THREE ON THURSDAY

First Trust

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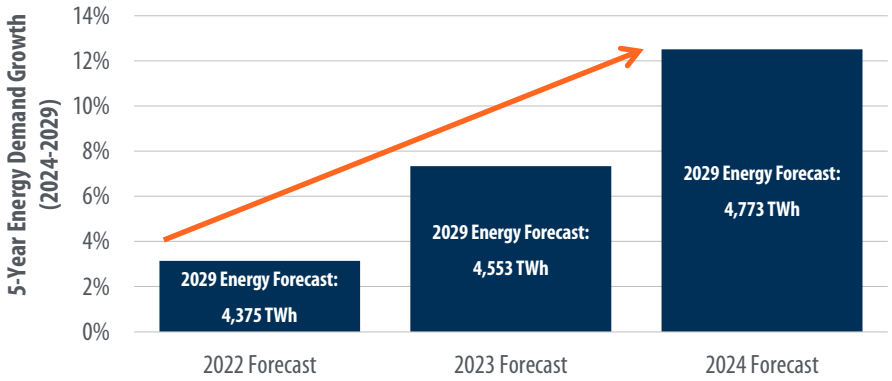
Powering America's Future: Insights on the U.S. Electricity Growth Outlook

One of the most urgent challenges facing the U.S. economy is not whether we can produce enough energy, but whether our infrastructure can transmit that power to those who want it. Over the next decade plus, demand will rise sharply as the nation electrifies its transportation fleet, builds out AI-driven data centers, and reshapes its industrial base through reshoring. These shifts will require far more reliable, flexible, and resilient energy systems than what we have in place today. The problem is that America's grid and pipelines are already strained. The American Society of Civil Engineers' 2025 Report Card gave U.S. energy infrastructure a D+, citing aging transmission lines, congestion in interconnection queues, and underinvestment in high-voltage projects. While the U.S. is rich in energy resources—from natural gas and oil to renewables—the bottleneck lies in moving that power where it's needed, when it's needed. In this week's "Three on Thursday," we look at the supply-and-demand dynamics that will define the next phase of America's energy story. To find out more view the three charts below.

Growing Demand for Electrical Power

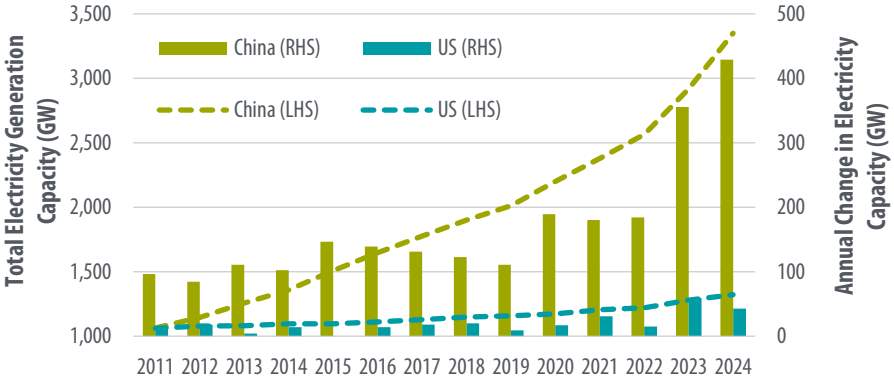
5-Year Nationwide Energy Demand Forecast (2024-2029) by Year of Estimate



Source: GridStrategies, First Trust Advisors. Report published December 2024.

U.S. electricity use was flat for 15 years from 2005 to 2020, as population and economic growth were offset by steady efficiency gains. That trend broke in 2021, with demand turning higher—and the pace has only accelerated since. Forecasts keep being revised upward: back in 2022, the expectation was for electricity demand to grow 3.1% between 2024 and 2029, driven largely by the commercial sector (especially data centers) and the industrial sector. But as of 2024, the outlook has been ratcheted up dramatically—demand is now projected to rise 12.5% over the same period, more than three times the earlier estimate.

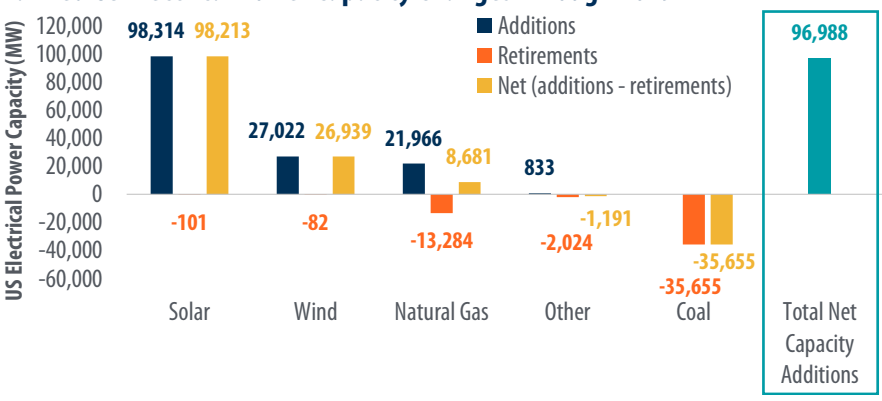
The Race for Power Capacity



Source: Ember, National Energy Administration (China), First Trust Advisors. U.S. estimates published Feb 2024. Chinese estimates published Jan 2025.

A key concern, in our view, is how slowly the U.S. has expanded its power capacity over the past decade. In 2011, total generation capacity in the U.S. and China was roughly the same. Since then, the paths have diverged sharply: from 2011 to 2024, China boosted its capacity by 215%, while the U.S. managed only a 25% increase. The gap widened further in 2024 alone, when China added 429 gigawatts of new capacity—ten times the 43 gigawatts added in the U.S. As electricity becomes ever more critical to economic competitiveness and security, the U.S. faces some serious catching up.

Planned US Electrical Power Capacity Changes Through 2029



Source: U.S. Energy Information Administration, First Trust Advisors. Estimates as of Q3 2024.

One of the biggest challenges with surging electricity demand is whether new supply can keep up. Between 2024 and 2029, nearly 97 gigawatts of new generation capacity are slated to come online. The catch: virtually all of it is from renewables, primarily solar. That means intermittent sources will make up an ever-larger share of the grid, while dependable fossil fuels take a step back. In 2024, fossil fuels still provided about 60% of U.S. electricity, with natural gas leading the way at 43.3%. But even as a small amount of new natural gas capacity is added, it's not enough to offset ongoing coal retirements—leaving the system more reliant on renewables that aren't always available when demand peaks.