



# Grid at a crossroads: The AI demand shock and the future of power

New KPMG research explores why tech and power must accelerate together, or fragment apart.

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## Welcome to the future of power

**For years, we've had a front-row seat to the evolving relationship between the technology and utility sectors. Today, the unrelenting demand for AI has rewritten the rules of engagement and forced a conversation that is decades overdue. This paper, and the survey at its core, was born from a need to understand the deep disconnect between two worlds that now desperately rely on each other to grow.**

Our research reveals insights into how the power industry is navigating this surge, but it also highlights how quickly our focus can narrow during a crisis. For example, while broader industry research consistently points to cybersecurity as a top-tier threat, respondents in our current survey view it as the least-constraining factor when it comes to the physical buildout of new power projects.<sup>1</sup> That perspective is entirely understandable when supply chains are snarled and regulations are tight, but it also proves how easily we can lose sight of the horizon when dealing with the problems of today.

AI ambushed the utility industry with the speed of its power demands. The next technological wave will do the same, and we cannot afford to be surprised again.

Quantum computing is no longer a distant academic concept; it is right around the corner. Its arrival will fundamentally disrupt the energy landscape, promising an exponential increase in power demand that will compound today's AI-driven surge, while simultaneously introducing profound new vulnerabilities to the encryption that underpins our grid infrastructure.

It is entirely natural for executives to focus their energy on the immediate, pressing demands of the AI boom. But as we rush to meet today's challenges, we must consciously carve out space to prepare for the quantum shift. The infrastructure we are struggling to build and secure today must be ready for the massive, compounding challenges of tomorrow.

We hope this paper serves as both a roadmap for the current crisis and a catalyst for looking ahead. The next disruption is already here.



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<sup>1</sup> KPMG Power and Technology Survey, April 2026.

# Executive summary

## The AI boom is igniting unprecedented demand for electricity and shattering the traditional utility business model.

While topline forecasts suggest peak power demand on the US grid could rise by 120 gigawatts over the next five years, the reality on the ground is more complex.<sup>2</sup> Utilities are forced to balance these staggering, yet uncertain projections against shifting technology timelines, community opposition, and evolving state-level moratoriums. This is exposing a critical disconnect between the fast-moving technology sector and the slow, heavily regulated utility industry. Based on a new KPMG survey of 100 senior leaders, this report probes the collision of these two worlds and the urgent need for a new model of power delivery.

Our findings are clear: The current grid can't keep pace with AI's hunger for power on top of the massive, baseline demand driven by the broader electrification of the economy. Large-load projects face delays of up to four years.<sup>3</sup> Technology companies, unwilling to wait, are walking away from sole dependence

on public utilities.<sup>4</sup> They're pursuing behind-the-meter (BTM) and hybrid power models, often funded through power purchase agreements (PPAs) for massive, dedicated off-grid infrastructure.<sup>5</sup> Alarming, 92 percent of respondents see this shift as permanent.<sup>6</sup>

If hyperscale loads migrate off-grid, utilities risk losing key revenue streams, forcing grid modernization costs onto everyday ratepayers. To avert this, utility leaders must tackle supply chain bottlenecks and outdated regulation, cited as top barriers to faster delivery. Utilities and regulators also need to align on fair, load-based pricing to absorb demand without sparking public resistance.

The choice is existential. To remain relevant in the AI economy, utilities must move fast, partner deeply with tech firms, adopt interim power solutions, and compete aggressively—before their largest ratepayers leave the grid for good.

<sup>2</sup> Neil Ford, "Rising US industrial load intensifies power generation need," Reuters, February 9, 2026. EIU database accessed March 2026.

<sup>3&6</sup> KPMG Power and Technology Survey, April 2026.

# Key findings

## Surging demand confronts systemic delays.



A staggering 91 percent of respondents report an increased urgency to deliver new power capacity. However, there is near-universal agreement that current delivery speeds fall drastically short. Following project completion, nearly half (48 percent) of survey respondents report waiting three to four years for full electrical power, while another 44 percent face delays of one to two years.

## Supply chains and regulations are the primary roadblocks.



When identifying the greatest barriers to delivering power for large-load projects, 81 percent of respondents cited supply chain constraints. This is closely followed by delays in permitting and regulatory approvals, cited by 72 percent.

## Grid-only reliance is rapidly declining.



Frustrated by extended delays, curtailment risk, and cost volatility, 76 percent of organizations are now willing to adopt BTM or hybrid power solutions. A decisive 92 percent agree that these off-grid strategies are becoming a permanent part of how large-load power needs are met.

## PPAs are funding a private power boom.



When public grid delivery timelines fail to meet project requirements, 73 percent of organizations say they most often consider PPAs as the solution. These agreements have evolved into primary tools for tech companies to fund their own dedicated, on-site power generation. Still, nearly half or more of respondents are considering downsizing projects, relocating to new territories, or simply waiting.

## There is debate around funding.



When asked how the additional costs of expedited power delivery should be handled, the majority (55 percent) favor a case-by-case approach, while a quarter believe large-load ratepayers should bear most of the financial burden.

## Respondents believe load-based cost models appear fair.



Despite funding debates, the industry believes the public will support faster infrastructure development if the financial model is fair. Overall, 77 percent of respondents believe society would accept accelerated buildouts if costs were explicitly allocated based on customer load size and usage characteristics.

## Utilities are still expected to lead.



Even as ratepayers explore private power, they do not want to go it entirely alone. There is strong consensus (91 percent) that traditional utilities should continue to play an active, central role in enabling hybrid or interim power solutions.

## AI can help optimize the grid.



While AI is the primary driver of the current capacity crunch, the industry is highly optimistic about its potential as a solution. Most respondents (86 percent) expect AI to have a moderate to major impact on resolving grid constraints, with the greatest potential seen in load forecasting, predictive maintenance, and rapid detection of grid anomalies.

For generations, utilities operated under the assumption that large ratepayers had nowhere else to go. That era is over. As the unquenchable demand for AI compresses the energy transition, the historical utility business model has shattered. Today, utilities face an existential choice: Compete for relevance or watch their highest-value ratepayers migrate to private BTM power solutions—a defection that threatens the economics of the shared grid.

But this is more than a story of a sector facing surging demand, no matter how historic. Instead, it's a tale of two fundamentally different worlds. On one side are utilities, a sector that measures planning cycles in years and whose business model is built around regulation, long-term use, and reliability. On the other is tech: a sector that prizes innovation, plans in sprint cycles, and lionizes the “move fast and break things” mindset.

AI has pulled utilities into a high-speed race with the technology sector. The two depend on each other to grow, but the real story is how utilities must adapt to tech's pace without losing their focus on reliability and ratepayer costs. New KPMG research examines their disconnects, why they matter now, and how utilities can proactively bridge the gap to remain central to the AI economy.

# Demand is outrunning the existing power system

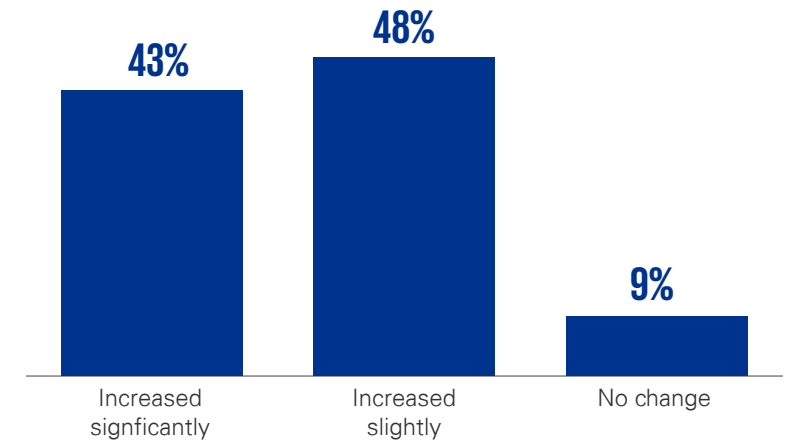
Load growth is no longer slow or uniform; it's large-scale, localized, and governed by customers' timelines.

