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Planning with uncertainty

Sustaining the core business in the age of large load growth

Executive summary

Rapid data center growth is testing more than the power grid. It is also straining utilities' capital plans, workforce capacity, operating resources, and existing commitments to customers and regulators. Because utilities cannot always expand engineering and construction capabilities as quickly as they can secure funding, large-load projects may displace or delay other essential work.

The article calls for a broader enterprise impact assessment that evaluates investments across portfolios, tests the organization's ability to respond to changing timelines, and establishes a clear evidentiary record for consequential decisions. This approach can help utilities support new demand without creating unexamined risks elsewhere in the business.

Several key takeaways emerge from the article:

- **Large-load connections create enterprise-wide trade-offs.** Utilities must assess which capital projects, reliability initiatives, and customer commitments could be delayed or displaced to accommodate data center demand.
- **Execution capacity may be more constrained than capital.** Funding can often be secured faster than utilities can expand engineering, procurement, project management, construction, and outage capacity.
- **Utilities need proactive, cross-portfolio planning.** Enterprise impact assessments and scenario-based exercises can help leaders identify bottlenecks, evaluate trade-offs, document decisions, and assign accountability before pressures become urgent.

The grid is not the only thing that faces a stress test when a data center comes to town. While the attention is focused on whether the power system can accommodate new demand and who will pay, getting a new connection to pass these tests often exposes the gaps in business priorities. The engineers, construction crews, and outage windows needed to serve a major new customer

may already be committed to replacing aging equipment, improving reliability, and serving growth elsewhere. Those obligations do not disappear when a data center moves to the front of the queue.

Right now, the challenge is easy to obscure. A dedicated team can keep a high-profile connection on schedule while delays accumulate across the rest of the capital program. What looks like progress from the project's perspective may involve trade-offs that no one has fully evaluated for the enterprise. This calls for another kind of impact assessment, one built for today, existing alongside studies of electrical performance and cost responsibility. Utility leaders need a line of sight into what will be displaced by delivering on the connection, which commitments it puts at risk, and whether their planning and decision-making processes can manage the consequences. A successful connection should not come with an unexamined cost to the rest of the utility.

17%

Global data center electricity demand grew 17% in 2025 — more than five times the 3% growth rate of overall global electricity demand, as AI-focused facilities alone surged 50% in the same period.

Source: International Energy Agency, Key Questions on Energy and AI, April 2026

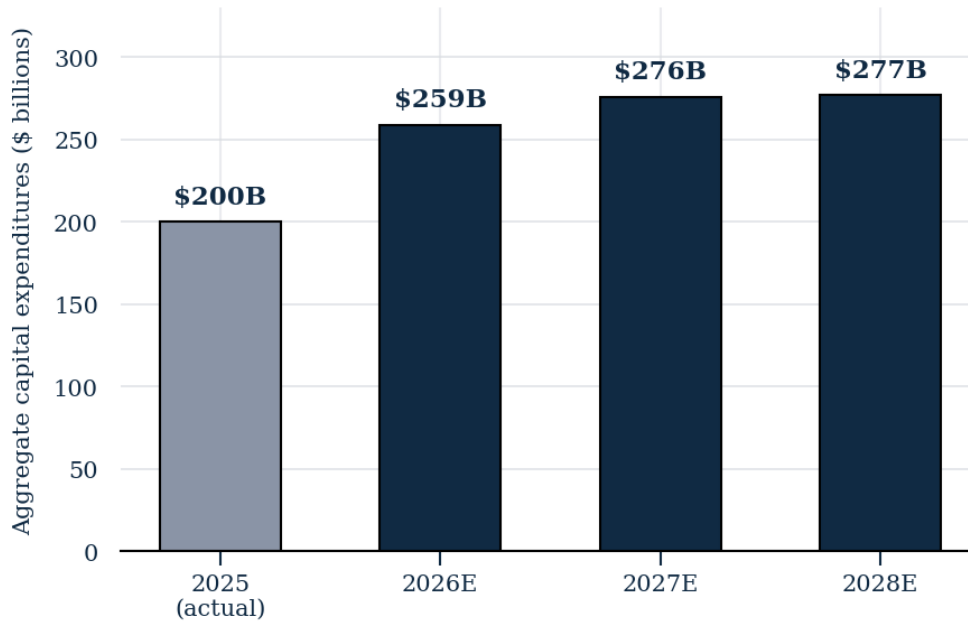
Actively reshuffling capital plans and tweaking processes is not something new for investor-owned utilities. However, the scale and pace of data center development can stretch established approaches. A less frequently asked question is what happens to day-to-day operations when an unexpected need to reallocate capital arises? Specifically, how do you balance long-term pacing, maintain reliability and resilience performance, and stay on top of commitments made to existing customers and regulators while still enabling organic load growth and new large-load demand?

