Powering the AI Economy

An Energy Agenda for Artificial Intelligence

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Business Roundtable

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Executive Summary

Artificial intelligence (AI) is rapidly reshaping the economic and national security landscapes, making sustained U.S. leadership a national imperative. To compete in and win the global AI race, federal and state policies must enable the timely buildout of AI-related infrastructure while ensuring affordable energy for American consumers. As AI becomes more integral to the economy, it will drive a significant increase in demand for energy and other resources. At the same time, AI can enhance grid efficiency, strengthen reliability and improve long-term affordability. Meeting this moment requires a comprehensive energy and infrastructure policy agenda for AI that:

+ **Utilizes and invests in all domestic generation resources;**
+ **Invests in grid resilience, reliability, flexibility and transmission capacity; and**
+ **Uses innovative approaches to energy and water systems management.**

Business Roundtable CEOs are committed to ensuring that these goals are pursued in a way that protects ratepayers, reduces emissions and improves air and water quality.

POLICY RECOMMENDATIONS

Keeping energy affordable for everyday Americans is foundational to the 26 key policy recommendations outlined in Business Roundtable's Energy Policy Agenda for AI, which includes:

1. Enacting comprehensive federal **permitting reform**;
2. Promoting generation and transmission expansion through a modernized **regulatory approach**;
3. Strengthening **supply chains**;
4. Reducing **financial barriers**; and
5. Promoting **coordination and planning at every level of government**.

Introduction

To continue expanding the physical infrastructure that supports Artificial Intelligence (AI), the U.S. must address significant resource and infrastructure challenges, particularly related to the rapidly growing demand for data centers and associated increase in energy and water needs. The benefits to everyday Americans of winning the AI race include improvements to energy affordability and a more sustainable economy, but those benefits hinge on the ability of policymakers to expedite project reviews, embrace diverse domestic generation resources, invest in energy transmission modernization, and deploy AI to improve energy production, delivery, and utilization.

Business Roundtable member companies are leading the world in developing and deploying sustainable solutions to the challenges of building out the AI economy. At the same time, a comprehensive policy agenda is required to meet the rapid pace of the global AI race. Recent data suggest that AI infrastructure build-out can be, and is being, deployed in many parts of the country in a manner that helps reduce energy costs, improve energy reliability, and strengthen our local, regional, and national economies.

Providing reliable, sustainable low-cost energy underpins the 26 key policy recommendations outlined in Business Roundtable's Energy Agenda for AI, which is focused on improving the regulatory landscape, strengthening supply chains, reducing financial barriers, and improving coordinating and planning across government entities.

I. The Challenge

The deployment of increasingly sophisticated artificial intelligence (AI) models has accelerated rapidly in just a few years and is reshaping the economic competitiveness landscape. From expediting scientific and pharmaceutical discovery, to optimizing resource allocation, to improving fraud detection, to fine-tuning advanced manufacturing processes and hundreds of other applications, AI is transforming the U.S. economy. With implications for long-term productivity growth, competitive advantage in the global marketplace and national security, maintaining and extending America's strategic AI leadership position is a clear national imperative.

Business Roundtable has articulated a suite of **policy recommendations** that promote national leadership in AI innovation, address AI-related risks, and promote safe and responsible AI use and deployment. But positioning the economy for an era in which AI is ubiquitous and essential also has important implications for physical-world resources — and for the businesses that manufacture, manage, and distribute them. Data centers, which house the hardware used to train and operate AI models, require vast amounts of concrete, steel, electrical equipment, chips, and fiber to build. More importantly, data centers are highly resource-intensive to operate, which means that resource considerations — electricity transmission and generation capacity, grid interconnection timelines, supply chains for energy system components, and access to water — will act as either critical brakes or accelerators on data center construction and AI innovation. Challenges to securing sufficient energy and water resources for data centers must be navigated quickly and decisively, while at the same time, deepening the reliability and resiliency of the nation's electricity system and ensuring affordability. AI deployment and data center demand for electricity are significant but far from the only drivers of projected load growth. Industrial processes, electrification and ambitious goals to ramp up domestic manufacturing — from semiconductor fabs to steel plants to automobile component manufacturing — all require massive amounts of electricity. Serving this demand while ensuring system reliability and affordability will require a portfolio of solutions: bringing the full range of diverse domestic energy sources to bear; modernizing and expanding the electricity grid; and deploying AI-enabled approaches for more efficient energy and water system management.

The private sector has a long history of finding creative solutions to what appear to be intractable problems. Unfortunately, the speed of technological progress and innovation — as well as the speed of international competition for AI dominance — stands in stark contrast with the typically slow pace of regulatory action, government coordination, and the legislative process. As U.S. businesses are innovating rapidly — investing in diverse sources of supply to power new data centers, finding new energy efficiencies, and working with local utilities to implement creative solutions — national policy support, regulation, and strategic direction must keep pace or the U.S. risks falling behind.

II. Goals for an AI Energy Policy Agenda

Maintaining and advancing our strategic global leadership in AI model development and deployment is an economic, competitiveness, and national security imperative. The United States is a resource-rich economy, with diverse domestic sources of energy and the industrial and manufacturing capacity needed to support AI's substantial infrastructure and hardware requirements.

As the leaders of American businesses that develop and deploy AI; produce energy; build infrastructure; and generate electricity, Business Roundtable CEOs urge policymakers and regulators to take prompt, decisive action to ensure that U.S. AI leadership is not constrained by resource-related barriers. Specifically, the United States needs an energy and environment policy agenda for data center development that eliminates physical resource supply and accessibility as significant barriers to AI deployment by:

1. **Taking full advantage of all domestic generation resources, each of which has an important role to play in meeting demand growth.**

2. **Investing in grid resilience, reliability, flexibility, and transmission capacity.**

3. **Using AI to innovate and optimize energy and water systems management.**

Importantly, Business Roundtable CEOs believe that these goals can and must be pursued in a way that ensures affordability and accessibility for ratepayers while reducing emissions and improving air and water quality.

