# AI data centre boom fuels race for next-generation power solutions



As artificial intelligence drives a surge in data centre construction, the challenge of powering these energy-intensive sites is becoming critical. By 2035, data centres in the United States could consume up to 9 percent of the country’s electricity—underscoring urgent demand for scalable, sustainable power.

Technology firms are exploring new energy strategies, with small modular nuclear reactors (SMRs) gaining traction. Unlike traditional nuclear plants, SMRs are smaller, faster to build and can be located closer to data centres. Google has partnered with Kairos Power to develop 500 megawatts of SMR capacity, while Equinix is working with Oklo—backed by OpenAI’s Sam Altman—on 20 micro reactors.

However, SMRs face long regulatory lead times. Nuscale’s 77-megawatt design remains the only model to gain partial US approval, but was shelved in 2023 over rising costs.

The UK government is backing SMRs as part of its energy strategy, pledging £2.5 billion over the next decade, with Rolls-Royce at the helm. France is also investing in SMRs through EDF’s Nuward project. But even as interest grows, these technologies remain a medium-term solution.

In the short term, AI firms are turning to gas and hybrid models. xAI’s Colossus supercomputer in Memphis now generates 500 megawatts on-site using mobile gas turbines. Utilities are also scaling up—CenterPoint Energy is planning $65 billion in grid investment through 2035, while PG&E is committing $73 billion to meet new demand and improve fire resilience.

The US Energy Secretary has encouraged a “Bring Your Own Generation” model, urging data centres to supplement grid supply with on-site generation. While this approach reduces strain on public networks, it has drawn scrutiny over fairness, transparency and consumer impact.

AI power demands are vast. Deloitte projects that US AI data centre demand could hit 123 gigawatts by 2035—a thirtyfold increase. Some planned campuses will require electricity comparable to major gas or nuclear plants. Meta’s $10 billion data centre in Louisiana offers a glimpse of the future. Expected to draw more power than New Orleans during peak summer, it is prompting major new energy infrastructure builds by Entergy, raising questions over cost, tax relief and public accountability.

For the UK and other AI-focused nations, this energy race brings both risk and opportunity. Balancing innovation with environmental and social responsibility is now essential. SMRs may hold long-term promise, but in the near term, traditional energy, on-site generation and grid upgrades will be critical to fuelling the AI revolution sustainably.

