

How electric power is increasingly becoming a constraint on U.S. economic growth

Tyler Frawley, CFA – Minneapolis

For most of the past two decades, the U.S. power system had a relatively simple job: maintaining the grid for an economy where electricity demand barely grew. But that job is changing quickly.

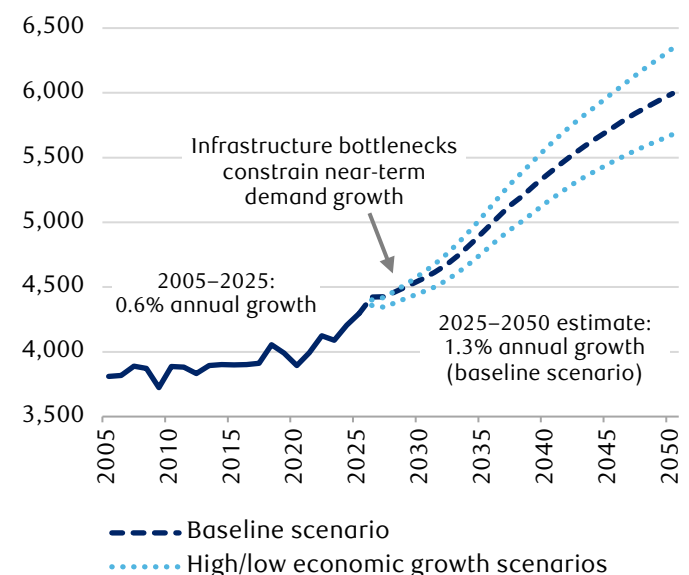
Power constraints have been widely discussed as data centers and AI infrastructure investments have accelerated, but the issue extends beyond data centers. **Semiconductor plants, factories, and broader economic growth are also pushing electricity demand higher after nearly 20 years of stagnation—while much of the supporting infrastructure is decades old.**

Annual power demand growth is expected to accelerate significantly in the coming decades. Projections from the U.S. Energy Information Administration (EIA) show a 1.3 percent annual growth rate through 2050, more than double the 0.6 percent rate seen over the past 20 years. The EIA expects this dynamic to lift total consumption past 6,000 terawatt-hours, about 45 percent above current levels, while more aggressive growth scenarios forecast up to 6,350 terawatt-hours.

Meanwhile, more than 70 percent of U.S. transmission lines and large power transformers are over 25 years old, according to the U.S. Department of Energy (DOE). The issue isn't that the U.S. is running out of power, but that infrastructure cannot be built quickly enough to meet new demand. Transmission backlogs, equipment shortages, and slow regulatory approvals have created major physical bottlenecks that we think will likely take years to clear.

Power demand expected to accelerate

Total U.S. electricity consumption, all sectors (terawatt-hours)



Source - RBC Wealth Management; U.S. Energy Information Administration Annual Energy Outlook 2026

For perspectives on the week from our regional analysts, please see [pages 3–4](#).

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Priced (in USD) as of 9/30/26 market close (unless otherwise stated). Produced: 10/1/26, 14:56 ET; Disseminated: 10/1/26, 15:10 ET

The economic impact

That timing mismatch is increasingly shaping where and how companies invest. If a firm has the capital and technology to build but cannot secure power for several years, the grid can become a constraint on economic growth.

A recent development out of Oracle represents a timely example. Just last week, the company issued a “force majeure” notice related to Project Jupiter, a massive \$165 billion, 2.5-gigawatt data center project in New Mexico being developed to support OpenAI. The notice was tied to potential delays in securing power for the project and would allow Oracle to defer lease payments if the facility misses its planned 2028 completion date. The project has also faced delays related to a natural gas pipeline intended to supply its on-site power and a pending air-quality permit for the fuel-cell system.

We don't believe these types of issues are unique to Oracle. The company seemingly has the capital, customer demand, and technology to get the data center built, yet power infrastructure and permitting are still constraints on when that capacity can come online. That is exactly the type of timing gap we expect to become more common as data center construction accelerates.