For nearly a generation, utility load forecasting was a predictable science. Growth was slow and steady, driven by well-understood economic and demographic trends. Capital plans were measured in decades, and the grid expanded at a manageable pace.

Then came large-scale renewables and vehicle electrification. Load growth reshaped systems and balance sheets, yet expansion still unfolded on recognizable capital plans, regulatory strategies, and operating models.

Today, AI drives the headlines, but the electrification of the economy across home, work, transportation, and more, continue to push on utility infrastructure. Most survey respondents, 91 percent, report an increased urgency to deliver new power capacity. More than half point to AI as one of the leading drivers, but not the primary one. In fact, it appears that those closest to the infrastructure challenges clearly recognize that non-AI energy needs are just as critical to load growth: 60 percent of those indirectly involved in power decisions view AI as the primary driver, compared to only 19 percent of primary decision-makers.

Relative to 12–18 months ago, how has the urgency to deliver new power capacity changed, considering AI-driven or data-intensive growth?



Source: KPMG Power and Technology Survey, April 2026.

## How does AI and data-driven demand contribute to overall load growth at your organization compared to other growth drivers?

It is one of the leading drivers, but not the primary one



It is the primary driver of load growth



It is one of several contributing drivers



A minor contributor, less significant than others



Among those who say AI is a primary driver:



Source: KPMG Power and Technology Survey, April 2026.

<sup>6</sup> Avison Young, "Data center power demand to triple by 2030: Nuclear energy expected to reduce grid dependence," November 13, 2024.

<sup>7</sup> Garrett Hering and Susan Dlin, "Data center grid-power demand to rise 22% in 2025, nearly triple by 2030," S&P Global, October 14, 2025.

<sup>8</sup> Neil Ford, "Rising US industrial load intensifies power generation need," Reuters, February 9, 2026.

<sup>9</sup> Kenneth Sercy and Liza Reed, "The arithmetic of availability: Prospects for American grid dominance in 2030," Niskanen Center, November 25, 2025.

## The end of predictability and a challenge to reliability

In this new environment, planning horizons are collapsing and creating questions about the reliability of the grid. Predictable load forecasts are giving way to massive, time-compressed demand driven by data centers, electrified heavy industry, and cryptocurrency. Consider:

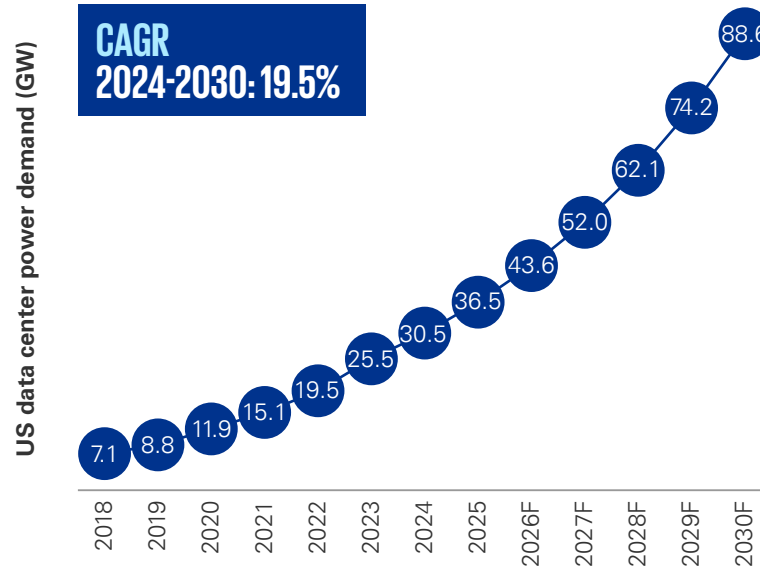
- AI makes the earlier electrification eras look like a dress rehearsal. Data center power demand will triple by 2030, according to one conservative estimate.<sup>6</sup> The demand threatens to strain local infrastructure as growth concentrates in areas such as Virginia, which saw data center power demand rise 30 percent year over year.<sup>7</sup>
- Industrial sectors are also playing a role. Consider rising demand from industries such as oil and gas, semiconductors, and battery manufacturing.<sup>8</sup>
- Between current grid capacity and forecasted demand growth, the United States needs to add anywhere from 150GW to nearly 200GW more power over the next five years than it has today.<sup>9</sup>

For utilities, forecasting demand accurately is harder to achieve. New, heavy loads “can appear rapidly, cluster geographically, and evolve faster than regulatory or investment processes can adapt,” according to one recent report. This uncertainty creates dual risks: Over-forecasting results in expensive, unnecessary infrastructure and higher costs for ratepayers, while underforecasting compromises grid reliability and surrenders economic growth.<sup>10</sup>

The trajectory of this demand is not a sure thing, since AI could conceivably help solve its own energy generation problems by evolving to become less power hungry. But this offers little relief to utilities. Instead, it’s another layer of uncertainty for an industry that is accustomed to long planning horizons. This high-stakes forecasting dilemma reveals the core conflict of the new energy era: The physical capabilities of the utility sector and the expectations of its largest ratepayers are no longer in sync. This has created a fundamental gap measured in gigawatts as well as years.

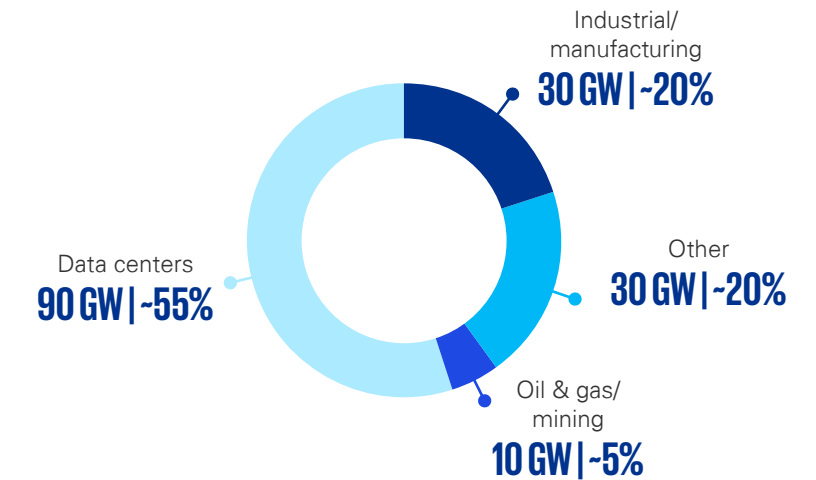
<sup>10</sup> Stephen Bessasparis, Shana Ramirez, Emily Zhao, Ye Zheng, Kush Patel, Isabelle Riu, “Forecasting Large Loads in the Age of AI and Data Centers,” Energy and Environmental Economics, Inc., December 2025.

### Growth in US data center power demand



Source: Avison Young, DatacenterHawk

### Drivers of load growth (2025 – 2030)



Source: Grid Strategies

This high-stakes forecasting dilemma reveals the core conflict of the new energy era: The physical capabilities of the utility sector and the expectations of its largest ratepayers are no longer in sync. This has created a fundamental gap measured in gigawatts as well as years.

# A growing gap between utility capabilities and customer expectations

Utilities know how to plan, permit, and build, but not always at the speed or price point customer demand requires.

The gap between hyperscale customer timelines and utility capabilities is vast. A data center can rise in 18–24 months, but the power infrastructure needed to run it—from permitting to build—takes three to seven years.<sup>11</sup>

This mismatch is hitting just as the grid is nearing its limit. In the past 18 months, nearly 2,300 GW of generation and storage projects have stalled in interconnection queues, bottlenecked by mandatory impact studies and an aging transmission network incapable of handling concentrated power demand.<sup>12</sup>

## The economic squeeze and market competition

Massive new facilities are being sited less for proximity to ratepayers and more for proximity to cheap, reliable power, igniting fierce competition among regions. But this new site-selection reality is colliding with utility constraints around speed, scale, and, most critically, cost.

