ESCA Back Pocket Insights

KEY INSIGHTS

- **EPRI projects data centers to consume 9% to 17% of U.S. electricity by 2030, up from 4% to 5% today.** These revised projections are about 60% higher than EPRI projected in 2024.

- **State-level projections for load growth vary widely, creating localized challenges.** Virginia is the only state today where data centers consume over 20% of electricity, increasing to 39-57% by 2030. In the Medium scenario, eight states exceed 20% shares by 2030.

- **Under reference policies, natural gas dominates incremental supply from data centers**, while carbon-free energy commitments shift investment portfolios toward low-emitting generation and energy storage.

This brief is based on the EPRI white paper "Powering Intelligence: Updated Scenarios of U.S. Data Center Electricity Use and Power Strategies"

Powering Intelligence: Updated U.S. Data Center Scenarios

by Geoff Blanford, Tom Wilson, John Bistline, and Nils Johnson

New EPRI study projects state-level U.S. data center electricity demand scenarios and impacts on power supply.

Data centers, industrial onshoring, and transport electrification are driving renewed regional load growth. Artificial Intelligence (AI) plays a growing but uncertain role in data center load. Drawing upon state-level data on operational capacity, construction in progress, and announced plans, EPRI developed scenarios for U.S. data center capacity growth.

EPRI projects data centers to consume 9% to 17% of U.S. electricity by 2030, up from 4% to 5% today, a 2-4x increase in annual electricity consumption. These projections are about 60% higher than EPRI projected in 2024. The increase is driven by record levels of development over the past 18 months. Scenarios reflect alternate assumptions about project execution for sites under construction, advanced planning, and early planning. The revised range is roughly consistent through 2028 with Lawrence Berkeley projections in their Dec. 2024 report to Congress, which was based upon projected chip and equipment shipments rather than project development data.

By 2030, EPRI's scenarios result in a range of 56 to 132 GW U.S. nominal IT capacity (Fig. 1), up from 35-44 GW in 2024:

- Capacity continues to accumulate in Virginia, Texas, and other primary data center markets. Development in Virginia implies a share