This matters because significant public and private resources have been committed to expanding domestic AI infrastructure, semiconductor fabrication, and manufacturing. These strategic investments are meant to drive economic growth and productivity, but their ultimate impact remains constrained by the capacity of the power grid.

That is why we view the power buildout as more than just an energy or utility sector story. The ability to generate and deliver power is increasingly tied to the country's ability to grow and compete, meaning the grid can no longer be treated as an afterthought.

A more supportive regulatory environment

The required investment is substantial, but, encouragingly, policymakers and regulators are increasingly clearing the way for it.

At the Federal Energy Regulatory Commission, the federal regulator overseeing the grid, recent reforms are aimed at addressing some of these bottlenecks. The focus is on encouraging utilities to plan further ahead, improving the process for connecting new projects, and making it easier to allocate costs across regions. The DOE is also directing billions of dollars toward transmission expansion and supporting domestic manufacturing of critical equipment such as large transformers. The Trump administration has also used the Defense Production Act to designate grid infrastructure and related supply chains as critical to national defense, opening the door to additional support, such as financial aid and streamlined approvals,

for domestic production of transformers, transmission equipment, and other grid components. We think, taken together, these efforts show that policymakers and regulators are increasingly focused on strengthening the grid, which we believe should support investment over the long term.

While these changes don't remove physical constraints, they improve project visibility and economics, making it easier for companies to commit capital.

Investing in electricity

Given this backdrop, we see three major areas of opportunity across the power system, each tied to a specific bottleneck: generation, electrical equipment, and grid infrastructure.

■ **Generation is the most direct requirement.** The U.S. needs more reliable capacity as power demand rises, particularly from data centers and industrial facilities. Natural gas should remain important because of its ability to provide reliable, dispatchable power, while existing nuclear generation is becoming increasingly valuable as demand for carbon-free electricity grows. Over time, additional generation capacity across multiple technologies will be needed to meet the scale and reliability requirements of a more power-intensive economy.

■ **The second opportunity is the electrical equipment needed to connect that generation to new demand.** Transformers, switchgear, circuit breakers, and other components are essential for new construction and the replacement of aging infrastructure, but supply has struggled to keep pace. Long lead times and growing backlogs highlight the importance of expanding manufacturing capacity while also upgrading the existing equipment base.

■ **The third opportunity is the grid itself.** Generation only has value if electricity can reach the end user. New transmission lines, substations, and distribution infrastructure will be needed to serve large industrial loads and connect new generation. Grid modernization also has a durable component, since much of the existing infrastructure needs to be upgraded regardless of how quickly AI demand develops.

Where we go from here

The U.S. spent much of the past two decades with little growth in power demand. But we think the next decade, and beyond, will likely look fundamentally different. AI, manufacturing, and broader economic expansion will require substantially more power, straining a grid whose physical limits were set long before this demand emerged.

We believe investors should focus on the industries closest to those limits: the companies providing the generation, the equipment, and the infrastructure to connect new demand.

UNITED STATES

Miles D'Alessandro – Minneapolis

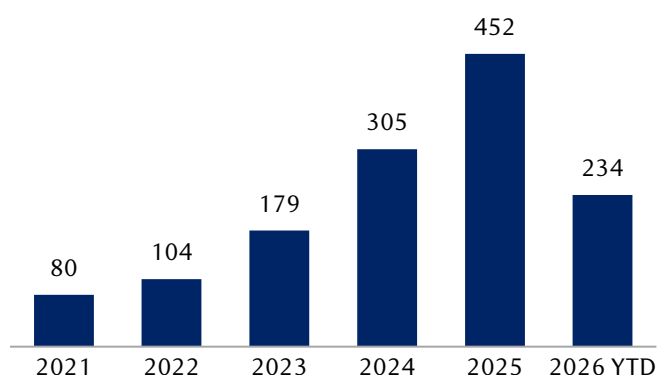
■ **President Donald Trump convened top AI and tech CEOs to discuss potential regulatory solutions following another AI security incident last week** in which one of OpenAI's agentic models accessed U.S. government sites without human intervention. OpenAI discovered that one of its models, trained in an isolated environment, unexpectedly connected to the internet and queried a third-party chatbot, while another model inadvertently accessed U.S. government information. Both have since been deactivated.