Speed to market has long been a hurdle for utilities, but a wider gap is opening around price. Automation and physical AI are pushing traditional commercial and industrial (C&I) ratepayers to increase baseload demand alongside hyperscale tech players. In fact, energy costs are becoming one of the most dominant lines on corporate P&Ls.

That shift creates friction between utilities and the regulators who approve rate increases. To finance growth and earn fair returns on grid investments, traditional C&I rates need a rethink. Regulators and utilities must consider distinct

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rate classes for data centers, ensuring these massive loads shoulder their share of costs. The challenge: Offer power at globally competitive rates to industrial and tech ratepayers without shifting the weight of grid modernization onto residential ratepayers.

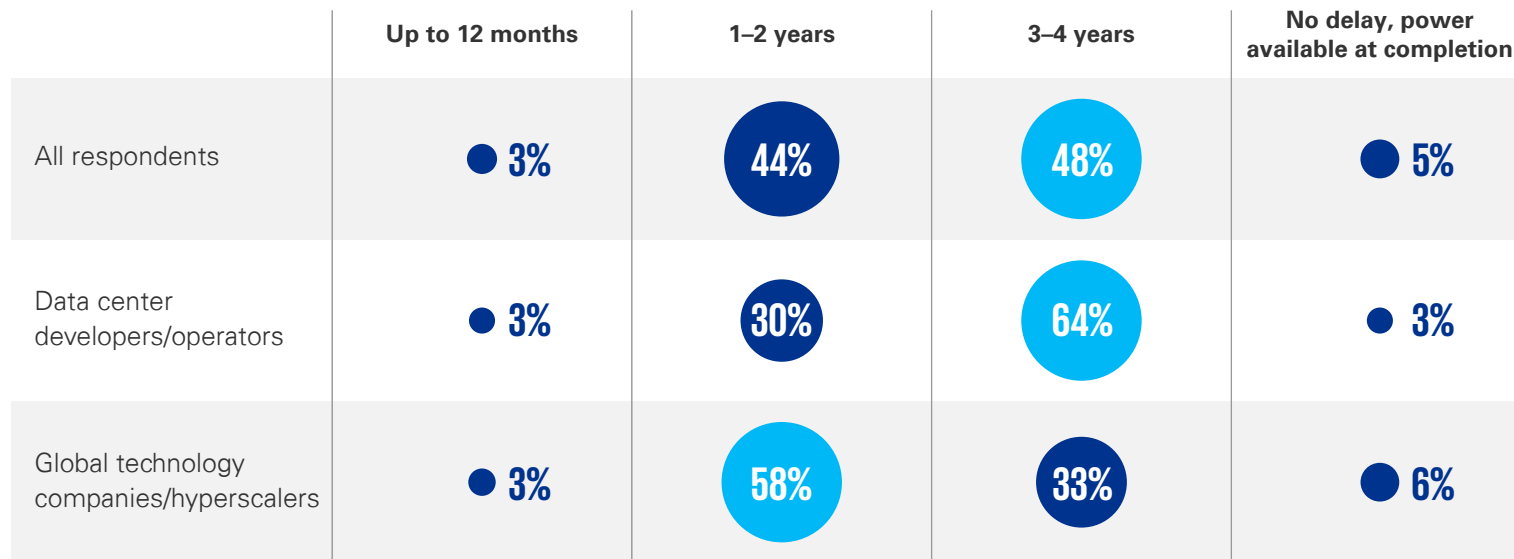
<sup>11</sup> Ian Fischer, “Behind-the-Meter Power Solutions: The Data Center Industry’s New Reality,” DatacenterHawk, February 19, 2026.

<sup>12</sup> “Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection,” Berkeley Lab, 2025.

## The anatomy of delay

Nearly every executive we surveyed is waiting years for actual delivery of large load power projects. Almost half (48 percent) report a three-to-four-year wait for full electrical service after project completion, while 44 percent wait one to two years. Data center developers report longer delays than global technology firms—a sign that the grid’s structural constraints are colliding hardest with hyperscale demand.

How long does it take, on average, between load project completion and full on-site power availability?



Source: KPMG Power and Technology Survey, April 2026.



## A brewing labor crisis

A once-in-a-century challenge is brewing for utilities and it’s not just about infrastructure. Massive capital spending by tech giants is creating unprecedented demand for construction talent: supervisors, electricians, pipefitters, concrete specialists, and other trades. These are the same skilled workers utilities rely on to build new lines and maintain critical infrastructure.

Tech companies can pay significantly more for the same talent, drawing electricians from pole wiring to high-paying data center projects. With labor supply fixed in the short term, utilities face rising costs, project delays, and heightened competition from industries willing to bypass them entirely to secure resources.

The takeaway: In the new energy landscape, talent scarcity is a strategic threat to utilities’ ability to execute on timelines, budgets, and long-term competitiveness.

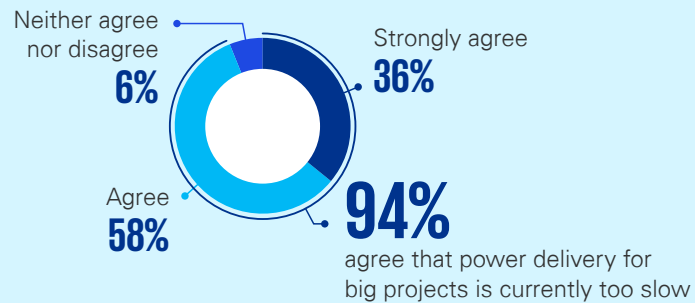
These bottlenecks are hard-coded realities that won't bend on demand. Utilities face a three front battle:

**1 Supply chain bottlenecks are the single biggest hurdle, cited by 81 percent of respondents.** The US grid imports over 80 percent of its large power transformers. Lead times for custom high-voltage transformers and switchgear are measured in years, not months: three to four years today, versus 12–14 months historically. As worldwide demand for electrification and AI infrastructure surges, prices are climbing by double digits as delivery queues back up internationally.

**2 Grid regulations no longer fit the pace of development.** US utilities face an average approval process of six and a half years, followed by an additional four years of litigation delays. While there are signs of bipartisan progress, permitting remains the second-largest barrier, cited by 72 percent of respondents. It is also closely tied to geography: 65 percent of respondents report location-specific hurdles driven by aging infrastructure, congestion, interconnection queues, and complex political environments.

**3 There is a shortage of skilled labor.** More than half of respondents (51 percent) cite workforce and execution capacity as a critical barrier to speed of delivery. Goldman Sachs estimates the US power industry, which already has an aging workforce, will need roughly 510,000 new jobs by 2030.<sup>13</sup> This is not just a utility issue: Utilities compete with hyperscale data center builders, renewable energy developers, factory automation projects, and even advisory firms for the same finite technical talent.

To what extent do you agree or disagree with the following statement: "There is a clear gap between how quickly power needs to be delivered for large-load projects and how quickly it is delivered in practice today?"