III. The Dynamics of AI Energy & Water Demand

Data centers are the physical engines of AI models: warehouses densely packed with servers and network equipment that perform highly complex computing tasks and store data for AI model training and use. Much of this hardware is resource intensive. A typical data center uses anywhere from 10 to 50 times the amount of energy used by a typical office building per square foot of space, and AI workloads are a more energy-intensive use of data centers than more traditional tasks (e.g., cloud computing, streaming, data retrieval).[1]

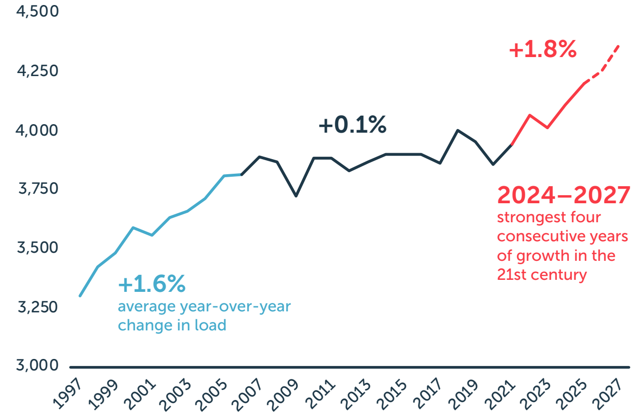
The Scale of Energy Demand

Data centers vary in size and scope, from single-tenant, extremely large data centers owned and operated by technology giants, to smaller, multi-tenant data centers owned by a third party and leased to customers. In the first half of 2025 alone, there were 5,243 megawatts (MW) worth of new data centers under construction in the United States — down from a peak of 6,350 MW in the second half of 2024 but still up 62% compared to the latter half of 2023.[2] Despite the slight year-over-year decline in MWs under construction, which was largely due to broader macroeconomic conditions, the broader trend continues to be toward more and larger data centers. Accelerating demand for advanced AI computing functions and rapid advancements in the sophistication and capabilities of large language AI models (LLMs) are prompting data center developers and AI "hyper-scalers" to build bigger, up to many hundreds of megawatts worth of demand for a single data center or data center cluster.

After roughly a decade of essentially flat load growth, AI data centers — along with electrification and the expansion of domestic manufacturing — are ushering in a new era of rapidly increasing electricity demand, particularly in certain regions (**Figure 1**). In fact, from 2020 to 2024, the average load growth across several major regional transmission operators and independent system operators was approximately double the peak load forecasts from the North American Electric Reliability Corporation (NERC).[3] And although data centers currently represent only around 4% of total U.S. electricity consumption, forecasts predict that their share could climb as high as 12%

Figure 1

The strongest load growth in 25 years
Historical and forecasted U.S. electricity consumption, billion kWh

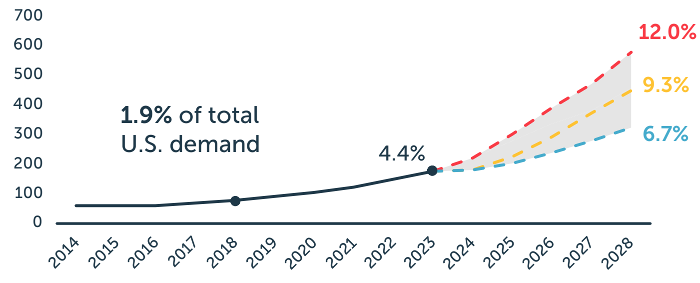


Source: Energy Information Administration, Short-Term Energy Outlook (2026).

by 2028 (**Figure 2**).[4] As of June 2025, public reporting by a subset of U.S. utilities indicate that they have already committed to providing 64 gigawatt (GW) in capacity to future data centers — which would be the equivalent of a 12% increase compared to current U.S. electricity demand.[5] In addition, a further 132 GW of "uncommitted" data center demand is sitting in utilities' interconnection queues. Some of this demand might never materialize, but the scale of potential demand is an indicator of how high the higher case scenario for data center load growth could be over the next several years.

Figure 2

The extent of near-term data center load growth is uncertain
Historical and forecasted data center electricity consumption, TWh



Source: Estimated from LBNL, 2024 United States Data Center Energy Usage Report (2024); McKinsey & Company, Global Energy Perspective 2023 (2023).

The Shape of Energy Demand

In addition to the scale of electricity demand, the shape of data center demand also presents unique challenges. AI computing tasks can vary in intensity as models are trained and used, which triggers corresponding and occasionally high variability in voltage sensitivity and power use within just a few seconds. Depending on how data center operators manage peaks and troughs in demand for computing power, load variability can make it challenging for grid operators to manage and balance demand across systems, resulting in reliability concerns that could ripple across the system to other customers.

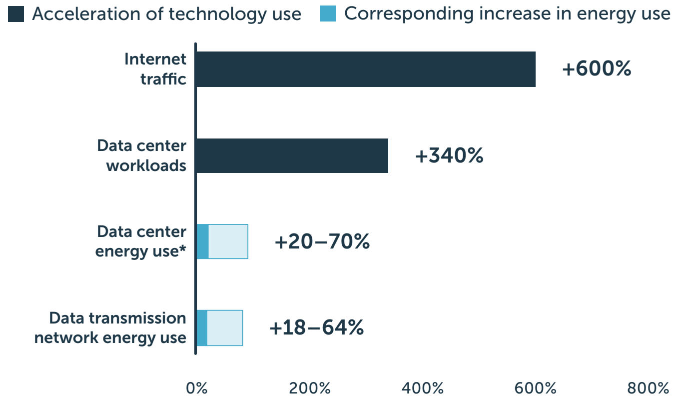
Implications for Investment & Project Planning

With such high electricity-intensity, the cost to build and operate the next generation of data centers, and therefore the cost contours of AI innovation, is largely determined by the timely availability and cost of reliable electricity supply. This makes timing a much more salient factor in efforts to bring new electricity generation online and expand the electric transmission system. But while there is agreement that data center development and electricity demand will continue to accelerate, to what degree and at what pace is unclear.

Forecasts for AI-driven electricity demand vary based on different assumptions and possibilities regarding the extent of AI adoption, the extent to which AI models run more efficiently, and the extent to which energy efficiency and adoption of flexible demand management at data centers can trim future power needs. Data center developers, and the manufacturers of the hardware and chips they rely on, are highly incentivized to improve their energy efficiency and are already finding innovative ways of doing so (**Figure 3**). And data center designs are looking beyond the IT stack (compute, networking and storage equipment) to the power, cooling and facility systems to find additional energy efficiencies — all of which are helping to offset the increase in computing workloads.