When capital is the easy part

Much of the debate over large electric loads centers on how to finance the infrastructure needed to serve them and who will bear the cost. But capital can be raised when the investment case rests on sound assumptions, and rate impacts can be modeled, allocated, phased in and, with sufficient analysis, defended.

U.S. Energy Utility Capital Spending Is Accelerating

Annual capex forecast, investor-owned utilities



Source: S&P Global Market Intelligence / Regulatory Research Associates, April 2026

Aggregate US utility capex is forecast at roughly \$1.3 trillion from 2026–2030 — a 29% jump from 2025 spending levels.

Planning, engineering, project management, procurement, and construction capacity, however, can be harder to expand on the required timeline than funding. There are a fixed number of skilled workers who can scope a station expansion, a limited number of qualified crews and EPC partners, only so much PMO bandwidth, and a fixed number of outage windows in a year. Quite simply, capital can be financed faster than a utility can plan, engineer, procure, construct, explain, and adapt.

500,000+

The US utility construction sector faces a skilled-worker deficit exceeding 500,000 as of mid-2026, concentrated in power-line work, grid modernization, and data-center-related construction. Separately, 89% of transmission, distribution, and storage construction employers report at least some difficulty finding qualified workers.

Sources: Amundson Group, 2026; US Department of Energy, 2026 United States Energy & Employment Report

If work throughput is inflexible and the data-center work is additive, then something must give. The next question is which planned projects are deferred, whether that displacement occurs by design or by attrition, and how the impact is assessed. The problem is that the risk of deferments emerges over time. System performance may degrade slowly, with the consequences appearing in reliability indices years after the deferral decision.

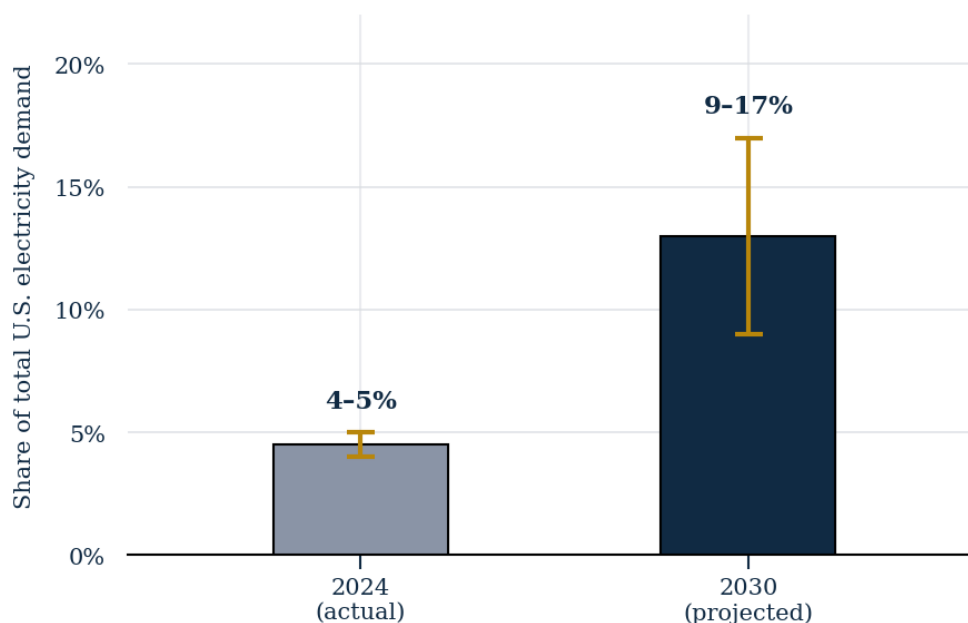
Prioritizing across portfolios, not merely within them

A key challenge is how to prioritize traditional projects along with data center make-ready work. Current approaches are typically siloed with distribution projects ranked against distribution projects, transmission against transmission, IT against IT, and so on. However, emergent large-load growth strains this method since capital requirements are too large to be absorbed inside a portfolio's envelope.