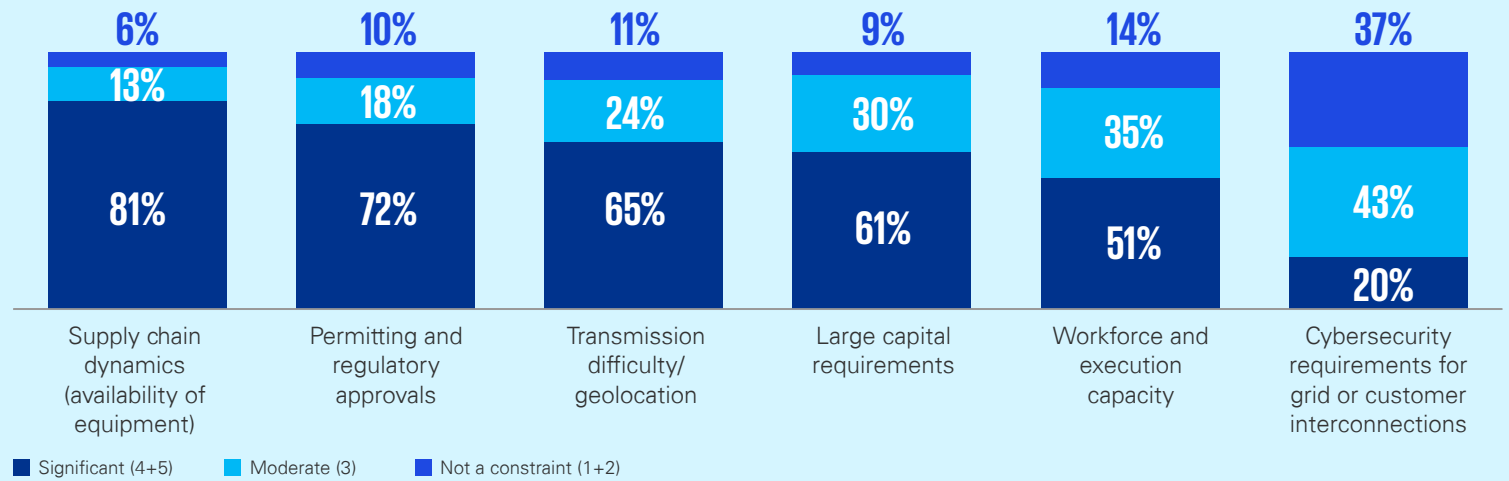


Source: KPMG Power and Technology Survey, April 2026.

<sup>13</sup> "The Power Industry May Need More Than 750,000 New Workers by 2030," Goldman Sachs, July 23, 2025.

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How much do the following factors constrain the speed of delivering power for large-load projects?



Source: KPMG Power and Technology Survey, April 2026.

## Resilience and reliability concerns

As utility leaders reach the physical limits of their systems, massive data center loads threaten grid stability. Tech companies are also concerned: Fear of unreliable power and curtailments is the second-leading reason data centers are reducing reliance on the grid, according to our survey.

This tension pits hyperscalers against the utility's decades-old operating model: Keep power flowing, reliably and affordably, for every ratepayer. They need answers now, not after the next rate case or transmission cycle.



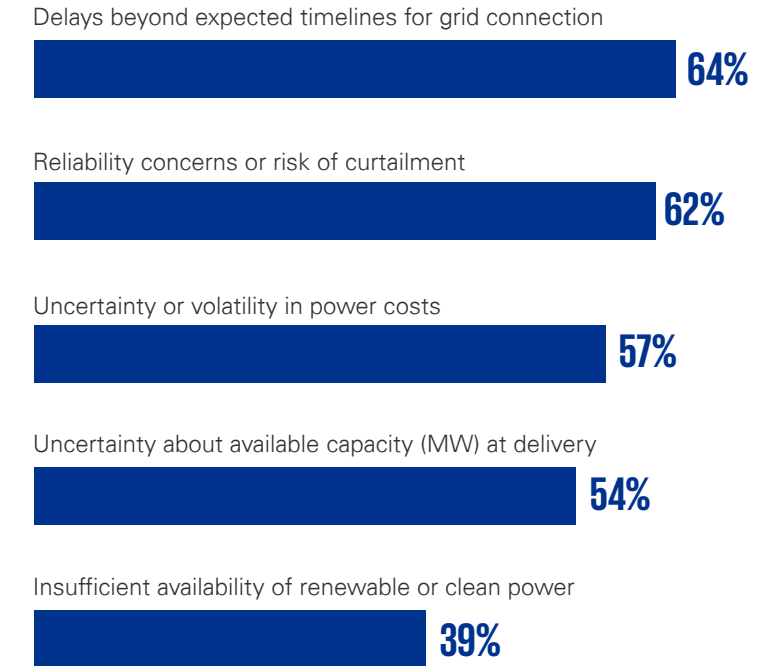
# Expectation gaps are reshaping the grid

When confidence in delivery erodes, large-load ratepayers move forward anyway.

The yawning gap between digital speed and grid speed is pushing ratepayers into decisive action. The rules of site selection are being rewritten. Geography and proximity to users no longer drive decisions; now it's all about immediate power availability. Multibillion-dollar projects start with a single question: How can we get power the fastest?

Increasingly, the answer lies outside the traditional utility. Customer tolerance for connection delays, reliability risks, and cost swings is razor thin. Faced with extended timelines and unpredictable rates, these organizations are walking away from sole reliance on grid power. Instead, they're taking control, pursuing BTM generation and hybrid power solutions to bypass the traditional utility sequencing.

## Which factor most often causes customers to move away from relying solely on the grid?

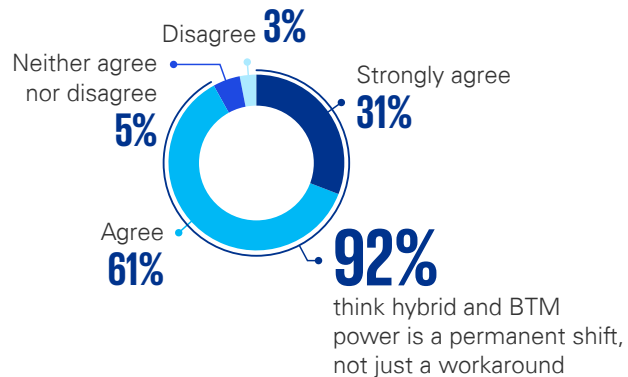


Source: KPMG Power and Technology Survey, April 2026.

## The rise of BTM

Delivery uncertainty is forcing large-load ratepayers to de-risk timelines and costs by controlling their own power supply. But what began as ad hoc, private grid workarounds are now crystallizing into a permanent structural feature of the power system: 92 percent of respondents see BTM and hybrid models as permanent features of future power delivery.

To what extent do you agree or disagree with the following statement: “Hybrid or behind-the-meter solutions are becoming a permanent part of how large-load power needs are met, not just a temporary workaround.”



Source: KPMG Power and Technology Survey, April 2026.



What began as ad hoc, private grid workarounds are now crystallizing into a permanent structural feature of the power system.



Consider the range: a Meta-affiliated data center tapping a 200 MW natural gas plant completely disconnected from the public grid; fuel cells powering operations at 19 Equinix sites; hyperscale campuses designed from day one for onsite generation.<sup>14</sup> By 2030, roughly one-third of hyperscalers and colocation providers expect to run fully onsite powered campuses. The reason is straightforward: Grid constraints make permanent onsite power the fastest route to operational certainty.<sup>15</sup>

Our research reveals the depth of this shift. More than three-quarters (76 percent) of respondents are willing to adopt BTM or hybrid power solutions when faced with persistent delays. Data center developers are especially aggressive: 88 percent of these respondents are open to the move versus 64 percent of global tech firms and hyperscalers.

<sup>14</sup> Press Release: “OPSB approves construction of Licking County natural gas-fired power plant,” Ohio Power Siting Board, June 9, 2025. Press Release: “Bloom Energy Expands Data Center Power Agreement with Equinix Surpassing 100MW,” Bloom Energy, February 20, 2025.

<sup>15</sup> “2026 Data Center Power Report,” Bloom Energy, January 2026.