Figure 3

Energy efficiency gains have offset major increases in workloads
Global digital and energy indicators, 2015 to 2022 change



** Excludes crypto mining energy use.*
Source: International Energy Agency, Data Centres and Data Transmission Networks (2023).

RELIABILITY

The confluence of new load growth, an aging electrical grid and increased frequency of extreme weather events and related power outages is raising real concerns about the reliability and resiliency of the U.S. electricity grid, especially amid accelerating retirement of baseload generation capacity. According to the Department of Energy (DOE), 70% of U.S. transmission lines are over 25 years old and approaching the end of their useful lifespan.[6] In 2014, a DOE study found that the average transformer on the grid was 38 to 40 years old, meaning that many transformers are now well beyond their expected design lifetime of 40 years.[7]

The task of bringing on new supply to meet data center-driven load growth is inextricably tied to reliability. Our nation's grid will require expansions and modernization to ensure it can handle future standard demand — shaped by data center load and increased electrification across the economy — as well as extraordinary demand resulting from exceptional demand-related events. This includes reinforcing existing infrastructure; adding new power generation, storage and dispatch technologies; bolstering existing and expanding new transmission capacity to accommodate diverse and new sources of supply; and implementing advanced AI-enabled grid management technologies for faster interconnection, more accurate forecasting and planning, and better, more responsive system management.

This uncertainty creates planning and financing challenges. While energy project developers and investors typically take a multi-decade view of new projects, data centers often operate on much shorter planning horizons. In general, demand for new data centers exceeds the pace at which they can receive grid interconnection, which is also faster than comparable generation and transmission can be planned and constructed. This timing misalignment places a speed limit on the ambitions of U.S. data center developers and undermines national ambitions to be the global leader in AI innovations.

Cooling Data Centers: Implications for Water Resources

Energy is not the only important resource to consider for AI deployment. Data centers rank among the top 10 water-consuming commercial industries in the U.S., and a 100 MW data center can use more than 500,000 gallons of water a day — the equivalent of 6,500 households.[8,9] AI model training and use is so computationally intensive that servers can quickly overheat, so data centers typically use electricity-powered air conditioning or water-based evaporative systems to cool them. This can create a trade-off between water and electricity-intensity. Beyond the data center itself, the broader infrastructure and supply chain needed to support data center deployment — electricity generation and semiconductor manufacturing — are also water-intensive activities, creating a need to invest in more efficient water use and recycling systems and technologies.

Traditional air cooling systems — attributing up to 40% of their electricity consumption to cooling their hardware — are less energy efficient than evaporative cooling systems.[10] Additionally, higher electricity use often corresponds with higher indirect water use, as power generation (especially conventional thermonuclear generation) can be water-intensive. This means that data centers using air cooling have tended to have a higher direct electricity footprint and often a higher indirect water footprint than data centers that use evaporative cooling systems.

Water-based cooling systems typically require significant amounts of water (subject to data center design and specific ambient temperature and climate conditions) and, due to evaporation, not all water is returned to the local water environment. In areas of the country where water is more scarce and has exclusive competing uses, water use and data center operational efficiency has heightened importance.[11]

IV. A Portfolio of Solutions

The United States needs a portfolio of solutions along four pathways to support our national AI ambitions and meet growing demand for AI:

1. **Taking full advantage of all domestic generation resources**

2. **Investing in grid resilience, reliability, flexibility, and transmission capacity**

3. **Using AI to innovate and optimize energy and water systems management**

Along each pathway, there are solutions that are ready to be deployed now. Others require short-term action to unlock long-term potential. Robust and sustained collaboration and coordination — between the public and private sector, national and state regulators, across federal agencies and regulatory bodies, and with grid operators — is needed to ensure that policy and regulatory actions are aligned with practical data center and electricity system needs, and that the timing of actions are aligned with the pace of AI and technological progress.

Finally, successful generation and transmission expansion and infrastructure improvements require policy stability. Energy infrastructure projects — whether in generation, transmission, or grid technologies — are built on planning processes and capital commitments that span decades. Durable regulatory, permitting, and policy frameworks provide the stability and confidence needed for sustained private sector investment in the energy infrastructure that powers AI.

1. Taking full advantage of all domestic generation resources

In early 2026, the North American Electric Reliability Corporation (NERC) anticipated that more than 105 GW of coal, natural gas, petroleum and nuclear generating capacity may be retired from the grid over the next decade.[12] This forecast is roughly 10 GW lower than NERC's projections from 2024, largely due to the postponement of retirements to meet more immediate reliability concerns. Still, these due-to-retire assets represent a sizable portion of overall generation capacity and primarily provide baseload power. This means that anticipated load growth is set to hit a grid that will already be "in the hole" in terms of firm generation capacity. Some regions will need to bring electricity generation online very quickly.

An "all-of-the-above" energy strategy

The U.S. needs an "all-of-the-above" approach to electricity generation that includes both dispatchable and firm sources and utilizes both mature and emerging technologies. Under this approach, the limitations of any one technology can be offset by the strengths of another, and technologies can be developed and deployed in sequence to best meet the contours of current, near-term, and long-term AI-driven load growth. We cannot afford to sideline any energy resource in the race to meet near-term demand and build for what we know is coming.

In the very near term, supply and reliability augmentation — particularly for data centers that are looking to come online or scale very quickly — may need to happen through "bridge solutions," which could include small-scale distributed generation, back-up power, short and long duration energy storage (LDES) technologies, or even restarting shuttered baseload power. In certain circumstances, some or a combination of these supply options can provide important off-grid firming supply that can help serve data centers' near-term power needs.

But bridge solutions and supply augmentation are not substitutes for bringing new, large-scale generation capacity online. When it comes to meaningfully expanding our nation's electricity supply, the system must prioritize sources that can quickly move from construction to delivery. Currently, renewable generation projects make up the majority of generation capacity in interconnection queues, and they are typically fast and affordable to develop. In addition, many AI data center developers and hyper-scalers are particularly interested in procuring low- or zero-emissions electricity: data center developers were responsible for more than half of corporate clean energy procurement in 2025.[13] While renewable resources alone may not be sufficient to provide the reliable electricity supply needed to support future AI-driven demand, when paired with firming technologies (e.g., batteries), flexible load management, and other firm baseload capacity, renewables can supply 24/7 power and serve as an essential energy engine for the AI revolution.

