

5 ISSUES TO WATCH FOR IN THE POWER SECTOR IN 2025

The report examines key challenges and opportunities in the power sector for 2025, addressing rising electricity prices, grid reliability, policy shifts, market reforms, and decarbonization. It emphasizes the need for innovation, regulation, and collaboration to create a sustainable energy future.



SUMMARY

5 Issues in the Power Sector to Watch in 2025

The power sector in North America is at a crossroads. We're moving toward a more sustainable future, but it's not without its hurdles. With an expected 18% growth in electricity demand by 2033 and decarbonization efforts pushing our aging grid to its limits, the decisions we make today are shaping our energy future.

As we head into 2025, five key challenges will define the power sector's path forward. These issues are more than obstacles—they're opportunities to innovate, regulate, and ultimately promote sustainable growth.

Here's what's on the radar when it comes to the future of energy and why these issues matter.



ELECTRICITY PRICES AND IT'S RIPPLE EFFECTS

Rising electricity prices are placing increased pressure on households, businesses, and industries, driving the need for creative solutions to manage costs while advancing clean energy goals.

MAJOR NORTH AMERICAN CITIES

AVERAGE PRICES FOR RESIDENTIAL CUSTOMERS^{1,2}
(IN ¢/kWh)³



1) For a monthly consumption of 1,000 kWh; rates in effect April 1, 2024.
2) Average prices excluding taxes.
3) In Canadian currency.

Electricity prices are climbing steadily, averaging 13.2 cents/kWh in 2025—up from 12.68 cents/kWh in 2023. This isn't just a pocketbook issue for consumers; it's a challenge for businesses and policymakers trying to balance affordability, sustainable energy, and infrastructure investments. The drivers behind these rising costs include a mix of higher natural gas exports and increasing demand, fueled by electrification, the rise of AI, data centers, and ongoing transmission upgrades.

While renewable energy prices continue to drop, their low cost alone cannot offset the growing demand. Balancing the integration of cost-effective renewable energy with the reality of rising demand and grid modernization efforts is the tightrope we need to walk.

Counterpoint: Yes, renewable energy prices are dropping. Solar energy costs, for instance, have reduced by 70% in the last decade. However, transmission and distribution upgrades—necessary for the widespread use of renewables—still place upward pressure on electricity rates. A dual focus on cost reduction AND infrastructure innovation is essential for tackling this issue head-on.

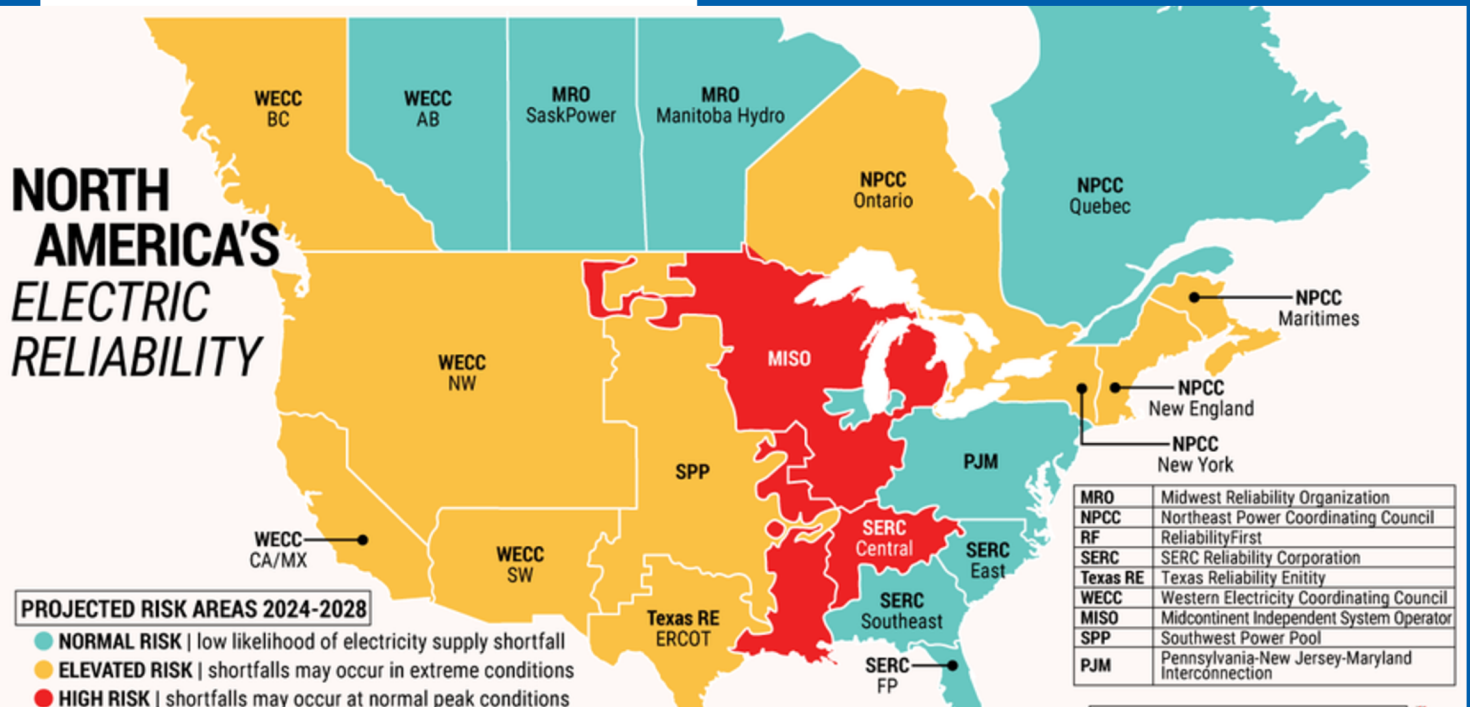
RELIABILITY RISKS AS DEMAND EXCEEDS SUPPLY