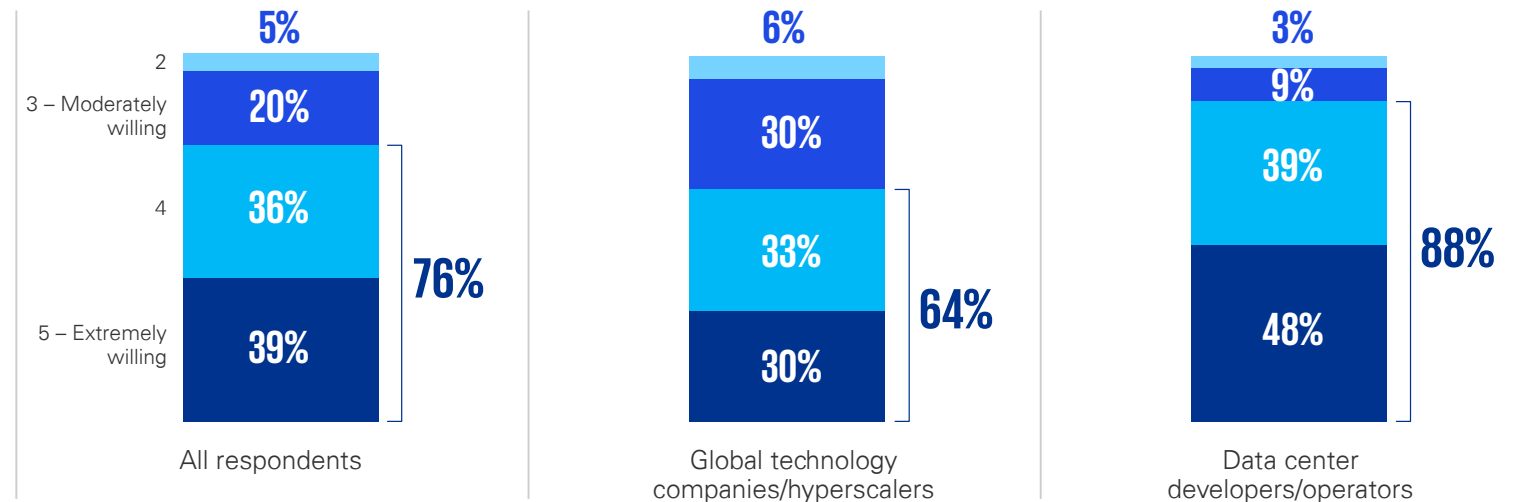
From a tech company's perspective, BTM presents its own significant challenges. To future-proof their investment, they must overbuild generation capacity from day one, leaving them with excess power to sell back to the grid to recoup costs. Meanwhile, a utility managing a long interconnection queue prioritizes projects that offer the highest financial return, typically where there is existing grid capacity. If a data center attempts to sell its excess BTM power into a part of the

grid that is already saturated, it could drive wholesale prices negative, essentially forcing the tech company to pay for its power to be taken.

This tension reveals a deeper conflict. Data centers demand 100 percent capacity, 24-7, while utilities, to protect grid stability for residential ratepayers, require large loads to ramp down during periods of peak system stress. That's a condition tech companies are unwilling to accept.

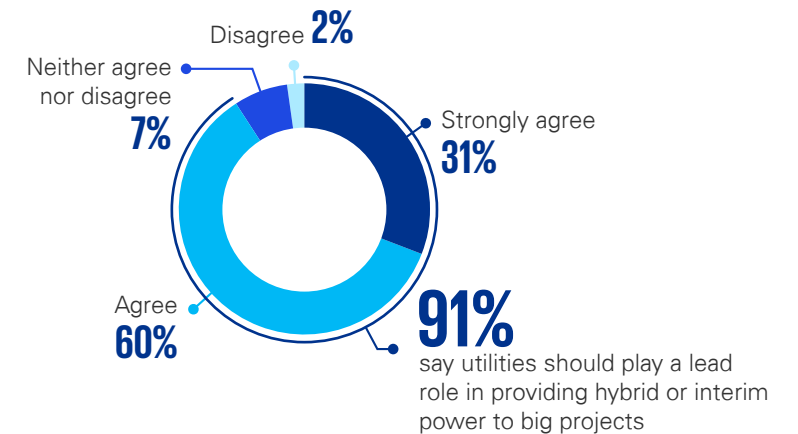
Still, our research suggests that ratepayers aren't walking away from utilities. Instead, they're redefining the role utilities play. Even in self-powered scenarios, they expect utilities to remain the central orchestrator of these solutions. For forward-thinking utilities, that opens a new growth path: Instead of fighting the defection, embrace it, broker it, and own it. The large-load ecosystem will still have a center—the question is whether utilities seize it.

### If grid power delivery is delayed, how willing is your organization to use behind-the-meter or hybrid power solutions?



Source: KPMG Power and Technology Survey, April 2026.

### To what extent do you agree or disagree with the following statement: "Utilities should play an active role in enabling hybrid or interim power solutions for large-load customers?"



Source: KPMG Power and Technology Survey, April 2026.

## PPAs have a new purpose

While full BTM generation presents complex financial and operational challenges, PPAs have emerged as the primary tool for today's grid constrained reality. Data center developers are particularly motivated: When utility delivery timelines fail to match project schedules, nearly three out of four organizations (73 percent) turn to PPAs first.

These agreements often blend technologies, such as natural gas generation paired with solar and battery storage, to create immediate, reliable power. They also shift the decision calculus: A tech company can now weigh the cost and certainty of a multiyear onsite PPA directly against connecting to the public grid.

**A tech company can now weigh the cost and certainty of a multi year onsite PPA directly against connecting to the public grid.**

This is where the stakes rise for utilities. As tech companies expand BTM generation, the defection of hyperscale loads threatens utility revenue streams. Without that revenue, the financial weight of grid modernization tips toward residential

ratepayers. This is a cycle that both burdens the public and undermines utilities' ability to fund the upgrades that could keep ratepayers on grid.

The scale of this new strategy is already staggering. Microsoft recently committed to a 20-year PPA with Constellation

Energy that includes restarting the Three Mile Island Unit 1 nuclear power plant.<sup>16</sup> As anchor customer, Microsoft will secure 835 MW of carbon-free electricity—enough to power a hyperscale campus—while reshaping nuclear economics in the process.<sup>17</sup>

### If grid delivery is too slow or uncertain for project requirements, which options does your organization pursue?

Enter into PPAs to improve power certainty



Continue waiting for standard grid delivery



Downsize the project to reduce near-term power needs



Move the project to a different location or utility territory



Add behind-the-meter generation



Cancel or defer the project



Source: KPMG Power and Technology Survey, April 2026.

Respondents who enter into PPAs to improve power certainty

**67%** Global technology companies/hyperscalers

**79%** Data center developers/operators

<sup>16</sup> Will Wade, "Microsoft to Pay Hefty Price for Three Mile Island Clean Power," Bloomberg.com, September 25, 2024.

<sup>17</sup> Press Release: "Constellation to Launch Crane Clean Energy Center, Restoring Jobs and Carbon-Free Power to The Grid," Constellation Energy Corporation, September 20, 2024.

## For tech companies, a new political battlefield



The clash between hyperscale ambitions and utility realities now extends into regulation, community sentiment, and the politics of energy.

For firms used to operating in lightly regulated digital markets, the shift is jarring: Public hearings, environmental reviews, and unpredictable political crosswinds can stall a project indefinitely. The biggest wildcard for those investing in BTM generation is regulatory change. A single policy decision—a new administration, or a reclassification of private energy assets as public resources—could force self-generation capacity onto the grid to subsidize the broader system. That would turn a competitive advantage into a stranded asset overnight.

Community resistance is mounting, too. Eleven states from across the political spectrum are considering moratoriums on new data centers, reflecting growing backlash over their strain on local resources, particularly the grid. The lesson: Speed to power is a technical and social license challenge.

Here lies the strategic opening for utilities. They've spent a century navigating ratepayer politics, securing environmental permits, and managing "NIMBY" opposition. That institutional muscle can be repurposed to position utilities as not just electron suppliers but also as co developers of AI infrastructure. By guiding ratepayers through this political terrain, utilities can build deeper, more resilient partnerships and remain central in an energy landscape increasingly populated with private grids.



