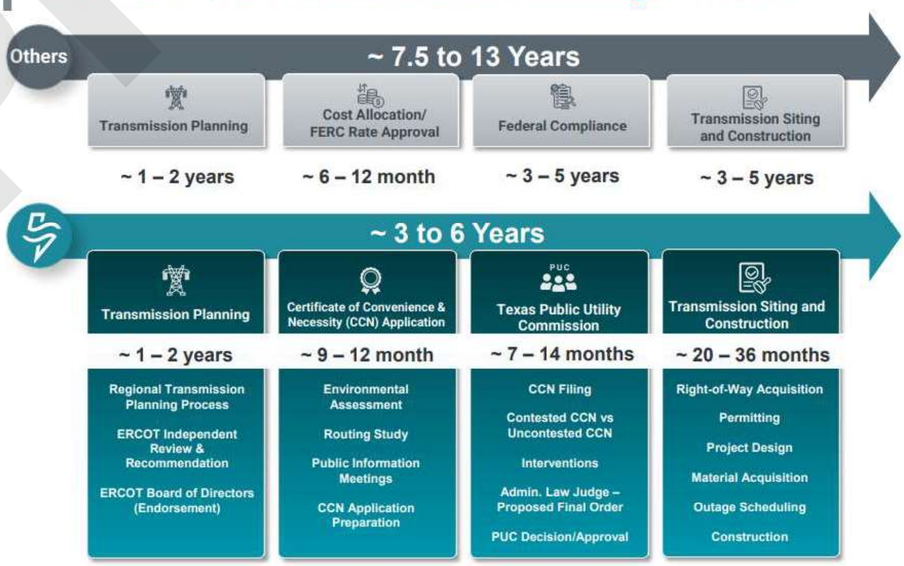
- Demand is escalating as new large loads are added to the ERCOT System faster and in greater sizes than historical interconnections.
- The current generation mix is more diverse than previous portfolios, can be built faster, and is more geographically disbursed from load centers.
- While we're seeing changes in the speed of load growth and generation coming onto the Texas power grid, transmission still requires 3-5 years to be energized.



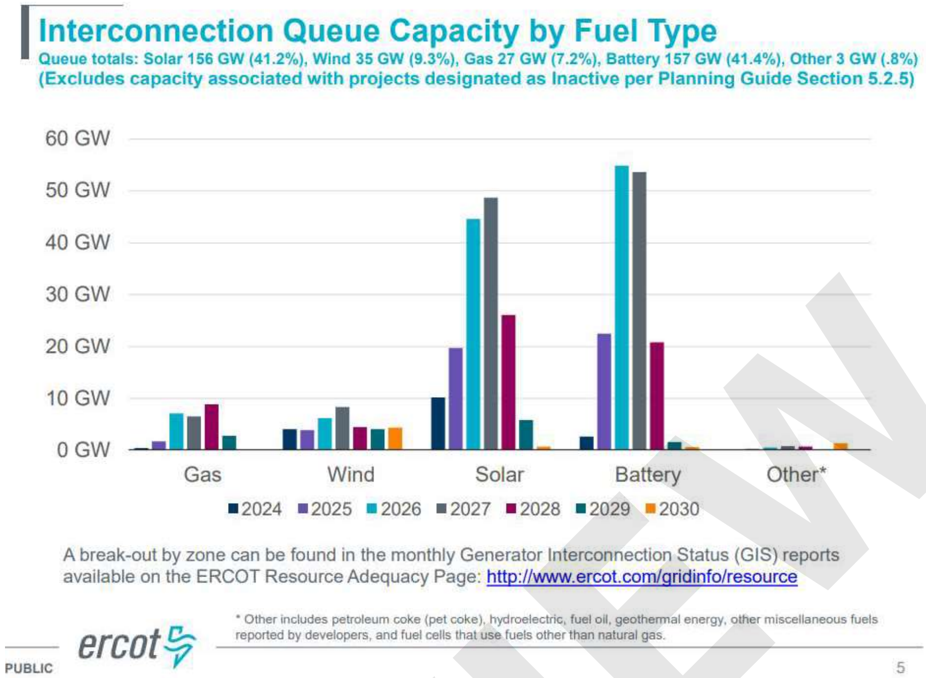
Key Takeaway: The forecasted pace of load growth could exceed the pace at which transmission capacity can be built to support it.

Transmission Even Slower Outside ERCOT

FERC vs ERCOT Transmission Planning Process



Will Solar and Batteries Solve the Supply Need?



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A [Rapidly] Approaching Supply-Demand Imbalance

- **"I don't have a positive sense that we have enough generation on the books to serve the load that's expected."**
- A Key Complicating Factor: "Behind the meter" service
  - Obtaining service directly from an existing or new generation source without using, or minimally using, the transmission grid.
  - Benefits the large load installation by providing reliable power directly from an adjacent source at a competitive price and without need of the time and expense of grid upgrades.
- Will it degrade reliability and increase all other customers' costs?
  - Do large behind-the-meter loads effectively take the associated generation "off the grid"?
  - Harder for the grid operator to anticipate, see, and respond to varying grid conditions?
  - Can large load operators avoid paying transmission costs or ancillary services costs, increasing the costs to be borne by other grid-using customers?

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Title search: Comparison of Interstate Grids' Regulatory Treatment of Large Load Projects

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