At the same time, continuing to build more traditional baseload generation sources such as natural gas, nuclear, and hydroelectric will be important for maintaining a balanced generation portfolio that can reliably meet future demand growth. While the U.S. has plentiful natural gas resources, it is also important to maintain access to sufficient domestic nuclear fuel supplies in the medium term. This includes continuing to investigate the potential for reprocessing nuclear materials, provided that security and cost considerations are adequately addressed.

Over the longer term, leading-edge energy generation technologies — fusion nuclear, small modular reactor nuclear, geothermal, and hydrogen — hold enormous potential to provide low- and zero-emissions supply, both firm and intermittent. Substantial additional investment, research and demonstration will be needed for these sources to reach cost-effectiveness and become commercially viable — but that investment is rapidly being deployed, globally. Data center developers, AI hyper-scalers and electric utilities have all expressed significant interest and made major investments in these technologies, highlighting that there is real momentum and commitment to creating an expanded, more diverse, more sustainable and more reliable future generation portfolio.

Challenges to Expanding Generation Capacity

There are, however, significant and stubborn barriers to bringing new, diverse sources of supply online: supply chain bottlenecks for key generation equipment, wait times for grid interconnection, and long, unwieldy permitting processes. When it comes to permitting, siting new generation is subject to both state and federal jurisdiction: the federal permitting process primarily oversees siting on federal lands and projects with a federal nexus, while state regulatory commissions and siting boards oversee generation under their purview. As currently designed and implemented, overly-complex and years-long federal permitting processes significantly drive up the costs of building new generation. When building new generation assets is a high-risk endeavor, it has negative knock-on effects for long-term system reliability, capacity, and even job growth in certain sectors. Indeed, cumbersome processes, unclear lanes of regulatory responsibility, changing requirements across administrations, and expansive potential for litigation mean that the average timeline for National Environmental Policy Act (NEPA) process completion is 3.8 years for projects requiring an environmental impact statement (the highest level of review possibly required).[14] While Congress has taken meaningful steps to amend the National Environmental Policy Act to improve the permitting process, NEPA is only one of many permitting-related processes overseen by the federal government, and more must be done to streamline deployment. More detailed information on policy recommendations to reform federal permitting and unlock investment in energy systems and infrastructure across the nation is available in Business Roundtable's *Building a Prosperous Future* report.[15]

2. Investing in grid resilience, reliability, flexibility, and transmission capacity

Bringing a sufficient, diverse portfolio of new generation assets online, and ensuring that new supply can be accessed when and where it is needed, will be impossible without simultaneous investments in grid capacity and modernization. New and increasingly complex demands — large commercial loads wanting to come online quickly, a growing share of intermittent generation, multidirectional flows, and highly variable voltage and demand patterns — are being placed on the nation's electricity grid. As an added challenge, these market forces are acting against a backdrop of more frequent and more severe extreme weather events. Against this backdrop, making investments in and taking actions to bolster grid reliability and capacity must be the north star of any energy policy designed to sustainably support AI deployment over the long-term.

Expanding and fortifying the grid to reliably facilitate the desired fast pace of data center development — and to accommodate other large industrial loads like new manufacturing facilities — requires three capabilities: (a) quickly connecting new generation assets and large loads; (b) adding long-distance, high-voltage transmission capacity (e.g., 765 kilovolt lines); and (c) modernizing grid operations to more efficiently balance an increasingly complex system. Building and maintaining these capabilities are multi-year, capital-intensive undertakings, which places a premium on regulatory certainty. Federal and state regulators must provide that certainty to ensure that utilities can confidently plan for and make needed investments in the power grid.

Quickly connecting new generation assets and large loads

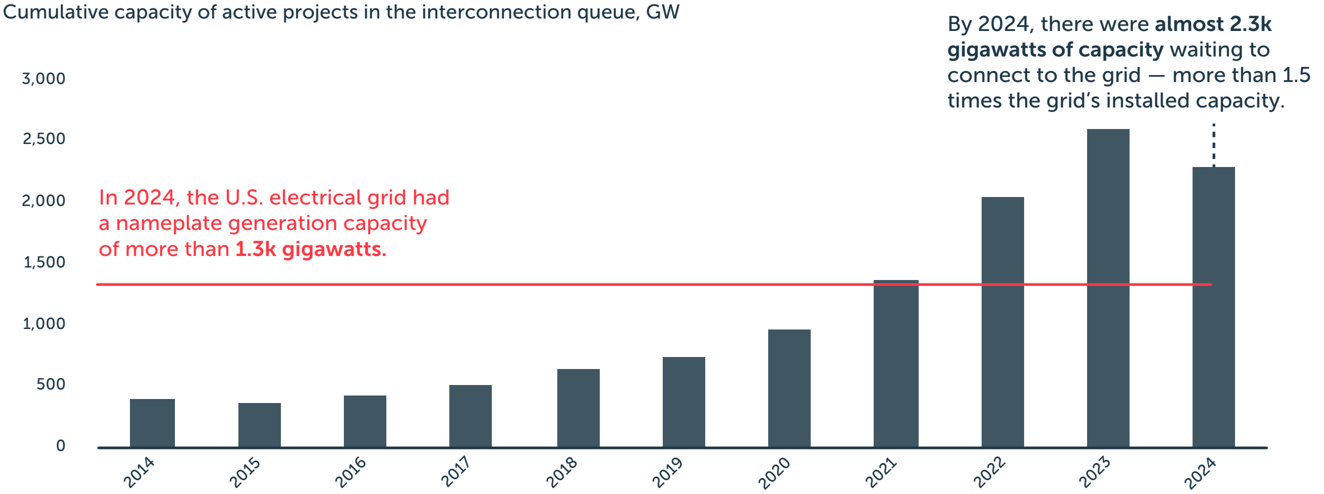
As of the end of 2024, the U.S. had almost 2.3 terawatt (TW) of new generation in line waiting to connect to the grid — 1.7 times the size of the existing fleet of grid-scale generation (**Figure 4**).[16] While some of this generation will withdraw from the interconnection queue or not materialize for a variety of reasons (e.g., siting, financing, supply chain, changing federal policy, etc.), inadequate interconnection capacity means that terawatts of power that could be supplying new demand are instead left waiting for years to connect to the grid.