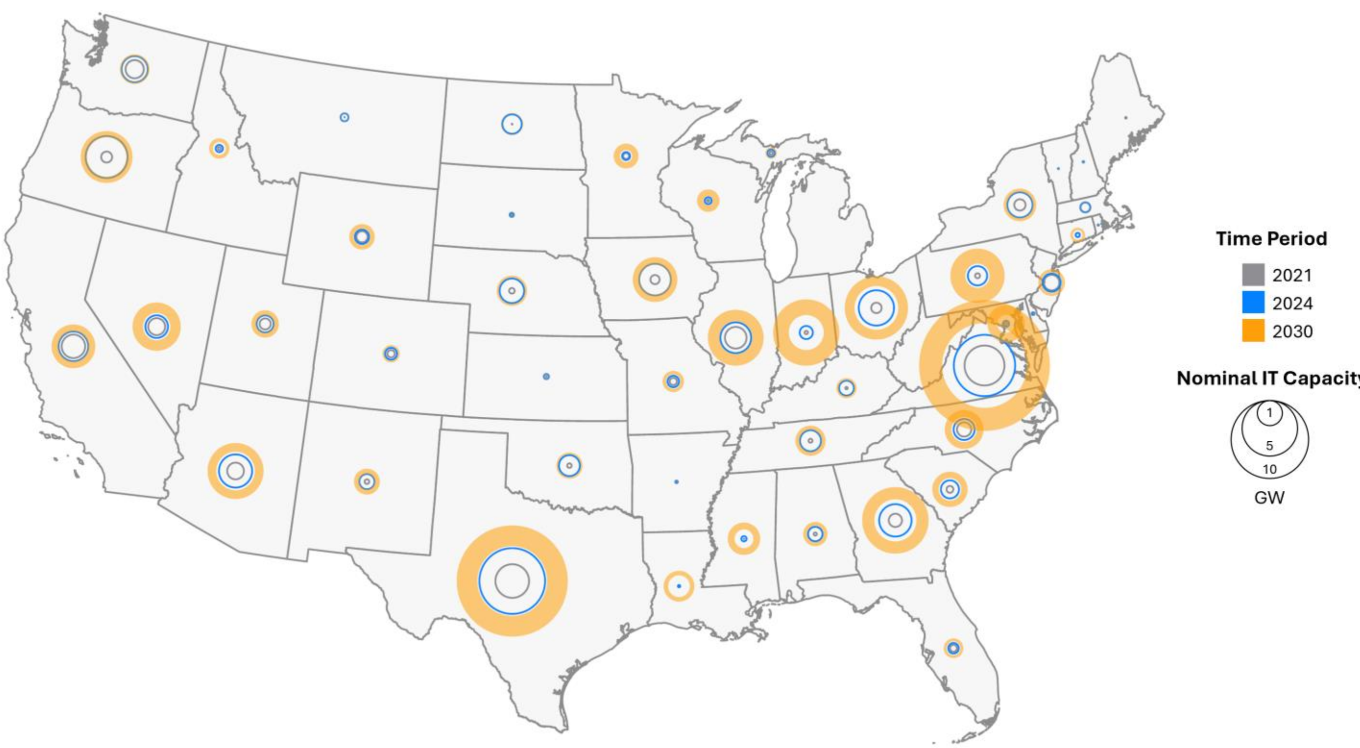

Figure 1. Data center nominal IT capacity by state. Inner circles show capacity in 2021 (gray) and 2024 (blue). Outer band shows scenario range of projected capacity in 2030 (orange). Circle area is proportional to nominal information technology (IT) capacity. Estimates include small- and large-scale data centers as well as cryptocurrency mining.

increasing to between 39% and 57% by 2030, reflecting projects currently under construction or in advanced planning.

- The emergence of new capacity in other states (e.g., Ohio, Indiana, Pennsylvania, Louisiana), where there is currently little capacity, suggests increased prioritization of power access and land availability, particularly for large AI training centers.
- **By 2030, seven additional states could see data centers exceeding a 20% share** (Oregon, Iowa, Nebraska, Nevada, Wyoming, Arizona, and Indiana) under the Medium scenario.

In 2024, total U.S. data center electricity use is estimated at 177-192 TWh, growing to roughly 380-790 TWh by 2030. Fig. 2 shows projections of annual U.S. data center annual energy use through 2030 relative to other studies.

Data center electricity demand currently exceeds electric vehicle charging load (184 TWh and 12 TWh in 2024, respectively). Both are growing from very different baselines. Under EPRI's reference projections, EV charging does not surpass data center electricity use nationally until the mid-to-late 2030s, and in states with heavy data center concentration such as Virginia, Texas, and Oregon, data center load may remain larger than EV charging indefinitely.

The analysis shows that **announced nominal capacity for data center projects should be treated as a pipeline indicator rather than a near-term peak forecast**, as non-IT loads, ramp-up, load shapes, on-site energy assets, and load flexibility materially impact peak effects.