The U.S. grid is under pressure like never before. New technologies, rising electrification, and extreme weather events are pushing demand to record highs, with no signs of slowing. **NERC** (North American Electric Reliability Corporation) recently warned that over half of the U.S. grid is at risk of energy shortfalls over the next decade.

Data centers alone could contribute to 44% of load growth between 2023 and 2028. Couple this with retiring power plants and our reliance on aging infrastructure, and it's clear why reliability is becoming a major concern.

The solution? We need federal and state policies that don't just encourage clean energy adoption but also address bottlenecks in interconnection and transmission. Grid modernization and investment in technologies like energy storage and AI for predictive maintenance will be essential to maintaining grid reliability while supporting rising demand.

Counterpoint: Some argue that battery storage and grid-enhancing technologies can mitigate these risks without massive overhauls to infrastructure. While they undoubtedly play a role, relying solely on these solutions is like putting a Band-Aid on a broken dam. A comprehensive approach, including infrastructure investments and demand-side strategies, is critical.



Elections inevitably reshape the regulatory landscape, and this year is no exception. With President-elect Donald Trump's renewed focus on fossil fuels, the renewable energy sector faces headwinds. Stricter tariffs on solar components and challenges to offshore wind projects are expected, which could result in delays and increased costs.

On the flip side, states are doubling down on clean energy policies, with bipartisan efforts to address transmission bottlenecks and interconnection issues. This state-level momentum could partially offset federal uncertainties, but how much remains to be seen.

For businesses in the energy sector, adaptability will be key. Companies dependent on solar imports may need to diversify suppliers, while those in offshore wind will need to prepare for potential regulatory hurdles.

Alberta's economic trajectory in 2025 shows both promise and caution, as the factors shaping its outlook remain dynamic and multifaceted. The province continues to leverage its traditional strengths in energy production, which serves as the bedrock of its economy, while also making strides in diversifying into technology and petrochemicals.

However, the looming spectre of U.S. trade policy changes, particularly the proposed 25% tariff on Canadian imports, requires proactive measures to safeguard Alberta's resource-heavy industries. Key stakeholders are already calling for strategic planning to mitigate these potential disruptions.