Indeed, the time to connect generation resources to the grid is one of the main bottlenecks to serving new data centers on the timelines they need — and delays have increased. From 2018 to 2024, the median time between interconnection request and commercial operations was more than four years, up from a median of less than two years for projects built between 2000 to 2007.[17] On the demand side, new data centers also face extended wait times for interconnection — as long as 7-10 years — especially in crowded markets.[18,19,20]

There are multiple drivers of long interconnection wait times. Utilities and regional grid operators have made progress over the last several years toward managing interconnection queues in a manner that gives priority to the generation and load projects that are most "ready" to come online quickly. And the federal government recognizes the urgency of these challenges and has taken

Figure 4

There is more capacity waiting for interconnection than there is on the grid
Cumulative capacity of active projects in the interconnection queue, GW



Source: LBNL, Interconnection Queue Dataset & Summarized Data Files through 2024 (December 2025); Energy Information Administration, 2024 Electric Power Annual Report (2025).

several steps, led by the Federal Energy Regulatory Commission (FERC), to address interconnection issues for generation and very large loads.[21]

However, siting, supply chain and financing-related challenges persist and in some cases are exacerbated by abrupt reversals in federal policy. Across the country, there are roughly 400 GW of capacity that have a drafted or signed interconnection agreement but that have not reached commercial operations due an array of issues, sometimes related to project-side decisions, but often due to delays stemming from permitting and siting processes, federal policy changes, litigation, and supply chain constraints. To put this into perspective, 400 GW is enough power to supply more homes than there are in the United States.[22]

Adding long-distance, high-voltage transmission capacity

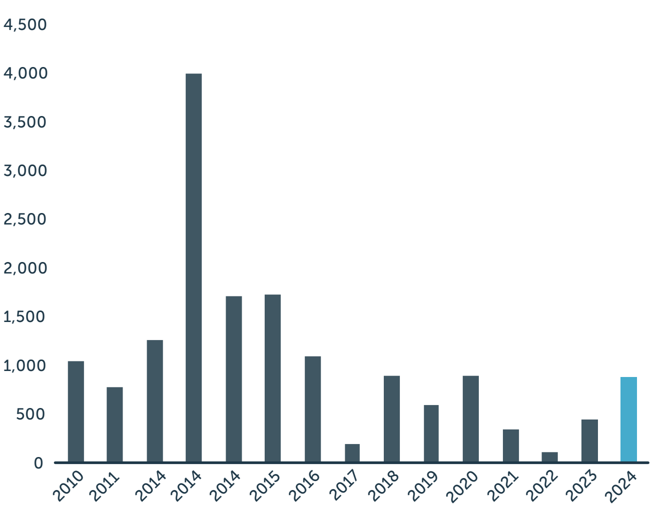
While the need for more grid capacity is clear, new transmission lines are difficult to plan, approve and build because of the numerous stakeholders implicated in transmission routing, especially interstate transmission line construction. Utilities, regulators, landowners, consumer advocates and environmental groups, and state and local governments all typically have a seat at the negotiating table, and they may have competing interests. Deciding who will build transmission lines, and who will pay for them, has slowed meaningful additions to U.S. transmission capacity over the past two decades. In fact, 888 new miles of 345 kilovolt or greater transmission lines were built in the United States in 2024 — one of the slower years for new construction since 2010 — as transmission system expansion projects can take between 5-20 years to develop (**Figure 5**).[23,24] In addition, federal permitting processes that involve multiple agencies and cumbersome environmental reviews delay the expansion of transmission systems further. Indeed, more than one-third of the 900 projects that were under construction or in planning in 2025 have been delayed from their expected in-service date.[25]

Some electricity markets are moving ahead with approving new long-distance transmission projects to prepare for future retirements and demand growth, but planners, project developers and investors need more support from policymakers — both in the executive branch and Congress — to place the grid on a long-term trajectory towards reliability and resilience. The North American Electric Reliability Corporation's (NERC) Long-Term Reliability Assessment emphasizes this

Figure 5

There is not enough new high-voltage transmission being built

Miles of new high-voltage (345+ kilovolts) lines added each year



Source: Estimated from Grid Strategies, Fewer New Miles: Strategic industries held back by slow pace of transmission (July 2025).

point, citing growing risks to transmission development due to procurement and supply chain delays; economic conditions; planning and construction issues; permitting delays; and changing needs.[26] Federal and state permitting reform is needed to streamline infrastructure development and more quickly connect new generation with new demand. And regulatory reforms are needed to recognize the value and importance of high-voltage transmission lines for accommodating rising electricity demand, which is increasingly being built in locations outside of traditional load centers.

However, even if permitting and regulatory roadblocks are lifted, supply chain barriers and difficulty sourcing critical equipment and materials could still place a brake on the pace of transmission line buildout and general capacity expansion. The United States imports many of the components needed for grid upgrades and expansions, and the narrow supplier bases for precious metals, chips, transformers, and insulation materials result in shortages, high prices, and long wait times. For example, a shortage of high-voltage direct current (HVDC) converters limits utilities' ability to add grid capacity and bring new, rapidly-deployable generation online.[27] Lead times on orders for transformers and circuit breakers have climbed to two to five years, while costs have nearly doubled.[28] Federal policy encouraging reshoring of manufacturing is bringing domestically-manufactured essential components to the market but it will take many years before there is sufficient domestic supply to meet demand.[29] In the meantime, federal policies must acknowledge this reality and provide for stable supply chains and enough certainty to ensure prudent investments can be sustained.

Modernizing the grid to more efficiently balance the system

Significantly increasing transmission capacity is a cost-intensive and long-term effort, even assuming prompt policy and regulatory action. The cost of building brand new high-voltage transmission lines and other grid infrastructure, combined with uncertainty regarding the scale and rate of future demand growth — and therefore how much additional infrastructure will be required — means that utilities and ratepayers have incentives to find quicker, lower cost approaches to expanding grid capacity and boosting reliability. These efficiency-oriented investments — while not substitutes for investing in large-scale grid infrastructure — still present attractive options for limiting the scope of investments and forestalling some decisions until the longer-term picture of AI's power demand becomes clearer.