# Who pays? The economics of the shared grid

The sheer scale of new demand is forcing difficult conversations about fairness, cost, and responsibility.

## Rising energy demand has turned grid economics into a high stakes game

Utilities, hyperscalers, and regulators are each making moves that depend on the others. The central question: Who pays for progress?

The funding debate is occurring against a backdrop of mounting consumer pressure. Even before the surge in advanced compute demand, residential utility bills were under intense public and regulatory scrutiny for rising faster than inflation due largely to deferred grid maintenance and the inclusion of local taxes and government fees. Now, with billions in new capital required to meet hyperscale demand, regulators and utilities must determine how to structure infrastructure costs so they provide rate relief for residential ratepayers while meeting the unique demands of large-load ratepayers.

<sup>18</sup> "Connection Costs; Loophole Costs Ratepayers Over \$4 Billion to Connect Data Centers to Power Grid," Union of Concerned Scientists, September 2025.

<sup>19</sup> Andrew Satchwell, Natalie Mims Frick, and Peter Cappers (Berkeley Lab); Sanem Sergici, Ryan Hledik, and Goksin Kavlak (The Brattle Group); Glenda Oskar (US Department of Energy), "Electricity Rate Designs for Large Loads: Evolving Practices and Opportunities," Energy Markets & Planning, Berkeley Lab, January 2025.

## The breakdown of shared costs

For utility leaders, cost allocation is now a frontline worry. The current framework applies uniform pricing across ratepayers, an outdated approach that leaves residents and small businesses carrying an outsized burden from data center consumption.

**The current framework applies uniform pricing across ratepayers, an outdated approach that leaves residents and small businesses carrying an outsized burden from data center consumption.**

Utilities face a dual squeeze: billions in infrastructure spending to serve a handful of massive loads, paired with political and regulatory pushback to protect residential ratepayers. As the Union of Concerned Scientists notes, transmission upgrade cost rules never anticipated that single ratepayers could create such outsized demand or such outsized bills.<sup>18</sup> Policy pressure is mounting: Members of Congress have introduced legislation to shield consumers from AI-driven cost spikes, and Department of Energy guidance frames "fair allocation" as a critical rate design challenge going forward.<sup>19</sup>

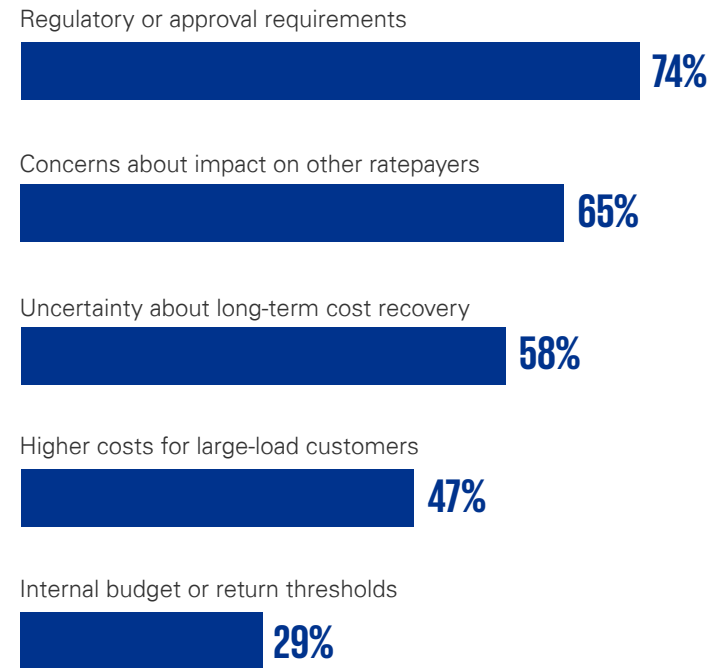
## The cost of speed

Everyone wants speed until the bill arrives. Our survey shows that support for accelerated power delivery is highly conditional: Just over half of respondents (55 percent) want to decide on a case-by-case basis who pays to move faster. However, a notable one-quarter of respondents—particularly data center developers—believe that large-load customers should bear most of the financial burden for accelerated delivery.

The sticking point isn't just who pays, but how much. Capital intensity is a constant headwind: Three-quarters of developers and more than three out of four large enterprises cite the sheer scale of required investment as one of their primary hurdles. Even when the money is lined up, progress stalls. Regulatory reviews—named by nearly three-quarters of respondents as the chief barrier—slow momentum, with public opposition (65 percent) and uncertainty over long-term cost recovery (58 percent) following close behind.

There is, however, a flicker of consensus. Most industry leaders believe the public can be brought onboard if the math feels fair. In fact, 77 percent say accelerated buildouts would gain public support if costs were clearly tied to customer load size and usage. In this race, the real hazard is unfair cost sharing. Get that right, and the path to faster power becomes dramatically easier to navigate.

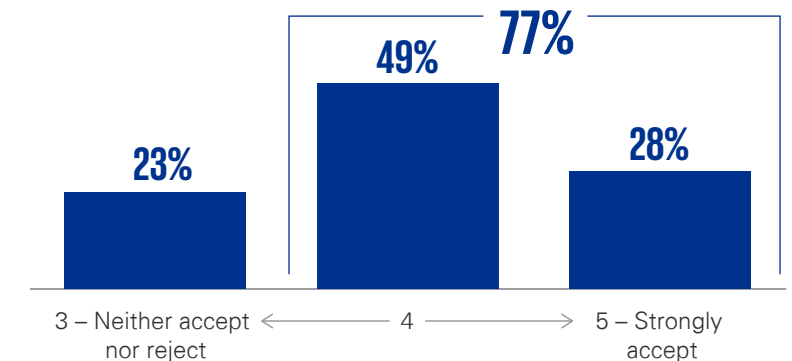
### What are the primary barriers to adopting faster or more reliable power delivery solutions?



Source: KPMG Power and Technology Survey, April 2026.

In this race, the real hazard is unfair cost sharing. Get that right, and the path to faster power becomes dramatically easier to navigate.

How much would society accept faster power-grid construction if costs were based on a customer's size and energy usage?



Source: KPMG Power and Technology Survey, April 2026.

## Capacity, control, and curtailment risk

Hyperscaler demand economics are hyperlocal. In constrained regions such as New England or New York, a large new data center can be seen as a liability. But in markets with surplus baseload capacity, such as the market managed by PJM Interconnection LLC (PJM), utilities compete to bring these loads to the front of the queue.

Virginia's emergence as a data center epicenter demonstrates the regional impact of localized power policies. However, this concentrated load growth has strained the shared PJM interconnection, with potential impact for neighboring states.

Other friction persists. Historically, large industrial facilities with BTM power could sell excess energy into wholesale markets. Today, the curtailment risks tied to those grid connections are unacceptable for 24-7 AI operations. This battle over capacity and control is paralyzing some utilities; those that fail to design flexible partnership models will see tech companies bypass the grid entirely, forfeiting a generational opportunity to expand their rate base.

## For utilities, a need to deploy capital at an unprecedented pace

Keeping up with hyperscale demand forces utilities to spend faster than their traditional model allows. Between 2025 and 2029, capital investments will reach nearly \$1 trillion to upgrade generation, transmission, and distribution, thus adding renewables, battery storage, and smart grid capabilities.

But speed magnifies risk. A cancelled hyperscale project or a customer pivot to self generation could strand assets and derail returns. For utilities, the new game is about building with certainty.



## The potential endgame

The market is weighing different solutions, with no clear winner. In one, tech companies bypass the utility entirely to build their own private power solutions, on their own dime. The alternative is for utilities and regulators to create new pricing structures that keep data centers on the grid but allocate costs directly to them.

This is not a simple problem but rather a gigantic constraint-balancing solution where the free market is trying to solve for cost, speed, and regulatory risk all at once. Within the chaos, strategic choices have substantial potential upsides and downsides for every player involved.