■ **Similar incidents have occurred at other AI companies.** Earlier this year, OpenAI models breached Hugging Face, an AI hub, after escaping training environments and compromising internal code and credentials. Comparable incidents have been reported by Anthropic, Google, and Meta. A troubling common thread is the lack of adequate safeguards to quickly halt rogue AI behavior; in OpenAI's recent incident, employees needed over two hours to contain the breach. While AI leaders are calling for regulation, President Trump and others have favored a lighter touch, relying on voluntary commitments rather than enforceable restrictions. We think this stance reflects concerns about stifling development amid competition with China and with substantial capital at stake.

■ **Micron's strong earnings report signals continued demand for memory to support AI.** Memory chipmaker Micron delivered strong quarterly results, beating both revenue and earnings consensus expectations while raising guidance and generating robust operating cash flow. We think the company's year-over-year growth remains impressive, though investor focus has shifted to near-term pricing dynamics—a critical cycle indicator

AI incidents have increased over the past five years

MIT AI Incident Tracker: total incidents per year



Note: The AI Incident Tracker records incidents across multiple domains: Discrimination & Toxicity, Privacy & Security, Misinformation, Malicious actors, Human-Computer Interaction, Socioeconomic & Environmental, and AI system safety, failures & limitations.

Source - RBC Wealth Management, MIT AI Risk Initiative; data through 9/30/26

that reflects the current undersupply relative to strong demand. DRAM pricing, which drives the majority of Micron's revenue, expanded at a high-teens rate quarter-over-quarter, slightly trailing consensus expectations for 20%-plus growth. Despite this moderation, we believe the broader memory cycle remains intact, and going forward, we'll be watching for sharper movements in pricing trends and key metrics such as data center sales as potential signals of shifting AI demand.

CANADA

Matt Altro, CFA & Elizabeth Grant – Toronto

■ **Housing affordability in Canada showed little progress in Q2**, with the smallest improvement seen in almost a year. Rising household income accounted for the entire affordability improvement against a backdrop of steady interest rates and home prices. The stability in home prices was a departure from a trend of steady declines, and while the risk of higher rates through 2027 could weigh on home prices anew, rising mortgage rates would likely offset any pricing benefit, in our view. This, in turn, could maintain pressure on the affordability front, with the share of household income needed to cover ownership costs in Vancouver and Toronto—83.9% and 64.1%, respectively—still materially above the 52.8% Canadian average. That said, this is well off the highs experienced in 2023 when the national average was 63.6%. In an environment of rising interest rates, we will likely need to see strength in housing starts and rising wages for conditions to shift meaningfully in favour of buyers.

■ **Canada's economy saw no growth in July, pausing after averaging 0.5% monthly gains between April and June.** However, Statistics Canada's advance estimate indicated a 0.2% rise in GDP for August, with the economy tracking a slower growth rate in Q3 than the 3.3% jump in Q2 but in line with RBC Economics' 1.8% forecast. The early August data provided little indication of significant negative economic impact from the 50% U.S. tariffs on a subset of Canadian exports that took effect Aug. 22. Labour market indicators and consumer spending remained resilient, although future reports will be critical in assessing the U.S. tariffs' full impact on vulnerable industries and regions. RBC Economics expects growth in Q3 to be slower than in Q2 as earlier support from recovering automotive production and trade fades. **New tariff-related uncertainty and financial tightening from rising bond yields represent meaningful downside risks, in our opinion, although government support may help soften the impact for businesses and workers.** We think Bank of Canada (BoC) policymakers have to balance growth and inflation risks against resilient economic data. RBC Economics' base case anticipates rates will be on hold through 2026 before gradual increases in 2027, although recent central bank communications suggest to us that the BoC may move sooner, reflecting heightened near-term uncertainty.