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## Bibliography

1. <https://www.tomshardware.com/tech-industry/data-centers-to-account-for-9-percent-of-electricity-demand-in-the-u-s-by-2035-an-increase-of-5-percent-nuclear-power-could-help-sate-ai-demand> - Please view link - unable to able to access data
2. <https://www.tomshardware.com/tech-industry/data-centers-to-account-for-9-percent-of-electricity-demand-in-the-u-s-by-2035-an-increase-of-5-percent-nuclear-power-could-help-sate-ai-demand> - This article discusses the projected increase in electricity demand from data centers in the U.S. by 2035, estimating it could reach 9% of total demand. It highlights the efforts of major tech companies like Google, Amazon, and Oracle in investing in small modular nuclear reactors to meet this demand. The piece also touches upon the rapid expansion of AI technologies and the corresponding need for substantial power resources, noting that individual graphics cards used in AI applications can require up to 500W of power.
3. <https://www.reuters.com/business/energy/centerpoint-unveils-65-billion-capital-spending-plan-over-next-10-years-2025-09-29/> - CenterPoint Energy has announced a $65 billion capital spending plan for 2026–2035 to meet the rising power demand in the U.S., particularly from data centers driven by artificial intelligence, cryptocurrency, and industrial electrification. The utility also raised its annual adjusted earnings per share (EPS) forecast to $1.75–$1.77, up from $1.74–$1.76, with a 2026 target midpoint EPS of $1.90. Analysts project an EPS of $1.76. CenterPoint anticipates electric peak load demand will surge by 50% to nearly 31 gigawatts by 2031 and double by the mid-2030s. The increase is especially pronounced in Texas, a rapidly growing hub for data centers and energy-intensive industries. The company previously committed $4 billion to new Texas projects and currently serves over 7 million electricity and gas customers across six states.
4. <https://www.reuters.com/business/energy/pge-unveils-73-billion-spending-plan-meet-surging-data-center-energy-demand-2025-09-29/> - PG&E Corp announced a $73 billion investment plan through 2030 to upgrade its transmission infrastructure in response to a significant surge in electricity demand, primarily driven by expanding data center projects and increased adoption of artificial intelligence. The utility projects 10 gigawatts of new demand over the next decade, with the U.S. Energy Information Administration predicting record energy consumption in 2025 and 2026. To enhance grid reliability and mitigate wildfire risks—given its history of causing major wildfires—PG&E plans to install nearly 700 miles of underground power lines and implement 500 miles of wildfire safety upgrades by 2026. Additionally, under California's wildfire funding reform law SB 254, PG&E’s share of the state's $18 billion Wildfire Fund Continuation Account will decrease from 64.20% to 47.85%, and utilities are granted first rights on insurance subrogation claims.
5. <https://www.axios.com/2025/09/26/data-centers-energy-cost-chris-wright> - During a Climate Week NYC interview with Axios, U.S. Energy Secretary Chris Wright emphasized the need for data center developers to generate their own electricity if grid resources are insufficient. This push comes amid growing concerns about energy supply as the rapid expansion of energy-intensive data centers outpaces previously stagnant electricity demand. Wright suggested a “BYOG” (Bring Your Own Generation) approach, proposing that data center developers should not expect the grid to meet all of their energy needs. His comments came in response to questions about electricity reliability risks associated with the surge in data center construction. An opposing concern, raised by a former Trump-era energy regulator, warns that colocating private power generation with data centers might negatively impact household electricity availability. Meanwhile, the Federal Energy Regulatory Commission (FERC) is currently reviewing the implications of this issue, particularly in the Midwest and Mid-Atlantic, though it previously declined a similar proposal. The discussion highlights tensions between tech infrastructure growth and grid reliability.
6. <https://apnews.com/article/4ce76b73c102727d71edbbb56abe1388> - Meta is constructing a $10 billion data center in Holly Ridge, Louisiana, which will be among the world’s largest and require more daily electricity than New Orleans in peak summer. To support the facility, $3 billion in new electricity infrastructure—three gas-powered plants and a $550 million transmission line—is being built by Entergy under a confidential contract with Meta. Although Public Service Commission approval was granted with some consumer protections, the lack of transparency and potential long-term costs to the public are raising concerns. Meta will cover about half of the plant construction costs over 15 years but not maintenance or operation. Consumer advocates and one dissenting commissioner warn the public may be left paying if Meta exits or doesn’t renew its contract. Meta is also exempt from sales taxes under recent state legislation, risking substantial revenue losses for Louisiana. In contrast, other states like Pennsylvania, Oregon, and Texas are implementing stronger protections to prevent residents from bearing data center-related power costs. While some locals welcome Meta’s investment—including a promise of renewable energy and infrastructure development—others worry about rising costs and displacement due to sudden population growth related to the construction.
7. <https://www.publicpower.org/periodical/article/deloitte-says-power-demand-ai-data-centers-could-reach-123-gw-2035> - By 2035, consulting firm Deloitte estimates that power demand from AI data centers in the United States could grow more than thirtyfold, reaching 123 gigawatts, up from 4 gigawatts in 2024. AI data centers can require dramatically more energy per square foot than traditional data centers. For example, a five-acre data center augmenting central processing units with specialized graphics processing units might see its energy usage increase from 5 to 50 megawatts, Deloitte noted. The leading AI infrastructure developers that are scaling data center networks globally are known as hyperscalers. Each of the top three hyperscalers’ largest US data centers currently draw less than 500 megawatts of power but the largest data centers they are constructing or planning to build are more than double to quadruple the capacities of completed projects. “The largest of these are expected to require up to 2,000 MW -- that is, 2 gigawatts,” Deloitte said. “However, even these capacities are modest compared to what is on its way. There are 50,000-acre data center campuses in early-stage phases, which could consume 5 GW -- the amount of power needed for five million residential homes, and more than the capacity of the largest existing nuclear or gas plants in the United States,” Deloitte said. To explore data center challenges and identify opportunities and strategic approaches to building data center infrastructure, the Deloitte Center for Energy and Industrials conducted an AI infrastructure survey of executives from US-based data center and power companies. The results also support a set of strategic recommendations that can work together to close these gaps in the nation’s critical AI infrastructure, Deloitte said.