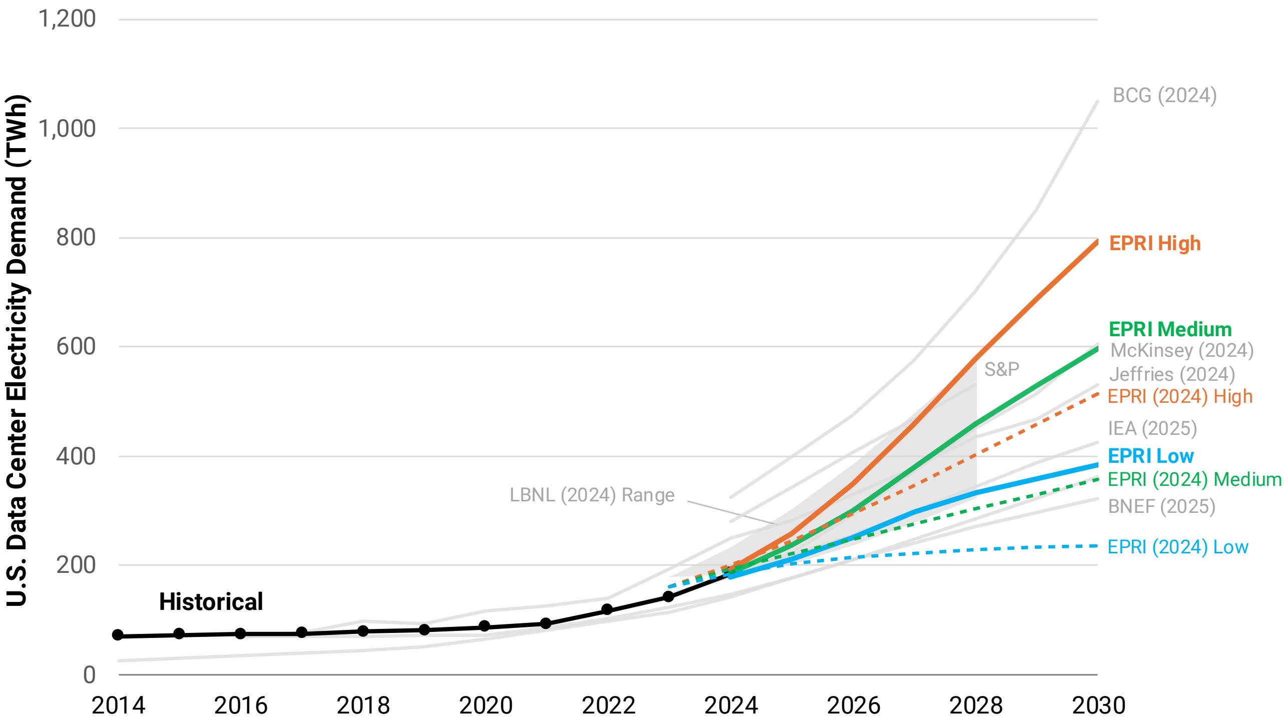

Figure 2. Comparison of U.S. data center annual electricity consumption projections. EPRI estimates include small- and largescale data centers as well as cryptocurrency mining. See report for detailed information about projections.

Energy procurement strategies drive sharply different generation buildouts to meet this demand. **Assuming current U.S. state and federal energy policies, least-cost procurement strategies favor natural gas**, with build rates in the High scenario more than double the recent average. These impacts are a departure from EPRI's 2024 analysis, which included higher wind and solar deployment to meet growing load due to the Inflation Reduction Act's production and investment tax credits, which have been curtailed for many technologies under the 2025 budget bill.

In contrast, meeting all data center load with hourly-matched, carbon-free energy would favor renewable and battery additions, with new nuclear generation coming online where feasible. Supply chain bottlenecks as well as delays in permitting and siting could constrain the modeled additions of both generation and transmission capacity.

Supporting this scale of data center growth will require accelerated collaboration among data center developers, energy and equipment providers, policymakers, and communities. Efforts like EPRI's DCFlex initiative, which is working with more than 60 companies to address grid reliability, flexibility, affordability, and other issues central to transforming data centers into grid assets, can help to accelerate this progress.

FOR MORE INFORMATION

Read the full white paper: EPRI (2026), "Powering Intelligence: Updated Scenarios of U.S. Data Center Electricity Use and Power Strategies."

CONTACTS

Geoff Blanford (gblanford@epri.com)
Tom Wilson (twilson@epri.com)
John Bistline (jbistline@epri.com)
Nils Johnson (njohnson@epri.com)