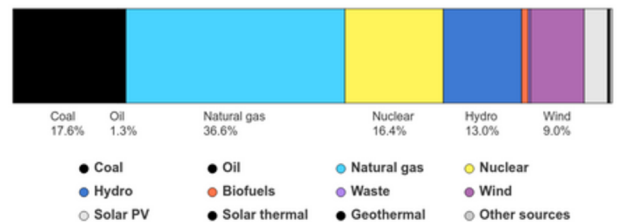
Fiscal Uncertainty

At the same time, fiscal uncertainty tied to volatile oil prices poses a significant challenge. The possibility of oil prices remaining below the \$70 per barrel threshold raises tough questions about Alberta's fiscal resilience, with provincial leaders openly acknowledging the risk of deficits. Balancing revenue streams while prioritizing long-term investments will be critical for maintaining economic stability.

Population Growth

Although population growth is slowing compared to the previous year, Alberta remains a destination for skilled workers, which is vital for fueling the labor market and supporting emerging industries. Further bolstering the outlook are falling interest rates, expected to drive consumer confidence and stimulate spending in key sectors. Alberta's ability to harness its economic diversity, address external pressures, and foster innovation will likely define the province's success in navigating the uncertainties of 2025.

Electricity generation sources, North America, 2022

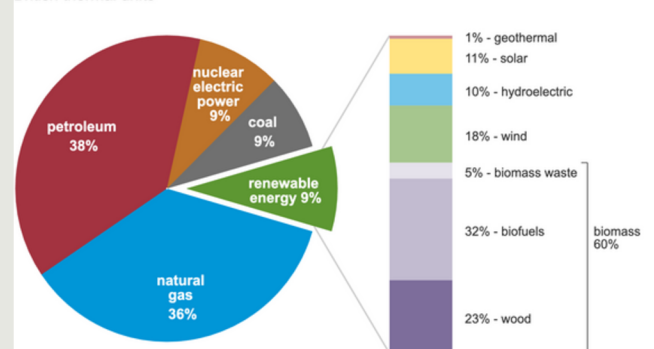


Source: International Energy Agency. Licence: CC BY 4.0

U.S. primary energy consumption by energy source, 2023

total = 93.59 quadrillion British thermal units

total = 8.24 quadrillion British thermal units



Data source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2024, preliminary data
Note: Sum of components may not equal 100% because of independent rounding.

Counterpoint: Tariffs and delays aside, the renewables sector remains resilient. Falling costs and increasing domestic manufacturing are helping offset challenges, suggesting that long-term growth in renewables is inevitable—even in a tougher policy environment.

MARKET REFORMS AND CHALLENGES FOR GRID OPERATORS

Grid operators are entering 2025 with a tall order—sending market signals to spur new generation while grappling with interconnection backlogs and capacity issues. For example, PJM Interconnection faces warnings of supply shortfalls while still trying to overhaul its capacity markets.

This isn't just a PJM problem. MISO and CAISO also propose reforms to manage growing demand and ensure reliability. For example, MISO plans to cap its interconnection queue size to streamline processes, while CAISO is looking to launch a new Extended Day-Ahead Market to boost efficiency.

Recent changes in capacity auctions across major grid operators have been significant and far-reaching. PJM's latest capacity market base residual auction for the 2025/2026 delivery year resulted in an unprecedented price spike, with system-wide capacity prices increasing by more than 800% compared to the previous year

This surge will lead to a total annual cost of \$14.7 billion for electric customers across the PJM footprint starting June 1, 2025.

The dramatic increase is attributed to factors such as increased electricity load, changes in market rules, and a decrease in available capacity supply due to plant retirements.

In Texas, ERCOT is accelerating its Real-Time Co-optimization (RTC) initiative, now targeting a December 2025 start, about six months earlier than initially planned.