First, grid-enhancing technologies (GETs), such as dynamic line rating and reconductoring are important tools for extracting more productivity from existing infrastructure and for helping fortify the grid against extreme weather and security threats.

GRID-ENHANCING TECHNOLOGIES (GETS)

Significant amounts of baseload generation capacity are nearing or have entered retirement, and the sources in the queue to replace them, which are largely wind and solar, need additional transmission capacity to be reliably delivered from their point of generation to customers. To expand transmission and increase generation capacity, regional transmission operators are greenlighting the construction of high-voltage transmission lines, and the Federal Energy Regulatory Commission (FERC) is well underway in its efforts to reform the generation interconnection process.

In the interim, grid-enhancing technologies, or GETs, are important tools for advancing grid modernization and efficiency by extracting more productivity from existing infrastructure and extending the lifetime of the transmission system. This suite of hardware and software includes technologies like dynamic line rating, power flow controllers, and advanced analytical tools such as sensors, smart meters, and monitoring devices that optimize the capacity of existing transmission infrastructure by providing real-time capacity data to grid operators. GETs are an important tool in the energy efficiency toolbox for grid management, but they are not a substitute for new baseload generation or large-scale transmission expansion, as their benefits are conditional on the right circumstances (for example, dynamic line rating only improves line ratings when environmental conditions, such as wind, are favorable).

Modernizing the grid is also about more than just creating more grid capacity. There is growing risk that current grid technologies and infrastructure are too old to be secure, particularly against the backdrop of rising cyber incidents from bad actors. GETs can help harden existing grid infrastructure against cybersecurity threats, as well as the impacts of extreme weather — particularly extreme cold. Policy actions, such as financial incentives or regulatory requirements, can support utilities and power project developers in implementing upgrades as regulatory efforts and reforms to facilitate transmission expansion continue apace.

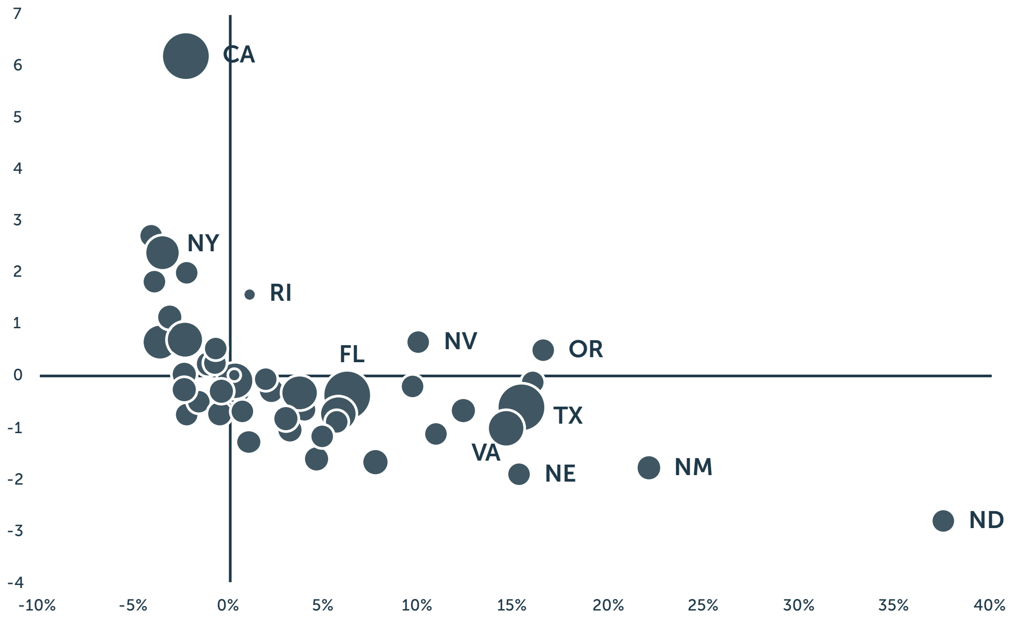
Second, when conducive, making large loads — including data center load — more flexible could shave peak demand and reduce the scale of new generation and grid infrastructure needed to create additional capacity to serve new load and improve system reliability. Most utilities and regional transmission systems intentionally maintain significant spare capacity reserves to be prepared to meet infrequent surges in maximum demand, such as from extreme weather events. In recent years these reserves have been tightening, and they cannot be relied upon as extra capacity to serve new large load demand. The extent to which large data centers can make their demand even slightly more flexible, especially during peak periods throughout the year, means more modest additions to generation capacity could accommodate new demand more quickly and mitigate the need for costly system-wide expansions and upgrades at the margins.

One approach for giving data centers the ability to shave demand during peak hours is building onsite renewable generation in combination with long-duration energy storage (LDES), typically via battery energy storage systems (BESS) to provide off-grid firming supply. In addition, generators can turn on immediately to provide back-up electricity when the regional grid is stressed and data centers cannot afford to lose power or voltage (subject to federal, state and local emission regulations). In fact, the U.S. has a competitive edge in manufacturing these high-performance, large-scale generators, which provides an advantage for domestic AI data centers.

Another approach is implementing flexible load management practices. AI-enabled virtual workload management is increasingly giving AI data centers the ability to defer power-intensive computations to a different time, shift them to data centers located on grids with lower demand, or lower voltage or frequency to slightly reduce processing speeds.[30] Not all AI workloads or data center configurations are equally amenable to demand flexibility or load shaving solutions. For example, co-location data centers (data centers that house multiple tenants) have contracts with different tenants that commit to different performance specifications, making it challenging to implement consistent demand flexibility practices. However, preliminary research, pilot projects, and even demand response agreements between hyper-scalers and utilities indicate that some AI workloads (e.g., model training) may be amenable to flexible load management while maintaining acceptable performance characteristics.[31,32]

Figure 6

States with the largest load growth have seen a decrease in electricity prices
Electricity demand versus electricity price change, 2019 to 2024



Source: Wiser et al, Factors Influencing Recent Trends in Retail Electricity Prices in the United States, Supplemental Data, The Electricity Journal (Oct 2025).