The trade-offs migrate upward and outward and may take the shape of IT and technology modernization assessed against reliability and capacity work; system capacity expansion for large-loads evaluated against capacity work driven by organic growth, and so on.

Data Centers' Share of U.S. Power Demand Could Double

Range reflects EPRI low-to-high growth scenarios



Source: EPRI, Powering Intelligence 2026 — Executive Summary

Data centers could grow from 4–5% of US electricity demand today to 9–17% by 2030, straining the capital envelope of every portfolio they touch.

While cross-portfolio prioritization can happen in certain situations, the data center paradigm could change the scale and urgency of these decisions. The challenge is whether existing forums and planning tools provide a shared analytical basis for weighing a substation rebuild against a work management system replacement.

This is solvable, however, and the range of solutions is wider than utilities often assume. One example includes advanced statistical and risk-quantification approaches that put disparate investments on a common “value at risk” footing. The right answer, however, depends on the utility’s data maturity and on how much of the decision needs to be defensible in a contested proceeding.

The other flexibility, and it runs in both directions

During a data center’s development, a single milestone moving by a quarter is enough to unsettle the delivery plan: it does not simply create slack. Instead, it creates pressure to pull other necessary work forward quickly, provided the work is justified and ready to proceed. The constraint binds in both directions: acceleration when the developer moves faster than expected, and potentially urgent acceleration of unrelated work when the developer moves slower.

5-7 years

The median time from interconnection request to commercial operation for new generation projects nationally now exceeds five years for projects completed in 2025. In Northern Virginia — the largest US data-center market — the average wait for grid connection stretches to seven years.

1 in 5

But not every request that enters the queue becomes load. Utilities estimate that roughly one in five data center interconnection requests never materializes, according to the Capgemini Research Institute survey of more than 600 electricity executives, 67% of whom described such requests as “phantom” load.

Sources: Lawrence Berkeley National Laboratory, Queued Up: 2026 Edition; Verse Inc., 2026; Capgemini Research Institute, AI Meets the Grid: Shaping the Data Center Power Play, 2026

That is not a trivial challenge. Pulling a project forward by two quarters requires engineering to be far enough along, that materials be available or substitutable, that an outage window exists, and that the crews are available. Most utilities have some of these conditions satisfied, but few projects within a portfolio of work are shovel-ready on short notice.

Someone needs to explain all of this

Every decision previously described eventually becomes a communication challenge, which often gets little attention until it is urgent.

\$31 billion

US utilities requested a record \$31 billion in rate hikes in 2025 — more than double the amount sought in 2024 — with approved increases already affecting 56 million Americans, underscoring the stakes of explaining capital re-phasing to regulators and the public.

Source: PowerLines analysis of 51 US utilities, April 2026

Any deferral that was analytically sound must still be explained to a regulator who approved the original plan, intervenors who may read the re-phasing as evidence that the work was never necessary, customers whose service area was impacted by the deferment, and investors who were given a capital trajectory and a set of reliability commitments. Documents must be updated to reflect the current realities, including enterprise risk registers, corporate strategy materials, disclosure, and the internal and external KPIs that were calibrated against the superseded plan.

The utilities that handle this well tend to do one thing consistently; they build the evidentiary record at the time of the decision rather than reconstructing it 18 months later under discovery.

Rehearsing before it is real

To help utilities understand their blind spots, a proactive enterprise impact assessment can be used to help identify blind spots by examining how new interconnections affect capital programs, resource plans, risk management, and existing commitments.

A practical starting point is to trace a proposed large-load through the utility's existing capital and operating plans, identifying shared resources, dependencies, and commitments that may change. A scenario-based leadership exercise can then test how the organization would manage those impacts. This is very similar to Emergency response drills: a realistic scenario, injects that change the assumptions mid-stream, decisions made in the room, and an honest account afterward of what broke and who owns it. Applied to data center growth, the same format surfaces bottlenecks, decisions with no clear owner, and missing evidence. The assessment should conclude with documented trade-offs, specific corrective actions, and accountable owners.

The question for leadership is whether the impact of delivering the connection on the rest of the business has received the same deliberate attention as its impact on the grid. Addressing that question early gives the utility a stronger basis for delivering growth while sustaining the commitments already made to customers, regulators, and the board.

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