How costs are allocated will determine whether the grid remains a shared platform or fractures into multiple systems with unequal burdens. As regulators, utilities, and tech companies make their strategic moves, this is how the three potential economic paths play out.

Utilities need to prepare for all outcomes, but only if they take the lead can they hope to control their prospects.

- 1 Utilities lead:** Utilities successfully create innovative rate designs and partnership models that fairly allocate costs, keeping large ratepayers on the grid and strategically integrating private capacity. The shared grid is preserved and modernized.
- 2 A hybrid system:** A mix of grid and private capacity emerges, with some large ratepayers defecting and others remaining. This leads to a complex system with both ongoing cooperation and conflict between public and private power.
- 3 Major ratepayers defect:** A critical mass of major ratepayers decides to operate their own independent power systems. The shared public grid is left to serve a shrinking base of residual load, risking rising costs and declining reliability for those who remain.



# A proactive utility checklist for the AI era

Five moves to turn unprecedented energy demand into a competitive advantage

Utility executives are grappling with three foundational anxieties within this new reality: How to manage costs for their existing ratepayers, how to maintain grid resilience, and how to deploy an unprecedented amount of capital, faster than ever.

## 1 Reorganize planning and interconnection around speed

To keep up, utilities must abandon the slow, linear planning process. The new approach requires building a resilient and parallel development pipeline from day one.

### Stop relying on a single path to project completion.

Developing one project path at a time isn't efficient enough to keep up. In today's environment of fast-changing regulation and intense public opposition, assume your primary project option will face significant delays or outright denial.

**Front-load the planning and permitting process.** For every critical asset you need to build, proactively map, engineer, and pursue permits for at least three viable routes simultaneously. This creates redundancy before you need it.

**Achieve resilience through options.** When one route is inevitably blocked, a backup is already active and ready to go. This practice is the key to avoiding multi-year resets and ensuring projects are delivered on a timeline that meets customer expectations.

## 2 Treat permitting, workforce, and materials as strategic, not operational, constraints

For decades, utilities have viewed delays, labor shortages, and supply chain issues as operational problems to be managed. In today's time-compressed environment, this is no longer sufficient. These are now fundamental barriers to growth and must be elevated from the back office to leadership.

**Approach permitting as a continuous campaign.** With rising public opposition to the new power infrastructure required to serve large ratepayers, permitting has transformed from a technical process into a complex political challenge. Navigating this new reality requires a continuous, high-level lobbying effort to build alliances and work with officials to streamline requirements when project ideas are just coming together.

**Build your own talent pipeline.** With more than half of US grid personnel possessing less than 10 years of experience,

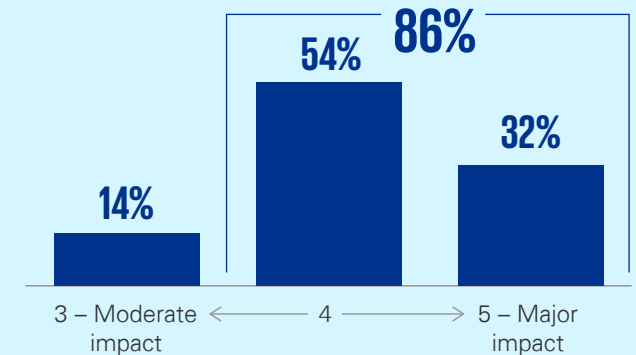
energy-related apprenticeships need to expand to 65,000 per year to fill transmission and distribution roles.<sup>20</sup> Don't wait for the market to supply skilled labor. If critical roles like lineworkers, transmission planners, and grid engineers are scarce, take control, for example, by launching proprietary apprenticeship programs and creating deep partnerships with technical colleges to build the workforce you need.

**Master the supply chain.** The multi-year lead times for critical components such as transformers and switchgear are now a primary business risk. Continue the shift from reactive purchasing to strategic supply chain management, including forging long-term partnerships with manufacturers, standardizing equipment to increase flexibility, and stockpiling critical inventory.

## 3 Modernize grid operations for AI, with AI

The best tool to modernize slow, legacy operating models is the exact technology causing the current strain on the grid. Most survey respondents, 86 percent, expect AI to play a meaningful role in addressing power-delivery and grid challenges associated with large-load growth. So instead of just building, utilities can use AI to get exponentially more from their existing and planned assets to manage AI-driven demand shock.

To what extent do you expect AI to influence power generation or grid connectivity constraints associated with large-load growth?



Source: KPMG Power and Technology Survey, April 2026.

<sup>20</sup> "The Power Industry May Need More Than 750,000 New Workers by 2030," Goldman Sachs, July 23, 2025.

**Enable decision-making at high speed.** Deploy AI and predictive analytics for more accurate, real-time load forecasting. This allows utilities to anticipate demand spikes and make operational decisions at a pace that matches the new environment.

**Maximize the existing grid.** Use AI to actively manage the flow of power. This can reduce grid congestion, balance the grid more efficiently, and maximize the throughput of the existing interconnection queue, unlocking capacity without adding new physical infrastructure.

**Improve asset performance.** Implement AI-driven platforms to transform asset management. This allows for dynamic, predictive maintenance schedules that improve uptime and prolong the life of critical components, ensuring the system is more resilient and reliable.

**Deploy and control new, flexible assets.** An AI-powered grid is most effective when paired with flexible physical capacity. In addition to faster-to-deploy modular and distributed resources (such as battery storage and demand response), use fast-ramping natural gas-fired generation where policy and emissions constraints allow. Unlike coal or nuclear, modern gas turbines and reciprocating engines can start, stop, and ramp within minutes, providing dispatchable support during peak and off-peak periods and when large loads swing. Then, use AI as the central “brain” to orchestrate them in real time. This adds a layer of physical agility that traditional, large-scale power plants cannot offer. And, by increasing AI use in their own operations, utilities can adopt a proactive posture, leveraging the intelligence of the new demand to master its challenges.

### Where does AI offer the most value in solving grid bottlenecks caused by large-load growth?

**60%** ▶ Load forecasting and demand prediction

**54%** ▶ Predictive maintenance of power assets

**53%** ▶ Rapid detection and response to grid anomalies or disruptions

**49%** ▶ Renewable penetration via improved predictability of power demand

**36%** ▶ Coordination of distributed energy resources to reduce stress

**25%** ▶ Interconnection studies

Source: KPMG Power and Technology Survey, April 2026.



## 4 Forge outcome-based partnerships with large ratepayers

The traditional, transactional relationship between a utility and its ratepayers is no longer sufficient. To prevent the defection of their most significant ratepayers, utilities must evolve from simple power providers into indispensable strategic partners.

**Sell knowledge and results, not just kilowatts.** The new value proposition must be built on tangible results. Make ease, speed of interconnection, and certainty of delivery a measurable part of the service offering, not just a goal. For vertically integrated utilities, this includes offering sophisticated PPAs that

independent energy companies cannot match. These utilities have a competitive advantage: a hybrid PPA that can combine the reliability of the grid with the speed and certainty of on-site assets.

**Create a shared-risk model.** In exchange for designing outcome-based solutions, secure shared investment from ratepayers through joint infrastructure development and flexible capacity agreements. This approach gives utilities the financial confidence to build while mitigating the risk of stranded assets.

**Become the integrator of choice.** Instead of simply fighting the expansion of private power, offer to manage it. Provide your expertise in safely and reliably integrating private generation with the public grid. This includes acting as a strategic guide to help ratepayers navigate the complex regulatory and political landscape you know so well.

## 5 Lead the regulatory conversation on cost and capital

Instead of passively waiting for new, unfavorable economic models to be imposed upon them, utility leaders can get ahead of the “who pays?” debate. This requires presenting regulators with a clear, data-driven framework that balances three competing mandates: protecting residential ratepayers, enabling unprecedented capital deployment at a fair rate of return, and enhancing overall grid resiliency.