AFFORDABILITY

Electricity prices typically reflect (1) supply charges, the cost of producing electricity and transporting it to the distribution system, (2) delivery charges, the cost of final delivery to the ultimate customer, and (3) necessary investments to maintain and ensure a reliable power delivery service — for example, maintaining sufficient capacity reserves; upgrading and expanding transmission lines; and rebuilding from and safeguarding against extreme weather and natural disasters.

As of November 2025, national average residential electricity prices were 15% higher than they were in 2022, while average commercial electricity prices were up 6%.[33] While inflation accounts for most of the rise, it does not account for all of it.[34] Among other cost drivers, extreme weather events have caused costly damage to generation and transmission infrastructure and required major investments in repair and grid hardening. What is clear, however, is that demand growth — including from data centers — has not been associated with higher prices. In fact, higher demand can actually place downward pressure, on average, on electricity prices, as more demand for electricity provides a larger base over which to spread critical investments in electricity infrastructure capacity, reliability, and security (**Figure 6**).

Utilities and data center developers are also making investments in new capacity and transmission infrastructure in a manner that supports affordability for residential and smaller commercial ratepayers. For example, utilities, data center customers, and state-level regulators are exploring new approaches to rate setting and contract terms that are helping to shield ratepayers from potential increase in electricity prices.[35] There has also been a flurry of announcements in 2025 and 2026 between technology companies, energy providers and local utilities about creative arrangements to co-locate large loads with supply to ensure reliability while also protecting customer affordability.[36] In 2026, leading AI infrastructure developers signed a pledge at the White House to protect Americans from energy price hikes by covering the cost of new generation and power delivery infrastructure upgrades.[37]

A prerequisite for long-term, broad-based energy affordability is making it faster, less burdensome, and therefore less costly to build and maintain electricity infrastructure and generating capacity — for example, by acting swiftly on **comprehensive federal permitting reform**. In addition, the costs of essential components for electricity infrastructure have gone up in recent years as shortages and tariffs have led to price hikes and long lead times for key component and materials — increasing cost pressures for energy developers.

But utilities, project developers, and technology providers are actively working against these cost pressures. For example, investments in energy efficiency, for all electricity customers but particularly for large loads during times of peak demand, promote affordability over the long-term by reducing the need for costly capacity additions. And AI-enabled demand forecasting systems are helping utilities more accurately predict how much capacity and infrastructure will be needed to serve future load, thereby avoiding costly over- or under-investment.

3. Using AI to innovate and optimize water and energy systems management

Meeting AI's energy and water resource needs will require continued innovation from the private sector, support from the public sector, and coordination between the two over both the short- and long-terms. Already, engineers and data center operators are innovating and deploying an array of solutions for managing AI's water draw and impact on local groundwater resources, from closed-loop cooling systems to waste and rainwater harvesting to targeted cooling techniques.[38] Over the next 25 years, data centers are expected to become 46% more efficient in their water use as a result of cooling system changes — in practice, this means data center water withdrawal is forecasted to increase at less than half the rate of an almost seven-fold increase in energy demand expected by 2050.[39]

Energy and AI have a bidirectional relationship: AI is highly energy-intensive, but it also unlocks novel solutions for efficiently increasing supply, improving reliability, reducing electricity consumption, and lowering emissions. Progress is already underway to apply AI to aspects of the U.S. electricity system, with the most impactful applications of AI to the grid and energy systems can be categorized across six dimensions.

Innovation: AI can accelerate the innovation process, making the discovery and development of advanced materials and manufacturing processes faster.[40,41] Areas ripe for AI-enabled design and development include new battery chemistries, advanced solar photovoltaics, sustainable biofuels (including sustainable aviation fuel), more efficient engines and motors, and making renewable sources more efficient sources of generation. These innovations not only support a more diverse and productive U.S. energy portfolio, they also support sustainability and emissions reduction without sacrificing affordability or domestic energy leadership.

Optimization: AI can optimize existing processes to increase energy and water efficiency and better utilize existing infrastructure. For example, AI can be integrated into smart grids to monitor transmission lines, improve resource allocation and enable real-time pricing, and optimize heating and cooling efficiency in buildings. It can be integrated into telemetry models that forecast energy costs and usage to improve resource allocation and minimize peak loads from grid demand. AI can also help identify the discrete and most impactful inputs and factors that drive system variability, clarifying which factors to target for more efficient energy and water management and cost reduction.

Prediction: New machine learning capabilities leverage real-time energy data collection to better monitor and analyze equipment performance and workloads, predict where faults and outages may occur, and allow for preemptive intervention and maintenance. For example, predictive maintenance has improved coordination between inventory planning and crew scheduling, which shortens maintenance timelines. Furthermore, enhanced weather forecasting, coupled with AI-enabled transmission line analytics, has improved supply forecasting for renewables and reduced curtailment of excess renewable generation.

Planning: AI can accelerate planning processes, including permitting and siting, to enable sufficient supply and transmission infrastructure. For example, permitting for new energy generation projects and transmission and distribution upgrades can be accelerated by using AI for bulk information and public comment processing. In addition, AI can help inform planning efforts to make resource exploration more efficient.

Administration and Coordination: AI can help onboard new networks that need to be administered and coordinated. For example, smart transportation systems can minimize traffic congestion, manage electric vehicle payment systems, and optimize public transportation. AI can simplify the use of these complex analytical tools by streamlining interactions between a wide range of operators and streamlining decision-making processes within a system.

Security: AI can help ensure that data is handled properly, systems are secure, and physical assets are protected.

V. Policy Recommendations

Implementing the following recommendations will mitigate resource-related barriers to AI deployment and data center development by taking full advantage of diverse, domestic generation resources; investing in grid resilience, reliability, and transmission capacity; and supporting innovative approaches to water use and management. Taking action on these recommendations should be done in a manner that is consistent with sustainable environmental stewardship, a long-term drive towards emissions reduction, and considerations around resource access and affordability. Policymakers should also take advantage of every opportunity to leverage AI models and tools as an important part of the solution for meeting AI's physical resource needs.