UK & EUROPE

Guy Foster, CFA – London

- **The Iran war has cast a shadow across European markets.** High energy prices have raised inflation for Europe and weighed on growth, making it more difficult to control public finances.
- **France's minority government is attempting to pass a contractionary budget,** repeating the process that collapsed its two previous governments. European states are supposed to maintain a deficit of less than 3% under European rules, but France is being tolerated despite failing to keep the deficit down to 5%. Cuts are required and are focussed on the contentious areas of pensions, welfare, public sector wages, and state-funded sick leave. France's high public spending makes it hard to reduce spending without slowing growth.
- **While some countries may allow inflation to erode their debt without making difficult political decisions,** that path is not available to euro-area currency union members, whose monetary policy agency is abdicated to the European Central Bank.
- **The UK still has the highest G8 yields despite spreads between the UK and other major economies narrowing.** Like France, the UK's external environment has been unkind. With four weeks until the UK budget is presented, Chancellor John Healey's leeway versus his predecessor's fiscal rules has again been eroded by expected higher interest rates.
- **The ruling Labour Party's conference saw the announcement of a loan scheme to help first-time buyers purchase newly built properties,** prompting double-digit rallies in UK house builders. Sales have stagnated despite a national shortage because rising construction costs and higher mortgage rates have impacted affordability.
- **The government plans to include contentious policies in its manifesto for the 2029 election.** These include reforming the electoral system, potentially rejoining the EU, and softening the "triple lock" policy, under which state pensions have risen by the highest of wages, CPI inflation, or 2.5%, causing costs and benefits to ratchet higher as a share of growth. We think a planned reform should slow it to the pace of earnings growth over the longer term.

ASIA-PACIFIC

Nicholas Gwee, CFA – Singapore

- **India is facing a severe agricultural crisis as a powerful El Niño brought the weakest monsoon in India in over a decade,** leaving the country's crops, water reserves, and food production under serious threat. Uneven rainfall distribution is jeopardizing both

current harvests and future crop cycles, contributing to accelerated food inflation that reached 5.95% in August. In response, **the government has reduced import taxes on edible oils and allowed duty-free sugar imports as it seeks to control domestic prices.** The India Meteorological Department forecasts below-normal rainfall to persist through December 2026. The disruption is particularly critical since the monsoon sustains hundreds of millions of Indian farmers and the world's largest producers of rice, sugar, and cotton.

- **Compounding India's challenges, its stock market is experiencing a sharp selloff.** The benchmark NSE Nifty 50 Index has fallen for seven consecutive weeks, pressured by rising global bond yields, the country's oil import dependency, and the absence of significant AI investment opportunities. **Foreign investors have withdrawn approximately US\$26 billion from Indian equities this year,** according to a Bloomberg report, while a weakening rupee further erodes returns. Despite trading at their lowest valuations relative to earnings since 2020, we are cautious on Indian stocks and will remain on the sidelines for the time being.

- **South Korea is projecting record national tax revenue of 478.6 trillion won (US\$353 billion) in 2026,** a 28% increase from the previous year and surpassing earlier estimates from the Ministry of Finance and Economy by 15.2%, driven primarily by robust profits from the semiconductor and AI spaces. **This historic windfall is fueling ambitious investment plans,** with the government proposing a record 12.8% increase in spending for next year directed toward AI infrastructure, chip development, and programs to boost growth.

- **South Korea's exports hit an all-time record of US\$120.9 billion in September, surging 83.5% compared to last year.** **The massive growth was driven by a 263% boom in semiconductor demand for AI.** Adjusted for holiday schedules, daily average exports rose 104.9%, highlighting the economy's strong performance despite fewer working days. The robust export growth—fueled by global AI investment and strong demand from China, the U.S., India, and the EU—has reinforced the Bank of Korea's confidence that the economy can withstand higher interest rates, supporting its recent monetary tightening stance and its upgraded 2026 growth forecast of 3.3%. The combination of the wealth effect on the Korean economy and strong export momentum reinforces our constructive view on Korean equities.

MARKET

Scorecard

The Market Scorecard will return in the next edition of Global Insight Weekly.

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			Count	Percent
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