This program, which includes battery storage integration, is expected to provide significant operational and reliability benefits, with estimated annual wholesale market savings exceeding \$1 billion

Meanwhile, CAISO is moving forward with its Extended Day-Ahead Market (EDAM) plan, approved by FERC, with an anticipated launch in spring 2026. The regional day-ahead market is projected to create substantial savings for Western ratepayers, potentially exceeding \$1 billion annually

Counterpoint

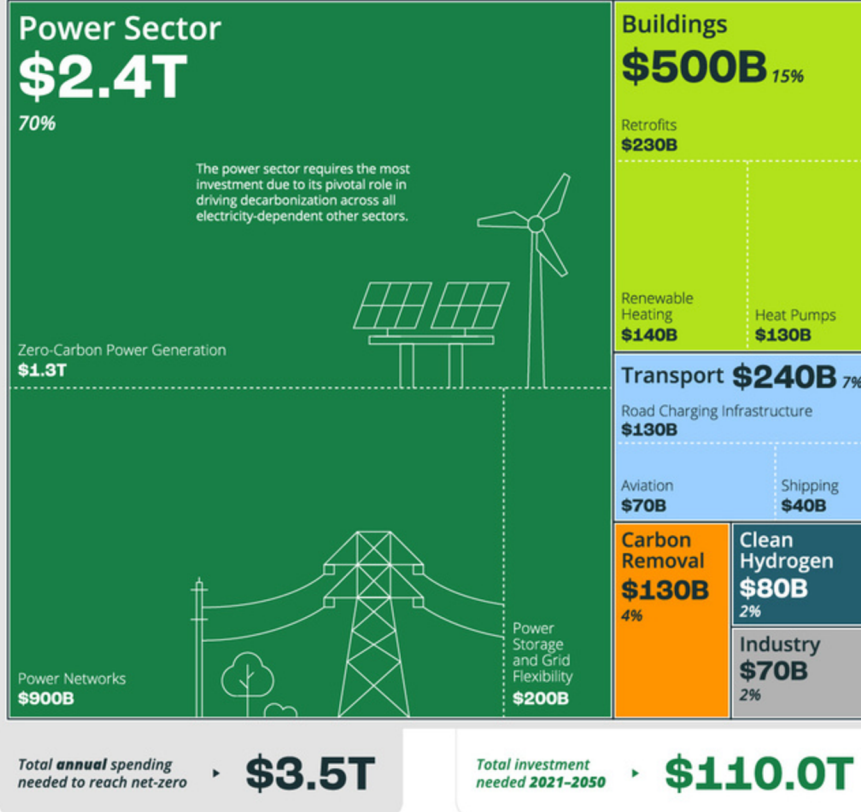
However, some argue that these proposed reforms might not address the core challenge of transitioning to a cleaner, more resilient grid. Critics point out that capping interconnection queues could inadvertently stifle innovation by limiting access for smaller, emerging renewable energy projects. Similarly, while initiatives like CAISO's Extended Day-Ahead Market aim to improve efficiency, they may overlook the need for deeper collaboration across regions and markets to tackle long-term reliability challenges. Striking the right balance between reform and inclusivity remains a delicate, ongoing debate.

THE DECARBONIZATION DILEMMA

The Cost of the Clean Energy Transition

Average Annual Capital Investment Needed Worldwide
2021–2050, USD

The Energy Transitions Commission estimates that the net-zero transition will cost **\$110T** in global capital investments between 2021 and 2050, averaging **\$3.5T** annually. Here is that sum broken down by sector.



In 2022, global investment in the clean energy transition totaled \$11T.
To remain on track to net-zero, significant and rapid injections of investment must be made in the above sectors.

Source: Energy Transitions Commission

Numbers may not total 100 due to rounding. All figures are in real 2021 U.S. Dollars.

Decarbonization is not optional—it's essential for a sustainable future. But it comes with its own set of challenges. Developing enough transmission to integrate renewable energy into the grid is a glaring bottleneck. Federal permitting reform is in the works, but delays and political gridlock could slow progress.

Nuclear energy, often touted as a key piece of the decarbonization puzzle, is gaining momentum, with projects like non-light-water reactors leading the charge. However, public perception and regulatory hurdles remain barriers to widespread adoption.

The silver lining? States and industries alike are exploring grid-enhancing technologies to maximize existing infrastructure. As Heather O'Neill of Advanced Energy United aptly put it, "We know we need to build more. But we also know we can get a lot more out of the existing grid."

Counterpoint: Critics often point to the upfront costs of decarbonization, from building new transmission lines to investing in novel reactor designs. While these concerns are valid, the long-term benefits—lower emissions, improved reliability, and the economic boost from clean energy jobs—far outweigh the initial expenses.

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