Modernizing Regulations

+ The Federal Energy Regulatory Commission has taken several steps to address generation and large load interconnection issues. In addition, several states, RTOs and ISOs also are grappling with load interconnection, cost allocation and other related issues associated with data center demand growth. Business Roundtable supports these efforts to improve the interconnection queue process and increase the speed at which projects are connected, while ensuring that costs are allocated fairly. We also support FERC's efforts to improve regional and interregional transmission planning.

+ Promote industry efforts to expedite the interconnection process in an objective and non-discriminatory manner by facilitating shovel-ready projects for new generation projects and generation capacity upgrades, and, in the case of new demand, by supporting projects that commit to completion and operation within an agreed upon timeframe.

+ Support the timely expansion of a balanced generation portfolio by supporting the ongoing operation of economically viable legacy generation resources and by providing regulatory and permitting certainty for all types of energy projects, including renewable.

+ Clarify and streamline regulations to enable the buildout of onsite generation for large industrial loads and support FERC and state initiatives to integrate effective utility grid-edge demand response approaches.

+ Support voluntary demand-side management of large loads in wholesale markets, led by FERC and supported by state regulators.

+ Improve federal-state coordination to ensure that national guidance regarding AI and energy for AI is implemented at the state level.

+ Promote conscientious water management practices at data centers by establishing water efficiency standards.

PERMITTING REFORM

There is growing bipartisan agreement that uncertain, lengthy and overly complex federal permitting processes threaten the reliability of our energy and infrastructure systems. While Congress has taken meaningful steps to improve the permitting process by amending the National Environmental Policy Act (NEPA), this is only one of many permitting-related processes overseen by the federal government, and more must be done. In September 2025, the Business Roundtable released *Building a Prosperous Future*, which lays out a comprehensive roadmap for enacting lasting, impactful permitting reform. The recommendations below highlight actions on permitting that are most critical for meeting the energy resource needs of AI. For Business Roundtable's full suite of recommendations for policymakers on how to enact impactful, pro-growth permitting reform, please refer to the full paper.

To remove permitting-related barriers to resource adequacy for AI, policymakers should:

+ Support the development of energy assets across onshore and offshore federal lands by accelerating relevant leasing programs and ensuring timely permitting of infrastructure needed to deliver energy resources to market. The Administration has taken steps to accelerate leasing for conventional energy sources, but codification and expansion of expediting policies for all resources is needed.

+ Accelerate the permitting and construction of natural gas pipelines and electricity infrastructure, including expanded and new interstate and inter-regional transmission lines.

+ Remove burdensome environmental reviews that slow transmission operators from making grid improvements and expansions.

+ Codify the requirement that agencies leverage digital technologies to streamline and speed up the permitting decision-making process, as called for in a Presidential Memorandum on April 15, 2025.

+ Facilitate promising technologies that can speed modeling necessary for interconnection studies and inform energy development decisions.

- Finalize National Interest Transmission Corridor designations and implement Federal expedited permitting of transmission in NITCs.

Strengthening Supply Chains

- Safeguard access to inputs that are essential for supporting a robust portfolio of diverse domestic energy sources, alternative energy production, battery manufacturing, and on-site and back-up generation technologies by facilitating domestic manufacturing and supporting reliable component imports where necessary.

- Reduce procurement timelines and ensure access to essential components for transmission grid expansions and upgrades — including metal conductors, steel towers, wires, chips, transformers, compute and network equipment, and insulation materials — by **revitalizing domestic manufacturing** and reliable access to imported materials and components when necessary.

- Support long-term domestic mining, processing and recycling of strategic materials and critical minerals of which the U.S. has sufficient reserves (e.g., lithium, copper, graphite, nuclear fuel).

- Remove any undue financial barriers to the timely expansion or ability to make reliability upgrades to electricity infrastructure, including policies that increase the price of essential materials and critical components (e.g., transformers, GETs), such as tariffs.

Reducing Financial Barriers

- Preserve a balanced and diverse energy mix by encouraging private sector investment in and construction of a broad portfolio of new energy projects.

- Ensure that promising new generation technologies (e.g., advanced nuclear reactors) receive the necessary financial support, including federal research dollars, to obtain first-mover advantage and secure emerging supply chains to support those technologies over the longer term.

- Look for opportunities to incentivize adoption of GETs, subject to situation-specific suitability, such as dynamic line rating, power flow controllers, and energy management tools that provide greater observability, efficiency and security.

+ Allow a repairs deduction under the Corporate Alternative Minimum Tax (CAMT) for electric service providers to deduct necessary grid repair expenses, to reduce financial barriers to maintaining and upgrading critical infrastructure and support a more reliable grid.

+ Create incentives for data centers to maximize water reuse and use of energy efficient hardware.

+ Support water reuse at data centers to enable economic growth while protecting local water resources.

+ Provide federal funding for research and development into energy applications of AI. Specifically, Congress should consider funding allocations to federally funded research centers to develop novel solutions for efficiently increasing electricity supply, improving grid reliability, reducing electricity consumption, and lowering emissions.

Coordination & Planning

+ Promote regional and interregional transmission expansion through planning and coordination between regional transmission operators and relevant agencies to promote grid reliability and transferability of power during peak demand or extreme weather events.

+ Support public-private partnerships working to strengthen AI innovation infrastructure, including between the government, national laboratories, universities and research institutions, non-profit organizations, and corporations.

VI. Conclusion

The build-out, upgrade and maintenance of energy generation resources is essential to America's economic growth and to ensuring that America is the global AI leader for this decade and in future decades. Data shows that the build-out of AI data centers can help mitigate the potential for rising energy costs, particularly if Congress and the Executive Branch act to implement the policies and recommendations outlined in this paper.

Data centers, as well as a shift toward electrification and ambitious goals to ramp up domestic manufacturing, are driving up electricity demand for the first time in decades. Serving this demand while deepening the reliability and resiliency of the nation's electricity system, protecting energy affordability and balancing the trade-off between water and electricity-intensity, is paramount for safeguarding U.S. economic competitiveness — ensuring that America is and remains the global leader in AI for this decade and in the future. To support AI developers, deployers, utilities, and other businesses in this mission, Business Roundtable urges Congress and the Executive Branch to act quickly to implement the policies and recommendations outlined in this paper.

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