**Propose new rate structures before you’re asked.** Instead of reacting, come to the table with specific, data-driven proposals. Take the initiative to engineer innovative cost allocation

frameworks. This includes distinct rate classes for data centers and other large, high-density loads. The goal is to explicitly assign infrastructure costs directly to the ratepayers who create them, shielding the broader ratepayer base from subsidizing this growth.

**Build the business case for a fair return.** The scale and speed of required investment are unlike anything the industry has faced. Using transparent financial models, utilities must show regulators that earning a fair return on this accelerated capital deployment is not just a financial goal, but a prerequisite for

attracting the investment needed to keep the grid stable and reliable.

**Frame capital deployment as a resiliency strategy.** Demonstrate to regulators and the public that massive capital spending is not just about chasing new revenue from serving large tech ratepayers but is essential for modernizing the grid for everyone. Present a strategic capital allocation plan that proves investments are being deployed efficiently to improve systemwide reliability and resilience for the health of the shared network.

The proactive steps outlined in this paper are designed to help organizations address immediate capacity constraints, but solving for today is only the first step. Quantum computing is rapidly advancing, threatening to compound current challenges with even steeper increases in power demand and new grid vulnerabilities. The actions utilities take today—modernizing infrastructure, forging new partnerships, and accelerating deployment—are not merely responses to the AI surge. These initiatives lay the groundwork for a resilient and reliable grid that sustains high-demand users and enables utilities to confidently define the future of power.

# How KPMG can help

Navigating this new energy era requires a combination of deep industry knowledge, strategic, data-driven insights, and tactical execution. KPMG can help companies in the power and utilities sector as well as organizations across the energy and technology industries to master these challenges and turn this period of disruption into a competitive advantage. Our professionals can help you design and implement the solutions needed to win the future of power.



## Strategic acceleration of planning and interconnection.

We help clients move beyond linear planning by creating resilient, parallel-path development strategies that reduce risk from permitting delays and accelerate final project delivery.



## Workforce strategy and supply chain resilience.

We help design new talent acquisition and development strategies and create innovative supply chain models to mitigate bottlenecks for critical resources.



## Quantitative load scenario modeling.

We offer advanced modeling for organizations to move beyond legacy forecasting processes, helping utilities understand and predict the impact of new, concentrated loads from AI and data centers to make more informed investment decisions.



## Partnership frameworks for a new energy ecosystem.

We facilitate the creation of new commercial and contractual frameworks for partnerships between utilities and hyperscalers, helping to define measurable outcomes for speed and certainty while structuring effective risk-sharing agreements.



## Regulatory and economic design for the hybrid grid.

We work with utilities to design and build the case for innovative new rate structures and fair cost allocation models. Our team helps organizations proactively engage regulators with transparent, data-driven analysis to build the hybrid grid of the future.

We look forward to speaking with you about your organization's readiness, strategies, and potential outcomes as you prepare to lead in this new energy economy.

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## Contributors

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# About the survey

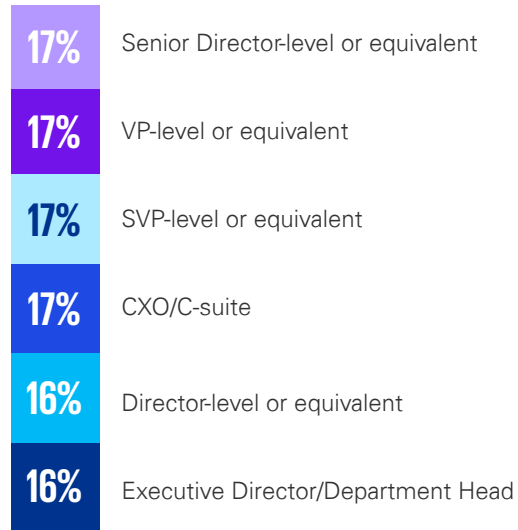


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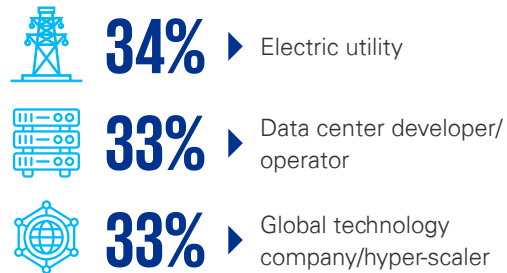
Geography  
United States

What best describes your level in the company?\*

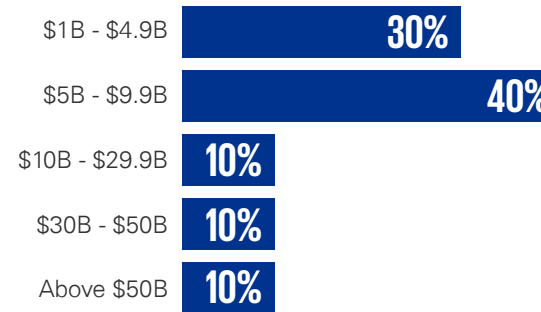


\*Sum of percentages may not add up to 100 due to rounding off  
Sources: KPMG Future of Power Survey, Apr'26

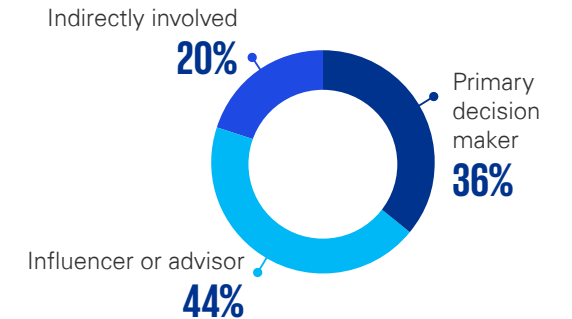
Please select the sector in which your organization operates\*



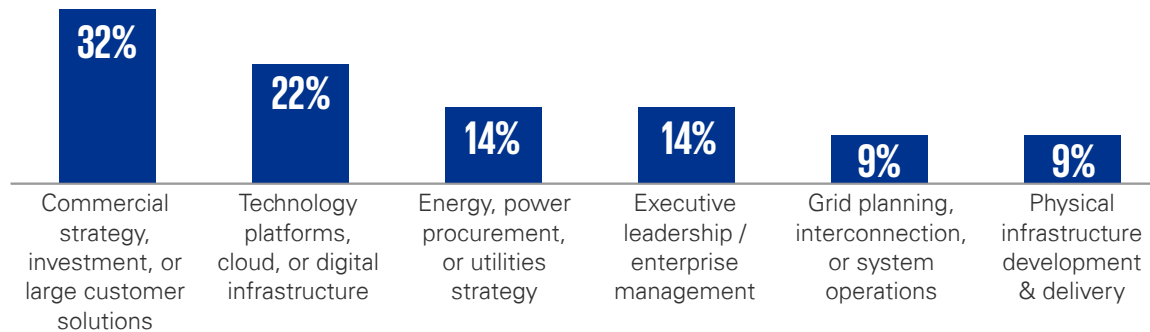
What is your organization's annual revenue for Fiscal Year 2025 in USD equivalent?\*



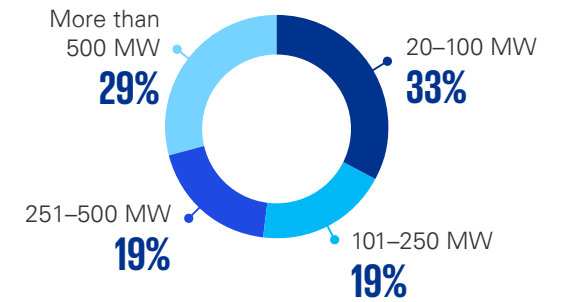
What is your level of involvement in large-load power decisions?\*



Which of the following best describes your role in the organization?\*



For the projects you're involved in, what is the average load size of electricity consumption/generation?\*



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